Nephrologists’ views of pharmacists in dialysis centers

Introduction

Collaboration between physicians and pharmacists has been advocated to improve health care [1, 2] and it has contributed to better patient outcomes [3, 4]. Physicians’ opinions and expectations of pharmacists have been assessed as a way of improving or adjusting future pharmacist interventions.

Methods

A qualitative study using semistructured interviews was conducted with a purposeful sample of 7 Australian and 14 Portuguese nephrologists. The audiotaped interviews were transcribed verbatim and thematically analyzed.

Results

Three themes emerged from the analysis: ’attitudes of nephrologists towards pharmacist involvement’, ’types of pharmacy services’ and ’consequences of implementation of pharmacy services’. Australian nephrologists showed positive attitudes and reported several pharmacy services that could be performed by pharmacists in dialysis centers, whereas Portuguese nephrologist views restricted pharmacists to administrative duties. In addition, Portuguese nephrologists showed concerns with professional boundaries and demonstrated lack of awareness and knowledge of pharmacist skills. Pharmacy services suggested by Australian nephrologists included medication review, medication reconciliation, medication history update, patient and staff education, patient compliance improvement and development and implementation of anemia protocols.

Abstract

Background. Implementation of pharmacy services in dialysis centers seems to be limited and requires acceptance from nephrologists. The aim of this study was to explore the opinions of Australian and Portuguese nephrologists toward a potential future provision of clinical pharmacy services in outpatient dialysis centers.

Methods. A qualitative study using semi-structured interviews was conducted with a purposeful sample of 7 Australian and 14 Portuguese nephrologists. The audiotaped interviews were transcribed verbatim and thematically analyzed.

Results. Three themes emerged from the analysis: ’attitudes of nephrologists towards pharmacist involvement’, ’types of pharmacy services’ and ’consequences of implementation of pharmacy services’. Australian nephrologists showed positive attitudes and reported several pharmacy services that could be performed by pharmacists in dialysis centers, whereas Portuguese nephrologist views restricted pharmacists to administrative duties. In addition, Portuguese nephrologists showed concerns with professional boundaries and demonstrated lack of awareness and knowledge of pharmacist skills. Pharmacy services suggested by Australian nephrologists included medication review, medication reconciliation, medication history update, patient and staff education, patient compliance improvement and development and implementation of anemia protocols.

Conclusions. Australian and Portuguese nephrologists hold different views regarding the future provision of pharmacy services in outpatient dialysis centers. Acceptability seems to be related to a previous acquaintance with pharmacists and pharmacy services. Different health policies in the two countries that promote collaborative practice between physicians and pharmacists may also account for the differences.

Keywords: Australia; dialysis centers; nephrologist opinions; pharmacists; Portugal

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Nephrologists expected economic benefits from the services implementation by minimizing the inappropriate use of drugs, avoiding medication errors, and reducing drug wastage due to noncompliance.

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Rayner HC, Pisoni RL. The increasing use of hemodialysis catheters: evidence from the DOPPS on its significance and ways to reverse it. Semin Dial 2010; 23: 6–10 (Epub 2010/03/25)

Dialysis centers seems to be limited and requires acceptance from nephrologists. The aim of this study was to explore the opinions of Australian and Portuguese nephrologists toward a potential future provision of clinical pharmacy services in outpatient dialysis centers. Acceptability seems to be related to a previous acquaintance with pharmacists and pharmacy services. Different health policies in the two countries that promote collaborative practice between physicians and pharmacists may also account for the differences.

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At the community level, physicians expect pharmacists to provide medicines information, [5–11] to aid physicians in medicine selection, [5–8] to perform medication reviews, [8, 11] to advise on cost-effective prescribing, [5–7] to monitor and provide compliance aids [6, 8, 9, 11, 12] and to monitor and report adverse drug reactions [5, 6, 8] or drug–drug interactions [11]. Physicians appear to be less supportive, however, when considering pharmacists screening for chronic conditions, [5, 6] selecting medicines or dosages according to agreed protocols after a general practitioner diagnosis [6, 9] or running anticoagulant or lithium clinics [6].

At the hospital level, more integration of pharmacists was noted with physicians considering pharmacists an integral part of the team [13]. Physicians expect pharmacist advice regarding medication appropriateness, information about medication interactions, toxicology and use in pregnancy and help in the decision-making process based on medication efficacy and pricing [13]. Clinical pharmacist interventions raise physician awareness to medication costs and medication quality and influence their prescribing habits [14].

