



Rationalising Antipsychotic Prescribing in Dementia (RAPID) complex intervention: A mixed-methods feasibility intervention study



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ABSTRACT

Background: To help address the issue of inappropriate antipsychotic prescribing to nursing home residents with dementia, the 'Rationalising Antipsychotic Prescribing in Dementia' (RAPID) complex intervention was developed, comprising staff education and training, academic detailing and a novel resident assessment tool.

Objectives: The primary objective was to assess the feasibility and acceptability of the RAPID complex intervention in a nursing home setting. The secondary objective was to describe associated trends in psychotropic prescribing, falls, and behavioural symptoms.

Methods: A mixed-methods feasibility intervention study in one large nursing home in Ireland was undertaken between 07/2017 and 01/2018. Focus groups and semi-structured interviews were conducted with nursing home staff and GPs at the end of the 3-month follow up period to assess participants' experience of the intervention. Quantitative measurements included pre- and post-course evaluation and psychotropic prescribing rates.

Results: Sixteen nursing home staff members attended the two education and training days (21% attendance rate), and four GPs participated in the academic detailing sessions (100% attendance rate). Participants of the focus groups and interviews ($n = 18$) found the education and training beneficial for their work and expressed a desire to continue educating new staff after the study's completion. However, there was limited usage of the resident assessment tool. Participants also offered recommendations to enhance the intervention.

The proportion of dementia residents prescribed at least one regular antipsychotic was stable over the 3-months pre-intervention at 45% ($n = 18$), and at baseline at 44% ($n = 19$) but decreased slightly to 36% ($n = 14$) at 3-months post-intervention. At the same time the absolute number of 'PRN' psychotropics administered monthly to dementia residents decreased substantially from 90 at baseline to 69 at 3-months post-intervention.

Conclusion: The RAPID complex intervention was broadly feasible to conduct and may be acceptable to stakeholders. However, before it can be evaluated in larger scale studies, certain protocol modifications and further exploratory work are required to improve implementation.

1. Introduction

Antipsychotics are commonly prescribed to people with dementia to manage behavioural and psychological symptoms of dementia (BPSD; also sometimes termed non-cognitive symptoms of dementia), despite

established evidence of harms and limited benefit.¹⁻⁶ Antipsychotic prescribing is particularly prevalent in nursing home residents with dementia, with a systematic review and meta-analysis by Kirkham et al. estimating a pooled prevalence of 37.5% in this population compared with 12.3% in community-dwelling people with dementia.² A substantial amount of

Abbreviations: ABC, Antecedent-Behaviour-Consequence; BCW, behaviour change wheel; BPSD, behavioural and psychological symptoms of dementia; CNM, clinical nurse manager; COS, core outcome set; CPZ, chlorpromazine; GP, general practitioner; GRAMMS, Good Reporting of A Mixed-Methods Study; HCA, healthcare assistant; MRC, Medical Research Council; NIHR, National Institute for Health Research; NPI-NH, neuropsychiatric inventory - nursing home version; OD, occupational disruptiveness; PINCH-ME, Pain, Infection, Nutrition, Constipation, Hydration, Medication and Environment; PRN, pro re nata; QUM-D, quality use of medicines in dementia; RAPID, Rationalising Antipsychotic Prescribing in Dementia; WHO-ATC, World Health Organization Anatomical Therapeutic Chemical.

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research has been conducted in the area of antipsychotic prescribing to nursing home residents with dementia over the past several decades,⁷ however, this issue persists to this day.⁸

While some antipsychotic prescribing to nursing home residents with dementia may be clinically indicated, evidence suggests that on the whole, antipsychotic prescribing is often inappropriate.⁹ The reasons for the continued high rates of inappropriate antipsychotic prescribing are complex and may include issues relating to healthcare workers (e.g. lack of awareness of limited benefits of antipsychotics, lack of confidence in non-pharmacological management, over-reliance on medications, social pressure to prescribe), the organization (e.g. limited resources, organisational climate, ineffective communication and teamwork) and external factors (e.g. unclear guidance and regulations, the role of the family and carers, and stigmatising attitudes towards people with dementia).^{10–13} A recent overview of reviews by Wiggin et al. concluded that a comprehensive approach, targeting organisational climate and multidisciplinary collaboration, along with staff education and training, may be an effective strategy to tackle inappropriate antipsychotic prescribing to nursing home residents with dementia.¹⁴

Informed by the conduct of three sequential studies (a systematic review and qualitative evidence synthesis,¹² a primary qualitative study¹³ and an expert consensus study),¹⁵ and guided by people living with dementia, carers and healthcare professionals, a theoretically-informed, evidence-based complex intervention was developed using the Behaviour Change Wheel (BCW)¹⁶ by the research team. The resulting intervention was called the Rationalising Antipsychotic Prescribing in Dementia (RAPID) complex intervention and comprised three components; 1) education and training with nursing home staff; 2) academic detailing with general practitioners (GPs); and 3) introduction of an assessment tool (e.g. behaviour mapping, screening for delirium and pain, mental health history) to the nursing home for use by all healthcare staff in the management of patient care. The development process for the RAPID complex intervention is described in detail in a previous publication.¹⁷

The primary objective of this study was to assess the feasibility and acceptability of the RAPID complex intervention in a nursing home setting in Ireland. This involved assessing the intervention's acceptability from healthcare professionals' perspectives, and the feasibility of the intervention from a logistical perspective, to determine if the content and delivery of the intervention required further refinement prior to larger scale evaluation. The secondary objective was to describe associated trends in psychotropic prescribing rates, falls rates, and behavioural symptom severity and occupational disruptiveness.

2. Methods

2.1. Study design

An uncontrolled, non-pilot feasibility intervention study (i.e. an interventional feasibility study without a control group, that was not designed as the definitive RCT conducted on a smaller scale, as described by Eldridge et al.),¹⁸ using a mixed-methods approach, was undertaken in one nursing home in a city in the south of Ireland. This study followed a mixed-methods design using a concurrent triangulation format. In this study, the quantitative and qualitative data were collected concurrently, analysed separately initially, and then merged during interpretation to better understand the research problem.¹⁹ Equal status was given to the qualitative and quantitative phases. This intervention was implemented at both the nursing home and the staff/GP level (i.e. the intervention was not targeting individual residents, but rather the healthcare staff providing their care, as well as the nursing home environment).

2.2. Setting and participants

The study was conducted over 6 months between July 2017 (three months prior to baseline, T-3) and January 2018 (three months after baseline, T3), with the intervention delivered in October 2017, between T0

(baseline) and T1 (one month after baseline). Data on 'regular psychotropic prescribing' were retrospectively collected 3 months prior to baseline to assess secular trends. Retrospective data on other outcomes were not readily available. However, data on all outcomes were prospectively collected from baseline (T0) onwards or as soon as the data became available. An overview of the intervention components and data collection process is provided in Fig. 1, with a detailed timeline provided in Table 1.

