Original Study

Exploring Antipsychotic Prescribing Behaviors for Nursing Home Residents With Dementia: A Qualitative Study

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Keywords: Theoretical Domains Framework (TDF) dementia antipsychotics qualitative nursing home behavioral and psychological symptoms of dementia (BPSD)

A B S T R A C T

Objectives: Caution is advised when prescribing antipsychotics to people with dementia. This study explored the determinants of appropriate, evidence-based antipsychotic prescribing behaviors for nursing home residents with dementia, with a view to informing future quality improvement efforts and behavior change interventions.

Design: Semistructured qualitative interviews based on the Theoretical Domains Framework (TDF).

Setting and Participants: A purposive sample of 27 participants from 4 nursing homes, involved in the care of nursing home residents with dementia (8 nurses, 5 general practitioners, 5 healthcare assistants, 3 family members, 2 pharmacists, 2 consultant geriatricians, and 2 consultant psychiatrists of old age) in a Southern region of Ireland.

Measures: Using framework analysis, the predominant TDF domains and determinants influencing these behaviors were identified, and explanatory themes developed.

Results: Nine predominant TDF domains were identified as influencing appropriate antipsychotic prescribing behaviors. Participants’ effort to achieve “a fine balance” between the risks and benefits of antipsychotics was identified as the cross-cutting theme that underpinned many of the behavioral determinants. On one hand, neither healthcare workers nor family members wanted to see residents oversedated and without a quality of life. Conversely, the reality of needing to protect staff, family members, and residents from potentially dangerous behavioral symptoms, in a resource-poor environment, was emphasized. The implementation of best-practice guidelines was illustrated through 3 explanatory themes (“human suffering”; “the interface between resident and nursing home”; and “power and knowledge: complex stakeholder dynamics”), which conceptualize how different nursing homes strike this “fine balance.”

Conclusions: Implementing evidence-based antipsychotic prescribing practices for nursing home residents with dementia remains a significant challenge. Greater policy and institutional support is required to help stakeholders strike that “fine balance” and ultimately make better prescribing decisions. This study has generated a deeper understanding of this complex issue and will inform the development of an evidence-based intervention.

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Guidelines advise against antipsychotics for the first-line management of behavioral and psychological symptoms of dementia (BPSD) because of the increased risks of stroke and mortality. However, antipsychotics can be appropriate when behavioral symptoms are severe, dangerous, or distressing to the person with dementia. Despite the existence of guidelines for over a decade and national level efforts to improve dementia care, antipsychotic prescribing is still common, especially in nursing home (NH) settings. Global estimates of antipsychotic prescribing prevalence in NH residents vary from 16% in the US, 19% in England, to 27% across Western Europe. A systematic review examining the effectiveness of interventions to reduce inappropriate prescribing of antipsychotics to NH residents with dementia reported that the majority of interventions were effective in the short term. However, the long-term effects were assessed in only 4 studies, with prescribing returning to baseline levels in 2 studies.

Successful implementation of evidence-based practice requires effective and sustained behavior change, beginning with a thorough understanding of the problem. A body of qualitative research has explored problematic clinical decision-making in this area. We recently published a systematic review of this literature and found that the use of antipsychotics in NHs is the culmination of a range of healthcare professional behaviors. The 2 main behaviors identified were appropriate requesting and prescribing of antipsychotics. However, there has been a lack of exploration of these behaviors as standalone processes and in terms of how they influence each other. Furthermore, there has been limited exploration of how different stakeholders perceive these interacting behaviors. Hence, gaps in our understanding remain, which will be best answered by further qualitative research.

The Theoretical Domains Framework (TDF) is an integrative framework of influences on behavior, identified by synthesizing multiple behavior change theories. The TDF consists of 14 domains (Table 1) and provides a comprehensive, theory-informed approach to identifying the determinants (ie, barriers and facilitator), which influence clinical behaviors. Utilization of the TDF will help us to identify the determinants that influence prescribing behaviors and hence, support progression from exploration to intervention.

The aim of this qualitative study was to explore and interpret the determinants of appropriate prescribing behaviors (requesting and prescribing) among a range of individuals involved in the care of NH residents with dementia, with a view to informing future quality improvement efforts and behavior change interventions.