Two recent systematic reviews showed that pharmacists have contributed to the detection medication-related problems, to improve patient outcomes and to reduce costs associated with medications in patients with chronic kidney disease [15, 16]. Previous research revealed that renal-specialized hospital pharmacists perceived an expanded role in this area and expected physician acceptance [17]. Gaining insight into physician perceptions and willingness toward working with pharmacists in outpatient dialysis centers may be considered necessary to implement clinical pharmacy services successfully. For the purpose of the study, we selected two countries, Australia and Portugal, both with a limited participation of pharmacists in direct patient care activities at present, but with different histories of pharmacy services implementation in general. In Australia, there is currently no legislation to regulate the presence of pharmacists in outpatient dialysis centers. These centers are being serviced by pharmacists affiliated with hospitals. In Portugal, outpatient dialysis centers are mostly privately owned although subsidized by the Government. Medicine delivery to patients undergoing hemodialysis shifted from hospitals to dialysis centers in 2008. As a result, pharmacists were specifically hired to perform operational activities such as managing medicine stocks, checking expiry dates and ensuring the appropriate storing conditions as well as the safe circulation of psychotropic drugs within the dialysis center.

The aim of this study was to explore the opinions of Australian and Portuguese nephrologists toward the current and future provision of clinical pharmacy services in outpatient dialysis centers.

Materials and methods

Participants and recruitment

Ethics approval in Australia was obtained from the University of Sydney (Protocol No. 13057) and the Royal Prince Alfred Hospital in 2010 (Protocol No. X10-0282). Ethics approval in Portugal was granted by the Ethics Committee of a private health corporation in 2009. Written consent was obtained from all participants.

A purposeful sample of Australian and Portuguese nephrologists was obtained using two sampling strategies described by Patton, homogeneous and snowball/chain sampling, as a means of selecting information-rich cases [18].

In Australia, the interviews were undertaken at the Department of Renal Medicine at a large tertiary referral hospital in Sydney, where one registered nephrologist and three registrars agreed to participate, and at two other Sydney hospitals involving three more nephrologists. Recruitment was mediated by a renal pharmacist who approached nephrologists directly or invited them by e-mail or telephone. The interviews were conducted by a member of the research team.

In Portugal, the research was conducted in 10 outpatient dialysis centers owned by a private health corporation from the five regions across the country. Head nephrologists and four other nephrologists were interviewed. The recruitment was performed via e-mail and telephone. Although the interviews were carried out in the dialysis centers, all participating nephrologists were hospital-based consultants with a part-time job at these centers.

Interview method and research instrument

This exploratory qualitative study employed semistructured interviews. The interviews were adapted to each country in response to different legal and social environments, culture, historical development and familiarity with pharmacy services. In Portugal, the interview focused first on patient medicine needs, followed by the potential contribution of pharmacists currently working in the dialysis centers in addressing those needs. Interviews conducted in Australia allowed a deeper exploration of the current interaction between nephrologists and renal-specialized hospital pharmacists with whom they worked at the hospital ward, as well as the potential involvement of these pharmacists in outpatient dialysis centers (interview guide presented as Supplementary data). To establish face validity [19], the interview guide was piloted with two Portuguese nephrologists.

Data analysis

The interviews were digitally recorded and transcribed verbatim. NVivo 8 software was used to assist data analysis. A thematic content analysis was performed and nephrologist attitudes or opinions were coded. The codes were ordered by thematic similarity or relationship into a project codebook and combined to reduce data to highly conceptualized themes. Finally, through an extensive process of analysis and comparison back to the original transcripts, data were grouped into major themes. The analysis was performed inductively where the themes emerged from the data ‘rather than being imposed prior to data collection and analysis’ [18]. Exemplar quotes were extracted to support the analysis and illustrate themes. Portuguese quotes were independently translated by two authors fluent in English and discrepancies reconciled to yield semantically equivalent versions.

Conceptual maps (Figures 1 and 2) and a chart (Figure 3) were drawn to represent the data in a visual format.

Results

Face-to-face interviews were conducted with 21 nephrologists (14 Portuguese and 7 Australian), 61.9% (n = 13) male (Table 1). The mean duration of the interviews was 45 min (range 7–83). Three main themes emerged from the analysis: ‘attitudes of nephrologists towards pharmacist involvement’, ‘types of pharmacy services’, and ‘consequences of implementation of pharmacy services’ (Figures 1 and 2).