The nursing home was recruited via convenience sampling. Four nursing homes that had participated in a previous qualitative study, were approached; with one committing to the study.¹³ The chosen site was a large (75 bed) publicly funded nursing home in a city in the south of Ireland. The nursing home site had three wards (25 beds on each ward) with a mix of older adult residents with and without dementia throughout all wards. There was no dementia specialist care unit in this nursing home. Care was provided primarily by nurses and healthcare assistants (HCAs), and the skill-mix ratio was approximately 50:50. GPs, based off-site, performed medical reviews twice weekly, with specialists (e.g. psychiatry of old age, geriatricians) and allied healthcare professionals (e.g. physiotherapy) available to attend on referral. The off-site pharmacist performed medication reviews for all residents every 3 months.

All attending GPs and nursing home staff who provided care for residents on any of these three wards were eligible to partake in the education and training sessions. There were no exclusion criteria. As this intervention targeted the culture of care of the whole nursing home, it was important that as many staff as possible received the education and training either directly (from the research team) or indirectly (from staff who attended). As determined a priori, it was not feasible to directly deliver this intervention to all staff (approx. 75 people) in the given time frame and limited resources, and thus it was decided to utilise 'opinion leaders' (or early adopters) as a vehicle to diffuse the innovation throughout each ward.^{20,21} The selection of 'opinion leaders' to attend the education and training was conducted by the Director of Nursing who selected a mix of professions and grades from each ward, whom they believed could help convey the key messages to their colleagues, and essentially become local 'dementia champions'. The primary researcher conducted briefing sessions, on the wards, at a later date, with as many staff as possible who were not in attendance. Furthermore, all four attending GPs were invited to partake in an academic detailing session to elicit their beliefs and attitudes towards the use of antipsychotics in the management of dementia and reiterate the key messages of the intervention. Academic detailing, or educational outreach, is an approach aimed at improving prescribing practices using proactive outreach with non-commercial, evidence-based medical information in a user friendly format.²²

The residents on the three wards were not the research participants of this study. However pseudo-anonymised data were collected from their drug charts, medical and nursing notes to assess changes in prescribing behaviours and other outcomes. At baseline (T0), the primary researcher went through all residents' medical notes and drug charts alongside the Clinical Nurse Manager (CNM) in charge of each ward. Residents who were determined by consensus to have definite dementia (documented dementia diagnosis and/or prescribed an anti-dementia drug) or probable dementia (high clinical suspicion of dementia by the CNM) were coded as having dementia. All other residents were coded as not having dementia. This procedure was repeated every time a new resident was admitted to a ward. Data were collected from all residents who were present at each of the time points regardless of their dementia status (Table 1), however more in-depth data were collected from those coded as having dementia. Due to changes in residency that frequently occur in nursing homes (i.e. due to admissions, transfers, deaths etc.), this study reflects a repeated cross-section of residents present at each time point rather than a fixed cohort of the same residents followed over time.

2.3. The intervention

The intervention was delivered between T0 and T1 in October 2017 (Table 1). In brief, there were three main components to the RAPID complex intervention (Fig. 1)¹⁷:

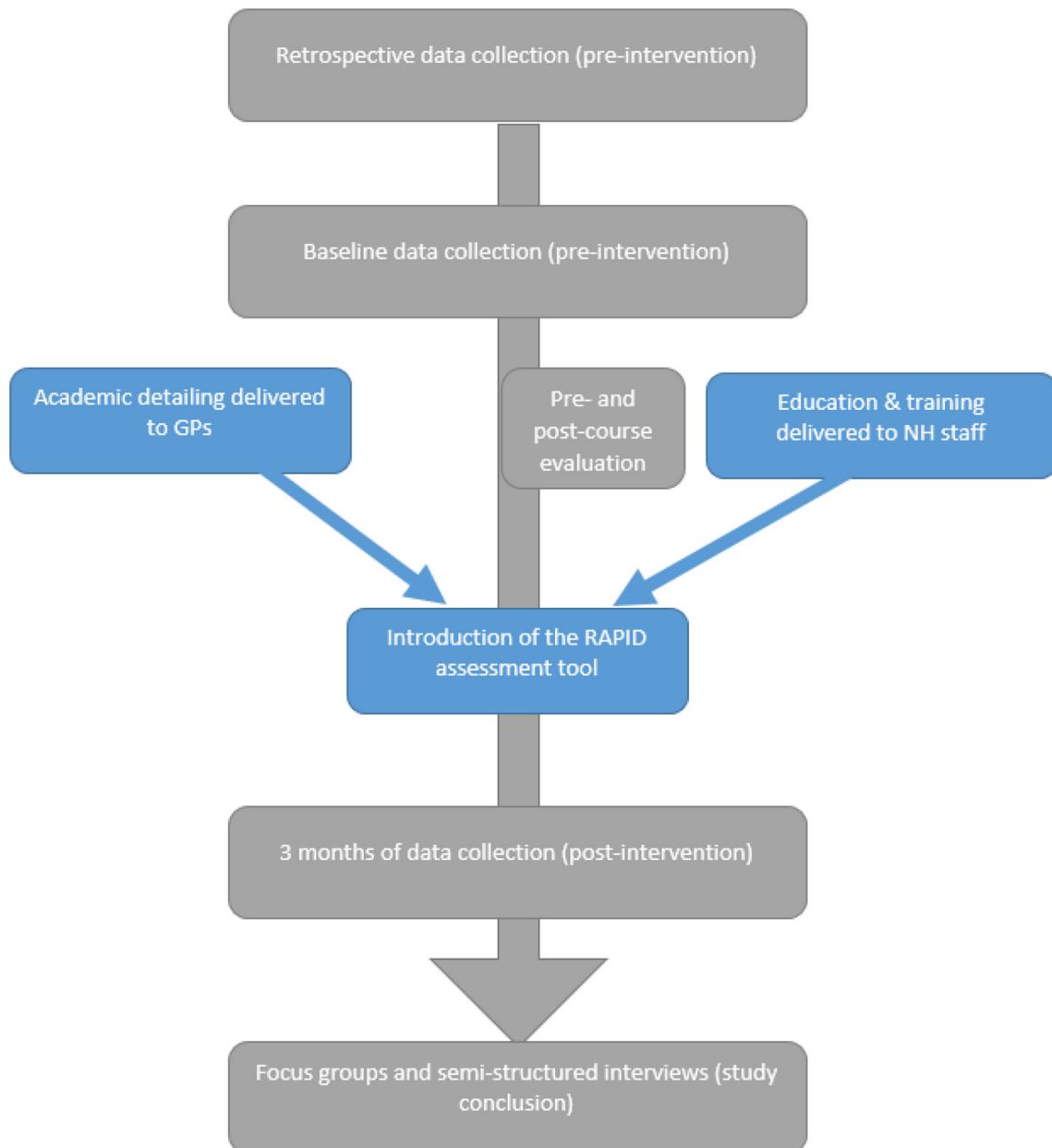


Fig. 1. Overview of RAPID intervention components and data collection process. Key: Intervention components are in blue. Data collection process is in grey. RAPID = Rationalising Antipsychotic Prescribing in Dementia; GP = general practitioner; NH = nursing home.