### Methods

#### Study Design

We conducted semistructured interviews, based on the TDF, with a range of healthcare workers and family members involved in the care of NH residents with dementia, in Cork, Ireland. Ethics approval was granted by the local ethics committee. The consolidated criteria for reporting qualitative research (COREQ) statement guided study reporting (Supplementary Table S1). Two Patient and Public Involvement (PPI) advisory groups composed of 4 people with dementia in 1 group, and 2 family members in the other group, provided input into topic guide development and recruitment. Advisor eligibility criteria included being a person with dementia affiliated with the Alzheimer Society of Ireland or a family member of any NH resident with dementia, and having an interest in research aimed at improving the quality of medication usage in NHs. Written informed consent was obtained from all advisors.

#### Study Setting and Sampling

NHs were chosen as the focus of this study because the prevalence of antipsychotic use is highest in these settings. Participants were purposively sampled to ensure a heterogeneous group with maximum variation according to 2 main predetermined criteria (professional/social role and NH type) (Supplementary Table S2). We also used snowball sampling to fulfill our sampling framework requirements.

Six different NH sites were selected based on our sampling framework, through publicly available directories of registered NHs on the Health Information and Quality Authority (HIQA) and Nursing Home Ireland websites. The Directors (Nursing or Medical) of each NH were contacted about the study. Once access was agreed, the Director and other consenting participants connected to that NH were interviewed. The Directors approached family members initially before recommending that they were suitable to be contacted.

Eligibility criteria for healthcare workers included being a physician [general practitioner (GP), geriatrician, or psychiatrist of old age], a nurse, a pharmacist or a healthcare assistant (HCA) who was involved in the care of NH residents with dementia. Eligibility criteria for family members included being a relative of a NH resident with dementia (alive or deceased) who had been prescribed an antipsychotic for BPSD.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Behavioral regulation</td>
<td>Anything aimed at managing or changing objectively observed or measured actions</td>
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<tr>
<td>Beliefs about capabilities</td>
<td>Acceptance of the truth, reality, or validity about an ability, talent, or facility that a person can put to constructive use</td>
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<tr>
<td>Emotion</td>
<td>A complex reaction pattern, involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significant matter or event</td>
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<tr>
<td>Environmental context and resources</td>
<td>Any circumstance of a person’s situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior</td>
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<tr>
<td>Goals</td>
<td>Mental representations of outcomes or end states that an individual wants to achieve</td>
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<tr>
<td>Intentions</td>
<td>A conscious decision to perform a behavior or a resolve to act in a certain way</td>
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<tr>
<td>Knowledge</td>
<td>An awareness of the existence of something</td>
</tr>
<tr>
<td>Memory, attention, and decision processes</td>
<td>The ability to retain information, focus selectively on aspects of the environment and choose between 2 or more alternatives</td>
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<tr>
<td>Optimism</td>
<td>The confidence that things will happen for the best or that desired goals will be attained</td>
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<tr>
<td>Reinforcement</td>
<td>Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus</td>
</tr>
<tr>
<td>Skills</td>
<td>An ability or proficiency acquired through practice</td>
</tr>
<tr>
<td>Social influences</td>
<td>Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviors</td>
</tr>
<tr>
<td>Social/professional role and identity</td>
<td>A coherent set of behaviors and displayed personal qualities of an individual in a social or work setting</td>
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Data Collection

We developed separate topic guides for healthcare professionals, HCAs, and family members. Topic guides were iteratively developed using findings from our systematic review,14 the TDF, advisor recommendations, and 5 pilot interviews. The topic guides underwent revisions throughout the study (Supplementary Table S3) to ensure that emerging themes were captured in subsequent interviews. All interviews were conducted by the primary author. Written informed consent was obtained prior to interviews. All interviews were audio-recorded and transcribed verbatim. The author wrote detailed field notes immediately after interviews to refine topic guides and inform data analysis. We sampled until no new ideas emerged and conducted 3 more interviews without any new ideas emerging to ensure that data saturation had been reached.22 The interviews were conducted between July 2016 and April 2017.

Data Analysis

Data analysis followed the principles of framework analysis23 and used NVivo version 11 (QSR International, Melbourne, Australia).24 Data collection and analysis phases occurred concurrently to enable the exploration of emergent themes in subsequent interviews and to identify when data saturation occurred.22 We used both inductive and deductive approaches to analysis. A detailed description of the analysis is available online (Supplementary Material S4). In summary, we familiarized ourselves with each transcript and coded emerging concepts inductively. Simultaneously, we coded data from the transcripts into 1 or more TDF domains according to the definitions for each domain (Table 1). We then created distilled summaries of each interview to identify the predominant TDF domains and the determinants (ie, barriers and facilitators) of the target behaviors (appropriate requesting and prescribing).16 Finally, we developed a conceptual model of explanatory findings, by exploring possible relationships between determinants, predominant domains, categories, and theory (Figure 1). In essence, the behavioral determinants were the “building blocks” for the explanatory themes, and an overarching theme was identified, explaining the relationship between determinants and explanatory themes. The research group (consisting of pharmacists, a GP, a health psychologist, a methodologist, and a geriatrician) held regular meetings throughout the study to discuss differences in interpretation and to identify themes.