1 As dialysis centers where the study was being conducted were owned by a private health corporation, the study required approval from the internal Ethics Committee to be performed.
Theme 1: Attitudes of nephrologists toward pharmacist involvement

Several Australian nephrologists described hospital pharmacists working in the renal setting as a ‘really important,’ ‘integral part of the team,’ ‘invaluable,’ ‘highly trained,’ and ‘knowledgeable about newer agents and how to access drugs.’

Fig. 1. Conceptual map for Australian data.

Fig. 2. Conceptual map for Portuguese data.
practitioners are … we [physicians] are thinking about diagnosing diseases and managing the overall picture whereas pharmacists are very much focused on the pharmacology of the drugs. (Australia 7)

The relatively short time the nephrologists had to see patients during appointments and the long time in-between appointments made them believe that clinical pharmacists could have a therapy-monitoring role.

I mean you might have 20 min to see a dialysis patient in clinic and you see them once every three months … you don’t have time to do a proper medication review. (Australia 3)

Portuguese nephrologists commented that a definition of professional roles and responsibility areas would be crucial to facilitate collaboration. Nephrologists pointed out the recent inclusion of the role of pharmacists in the dialysis center and that the team was already organized to work without pharmacists.

…there’s a problem with the role of the physician and the role of the pharmacist. […] Because if there is encroachment in the work of one another that is complicated … it would be beneficial to have a synergy, but that would have to be … pre-arranged. (Portugal 4)

…the role of the pharmacist is very recent. We have always lived without pharmacists. (Portugal 6)

Other Portuguese nephrologists showed some receptiveness but recognized that they could not conceive how the inclusion of clinical pharmacists could be operationalized. In some instances, pharmacists were seen as auditors of the medical practitioners’ performance.

I can’t really see how it would be. We always see pharmacists as someone who tells us what we should do, if the prescription is incorrect or if the drug is not available and not as the person who explains to the patient what the drugs are for. (Portugal 2)

Portuguese nephrologists would see pharmacists as the medicine experts, but in logistic and distributive roles within the center, ensuring that ‘medicines reach the patients in an appropriate physical condition’ (Portugal 13),
and have the responsibility for the ‘quality control of medicines’ (Portugal 7), ‘to check if the medicines are well labeled and if the package inserts are updated’ (Portugal 14). Clinical roles were seldom attributed to these pharmacists.

Theme 2: Types of pharmacy services

While Australian nephrologists were able to immediately attribute different roles to clinical pharmacists within dialysis centers, Portuguese nephrologists were more reluctant (Figure 3). Pharmacy services mentioned by Australian nephrologists included the following medication therapy management activities: getting accurate medication histories accounting for over-the-counter medicines, performing medication reconciliation, eliciting unified medication lists and conducting medication reviews.

...there have been cases where you have patients who have a list of their medications and then their GP [General Practitioner] might have a list of medication that they think the patient is on and then the other doctors have a different list as well so in the end there’s three or four lists. (Australia 4)

Australian nephrologists spontaneously mentioned medication reviews as a primary role for clinical pharmacists within the centers, whereas when Portuguese nephrologists were asked about this activity they showed some hesitancy and confused it with medical prescribing.

Patient education was mentioned by almost every Australian nephrologist as an important activity for clinical pharmacists to carry out with dialysis patients. For some Portuguese nephrologists ‘the pharmacist should have an important role in counseling, especially, for example, in the adverse effects of drugs’ (Portugal 4); however, others viewed that ‘it wouldn’t be the pharmacist to directly interact with the patient’ (Portugal 1) because ‘it would be one more person doing the same thing’ (Portugal 6) as nephrologists, nurses and dietitians are already performing this task.

Alongside education, compliance was referred to by Australian nephrologists as an area to be improved in this patient population, and clinical pharmacists were thought to be able to assume a more proactive role. Portuguese nephrologists recognized that no formal compliance-monitoring systems were currently in place, except an indirect assessment through the records of medicines supplied to each patient. Nevertheless, Portuguese nephrologists did not spontaneously refer to pharmacists as potential contributors to the improvement of compliance, but one admitted that they could back up nephrologists and nurse interventions to improve compliance.