Table 1
Timeline for RAPID study outcome assessment.

	T-3 (Jul 2017)	T-2 (Aug 2017)	T-1 (Sep 2017)	Baseline T0 (Oct 2017)	Intervention delivery (Oct 2017)	T1 (Nov 2017)	T2 (Dec 2017)	T3 (Jan 2018)	T4 (Jan 2018)
Regular psychotropic prescription	X	X	X	X		X	X	X	
PRN psychotropic administration				X		X	X	X	
QUM-D				X		X	X	X	
Falls				X		X	X	X	
NPI-NH				X				X	
OD				X				X	
Intervention Evaluation forms					X				
Attendance at education sessions					X				
RAPID tool fidelity						X	X	X	
Focus groups/ interviews									X

RAPID = Rationalising Antipsychotic Prescribing in Dementia; PRN = Pro Re Nata’As required; QUM-D = Quality use of Medications in Dementia; NPI-NH = Neuropsychiatric Inventory – Nursing Home; OD = Occupational Disruptiveness.

1. Education and training sessions with nursing home staff (face-to-face)
2. Academic detailing with GPs (face-to-face)
3. Introduction of an assessment tool to the nursing home environment (RAPID tool) (Appendix A).

Three facilitators were involved in the delivery of the educational and training sessions with nursing home staff. The teaching material was developed by content experts from Dublin City University, Ireland. These sessions were delivered in 14 h over 2 days to a group of selected in-house 'opinion leaders'. The four modules delivered were:

1. Understanding and responding to the person with dementia
2. Everyday ethics
3. Antipsychotic drug use in dementia
4. Understanding emotion.

The academic detailing sessions were delivered by the primary researcher, a pharmacist. The sessions were initially piloted with another pharmacist with experience in academic detailing and two GPs, who provided feedback on content and delivery. The academic detailing sessions were flexible, to suits the needs of the GP, but they all followed a similar process. Firstly, the purpose of the visit was clearly outlined to GPs by the primary researcher. Secondly, through conversation with the GP, some gaps in practice, unresolved problems and clinical challenges with regards this topic were raised. This allowed the primary researcher to tailor the presentation to each GP. Next, key messages (specific, evidence-based, behaviour change recommendations) were discussed with an emphasis on the features (i.e. the evidence) and benefits (i.e. benefits to GP/resident) of each. Should the participating GP disagree with some of the key messages, these concerns were teased out and explained, in order to ensure the success of the visit. These objections presented an opportunity to better understand the thinking of the GP. Finally, the visit was summarised by the primary researcher and the key messages accepted by GPs who then committed to changing their prescribing behaviours. The academic detailing sessions with the study participants took place in the GPs' surgeries and lasted around 20 min each. A guidance document discussing assessment and treatment of BPSD, including treatment options with non-pharmacological and pharmacological interventions²³ and another antipsychotic deprescribing algorithm²⁴ were provided to GPs.

2.4. Qualitative data collection procedures

Focus groups were conducted with nursing home staff and GPs, after the end of the follow up period (T4), to explore their perceptions and experiences of the feasibility and acceptability the intervention. Semi-structured interviews were conducted when it was not logistically possible to have a group of people together at the same time. These focus groups and interviews were facilitated by a male undergraduate pharmacy student and note-taking was conducted by a male senior academic with experience in qualitative methodologies. The primary researcher was not involved in the conduct of these focus groups/interviews, nor was he present in the room, to avoid any potential bias entering the data collection process as the primary researcher was known personally to the staff, having delivered the intervention to them. The topic guides were developed based on findings from the research team's previous qualitative work,^{12,13} and were initially piloted with members of staff from the research department of the primary researcher.

All nursing home staff and GPs attending the nursing home were eligible to participate in the focus groups/interviews. The research team purposively sampled the cohort to include a mix of professions (e.g. HCAs, nurses), grades (CNM and staff nurses) and also a mix of attendees and non-attendees of the education and training sessions. It was agreed in advance to conduct one focus group with each of the three wards, one semi-structured interview with the Director of Nursing and one focus group or semi-structured interviews with each of the four attending GPs. Following the completion of the audio-recorded focus groups/interviews, the audio was transcribed verbatim. The interviewer wrote in depth field notes

immediately after each session and this was supplemented by field notes written by the senior academic. The topic guides changed iteratively throughout the study, as novel concepts were identified (Appendix B).

The qualitative data captured from the focus groups and interviews were supplemented with responses to open-ended questions from an anonymous questionnaire (Appendix C; pre- and post-course evaluation forms) completed immediately after the education and training session with nursing home staff (Table 1). Briefly, the questions focused on participants' experience of the intervention in terms of its perceived impact (or lack thereof), what worked well and what could be improved, and how this intervention could be rolled out to a larger number of nursing homes.

2.5. Quantitative data collection procedures

Quantitative data were extracted from anonymous evaluation forms completed immediately before and after the education and training session with nursing home staff (between T0 and T1) which assessed changes in participants' self-reported understanding of the topic area, and their experience of these sessions. All attendees completed the pre- and post- course evaluation forms. Quantitative measurements included psychotropic prescribing rates, falls rate (number of residents with dementia who experienced a fall in past month), behavioural symptom severity (10-item neuropsychiatric inventory - nursing home version, NPI-NH) and occupational disruptiveness (OD). All resident-related data were identifiable only by a random code, which was only known to the primary researcher.

The psychotropic prescribing data were extracted from resident drug charts (prescription and administration records), medical and nursing notes, and pharmacy dispensing records. Specifically, data on the psychotropics that residents were prescribed and administered around the time of data collection were obtained from the resident drug charts. Retrospective prescribing data, from before the research team commenced collecting data on site, were obtained from pharmacy dispensing records. These were supplemented by a review of the medical and nursing notes to understand the clinical rationale for each prescription. Medication data were collected and organised according to the World Health Organization Anatomical Therapeutic Chemical (WHO-ATC) classification system.²⁵ The following classes of medication [and WHO-ATC codes] were initially extracted from the various sources: antipsychotics (excluding Lithium and Prochlorperazine, as these are not usually used as antipsychotics) [N05A], antidepressants [N06A], anxiolytics [N05B], hypnotics [N05C], anticonvulsants/mood-stabilisers (including Lithium) [N03A] and anti-dementia drugs [N06D]. Data were collected on both regular prescriptions and 'as required', 'pro re nata' (PRN) administrations. Regular prescription data were collected from 3 months (T-3) prior to baseline (T0), every month right through to 3 months post intervention (T3). PRN administration data were collected monthly from baseline (T0) through to 3 months post-intervention (T3), as these retrospective records were not readily available to the research team.

