

# A qualitative study exploring issues related to medication management in residential aged care facilities

Mariani Ahmad Nizaruddin  
Marhanis-Salihah Omar  
Adliah Mhd-Ali  
Mohd Makmor-Bakry

Faculty of Pharmacy, Universiti  
Kebangsaan Malaysia, Kuala Lumpur,  
Malaysia

**Background:** Globally, the population of older people is on the rise. As families are burdened with the high cost of care for aging members, demand is increasing for medical care and nursing homes. Thus, medication management is crucial to ensure that residents in a care center benefit and assist the management of the care center in reducing the burden of health care. This study is aimed to qualitatively explore issues related to medication management in residential aged care facilities (RACFs).

**Participants and methods:** A total of 11 stakeholders comprising health care providers, administrators, caretakers and residents were recruited from a list of registered government, nongovernmental organization and private RACFs in Malaysia from September 2016 to April 2017. An exploratory qualitative study adhering to Consolidated Criteria for Reporting Qualitative Studies was conducted. In-depth interview was conducted with consent of all participants, and the interviews were audio recorded for later verbatim transcription. Observational analysis was also conducted in a noninterfering manner.

**Results and discussion:** Three themes, namely medication use process, personnel handling medications and culture, emerged in this study. Medication use process highlighted an unclaimed liability for residents' medication by the RACFs, whereas personnel handling medications were found to lack sufficient training in medication management. Culture of the organization did affect the medication safety and quality improvement. The empowerment of the residents in their medication management was limited. There were unclear roles and responsibility of who manages the medication in the nongovernment-funded RACFs, although they were well structured in the private nursing homes.

**Conclusion:** There are important issues related to medication management in RACFs which require a need to establish policy and guidelines.

**Keywords:** older people, drug, nursing home, aged, drug related problem

## Introduction

Half a century ago, there were 205 million people aged 60 years and above globally, and it is expected that in the next 50 years the number of older people will increase to 2 billion.<sup>1</sup> The older individuals are living longer, which leads to a proportion of the aged group associated with an increase in the prevalence of ill health. Nowadays, inability to manage activities of daily living independently is a common excuse for admission of older people to a nursing home.<sup>2</sup> This bears significant new considerations of delivery of health care systems to the country and increases demand for medical care and nursing homes.

A residential aged care facility (RACF) is defined as a special-purpose facility which provides accommodation and other types of support, including assistance with

Correspondence: Marhanis-Salihah Omar  
Faculty of Pharmacy, Universiti  
Kebangsaan Malaysia, Jalan Raja Muda  
Abdul Aziz, 50300 Kuala Lumpur,  
Malaysia  
Tel +60 3 9289 8055  
Email marhanis@ukm.edu.my

day-to-day living, intensive forms of care and assistance towards independent living, to frail and aged residents,<sup>3</sup> while nursing home is described as a “residential facility for persons who require nursing care and related medical or psychosocial services”.<sup>4</sup> With an aging population comes a plethora of health issues associated with physical and social changes such as debilitating effects of multiple, acute and chronic diseases. This requires more complex medication management as the aged people take a few medications for their comorbidities and cognitive problems.<sup>5</sup> Therefore, management of medicines is crucial to ensure that residents in a care center benefit and assist the management of the care center in reducing the burden of health care.

Managing medication has been reported to be a primary duty of a guardian in facilities housing the aging residents.<sup>6</sup> Medication management is concerned with the design, implementation and delivery of accessible, appropriate and cost-effective care for patients based on their needs. It should help to prevent, identify and resolve problems that could interfere with the goals of drug treatment or improved health outcomes. It is an elaborate system that involves several stages such as purchasing and storage of medicines for use by health care institutions, issuance of a prescription by a doctor as well as documentation of any procedure related to the patient in the patient’s records, transferring information from prescription to documenting, filling, preparing and dispensing by the pharmacist which entails screening the prescription or order prior to the release of the product for use by the health care provider or the resident, administering the medication to the end use and monitoring.<sup>7</sup> Around 40 years ago in Australia, studies began to highlight the issues with medication utilization in care homes.<sup>8</sup> Following these studies, several recommendations were put forward to improve this situation such as including medication review services, funded initially for pharmacist-initiated reviews and amended to ensure medical practitioner–pharmacist collaboration. Countries such as the US, Australia and UK have a broad range of policies and resources available to assist health professionals, aged care facilities and residents to optimize medication management. These include national guiding principles, a standardized national medication chart, clinical medication reviews and facility accreditation standards.<sup>9</sup>