Results

We invited 6 NHs to participate and 4 agreed: 2 private NHs, 1 with and 1 without a dementia special care unit (SCU); 1 voluntary NH (state-funded but charitable organization governance) without a SCU; and 1 public NH (state-run) without a SCU. Of 38 individuals contacted, 27 agreed to participate (8 nurses, 5 GPs, 5 HCAs, 3 family members, 2 pharmacists, 2 consultant geriatricians, and 2 consultant psychiatrists of old age) (Table 2). The median interview length was 23 minutes (range 12–56 minutes).

We identified 9 predominant TDF domains, encompassing 38 behavioral determinants that influenced our target behaviors (Table 3). We also developed 3 explanatory themes and 1 overarching theme, which are discussed below and illustrated in a conceptual model (Figure 1). The 9 predominant TDF domains and the more
Furthermore, some participants were confused by the regulatory requirements and were concerned about unintended negative consequences because of the mistaken belief that only psychotropic medications used for acute episodes were reportable.

"Now, conversely, what it has made some nursing homes do is, if somebody was on a PRN psychotropic, because the resident might only need it once or twice per month and because it becomes reportable, they get prescribed regularly." [Nurse 5]

Healthcare workers reported that interdisciplinary medication reviews, audits, and internal registries also provided an opportunity for self-monitoring. When in place, these systems assisted with the identification of patterns of inappropriate usage. Prescribers found international guidelines helpful in their decision-making.2 However, succinct guidelines specific to the Irish context were sought.

**Beliefs about capabilities**

Participants struggled to find solutions to BPSD other than antipsychotics in part because they felt that they lacked necessary training. NH staff struggled with the daily management of BPSD and some admitted that they needed antipsychotics to cope. GPs often felt out of their comfort zone and regularly needed input from specialists.

"In some ways I don’t feel I have the sufficient expertise to make those decisions so I’ll look to specialists at that point if I’m struggling with something." [GP 3]

**Beliefs about consequences**

Both healthcare workers and family members were worried about side effects such as sedation and falls. Some viewed these side effects as undignified and inhumane, and hence were reluctant to request or prescribe antipsychotics.

A fear of negative consequences (ie, adverse behavioral events from residents) if antipsychotics were not prescribed was expressed by prescribers. They were conscious of the safety of their NH colleagues who were often at the receiving end of behaviors.

"Because you don’t know what precipitated the [behavior], and then, when you’re trying to pull back and you walk away, are you leaving your colleagues in the height of it then?" [GP 4]

**Emotion**

Participants, particularly family and NH staff, spoke emotively about BPSD, and how these symptoms deeply impacted them personally. Sometimes participants believed that antipsychotics were the only solution to alleviating this distress.

"It was very hard to listen to [the BPSD]... so as far as I’m concerned, if there was a medication that would sort this thing anyway, I certainly was completely open to it." [Family member 2]

NH staff were deeply affected by behaviors leading to burn-out, frustration, and poor morale. Staff sometimes took behaviors personally, which could increase the propensity to request prescribing of antipsychotics. Empathy as opposed to sympathy was viewed as an important trait when dealing with BPSD. It was seen to be important to be able to step back, evaluate the situation and determine the best course of action for the resident, without emotions clouding one’s judgement.

"I feel that certain people take huge offense if a person who is cognitively impaired lashes out, punches, screams, whatever, and you have to let it go." [Nurse 8]

**Environmental context and resources**

The overall picture was one of poor resources in NHs. Although nonpharmacologic interventions were generally seen as the gold standard, some participants believed that HIQA, the independent NH regulator in Ireland, has put antipsychotics under scrutiny. Regulation now requires NHs to notify HIQA on a quarterly basis of any occasion when restraint (chemical or physical) is used.25 Some participants believed that these regulations made them re-evaluate how they manage BPSD, with positive outcomes for residents.

"I think HIQA is brilliant... because I really think they force people to look at their practice, and to challenge their own practice and to change." [HCA 1]

However, GPs in particular felt that there was over-regulation by HIQA, resulting in increased administrative burden, which did not necessarily translate into good care.