In order to gain an indication of dosage change over time, all antipsychotic doses were converted into chlorpromazine (CPZ) equivalents.²⁶ Appropriateness of antipsychotic prescription in residents with dementia was determined using an adapted version of the quality use of medications in dementia (QUM-D) tool.²⁷ Falls data were collected for residents with dementia on a monthly basis starting at T0. This information was retrieved from the medical and nursing notes.

The NPI-NH is a structured questionnaire conducted with professional caregivers (i.e. nurse or HCA) in the absence of the resident, to assess 10 behavioural symptoms in residents with dementia.^{28,29} Caregivers were asked whether each of the 10 behavioural symptoms were present or absent in the past week. If a behavioural symptom was present, they were further asked to rate the frequency and severity of these. A total NPI-NH score per resident was then calculated out of 120 (higher score equates to more severe behavioural disturbances). An additional component of the NPI-NH survey is the OD domain. For each behavioural symptom that a caregiver indicated was present, the caregiver rated how disruptive they found these behaviours on a five point Likert scale. A total OD score per resident was then

calculated out of 50 (higher score equates to more severe disruptions). This structured questionnaire was then repeated for each resident.

Use of the RAPID assessment tools were monitored monthly by the primary researcher to assess adherence of nursing home staff to the intervention. Attendance rates at education and training sessions were recorded.

2.6. Analysis

Using a mixed-methods integration approach described by Sampson et al.³⁰ the qualitative data were analysed using the initial phases of framework analysis (Familiarisation, Identifying a thematic framework and Indexing).³¹ The qualitative data were coded using NVivo version 11 software.³² Open coding on all transcripts was carried out independently by the primary researcher and the interviewer. The codes generated were compared and the findings discussed. A thematic framework was agreed by consensus. Inferential statistics were not used for quantitative data, as feasibility studies are generally not designed for hypothesis testing due to their inherently small sample sizes.³³ Hence the quantitative data, from all the various sources, were analysed descriptively by the primary researcher using STATA software version 13³⁴ and Microsoft Excel 2013.³⁵ These quantitative findings were then indexed according to the newly developed qualitative framework. Therefore, the results of this feasibility study are presented with both quantitative and qualitative findings referring to different aspects of the main topics. The guidance for 'Good Reporting of A Mixed-Methods Study' (GRAMMS) was followed throughout this study.³⁶

2.7. Ethics approval

Ethics approval was granted by the local ethics committee [ECM 4 (e) 15/08/17 & ECM 3 (jj) 05/09/17 & ECM 3 (ww) 05/12/17]. Nursing home staff, management and attending GPs provided written informed consent prior to participating in any component of the intervention. A waiver of informed consent was received for residents and family members from the local ethics committee, as the research presented no more than minimal harm to subjects and involved no procedures for which written consent was normally required outside the research context.

3. Results

3.1. Demographics

3.1.1. Demographics of the healthcare staff

Sixteen nursing home staff members attended the two education and training days (seven nurse managers, two staff nurses, five HCAs, one physiotherapist and one occupational therapist). Of approximately 75 staff members working in this nursing home, this represents a 21% attendance rate. All four GPs attending this nursing home participated in the academic detailing sessions (100% attendance rate). Four focus groups and three semi-structured interviews were conducted with 18 participants (six nurse managers, three staff nurses, four GPs, four HCAs and one physiotherapist) (Table 2). Data were collected from all study participants who provided written informed consent and so there were no missing data.

3.1.2. Demographics of the nursing home residents

At baseline (T0) there were 75 residents in the nursing home, 43 of whom had dementia (57%). The majority of residents were female (65%) and the median age was 83 (Interquartile range [IQR] = 79–90). Table 3 details the demographics of residents at baseline (T0). Forty-four percent of residents with dementia ($n = 19$) were prescribed at least one antipsychotic at baseline, compared to 22% of residents without dementia ($n = 7$), however antipsychotic doses (CPZ equivalents) were much higher in those without dementia (median [IQR] of 200 [100–530] v 66 [50–100] mg/day). Given that the data were collected from all residents that were present on the ward at each data collection point, there were no missing data.

Table 2
Demographics of Focus Group/Interview Participants.

Total qualitative focus group/interview participants ($n = 18$)	Participants, n
Gender	
Female	10
Male	8
Professional/social role	
Nurse Manager	6
Staff Nurse	3
General Practitioner	4
Healthcare Assistant	4
Physiotherapist	1
Years of professional experience (since qualification)	
≤ 5 years	1
$6 \leq 10$ years	4
$11 \leq 15$ years	2
≥ 16 years	9
Information not provided	2
Years of experience working in nursing homes	
≤ 5 years	8
$6 \leq 10$ years	4
$11 \leq 15$ years	2
≥ 16 years	2
Information not provided	2
Received specialist dementia training	
Yes	9
No	7
Information not provided	2
Attended the RAPID education and training session(s)	
Yes	12
No	6
Ever utilised the RAPID tool	
Yes	12
No	6
Frequency of RAPID tool utilisation (if used)	
Rarely (less than once a week)	8
Sometimes (about once per week)	3
Often (several times per week but less than every day)	0
Very often (once or more per day)	0
Information not provided	1

3.2. Findings of mixed-methods analysis

The data are reported below according to a framework developed during the analysis phase, which comprises four main topics and 10 subtopics (Table 4).

3.2.1. Topic 1: education and training sessions

a. Nursing Home Education and Training

All participants rated these sessions positively during the anonymous post-course evaluation survey (either agreeing or strongly agreeing with all 10 statements).

"I found the training very beneficial. Plenty of time given for open discussion."
[Post-course evaluation 1, Anonymous]

Focus group and interview discussions supported the acceptability of the education and training sessions among staff.

"We were very pleased, we were glad to be involved in it. It went well, the staff were happy. Good for the staff, good for the residents" [Interview 1, Nurse Manager 1]

However HCA participants in particular found the discussion regarding medications difficult to understand, due to their lack of background knowledge on this topic. Furthermore, although participants enjoyed the sessions, some felt that the fundamental issue of poor resourcing was the main cause of inappropriate antipsychotic prescribing and not the lack of knowledge.

"I suppose there's a huge focus on the problem and identifying the problems and we kind of know what they are, but as regards to trying to implement

Table 3
Baseline (T0) demographics of nursing home residents (n = 75).