Medication management for residents in RACFs presents unique challenges and requires a dynamic process of continuous assessment and partnership which include the roles of all staff. Errors can occur at all levels and can involve different professionals such as physicians, pharmacists and

nurses. These errors can also affect patient safety. The importance of proper medication procedures and safety in RACFs has been highlighted indicating that as much as 40%–50% of their time is spent in activities related to medication.<sup>10</sup> Nevertheless, as little as 2% of research studies in older people is undertaken in the residential aged care setting.<sup>11</sup> Even less is known of medication management in RACFs in Malaysia. Due to the variances in the organizational structures of institutions delivering care to older people, it is important to gain an insight into the general landscape of RACFs in Malaysia and investigate the perspectives of key stakeholders in medication management.

## Methods and participants

An exploratory qualitative study adhering to Consolidated Criteria for Reporting Qualitative Studies guidelines was conducted.<sup>12</sup> A preliminary discussion was first held among the investigators to identify the importance of a needs analysis, and a decision was made to gain insight into the landscape of RACFs in Malaysia in relation to medication management. In this study, stakeholders sampling was performed by selecting individuals of different backgrounds at RACF practice. Participants were recruited from a list of registered RACFs comprising government, private and nongovernmental organization (NGO) nursing homes in Malaysia. The relevant stakeholders for this study included health care practitioners such as doctors, RACF administrators and caretakers as well as residents. All the health care practitioners, administrators and caretakers were considered eligible if they have the experience of working with the residents as well as handling medications or engaging with residents at an RACF for more than 3 months. They were excluded if they were based at day care or respite care institutions for older person. Residents staying more than 3 months in an aged care facility were considered eligible for this study.

In this study, purposive stakeholder and snowball sampling methods were employed as RACF list of contacts provided the researcher access to contact caretakers, administrators and other health professionals who were willing to participate. By these means, the participants were not known to the researcher, thus eliminating bias. The participants were verbally invited and explained of the purpose of the interview, the process of interview and the guarantee of anonymity. Data collection was completely anonymous, and participation was voluntary. The study was reviewed and approved by Human Research Ethics Committee, Centre for Research and Instrumentation Management, Universiti Kebangsaan Malaysia (UKM PPI/111/8/JEP-2016-523).

In-depth unstructured and semi-structured face-to-face interviews were conducted from September 2016 to April 2017. Two interview guides were used, one for the stakeholders comprising health care professionals, administrators and caretakers and the other for stakeholders representing residents (Supplementary material). The unstructured interviews allowed the participants to speak freely with structured guidance from the interviewer using an emerging sequence. Interviews were closely observed, and notes were taken. The in-depth interviews ran between 1 and 2 hours per participant. Semi-structured interviews were conducted for the RACF residents lasting around 30 minutes. The in-depth unstructured interview provided a less formal, less intimidating need to probe beyond simple answers and provided opportunity for clarification of ambiguous replies and to explore more deeply. Observational analysis by way of field notes was documented as the respondents shared information on handling of stocks and medication administration procedure.

Written informed consent was obtained from all participants prior to the interview. Participants were also reassured that the aim of the study was to obtain their personal perspectives and opinions on, as well as their experiences with, medication management policies and practices in their settings of RACFs. The participants also consented to be audio recorded. To avoid potential participant response bias, the persons interviewed by the researcher were not known to her. Data collection ceased when data saturation was achieved, and all the investigators reached a consensus that no new categories or themes were emerging from the interviews. The researcher also performed observational analysis to add support to the richness of data in an independent, noninfluencing and noninterfering manner.

## Data analysis/collection

Dialogues from each interview were fully transcribed verbatim and stored electronically as Word files. Following interview, primary analysis was conducted by researcher and the team comprising two senior academicians. This process required continuous reflexivity and self-scrutiny. A meeting was held on coding, and an argumentative validation was conducted in which the data set was argued from a contradictory viewpoint, codes were compared and differences of opinion were debated, until consensus on a coding tree was reached, and the most relevant themes related to stakeholders' experiences and perspectives regarding medication management were identified. Finally, the text fragments were sorted and analyzed according to

the identified themes, and a consensus was established. Repeating themes were identified, and findings subsequently summarized. Reliability of the study was assured by the researcher's conduct and maintaining good records of the interviews and observations through documenting processes in detail.

