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Impact of the Parkinson's disease medication protocol program on nurses' knowledge and management of Parkinson's disease medicines in acute and aged care settings

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SUMMARY

Aims: To determine the impact of a Parkinson's medicine education program on nurses' knowledge and practices in two settings where people with Parkinson's disease are cared for: hospitals and residential aged care facilities. The Parkinson's Disease Medication Protocol Program aimed to increase nurse knowledge of Parkinson's medication administration and safety in care management in order to improve health outcomes, function and well-being for the person with Parkinson's.
Background: The ageing demographic of the developed world is concomitant with an increase in chronic disease, with Parkinson's disease being one of the most debilitating and costly. Individually complex medication regimens and unique spectrums of symptoms require disease-specific knowledge in nurses. People with Parkinson's disease admitted to hospitals and/or living in residential aged care facilities often have multiple co-morbidities, rendering care more complex still. Nurse ignorance of Parkinson's disease medicines, their uses, side effects and administration regimens, and safe care practices, can cause unnecessary distress and dysfunction for the person.
Method: The two pilot studies employed an eighteen month pre/post-test/follow up design at different time frames, using a questionnaire developed by the study team and an expert panel to evaluate nurses' self-assessed 'perceived' knowledge and actual knowledge of Parkinson's disease, Parkinson's medicines and safe care practices, and satisfaction with the targeted Parkinson's education program.
Results/findings: Nurses in the hospital pilot (2006/8) revealed deficits in pre-test perceived and actual knowledge levels, which increased significantly at post-test and follow-up. In contrast, in the residential aged care pilot (2008/10) the nurses had higher perceived and actual (correct) knowledge relevant to experience at pre-test and these levels increased at follow-up. Both pilot study cohorts were very satisfied with the PDMPP as an education and support vehicle in Parkinson's management.
Conclusion: These study results concur with the international literature which identifies that without targeted clinical education nurses do not necessarily have sufficient knowledge to effectively manage Parkinson's medicines and avoid unnecessary negative outcomes arising from delays, errors and omissions, nor do they know how to provide safe and effective care for persons with Parkinson's. A well-developed and resourced Parkinson's medicine education program, such as the PDMPP, has the potential to improve deficits in clinical practice.

Introduction

Background

Parkinson's disease (PD) is a progressive neurodegenerative condition caused by loss of dopamine producing cells in the substantia nigra located in the basal ganglia (brain stem) causing motor, autonomic and cognitive impairments. The impairment is often characterised by bradykinesia, rigidity and muscle stiffness, tremor, gait disturbance and postural instability (Mattox et al., 2001; Dorsey et al., 2007; Hoffman Snyder and Adler, 2007a). Non-motor symptoms can include disturbance in temperature control, gastrointestinal function, sleep, sexual function, and cognition, and psychological well-being as the condition progresses, (Ehrt and Aarsland, 2005; Hely et al., 2005; Hoffman Snyder and Adler, 2007b). Effective management of Parkinson's medicines, physical therapies and home support may extend independent living for people with Parkinson's, but institutionalised care is often required at the end-stage (Noble, 2007).

Approximately two people per 1000 have a diagnosis of Parkinson's, with incidence increasing to one in 100 over the age of 60. The incidence

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of Parkinson's is estimated to double to 8.7 million worldwide by 2030 (Dorsey et al., 2007). Australia has approximately 40,000 people with Parkinson's, one in seven diagnosed before age 50 (Hely et al., 2008). Sequential Australian studies indicate that the capital of NSW, Sydney, may have one of the highest Parkinson's prevalence estimates amongst developed countries (Chan et al., 2001, 2005). A more recent study confirms incidence of Parkinson's in Australia is increasing (Mehta et al., 2007), with serious implications for families, as well as health, community and residential aged care sectors. Meta-analysis of Parkinson's prevalence and survival by the Neurologic Diseases in the Elderly Research Group (Berger et al., 2000), reported relative mortality risks for males and females of 3.1 and 1.8, with average durations of 4.5 and 9.8 years respectively (Fall et al., 2003; Herlofson et al., 2004; Hughes et al., 2004; Begg et al., 2007).

Early-stage care management of Parkinson's involves making an accurate clinical diagnosis, multidisciplinary management of clinical problems, and a range of therapeutic options designed to improve function in all areas of daily living. Maintaining function and well-being includes access to neurologists, general practitioners, specialist nurses, dieticians and allied health professionals such as social workers, occupational therapists, physiotherapists, and speech pathologists (Guttman et al., 2003). While ideal, access to these health services remains uneven, with many of those receiving an initial GP diagnosis finding it difficult to engage these services, and to get up to date information about therapies (Carter, 2008; Evans et al., 2010).