	Dementia (n = 43)	No Dementia (n = 32)	Total (n = 75)
Gender, N (%)			
Female	29 (67)	20 (63)	49 (65)
Age			
Median (IQR)	84 (79–92)	83 (77–87)	83 (79–90)
Number of residents prescribed ≥ 1 psychotropic ¹ medication, N (%)	37 (86)	21 (66)	58 (77)
Number of residents prescribed ≥ 1 of the following psychotropic medication classes, N (%)			
Antipsychotics	19 (44)	7 (22)	26 (35)
Antidepressants	28 (65)	17 (53)	45 (60)
Anxiolytics	5 (12)	4 (13)	9 (12)
Hypnotics	12 (28)	12 (38)	24 (32)
Anticonvulsants ²	14 (33)	11 (34)	25 (33)
Anti-dementia drugs ²	16 (37)	0 (0)	16 (21)
Chlorpromazine equivalents (mg/day)			
Median (IQR)	66 (50–100)	200 (100–530)	74.25 (33–133)
QUM-D score			
Median (IQR)	6 (4–8)	N/A	6 (4–8)
NPI-NH score			
Median (IQR)	6 (1–24)	N/A	6 (1–24)
Occupational Disruptiveness Score			
Median (IQR)	0 (0–9)	N/A	0 (0–9)
Falls			
Number of residents who have experienced a fall in past 28 days, N (%)	3 (7)	2 (6)	7 (9)

IQR = Inter-quartile range; PRN = Pro Re Nata (As Required medication); QUM-D = Quality Use of Medications in Dementia; NPI-NH = Neuropsychiatric Inventory – Nursing Home Version; N/A = Not Applicable.

¹ Psychotropic defined as Antipsychotics, Antidepressants, Anxiolytics and Hypnotics.

² Not included in our definition of psychotropic, but included here for reference.

the interventions, that's where the difficulties arise really.” [Focus Group 2, Nurse Manager 2]

b. GP Academic Detailing

Similarly all four GPs found the academic detailing sessions useful and the format very suitable for the needs of a busy clinician.

“I thought it was very informative and concise - to the point.” [Interview 2, GP1]

Furthermore, the GPs believed that involving both the nursing home staff and the GPs in this intervention was critical to its success going forward.

Table 4
Analysis framework.

Topic	Subtopic
1. Education and training sessions	Nursing home education and training GP Academic Detailing
2. Intervention documents	RAPID assessment tool Guidance documents
3. Impact of the intervention	Impact on knowledge, attitude and beliefs Impact on interprofessional communication and collaboration Impact on staff who were not at the education/training sessions Impact on appropriate requesting and prescribing Impact on other outcome measures
4. Recommendations to enhance the intervention	Recommendations from study participants

“I think getting the nurses on board is probably key because if the culture becomes ‘not for prescribing antipsychotics and looking at other reasons and only prescribing for specific reasons’, I think then that tends to make it much easier say from a doctor's point of view when you come along that you're not sort of under pressure to prescribe for these things so I think the fact that you educated both groups I think was probably key.” [Focus Group 4, GP 2]

3.2.2. Topic 2: intervention documents

a. RAPID assessment tool

Utilisation of the RAPID tool was quite low, and full completion of the tool was rare. Over the 3 month period, only 19 RAPID tools were utilised – two in full. Of the 12 staff included in the qualitative evaluation that self-reported to have used the RAPID tool, eight acknowledged to have rarely used it (i.e. less than once per week). Sections that were repeatedly skipped included the Antecedent-Behaviour-Consequence (ABC) chart section, the table of behaviours, the review date and the plan of action. Some of the completed RAPID tools suggested a change in behaviour by the nursing staff. For example one resident tested positive for a urinary tract infection, as prompted by the PINCH-ME assessment (Pain, Infection, Nutrition, Constipation, Hydration, Medication and Environment) and was started on cephalexin (an antibiotic), instead of an antipsychotic. However it is not possible to demonstrate that the RAPID assessment tool changed the behaviour of the nursing staff, given the uncontrolled nature of the study.

The reported benefits of the tool were that it alerted staff to behaviours that were likely and unlikely to respond to antipsychotics, hence acting as an *aide-memoire*.

“I think this part was very good [matrix of behaviours likely/unlikely to respond to antipsychotics], in that they said that they were more likely to respond to [antipsychotics].” [Focus Group 2, Nurse Manager 2]

However the main barriers to using this tool, as reported by staff, were the lack of time, and the lack of perceived benefit, particularly for ongoing repeated behaviours where the trigger is known but difficult to eliminate (e.g. resistance to care).

“Whereas for somebody who's got repeated behaviours you've the bit about PINCH-ME at the end. It's there but you're not really necessarily going to use it every time one of the regular challenging behaviours are, because if it's something they did yesterday and it's something they did the day before, we've already ruled out all these things. Are you going to question these every time?” [Focus Group 3, Nursing Home Staff Member 1]

b. Guidance Documents

The GPs were satisfied with the various guidance documents (guidance on the assessment and treatment of BPSD, and an antipsychotic deprescribing algorithm) provided as part of the study. In particular they found them useful as a means of supporting their decision to prescribe or not prescribe.

“It's easier to back your rational up when you have it in writing.” [Interview 2, GP 1]

3.2.3. Topic 3: impact of the intervention

a. Impact on knowledge, attitudes and beliefs

Among the 16 nursing home staff who attended the training and education sessions, self-reported knowledge levels of the risk/benefits of antipsychotics (on a scale of 1–5; higher score indicating better knowledge) increased from a median of 3 before the sessions to 4 afterwards. Self-reported knowledge levels of person-centred dementia care remained the same at a median of 4.

From the focus groups and interviews, it was evident that participants' long held attitudes and beliefs towards the management of BPSD were

challenged. In particular, participants were surprised to hear the evidence surrounding the effectiveness of antipsychotics was so limited.

“What really impacted upon me was when we were talking about the behaviours that don't respond to antipsychotics. And I saw the sexual disinhibition... and I mean that was like a slap in the face to me to think that we've just sedated somebody because we don't like what they're saying.” [Focus Group 3, Nurse Manager 1]

b. Impact on interprofessional communication and collaboration

Participants valued the interprofessional nature of the intervention and believed that it contributed to improvements in communication and collaboration when managing residents' BPSD.

“The other thing I found quite helpful was the fact the nurses have it as well so when you were explaining something they were coming from a similar sort of viewpoint so it made it much easier to agree on a shared sort of plan.” [Focus Group 4, GP 2]

One participant raised the point that this intervention “empowers [the nurses] to lead on a medication changes” [Focus Group 3, Nursing Home Staff Member 1]. This point prompted discussion of recent cases whereby the need for residents' long-term antipsychotics were reviewed by the nurses, and subsequently tapered and discontinued by the GPs on request.

c. Impact on staff who were not at the education/training sessions

One CNM in particular, was observed to have driven this intervention locally on their ward, conducting more education sessions with staff who weren't in attendance and creating information posters to hang in the various treatment rooms. This was conducted without prompting by the research team, and persisted even after the research team had completed the intervention.

However the challenges of conducting training locally on the ward, without protected time, was felt to be hampering the ability to attain buy-in from staff. This was found to be of particular importance since the vast majority of staff (approximately 80%) would not have attended the RAPID education and training sessions. Additionally, there were noted high levels of staff turnover in the nursing home sector more generally,

and so maintaining the provision of training to new staff going forward was suggested to be challenging.