**Predominant TDF Domains**

**Behavioral regulation**

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However, GPs in particular felt that there was over-regulation by HIQA, resulting in increased administrative burden, which did not necessarily translate into good care.
### Table 3
Determinants of Appropriate Antipsychotic Prescribing Behaviors (Requesting and Prescribing)

<table>
<thead>
<tr>
<th>Predominant TDF Domain</th>
<th>Determinants (ie, Barriers and/or Facilitators) of Appropriate Antipsychotic Prescribing Behaviors</th>
<th>Illustrative Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behavioral regulation</strong></td>
<td>• HIQA regulation as a stimulus for change (facilitator)</td>
<td>• I think HIQA is brilliant... because I really think they force people to look at their practice, and to challenge their own practice and to change.” [HCA 1]</td>
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<td></td>
<td>• Perception of HIQA over-regulation by GPs (barrier)</td>
<td>• “I think HIQA are a scourge. I wonder what they bring to the table. I think they’re self-fulfilling...” [GP 4]</td>
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<td></td>
<td>• Uncertainty regarding HIQA reporting requirements (barrier)</td>
<td>• “Now, conversely, what it has made some nursing homes do is, if somebody was on a PRN psychotropic, because the resident might only need it once or twice per month and because it becomes reportable, they get prescribed regularly.” [Nurse 5]</td>
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<td></td>
<td>• Self-monitoring (using local systems) of antipsychotic prescribing (facilitator)</td>
<td>• “So, for me it would be to monitor the scripts as they come in and maybe their charts and we do at the request of the Director of Care, we do a psychotropic audit every month. So we see where they’re being reviewed.” [Pharmacist 2]</td>
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<td>• Guidelines for monitoring the appropriateness of antipsychotic prescribing (facilitator)</td>
<td>• “Guidelines is a good thing, and licensing, because you know there isn’t any license. Grade 1, grade 2 evidence, meta-analyses... You can certainly use them to say why you’re not prescribing an antipsychotic. You just say there’s no evidence and it’s not national policy.” [Consultant Psychiatrist of Old Age 2]</td>
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<tr>
<td><strong>Beliefs about capabilities</strong></td>
<td>• Poor self-efficacy in the management of BPSD among non-specialists (barrier)</td>
<td>• “So I suppose in some ways I don’t feel I have the sufficient expertise to make those kind of decisions so I’ll look to specialists at that point if I’m struggling with something.” [GP 3]</td>
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<td></td>
<td>• Belief that assessing whether an antipsychotic prescription is appropriate or not is challenging (barrier)</td>
<td>• “It’s a difficult one to decipher. When it’s appropriate and when it’s not appropriate.” [Nurse 6]</td>
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<td></td>
<td>• Belief that deprescribing antipsychotics is difficult (barrier)</td>
<td>• “And it’s very easy starting these things but the discontinuation of them is not quite so clear cut.” [Consultant Geriatrician 2]</td>
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<tr>
<td><strong>Beliefs about consequences</strong></td>
<td>• Concerns about side effects (facilitator)</td>
<td>• “She was just asleep looking, absolutely drugged out of her tree looking, sitting in a chair.” [Family member 1]</td>
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<td></td>
<td>• Belief that antipsychotics are highly effective (barrier)</td>
<td>• “I know the drugs can fix these things. Now not completely right. But I know that drugs can fix these things.” [Family member 2]</td>
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<td>• Belief that NPIs are not a feasible alternative (barrier)</td>
<td>• “But if you have somebody at 2 o clock in the morning that you’re pacing the floor with until 6 o clock in the morning, where are your therapies then?” [HCA 2]</td>
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<td></td>
<td>• Belief that the return of symptoms are caused by the reduction of antipsychotic dosage (barrier)</td>
<td>• “I think people often think, that if something doesn’t work straight way or if there happens to be a coincidental problem as soon as you start to reduce it, suddenly there is this complete fear that this has caused it they expect more immediate, they see the immediate things as being either absent or present so when you start a new drug if it hasn’t worked straight away there is a bit of ‘oh it’s not working.’” [GP 3]</td>
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<td>• Anticipated regret (barrier)</td>
<td>• “Because you don’t know what precipitated the [behavior], and then, when you’re trying to pull back and you walk away, are you leaving your colleagues in the height of it then?” [GP 4]</td>
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<td><strong>Emotion</strong></td>
<td>• Fear of dementia (barrier)</td>
<td>• “It was very hard to listen to [the BPSD]... so as far as I’m concerned, if there was a medication that would sort this thing anyway, I certainly was completely open to it.” [Family member 2]</td>