The primary treatment for Parkinson's consists of drug therapy, with levodopa the gold standard to manage symptoms and maximise physical function (Mattox et al., 2001; Noble, 2007). The overall objective is to provide a therapeutic dose of levodopa that allows the person to function as close to normal functioning for as long as possible, while avoiding side effects from drug therapy (Hoffman Snyder and Adler, 2007a,2007b). Nurses and care staff say they are aware of the action of levodopa, but optimal management requires expertise, and cooperative effort, both from prescribing and managing health professionals and from the person and their family, for decisions about prescribing regimens (Noble, 2007; Fincher et al., 2009).

Optimal management of Parkinson's medicines requires an ongoing process of drug selection, dosage titration (Mattox et al., 2001) and maintaining currency with pharmaceutical developments (Linnebur, 2004). Familiarity with side effects of medication is essential, as these may include nausea and vomiting, drowsiness, mood changes, alteration in libido (Chan et al., 2008), hallucination, vivid dreams (Lundbeck, 2009), postural hypotension, dyskinesia and motor fluctuations (Noble, 2007). In advanced stages, treatment is often limited to the dopaminergic agents, which are associated with debilitating side effects (Chan et al., 2008), including depression (Noble, 2007).

Management of medication regimens increases in complexity as Parkinson's progresses, building to six to eight prescriptions taken six or more times per day (Chan et al., 2008; Preskorn, 2008; Fincher et al., 2009). Older people can also develop constellations of clinical symptoms evolving over the course of the disease. As a consequence, Parkinson's medicines are typically coupled with other polypharmacy to treat co-morbidities like hypertension, arthritis and diabetes (Carter, 2006; Raymond, 2006; Noble, 2007).

As the Parkinson's condition progresses from moderate to severe, symptom management also becomes a continual challenge for health and aged care staff (Linnebur, 2004). This is compounded where staff's understanding of Parkinson's and its individual regimen complexities is limited, as may be the case in the residential aged care setting characterised by low numbers of qualified nurses (Buxton, 2007; Senior, 2008; Hoffman Snyder and Adler, 2007b).

Very few studies have investigated nurses' knowledge and management of Parkinson's medicines, and the impact of poor practices such as missed or poorly timed doses (Carter, 2006; Magdalinou et al., 2007; Senior, 2008). It has been shown, however, that nurses' failure to understand the significance of missed, delayed or extra doses means that the person with Parkinson's can experience a dramatic motor or behavioural disability (Leopold et al., 2004), resulting in a fall, inability to swallow, digest and eliminate food (Buxton, 2007). Consequently, despite the education and advocacy provided by Parkinson's associations and advances in Parkinson's medicine regimens, many people with Parkinson's are at risk when admitted to acute or residential care facilities, because medical, nursing and allied health staff are not well-educated in Parkinson's medicines and optimal regimens, leading them to rely on non-individualised medication protocols (Buetow et al., 2010; Derry et al., 2010).

Given the high prevalence and dangers of side effects, studies on the effect of education in levodopa medication remain surprisingly limited. When researching the literature we found a few references to the educative work of Parkinson's disease Nurse Specialists and only one short report noting a UK hospital's initiatives to increase junior doctors' and nurses' knowledge of Parkinson's medicines and conditions (Magdalinou et al., 2007). International studies that aimed to improve nurses' Parkinson's medicine knowledge and practices were sparse. Awareness of this lack and continuing concerns about poor nurse education and Parkinson's medicine practices in acute and aged care services in Australia provided the impetus for representations being made to the NSW Minister for Health and the Australian Government Department of Health and Ageing by Parkinson's Australia. The issue was referred to the Statewide Medication Safety Committee in 2010 for its consideration. The main concerns raised by Australian Parkinson's consumers and their supporters were that:

- in most hospitals patients are not permitted to self-medicate however the administration of Parkinson's medicines is often poorly timed;
- there is a limited time period for taking Parkinson's medicines in order to ameliorate symptoms and to minimise risk of falls and injury; and
- there is a need for flexible protocols for Parkinson's medicine management in all health settings that are responsive to individual person's needs.

The two pilot studies reported in this paper were conducted in response to that ongoing concern.

Aim

The Parkinson's Disease Medication Protocol Program (PDMPP) was piloted with hospital nurses in 2006/08 and with nurses and nurse assistants in residential aged care facilities in 2008/10 to evaluate the PDMPP's impact on staff's Parkinson's medication regimen knowledge and care practices. This paper reports on both nurse cohorts' knowledge results.

Method

Design

To test the hospital and residential aged care nurses' acceptance of the Parkinson's education program and resources, and their impact on the nurses' knowledge and applied learning, we conducted a pre/post-test, follow-up design using the same measurements and procedures in both settings. This study design helped to determine whether the learning achieved through the Parkinson's education program was sustained over time.

Setting and Sample

The hospital pilot study was conducted in 10 acute and sub-acute aged care wards at five Sydney metropolitan teaching hospitals in 2006–08. The two participating wards at each hospital were found to admit more patients with Parkinson's disease than any other