“But you know getting second hand training in a snatched five minutes here after the morning report... I suppose their buy-in I think really was way watered down because they wouldn't have understood or grasped a lot of the concepts.” [Focus Group 3, Nurse Manager 1]

d. Impact on appropriate requesting and prescribing

Fig. 2 illustrates the changes in regular psychotropic prescribing in residents with dementia in the nursing home, from 3 months before (T-3) to 3 months after (T3) the intervention was delivered (vertical red line). Of note, the levels remained relatively stable for all classes of psychotropics during this period except antipsychotics which decreased slightly, but not notably, from 44% at baseline (n = 19 residents) to 36% (n = 14 residents) at T3. The majority of net reductions took place on one ward (n = 5), whereas another ward had a net reduction of 1 and the other had a net addition of 1. Although not included in this figure, levels of anti-dementia drugs and anticonvulsants/mood-stabilisers also remained stable. Additionally, antipsychotic dosage remained the same in residents with dementia (median CPZ equivalent of 66 mg/day at both T0 and T3).

Fig. 3 illustrates the level of monthly psychotropic PRN administrations to residents with dementia. The PRN levels fell substantially in this period (from 90 incidences/month at T0 to 69 incidences/month at T3). Hence, it would appear that there was no substitution of regular antipsychotic prescribing with PRN psychotropic medications during the study period. Of note, for each month, most PRN administrations (ranging from 59 to 86% each month) occurred between 18:01 and 24:00 h.

During the study period (T0 to T3), a total of 21 residents with dementia were prescribed at least one antipsychotic. There was a small improvement (from a median of 6 to 4; lower score indicating improvement in prescribing quality) in antipsychotic prescribing appropriateness using the QUM-D tool, from baseline (blue) to 3 months post-intervention (red) (Fig. 4). However, the number of residents was too low to undertake any statistical test. The most commonly breached QUM-D quality parameter was psychotropic polypharmacy (≥ 2 psychotropics) in 65 incidences. The QUM-D quality parameters that were breached throughout the study period, along with observed changes in antipsychotic prescribing behaviours, are outlined in Appendix D.

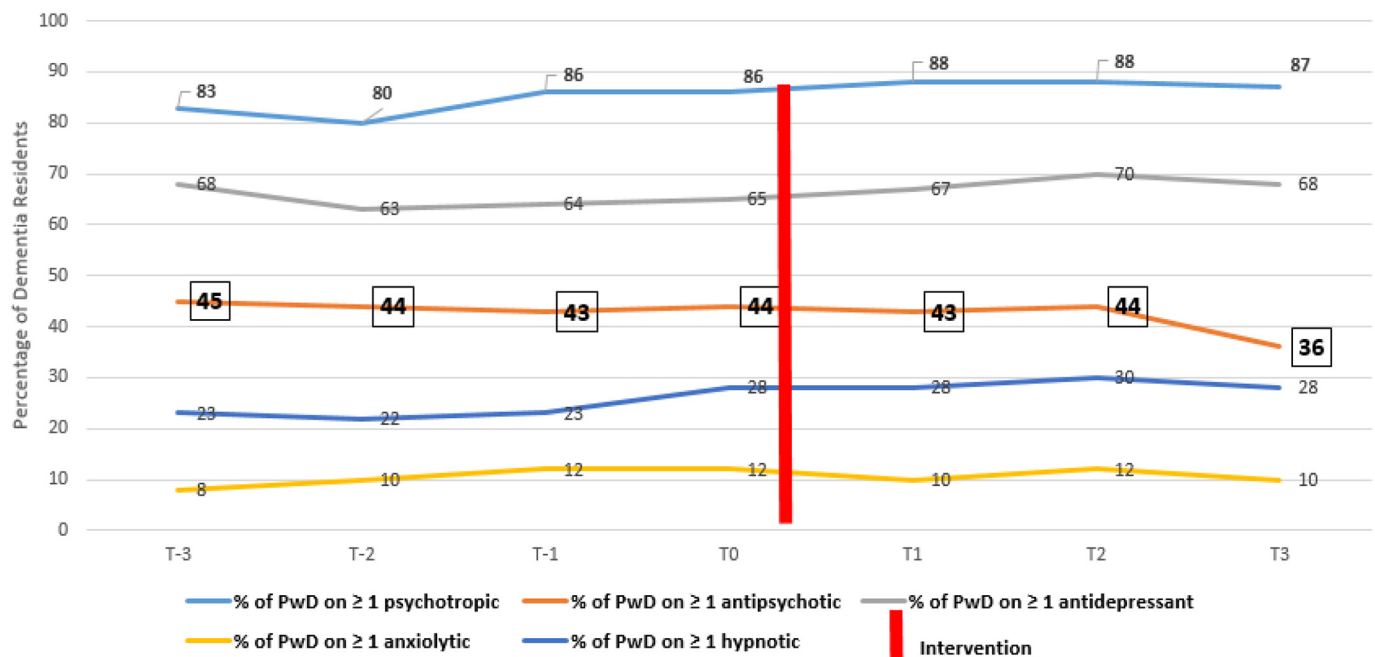


Fig. 2. Trends in Regular Psychotropic Prescribing in Residents with Dementia. PwD: People with Dementia.