Staff education was considered by four Australian and one Portuguese nephrologist as another role for pharmacists within dialysis centers. Some nephrologists referred to the fact that handling new drugs could sometimes be difficult and that ‘if there is a pharmacist available then we just discuss it with the pharmacist because usually the pharmacist would have the information at their fingertips’ (Australia 7). Additionally, a Portuguese nephrologist expressed the following opinion:

...we cope well with the old drugs but the more recent, that are always coming through, it is harder…I think it would be a lot easier to take advantage of a new drug if I had someone to ask questions. (Portugal 3)

Australian nephrologists stated that clinical pharmacists should be assisting at the prescribing stage by giving feedback to nephrologists regarding medication appropriateness, which was not mentioned by any Portuguese nephrologist.

I think that they [pharmacists] could also be helpful at the prescribing stage. […] they need to be closer in towards that decision-making step… (Australia 3)

Australian nephrologists advocated the participation of clinical pharmacists in protocol design and implementation, particularly anemia-management protocols. However, one participant stated that the involvement of these pharmacists in the management of anemia parameters would not be necessary because it does not involve a level of complexity as high as managing the overall pharmacotherapy of patients and because nurses have already succeeded as anemia-coordinators in Australia.

...pharmacy roles in hospitals have been really ones of oversight, trying to detect inappropriate prescriptions and drug interactions and that complex interplay of drugs, whereas the anemia role is less about the complex interplay with drugs. (Australia 6)

Medicine delivery was not spontaneously mentioned by any Portuguese nephrologist as it was considered a minor task, which does not require high qualifications.

...for a long time [delivery] has been done by non-nursing staff, even a simple administrative staff member, because dispensing medicines does not necessarily have to be done by someone with higher education. (Portugal 10)

Both Australian and Portuguese nephrologists highlighted the importance of clinical pharmacists in monitoring and reporting adverse drug reactions—pharmacovigilance. Finally, another activity mentioned by Australian nephrologists was pharmacist involvement in research projects.

It’s crucial to have a pharmacist available … when research projects are being approved. (Australia 7)

Theme 3: Consequences of pharmacy services implementation

Consequences from the implementation of pharmacy services in dialysis centers were not straightforward for
nephrologists in either country. The impact these services would have on clinical patient outcomes was doubtful.

One of the most common causes of hospitalization is medication-related incidents. The question is whether you could really make an impact on that. I don’t know if you could, I wish you could. I’d love it if you could. (Australia 3)

Some interviewees suggested that patient education by pharmacists could result in increased understanding of the disease, better patient compliance and improved results from clinical practice.

I think that we could see that [education] improves a) understanding of the disease and b) compliance and c) I guess the results from clinical practice. (Australia 1)

Australian nephrologists viewed that cost savings with medications could be achieved by minimizing the inappropriate use of drugs and avoiding medication errors. Some Portuguese nephrologists believed that cost savings could be attained by improving patient compliance and subsequently reducing drug wastage resulting from unnecessary medicine delivery to patients at the end of the month.

…if you could reduce significant errors, I’m sure there are massive errors, and you could show that to be economically viable, or reduce drug usage even, then I think there’d be benefits. (Australia 6)

…maybe we could reduce waste if they [patients] were more compliant […] and decrease costs. (Portugal 3)

Discussion

The present study was conducted in two countries where clinical pharmacist involvement in outpatient dialysis centers seems to be limited, but where the expansion of general pharmacy services is markedly different. While Australia is noted for a reported high implementation of pharmacy services in the community [20–22] and hospital settings [23–25], the literature reveals a paucity of evidence of service implementation in Portugal [26–28]. As such, collaborative working relationships between physicians and pharmacists in Australia may be expected to be different from Portugal. In Portugal, interprofessional work appears to be in an early stage of development, at least in the community setting [29].

Australian and Portuguese nephrologists provided varying views during the interviews conducted (Figures 1 and 2). Positive attitudes toward the job of renal-specialized hospital pharmacists, with whom they were used to working, made Australian nephrologists receptive to the future pharmacy services in outpatient dialysis centers. Conversely, Portuguese nephrologists demonstrated some reluctance in accommodating pharmacists in the renal team and manifested concern over professional boundaries. Similar concerns with role encroachment have been voiced by Portuguese medical and pharmacy leaders to a successful interprofessional collaboration in a previous study [29]. Furthermore, perceived incursion into their own domain was shown to contribute to the physicians’ lack of understanding and reluctance to accept pharmacist input [30]. Role clarity therefore seems vital for effective teams [31, 32].