## Results

In this study, 11 participants comprising five health care providers, two RACF administrators, two caretakers and two residents were recruited. Participants were recruited from various backgrounds taking into account area of discipline and years of experience (Table 1). A total of two doctors, three nurses from private nursing and government residential care setting, two administrators, two caretakers and two patients all participated voluntarily.

Three themes, namely medication use process, personnel handling medications and culture, emerged in this study. The subthemes of medication use process were availability, administration, monitoring, documenting, storage and disposal of medications. The subthemes of personnel handling medications were educational background, qualification and competency. The subthemes of culture were administrator's perspective, patient's belief of fatalism, resident's perspective, empowering residents and opportunities for promotion of safety culture and quality improvement.

**Table 1** Demographic details of participants

No	Group	Participant	Gender	Years of experience
1	A	SN, partial-service private nursing home	F	6
2	B	SN, government RACF	F	10
3	C	SN, full-service private nursing home	F	20
4	D	Primary care physician, primary care management	F	18
5	E	Public health specialist, policy issues	F	25
6	F	Administrator, welfare home	M	10
7	G	Caretaker, foreigner, private nursing home	F	4
8	H	Caretaker, Rumah Orang Tua, welfare home	M	15
9	I	Patient, private nursing home, Chinese, 60 years, moderately healthy	F	N/A
10	J	Administrator, NGO	M	3
11	K	Patient, welfare home, Malay, 67 years, diabetic	F	N/A

**Abbreviations:** SN, staff nurse; RACF, residential aged care facilities; N/A, not available; NGO, nongovernmental organization.

## Medication use process

The procedure of procurement and supply of medication varies among the different institutions as the government RACFs tend to send their residents to the government clinics and hospitals for check-ups and collection of their medications. Certain government RACFs have a clinic in which a doctor visits on certain days and other health care providers such as nurses and physiotherapists are stationed.

There is a small clinic on-site. Residents visit the doctor at government healthcare facilities when need to. We have a store for non-prescription items and supplements. We give medications to them in a consistent and regular manner. [Nurse, government RACF setting, female, 10 years' experience]

Meanwhile, the NGO and private RACFs often send their residents to the government clinics and hospitals; however, certain care centers require that the residents must be sent by their family members to any health care facilities such as clinics or pharmacies.

We arrange resident's check-ups to government health-care facility and get the medication that is dispensed by pharmacy department to the patient. [Administrator, NGO RACF, male, 3 years' experience]

The family members must get the medicines. [NGO home worker, male, 30 years' experience]

Family will get medications, we give what the family passes to us, my superior trains me so I know how to give it. [Caretaker, foreigner, private nursing home, 4 years' experience]

The availability of medications is a concern as the NGO and private nursing homes need to ensure the continuous supply of medications. However, they depend on family members to obtain the medications, although some residents claimed that their caregiver or family is keeping their medications.

I have run out of my diabetes tablets [...] can you get someone to bring it to me [...] my family members hasn't come with it yet. [Resident, female, 60 years old]

At our private nursing home, the family must come and take them for their regular check-ups of every 3 months. The family are responsible to get the medications. [Private nurse, female, 20 years' experience]

The variation in medication administration among the different centers was noted in this study. The NGO RACFs tend to have staff, volunteers and residents who are not trained in administering medication.

They take care of one another, reminding each other to take their medication, each resident is in charge of own medication, we also encourage them to clean their own room and wash up after meals. [Caretaker, NGO RACF, male, 40 years' experience]

Medications, our staff gives. We also blend some juices as our staff use some of their knowledge of herbs. They take what is given. [Administrator, NGO RACF, male, 3 years' experience]

In private nursing homes, there are different levels of care ranging from partial to full nursing care services. A nurse may or may not be there full time; in such cases, handling of medication is delegated to other staff.

I have a degree in Science and I handle medication administration here. We have our Nurse who checks from time to time and trains us. [Female, foreigner, private nursing home, 4 years' experience]

Family members pass us nurses the medications and we put them in special place. The medications are not kept with the residents as worried they may take double dose. [Private nurse, female, 20 years' experience]

In the government facilities, community nurses and staff nurses are primarily involved in managing medications for chronic patients and severely debilitated patients. Those patients who are quite well take medications on their own with reminders from attendants.