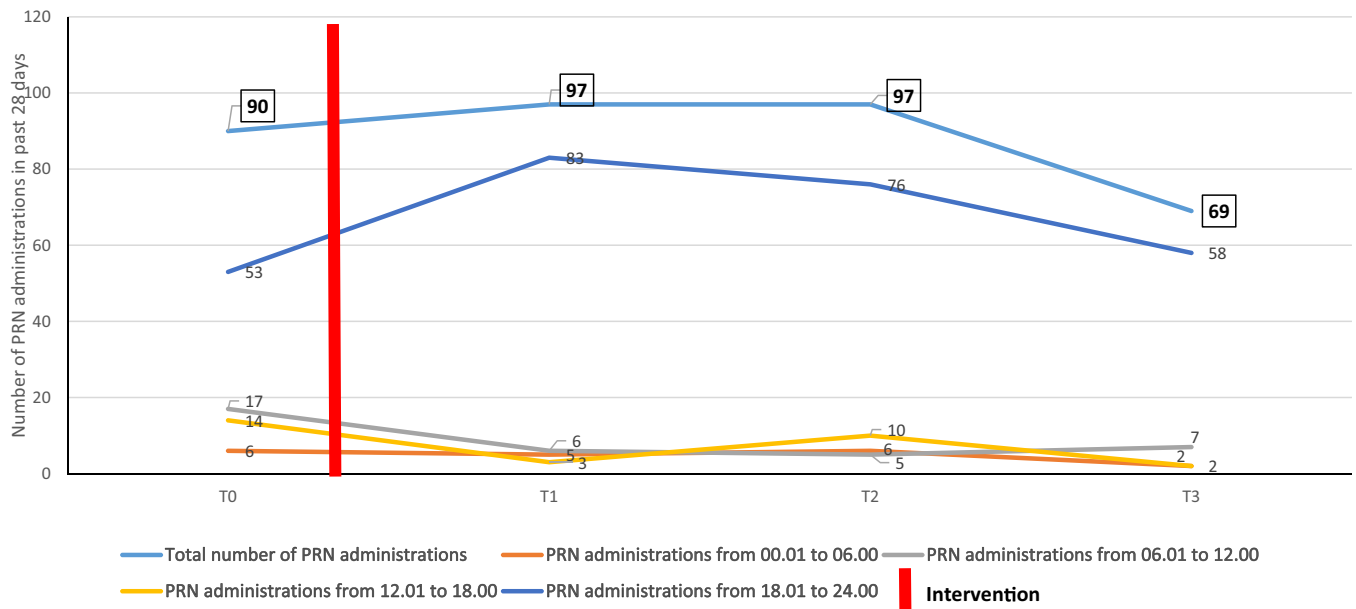


Fig. 3. Number of Psychotropic PRN Administrations (according to time) in previous 28 days in Residents with Dementia. PRN = Pro Re Nata (As required).

During the 3-month pre-intervention period, changes to antipsychotic prescribing were all dose increases (n = 5). During the 3-month post-intervention period, there were dose increases (n = 5), dose reductions (n = 5), initiations (n = 2) and stoppages (n = 6). Hence there was more activity post-intervention, possibly indicating more proactive reviewing of antipsychotics.

Qualitative evidence from the focus groups and interviews would appear to indicate this conscious change in antipsychotic requesting and prescribing behaviours.

“It has prompted me to change my prescribing habits. Or just be a bit more mindful of what symptoms might respond to medication or what symptoms might respond to different types of medications.” [Interview 2, GP 1]

“She kept calling and shouting and roaring and making all sorts of weird noises, definitely a couple of months ago we'd be looking to give her a PRN of something whereas [this time] I took her for walk.” [Focus Group 3, Nurse Manager 1]

e. Impact on other outcome measures

The number of residents with dementia who experienced a fall in the previous 28 days remained relatively static from month to month, fluctuating between 7 and 10. Similarly, both the NPI-NH total score and the OD total score only changed minimally in 3 months (Appendix D).

3.2.4. Topic 4: recommendations to enhance the intervention

Through focus group and interview discussions, the study participants offered clear and practical advice on how to improve the intervention going forward (Table 5). Although there was general consensus on many of the recommendations, there was disagreement and tension with regards to family involvement. For example in one focus group, one participant made the following point, which was subsequently agreed by others in the group:

“Definitely. They [family] should be involved because when they come they should know, they should have some idea about this [antipsychotics]. Then things would be easier I think. Definitely I recommend they should be involved in this kind of thing.” [FG 1, Nursing Home Staff Member 2]

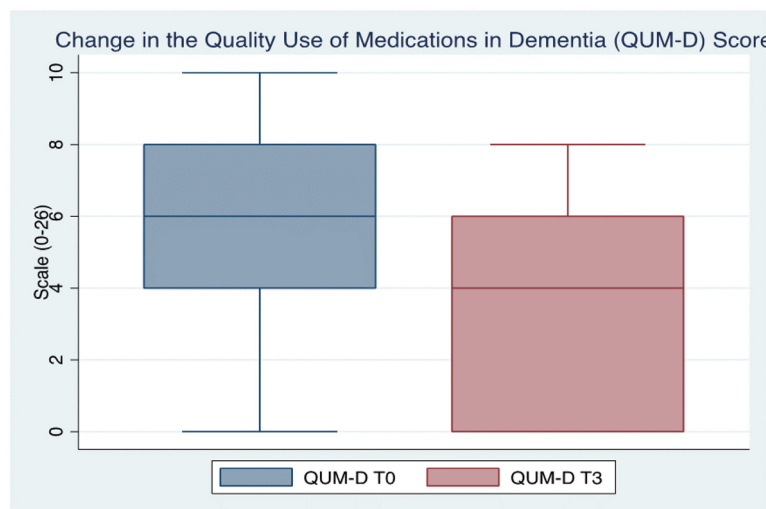


Fig. 4. Change in the Quality Use of Medications in Dementia (QUM-D) Score (median and IQR).

Table 5
Recommendations from study participants (nursing home staff and GPs).

<p>Education and Training Sessions for NH staff and GPs</p> <ul style="list-style-type: none"> • Keep education and training sessions for NH staff off-site, with a mix of different staff members, and a small-to-medium group size • More education and training on psychosocial interventions • Allow staff to discuss their own residents as case studies for Day 2 • Train 100% of NH staff • Keep GP academic detailing session brief, with refresher courses available • Consider a multidisciplinary meeting between NH staff and GPs • Avoid online modules
<p>Intervention Documentation</p> <ul style="list-style-type: none"> • Shorten or eliminate RAPID tool • Create a booklet containing the key information for staff to read during work • The 1st page of the RAPID tool could be utilised at admission for all residents with dementia, especially to identify prior antipsychotic usage/psychiatric history • Greater focus on completing and analysing ABC charts (with advice on how to do so) • Consider completing the RAPID tool for “out of the blue” behaviours • “Behaviours that are likely to respond” matrix should be visible on nurses station • Guidance documents for GPs should be brief and more visually attractive
<p>Family involvement</p> <ul style="list-style-type: none"> • Mixed opinions about greater family involvement in future iterations of intervention
<p>Local Implementation and Upscaling of the Intervention</p> <ul style="list-style-type: none"> • Need opinion leaders/early adopters on the wards • Offer ongoing support with the RAPID tool from the researchers (if continuing with the tool) • Utilise GP networks such as the local CME groups • Collaborate with the ICGP or HSE

NH = Nursing Home; GP = General Practitioner; RAPID = Rationalising Antipsychotic Prescribing in Dementia; ABC = Antecedents, Behaviour, Consequence; CME = Continuing Medical Education; ICGP = Irish College of General Practitioners; HSE = Health Service Executive.

However in other focus groups and interviews, it was clear that participants were somewhat apprehensive about greater involvement of family members in this intervention going forward. This apprehension seemed to stem from a desire to avoid confrontational discussions with family members surrounding the decision to prescribe (or not) an antipsychotic for their loved one with dementia:

“I think that is a double edged sword... I think there should be some [family] involvement because you can't be paternalistic about it you can't just give everyone medication without consultation, but then I think someone has to act as the doctor too and make the decision. I just have learned with experience that over-involvement of family members can be an absolute nightmare as well because you can't chart a paracetamol without them objecting to it. So it really is a double edged sword and it depends on the type of family involved.” [Interview 2, GP 1]

4. Discussion

This study found that the RAPID complex intervention was broadly feasible to conduct and may be acceptable to stakeholders. However it is not possible to conclude for certain whether the RAPID complex intervention in its current format is unequivocally feasible to conduct and accepted among study participants, largely due to implementation issues surrounding the assessment tool and the uncontrolled nature of the study conducted in a single site. However despite these issues, the intervention showed promising preliminary findings in terms of a marginally reduced prevalence of antipsychotics without PRN substitution or worsening of clinical outcomes, supported by positive feedback from participants. While caution is urged in the interpretation of these findings given that it is a small feasibility study, it is the view of the research team that a larger scale evaluation is worth pursuing.