The views of Australian and Portuguese nephrologists regarding the future provision of clinical pharmacy services in dialysis centers also differed in the type and number of services proposed/expected. Australian nephrologists reported a range of diverse pharmacy services that could be of benefit for outpatients, whereas Portuguese nephrologists restricted pharmacists working in dialysis centers to their current administrative duties. This difficulty in attributing roles to pharmacists might derive from the fact that Portuguese nephrologists see nurses as the main health professional responsible for interacting with patients and delivering medicines. As known from the literature, prior experience with pharmacists and physician awareness of pharmacy services influence role perception [29]. Furthermore, the physician’s receptivity to pharmacy services may also be related to the value physicians attach to these services and their perception of the pharmacist’s competence [33]. Therefore, we believe the opinions of the Portuguese nephrologists in our study might have been influenced by prior experiences or ideas of community or hospital pharmacists with whom they came into contact in the past. These views could be hindering the development of interprofessional relationships therefore affecting the quality of care delivered and compromising the effectiveness of the health care system.

One possible explanation for the different findings in the Australian and Portuguese datasets can be due to the different history of collaboration between the two professional groups. The lack of historical collaboration in Portugal resulted in lack of knowledge of the pharmacist’s responsibilities by nephrologists, as well as low expectancy as to what pharmacists have to offer to contribute to patient care. These results are consistent with studies conducted in other countries showing low expectations of physicians regarding pharmacists [7]. In fact, it has been reported that the physician’s level of acceptance of pharmacy services was positively associated with the frequency of their interaction with clinical pharmacists, and that frequent contact rendered physicians more comfortable with and aware of the roles of the pharmacist [34–37].

A second explanation, which may be intimately related to the lack of historical collaboration, has to do with the absence of health policies in Portugal that promote collaborative practice between physicians and pharmacists. In Australia, several pharmacy services officially recognized by the Australian Government have been implemented in the primary health care setting [38]. Similar developments have occurred in countries such as the Netherlands, [39] Switzerland [40], the United Kingdom [41] or the United States [42, 43]. The latter country has made significant progress in passing and implementing laws on pharmacist
collaborative practice [42, 43], which resulted in the improvement of several patient outcomes [44, 45], access to medication [46] and quality of care [47]. Resistance by physicians and medical associations was the most frequently mentioned barrier to passing collaborative practice legislation, however experience with collaborative practice appears to build acceptance [43, 48]. Therefore, professional organizations and health authorities in countries lacking previous physician–pharmacist collaboration will need to find strategies to overcome this resistance, such as developing formal agreements or protocols to promote the adoption of collaborative practice models [29].

Although Australian nephrologists showed positive attitudes toward pharmacy services, the consequences of their implementation were not straightforward for nephrologists in either of the two countries. The consequences expected by Australian and Portuguese interviewees were mostly at the economic level and less obvious at the clinical level. This might be due to a historical involvement of pharmacists in medicine delivery and management activities in hospitals where costs associated with medicines assume a focal point. At the economic level, consequences of pharmacist intervention reported in the literature do include cost savings in hospitals and dialysis clinics [49–52].

In most countries, the role of the pharmacists in outpatient dialysis centers is either limited or absent. The recognition of the pharmacist’s expertise and competence by physicians will gradually arise as collaboration evolves [53]. Colocation may be crucial to foster this collaboration [13], facilitating daily-basis contact and interaction between the two parties.

Finally, while the concept of data saturation [54] was borne in mind during the conduct of the study, we cannot be assured that we explored all issues pertained to the subject with the sample recruited. Although the coding frame and coding process were discussed in-depth between two researchers, the analysis was performed by one single researcher. However, this was an exploratory study whose main goal was to gather nephrologists’ views rather than generating new theory.

Concluding, Australian and Portuguese nephrologists hold different views regarding the future provision of clinical pharmacy services in outpatient dialysis centers and the acceptability seems to be related with a previous acquaintance with pharmacists and pharmacy services. Collaboration between physicians and pharmacists in this setting could be a way of improving patient care, increasing the effectiveness of the health care system and potentiating the capabilities of both the pharmacy and the medical professions.

In Australia, provision of pharmacy services to outpatients undergoing hemodialysis at this stage appears to be ready to be more generally implemented into practice. Yet, Portugal appears to be in a much earlier stage of pharmacy services implementation, which might also be the case for several European countries. There is a lack of defined policies in both countries to promote future inter-professional relationships between physicians and pharmacists in this field. If collaboration results in positive experiences; more support from physicians will inevitably broaden the involvement of pharmacists in collaborative practice.

### Supplementary data

Supplementary data are available online at http://ndt.oxfordjournals.org.

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### Conflict of interest statement

None declared.

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