I take care of the patients here especially the diabetic patients that need insulin injections. [Nurse, government RACF setting, female, 10 years' experience]

In this study, it was found that there is a gap in communication across the continuum of care. In the private setting, the responsibility is on the patient's family and next of kin to establish a "form of process or system" pertaining to regular medical check-ups and procuring medications.

Our home residents receive visit for medical check by the doctor of nearby hospital once a month for around 2–3 hours. On some occasions the pharmacist and physiotherapist come too. I listen to what the doctor says about the medication but I don't really understand the 5R concept. [Caretaker, NGO RACF, male, 30 years' experience]

Patients family obtain medications from private pharmacies. No checking is done, no monitoring is done. My nurses and I go to the care homes and we see diabetes not well managed. We need pharmacists with us as there is lack of interdisciplinary care in managing complex morbidity residents. [Medical doctor, female, 18 years' experience]



Meanwhile, in the NGO RACFs, some residents do not have next of kin, and the role of guardian is void. Hence, the medication-related responsibility falls on the RACF administrators or caregivers.

I will take them to hospital and sometimes if possible return together with them so instructions are clear otherwise if I am not able to go, the van driver passes the information.  
[Administrator, NGO RACF, male, 3 years' experience]

During both medication administration at primary care level and transition from secondary back to primary care, documentation is lacking.

Not a smooth process when patient is discharge, lucky if the caretaker has accompanied the patient from the hospital so has information to go on, but formal documentation such as full discharge summary is not the norm. The patient would have seen many doctors and specialists. Who is responsible to check medications given by these different providers? Sometimes, the information is kept by family member and not communicated to caretaker. [Medical doctor, female, 18 years' experience]

There is a lack of medication records and medication administration charts. It is not the usual practice to have the photo of the resident on the folders. Most residents have a personal folder, and general medical information is included in this often without confirming identity by photographs of the resident. However, medication administration records are not regularly filled up.

I have a resident's folder, the information on their medical care and health issues is in there, not so much on the medication though. [Welfare home worker, male, 30 years' experience]

In this study, it was found that the safety component of medication storage and disposal was not identifiable in the care home. The government setting has a specific storage area for prescription and nonprescription items.

The family member passes the medication to the staff nurse who has a special place to put. The medications are not kept with the residents as we are worried they may take double dose. [Private nurse, female, 6 years' experience]

NGO setting has space limitations and does not have a specific storage area. Although there is one home that has a storage area, the upkeep and maintenance of that store is not in good order. As for the private RACFs, some have a designated room housing all the medications of residents there, whereas others employ a common area.

## Personnel involved in handling medications

Personnel handling medications have different educational backgrounds, qualifications and competencies in different settings of RACF. The government facilities employ trained staff, whereas some of the private and NGO enlist "support personnel" to perform a wide range of tasks and duties. There is a lack of training to staff and volunteers in the area of handling medication. In the private RACFs, most staff handling medications have nursing and pharmacy backgrounds and consider medication management as a primary task.

We have a diploma holder of Pharmacy and she works with the nurses here to fill medication orders by the physician and administer to the residents, especially the dependent ones.  
[Private nurse, female, 20 years' experience]

I have a degree in Science and I handle medication administration here. We have our Nurse who checks from time to time and trains us. [Female, foreigner, private nursing home, 4 years' experience]

I am happy with the way they administer medication to me. I take what they give me. Medication is not what I worry about [...] frankly it is the food that needs to improve here. [Resident, private nursing home, diabetic, female, 60 years old]

In the government facilities, nurses are employed to oversee care of the residents, and they are actively involved in managing medications for chronic patients. For those patients who are quite well, attendants will oversee their care and remind the residents to take the medications. There is a dependency on employing unqualified staff as caretakers or assistants to care for the many needs of the residents.