In particular, this study found that education and training of both prescribers and staff, delivered from credible sources, was potentially key to changing behaviour, and the use of local ‘dementia champions’ was critical

to its diffusion throughout the wards. However there is a need to improve upon the RAPID assessment tool, as it was evident from its poor utilisation that it did not contribute substantially to the intervention. It is possible that the assessment tool contained too much information and so its universal application for every resident was not perceived to be useful by staff. More education and training as part of a holistic person-centred care approach, rather than focused on undertaking specific “tick-box” tasks, may have been preferred by staff. More research is required to understand the best way of implementing such evidence-based practices in nursing home environments. Further consultation is required with professional stakeholders and with the research team's advisory groups (which comprises people living with dementia and family carers), in order to tease out remaining issues, prior to up-scaling of the intervention.

4.1. Comparison with previous research

The RAPID project has similarities with the larger-scale Optimising Practices, Use, Care, and Services–Antipsychotics (OPUS-AP) programme that was conducted in Quebec, Canada.^{37–39} The OPUS-AP programme aimed to improve long-term care (LTC) residents' care through increased knowledge and competency among staff, resident-centred approaches, non-pharmacological interventions, and by deprescribing antipsychotics when appropriate. The authors found that the OPUS-AP programme was successfully implemented in 24 long term LTC centres initially and then in 129 LTC centres, resulting in a significant reduction in antipsychotic use, as well as improvement in BPSD, and reductions in benzodiazepine use and falls in residents with successful antipsychotic deprescribing.^{37,38} An embedded qualitative study identified certain conditions that were conducive to scaling up the OPUS-AP programme. These conditions comprised: communications in support of the process; an integrated, collaborative and evidence-based approach; an implementation climate conducive to change; stakeholder engagement at the strategic, tactical and operational levels; and an integrated knowledge translation strategy.³⁹

4.2. Strengths and limitations

One of the main strengths of this study was the use of mixed-methods to gain additional insights into the feasibility and acceptability of the intervention. For example, by using both qualitative and quantitative data, it was identified that the activation of a local ‘opinion leader’ may be more important than implementation of an assessment tool, in order to reduce inappropriate antipsychotic requesting and prescribing in a nursing home environment. Additionally, the involvement of multiple professional and lay stakeholders throughout the development and testing of this intervention contributed towards its acceptability and feasibility, and also provided a multi-disciplinary perspective to the analysis.

The main limitations of this study were that there was no control group, the intervention was only conducted in one site and it involved a limited number of participants. Therefore neither causality nor generalisability can be inferred from the findings of this study, and caution is required in the extrapolation of the quantitative analysis in particular. The National Institute for Health Research (NIHR) defines feasibility studies as those that ask questions about “whether the study can be done, should we proceed with it, and if so, how” while defining pilot trials as essentially “a miniature version of the main trial”.⁴³ This study was designed as a feasibility study as opposed to a pilot study and as such it was mostly concerned with acceptability and logistics rather than small-scale effectiveness. While quantitative outcome data were collected, the purpose was predominantly to assess the feasibility of collecting such data and are presented in this report for completion; however, any observed trends should be viewed with caution. Although a feasibility study is not designed to address questions on causation and generalisability,¹⁸ this study provides important insights into the feasibility and acceptability of this intervention in advance of a potential definitive trial.

Another limitation of the study was that there were no definitive dementia diagnoses for many of the residents. Hence ‘clinical suspicion’ by

the CNM was often used to categorise residents as having or not having dementia. This may have resulted in either an over- or under-estimation of the true prevalence of dementia in the nursing home, which may have impacted on the quantitative findings. However due to the documented under-diagnosis of dementia in Ireland,⁴⁴ and the challenges reported by Irish GPs in diagnosing dementia,⁴⁵ this pragmatic approach to dementia diagnosis was considered to be appropriate.

Finally, this study was also limited in terms of the outcome measures collected and the overall scope. Due to time constraints and ethical concerns regarding collection of patient-reported outcome measures such as quality of life directly from residents with dementia, only data that were routinely collected or could be extracted from medication records and medical/nursing notes were obtained. Quality of life in particular, is viewed as an important outcome when conducting medication optimisation studies in nursing home settings, as it is important to assess the impact of medication changes on the resident.⁴⁶ Additionally, outcomes such as staff satisfaction and fidelity measured using questionnaires and validated frameworks respectively, are viewed as increasingly important in feasibility studies.⁴⁷ A thorough process evaluation utilising Normalisation Process Theory for instance, may have been helpful in exploring some of the more contextual barriers and facilitators to implementation of the intervention.⁴⁸

4.3. Future directions

The findings from this feasibility study are crucial to the next steps in the development and evaluation of the RAPID complex intervention. The UK Medical Research Council (MRC) framework for developing and evaluating complex interventions acknowledges that the 4 key stages ('development', 'feasibility/piloting', 'evaluation' and 'implementation') are not unidirectional, and the earlier stages are in fact quite iterative.⁴⁹ Hence, although feasibility testing has been conducted, there is a need to refine and redevelop certain aspects of the intervention e.g. the RAPID assessment tool. In-depth consultations with the established advisory and professional stakeholder groups may help to resolve some of these issues. Therefore it may not be appropriate to move directly to a definitive trial, but rather more exploratory work should be conducted next, once protocol amendments have been agreed.

5. Conclusion

This feasibility study found that the RAPID complex intervention was broadly feasible to conduct and may be acceptable to stakeholders. The findings suggest that the RAPID complex intervention is worth evaluating in larger scale studies in order to examine its potential to change appropriate antipsychotic requesting and prescribing behaviours and ultimately improve outcomes for residents with dementia. However, important protocol modifications and further exploratory work are required prior to larger scale evaluation in order to improve implementation.

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Declaration of interest

None.

CRediT authorship contribution statement

Kieran A. Walsh: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization, Project administration. **Stephen Byrne:** Conceptualization, Methodology, Validation, Formal analysis,

Investigation, Resources, Writing – review & editing, Supervision. **Alex O'Riordan:** Validation, Formal analysis, Investigation, Writing – review & editing. **Jenny McSharry:** Conceptualization, Methodology, Writing – review & editing, Supervision. **John Browne:** Conceptualization, Methodology, Writing – review & editing, Supervision. **Kate Irving:** Resources, Writing – review & editing. **Eimir Hurley:** Resources, Writing – review & editing. **Suzanne Timmons:** Conceptualization, Methodology, Resources, Writing – review & editing, Supervision.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.rcsop.2022.100190>.

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