Patients have comorbidities of hypertension, diabetes and hyperlipidaemia and some also suffer gastric conditions, cancer, skin problems like ubiquitous ulcer and unable to feed so need Ryles's tube. Vital to adhere to medication and receive care and attention, but personnel not updated on how to care for residents. Patient may succumb to aspiration pneumonia, stagnant pneumonia, fungal infection. Some volunteers at centres as well as personnel are not qualified. These institutions are not well staffed. [Medical doctor, female, 25 years' experience]

Some language barrier exist as staff here are foreigners. They don't speak Malay and use hand sign language. They converse in Tamil language, having said that they are the ones that work these jobs. [Administrator, NGO RACF, 3 years' experience]

In the area of elderly care, it is key to have experienced personnel and skilled workers, but sadly this is not possible. [Medical doctor, female, 25 years' experience]

## Culture

There were existing differences in the beliefs and opinions of stakeholders on the gravity of medication management issues. The theme of culture here encompasses beliefs of the residents, empowerment of the residents, culture of patient safety and medication safety and quality improvement. It reflects on the type of institution and its organizational system. The perspective of RACF administrators towards medication management is important as they plan and manage the operations of the care home, while the staff employed will execute the work needed. In NGO setting, medication management is not rated high when compared to other daily tasks.

Not such a concern. Residents fight about privacy and space. I have six staying in a single large room. We have far more serious issues like worrying about costs and how to manage. [Caretaker, NGO RACF, male, 30 years' experience]

There are only two other staff here besides me to take care of residents. Here we have some residents with cancer and psychiatric problems. We empower them to do their own laundry, cook and tend the garden. I do feel medications are a really big issue here. I am really concerned about it but I don't know that much about medications, I worry about the deaths here. [Caretaker, welfare home, female, 15 years' experience]

The belief of fatalism influences behaviors towards adhering to medications and is identified in this study.

Sometimes the resident just doesn't want to take his medication, he says he is old so what does it matter. The staff want to give the medication and so they get into a bit of a quarrel. I don't force them though. [Administrator, NGO RACF, male, 3 years' experience]

The additional challenge is that in Malaysia, a multicultural and multiethnic society, the use of herbal and traditional medications is widespread, and this can affect the use of prescribed medicines.

A visit to the storage room revealed a wide range of non-prescription medicines. Some were not easily identified, unregistered products and had expired. A lot were traditional medicines. [Researcher's field notes]

Nevertheless, as the residents in RACFs face the complexity of their health and other related aging issues, there is

a culture observed in few organizations to help them thrive in this situation and empower them.

We empower the residents to maintain their independence and do their own washing up after eating, clean their rooms and they take of their own medications. [Caretaker, NGO RACF, male, 30 years' experience]

There was a lack of medication safety culture, with a range of medicines available in certain facilities not properly labelled.

The store had several plastic packets containing a mix of three unlabelled medications, most like 2 anti-inflammatories and 1 steroidal tablet. [Researcher's field notes]

Meanwhile, caretakers are hoping for opportunities for promotion of safety culture and quality improvement of their work.

In my state, a few of us get together and do case studies to learn how we can help residents in terms of caring for their medical condition. We do this on our own initiative, I don't know think it is common in other nursing home. [Private nurse, female, 6 years' experience]

I don't understand it, sometimes, the care home management is more concerned about putting funds towards certain activities instead of spending wisely on staff training. It baffles me. [Medical doctor, female, 25 years' experience]

## Discussion

There is not an overarching consensus by all stakeholders on medication management as being a top priority or chief concern. Main concerns are providing care services such as food and hygiene, and addressing living conditions and privacy issues while managing costs and budgets. However, medication management should be an important concern as it facilitates the safe and effective use of prescription drugs and nonprescription medicines, thereby reducing morbidity and mortality and improving quality of life of the residents. There is no personal admission due to occurrence, let alone reporting, of any medication errors in these settings.

There are several types of RACFs providing different levels of care and have a variety of different health professionals including nurses and physicians. In this study, it was observed that the responsibility of managing medication varies from care home to care home. Welfare homes that face staff and budget shortages empower individuals to care and look out for one another. For example, in government care home facilities, there are dependent and nondependent

residents. The former are in-charge of their own medication with the assistance of attendants, while in the case of the latter, staff nurses are employed. In some private nursing homes, a staff nurse is employed as in-charge of administering medications, while in other settings, it is the task of either RACF administrator or caretaker.

There is not a systematic way of procuring the medications, and it may be quite difficult for the administrator to handle individual resident visits for health check-ups. The task of ensuring the resident has a continuous supply of medications is cumbersome on the part of the administrator or caretaker. Administration of medications is not structured as NGO RACFs tend to have staff, volunteers and residents who are not trained in administering medication. Apart from the government facility, there is not a designated room for storage of medication. However, in the other settings, medications are kept at a common area or in the kitchen. It was observed that the residents are keeping their medications in their side cabinet, and this could pose a threat if another resident gets hold of them or if they are stolen. In one welfare home, inventory management of the store was lacking, and accumulated stocks had expired and were nearing expiry date. As there are differences in organizational structure and governance in terms of medication management, in which some have inadequate management of facilities, systems and processes, standard operating procedures could be proposed with guidelines. A more systems-based approach to medication management needs to be applied in order to develop behaviors and nurture an environment that supports good medication management.

In this study, it was observed that the responsibility of administering medication varies from care home to care home. NGO homes that face staff and budget shortages empower individuals to care and look out for one another. For example, in government care home facilities, there are dependent and nondependent residents. Nondependent residents are in-charge of their own medication with the assistance of attendants, while for dependent staff, nurses are employed. In some private nursing homes, a staff nurse is employed as in-charge of administering medications, while in other settings, it is the task of either RACF administrator or caretaker. The medication use process highlighted an unclaimed liability for residents' medication by the NGO and certain private RACFs.

The medications use of residents is monitored in some private nursing homes by the visiting or on-site doctor and nurse, while the pharmacist is excluded from medication review. There is a lack of interdisciplinary management in

this setting, although it does exist in government facilities. There is also a lack of interdisciplinary communication among different medical and health care providers with the administrator and family. Advocacy for a partnership and systems approach to achieve safe and quality use of medicines and medication management in RACFs is needed.

Residents at RACFs are not empowered to take ownership of their medication management. It is interesting to note that certain ethnic groups are more empowered. A study of Northern Ireland nursing homes supports the overall sentiment of the study in that "residents are generally adherent to medication and had little involvement in the prescribing or administering process".<sup>13</sup> In terms of personnel handling medication, it is an issue that staff are not employed based on qualification and not continuously afforded ongoing education and training for the tasks which they are assigned to perform. The need to employ staff with proper qualification and training is warranted as more experienced care home workers commit less errors and the medication administration error rate of the staff who are trained is very low compared with those less well trained.<sup>14</sup>

In the UK, under the National Health Service, community pharmacists deliver advanced services to improve patient safety in focus areas such as ordering, storage, administration and disposal of medicines and appliances and use of residents' own medicines, both prescribed and purchased.<sup>15</sup> This encompasses advice from community pharmacists on the safe administration, storage, recording and disposal of medicines with 6-monthly monitoring visits and support with training and advice on written procedures within the home to improve medication management and medication administration record chart as a locally commissioned service. Hence, there is a potential for community pharmacists to practice advanced and enhanced value-added services in Malaysia. This work beyond the confines of the pharmacy can include medication reviews in residential homes, full access to clinician records and possibility to obtain electronic health data and work alongside other health care practitioners in coordinated efforts. The pharmacist can play a major role in educating staff on medication management and information resources and conducting series of staff education and training. Pharmacist can engage in the community RACFs to conduct medication reviews and collaborate more with other health care professionals.

It is not clear as to who manages the medication in NGO RACFs, though the role is more structured in the private nursing homes. Medication management standards have to be put in place with regulations, guidance and codes of practice

to enable a partnership to engage staff and stakeholders in medication management at RACFs.

## Conclusion

Medication use process, personnel management and culture as well as governance structure are the main issues related to medication management in RACFs. There is a need to establish policy and guideline in medication management at RACFs with emphasis on the role of the pharmacist in this setting towards quality use of medicines. There is a professional imperative to make better use of the knowledge and skills of the pharmacist, and medication management is the vehicle that could be used to deliver it.

## Acknowledgment

This research was funded by Universiti Kebangsaan Malaysia (grant number FRGS/2/2014/SKKK02/UKM/03/1).

## Disclosure

The authors report no conflicts of interest in this work.

## References

- World population ageing. United Nations. 2001. Available from: <http://www.un.org/esa/population/publications/worldageing19502050/>. Accessed April 20, 2017.
- Krause MR, Palmer JL, Bowers BJ, Buckwalter KC. Responding to poor quality care during research in nursing homes. *Res Gerontol Nurs*. 2011;4(1):47–52.
- Australian Institute of Health and Welfare. *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (7th Edition 2008) (ICD-10-AM)*. Sydney: National Centre for Classification in Health; 2016.
- Buccheri C, Mammina C, Giammanco S, Ginammanco M, La Guardian M, Casuccio A. Knowledge, attitudes and self-reported practices of food service staff in nursing homes and long term care facilities. *Food Control*. 2010;21(10):1367–1373.
- Maufauzy M. The problems and challenges of the aging population of Malaysia. *Malays J Med Sci*. 2000;7(1):1–3.
- Rigby D. Adherence assessment tools: drugs don't work when they are not taken. *Aust J Pharm*. 2007;88:32–33.
- Hicks RW, Sikirica V, Nelson W, Schein JR, Cousins DD. Medication errors involving patient controlled analgesia. *Am J Health Syst Pharm*. 2008;65(5):429–440.
- Snowden J, Day S, Baker W. Audits of medication use in Sydney nursing homes. *Age Ageing*. 2006;35(4):403–408.
- Sluggett JK, Illomaki J, Seaman KL, Corlis M, Bell JS. Medication management policy, practice and research in Australian residential aged care: current and future directions. *Pharmacol Res*. 2016;116:20–28.
- Cotter M, Donlon S, Roche F, Byrne H, Fitzpatrick F. Healthcare-associated infection in Irish long-term care facilities: results from the First National Prevalence study. *J Hosp Infect*. 2012;80(3):212–216.
- Rolland Y, Abellan van Kan G, Hermabessiere S, Gerard S, Guyonnet Gillette S, Vellas B. Descriptive study of nursing home residents from the REHPA network. *Nutr Health Aging*. 2009;13(8):679–683.
- Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349–357.
- Hughes CM, Goldie R. “I just take what I am given”: adherence and resident involvement in decision making on medicines in nursing homes for older people: a qualitative survey. *Drugs Aging*. 2009;26(6):505–517.
- van den Bemt PMLA, Robertz R, de Jong AL, van Roon EN, Leufkens HGM. Drug administration errors in an institution for individuals with intellectual disability: an observational study. *J Intellect Disabil Res*. 2007;51(7):528–536.
- Centre for Policy on Ageing. Managing and administering medication in care homes for older people. 2011. Available from: [http://www.cpa.org.uk/cpa/policies\\_on\\_ageing.html](http://www.cpa.org.uk/cpa/policies_on_ageing.html). Accessed January 22, 2017.



## Supplementary materials

### Interview topic guide on issues faced regarding medication management in residential aged care facilities (RACFs)

Preamble: You have had experience in the practice of taking care of older persons in long-term care facilities. You would have planned, overseen, instructed others or administered medication to residents.

General questions: (set at 5, sequence and probing style). When question is posed and the participant answers, the researcher cues in and follows up the questioning process based from the emerging response.

For healthcare professional/healthcare provider

1. How long have you worked here/with residents? [NB: asking participants current situation before questions about the past or future aids engagement]
2. Tell me about your background?
3. What main concerns/issues do you face in your RACF?

4. Tell me how you manage medications at RACF?
5. Describe the process of giving medications to the resident?
6. What are the some of the problems you face when giving medication?
7. Are there any complications that arise when/after residents take their medications?
8. How do you perceive the importance of managing medication?
9. What would you like to see in terms of the managing of medications at your RACF in future?

For residents:

Thank you for meeting with me. Today I would like to talk to you about your medications you take.

1. How are you feeling today?
2. How is everything with your medicines?
3. How do you obtain your medications?
4. Do you take your own medications? (If not, then ask, who gives you your medication?)

#### Patient Preference and Adherence

### Publish your work in this journal

Patient Preference and Adherence is an international, peer-reviewed, open access journal that focuses on the growing importance of patient preference and adherence throughout the therapeutic continuum. Patient satisfaction, acceptability, quality of life, compliance, persistence and their role in developing new therapeutic modalities and compounds to optimize

Submit your manuscript here: <http://www.dovepress.com/patient-preference-and-adherence-journal>

clinical outcomes for existing disease states are major areas of interest for the journal. This journal has been accepted for indexing on PubMed Central. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Dovepress