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<td>• Taking behaviors personally (barrier)</td>
<td>• “I feel that certain people take huge offence if a person who is cognitively impaired lashes out, punches, screams, whatever and you know, you have to let it go.” [Nurse 8]</td>
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<td><strong>Environmental context and resources</strong></td>
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<tr>
<td>- Burn-out and frustration (barrier)</td>
<td>&quot;You'll get staff who are burned out, they just can't cope. They're sick of saying X, Y, and Z and they're not being listened to, and they just don't care anymore.&quot; [Nurse 3]</td>
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<td>- Empathy toward people with dementia (facilitator)</td>
<td>&quot;I think people with a very empathetic view of dementia would be less likely to encourage prescription of antipsychotics, because there is that, 'oh it's, you know, you don't have to give them drugs for it, it's just their dementia, we can get around it,' and then, some people... will see the more negative side of the dementia, and be like, 'isn't it awful for them, God wouldn't you just give them something to relax them.' [Nurse 6]&quot;</td>
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<td>- Emotions of healthcare professionals tend to reflect those of family members (barrier)</td>
<td>&quot;I'll get [a phone call], 'The family were in today they're very worried about mammy. She's very upset and agitated'. I never get those phone calls to say that they're worried that she's just sitting there staring into space.&quot; [GP 1]</td>
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<td>- Personal experience of dementia (barrier/barrier)</td>
<td>&quot;We're all human, we all bring our own stuff.&quot; [HCA 3]</td>
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<td>- Lack of adequate resources (barrier)</td>
<td>&quot;You need to have the time to be with somebody, staffing levels don't really give you the opportunity to sit with somebody all day long or all afternoon... you can come and go but you can't stay with the person.&quot; [Nurse 4]</td>
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<tr>
<td>- Perception that it's cheaper to give antipsychotics than deliver NPIs (barrier)</td>
<td>&quot;They haven't enough staff and they seem to think that the cheapest way is to dose them, and keep them quiet&quot; [Family member 1].</td>
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<tr>
<td>- Impact of the built environment on the person with dementia (facilitator/barrier)*</td>
<td>&quot;I think if we had properly designed purpose built modern dementia units that allowed us to offer a different environment than the standard ward environment... I do think that would be far more humane and you'll probably get better overall results than resorting to the old fashioned chemical restraints.&quot; [Consultant geriatrician 2]</td>
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<td>- Each NH is different (facilitator/barrier)*</td>
<td>&quot;You go to different nursing homes and attitudes are very different.&quot; [Nurse 3]</td>
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<tr>
<td>- Impact of treatment culture on residents (facilitator/barrier)*</td>
<td>&quot;Sometimes it can feel like the person is there as... I don't know how to say this politely, but they're in the bed and they have to acquiesce or be compliant with the system around them, be good children or good grown-ups and play the game. And if you don't do that, then you get labeled and your behavior gets labeled.&quot; [Consultant Psychiatrist of Old Age 1]</td>
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<tr>
<td><strong>Knowledge</strong></td>
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<tr>
<td>- Knowledge of antipsychotics (facilitator)</td>
<td>&quot;If you can tell someone what the potential complications of antipsychotics are, they may be a little less likely to ask for them.&quot; [GP 1]</td>
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<tr>
<td>- Knowledge on the cause and nature of BPSD (facilitator)</td>
<td>&quot;I think if people understood... why [residents] have behaviors that challenge I think that would go a long way for a lot more understanding and people not wanting just to sedate somebody.&quot; [Nurse 3]</td>
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<tr>
<td>- Knowledge of the resident (facilitator)</td>
<td>&quot;I think just knowing the person. Knowing that they have been on them [antipsychotics] for years. Looking at them now, their state of deterioration and you know in your heart and soul they don't need them.&quot; [Nurse 5]</td>
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<tr>
<td><strong>Memory, attention and decision-processes</strong></td>
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<tr>
<td>- Decision-making based on a thorough assessment (facilitator)</td>
<td>&quot;Then with the physical as well, we do the PINCH ME acronym so we... pain, infection, constipation, hydration, nutrition, medications, environment, we look at real holistic view of the person and try and rule out any triggers there [sic].&quot; [Nurse 6]</td>
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<tr>
<td>- Paying attention to where the challenge lies with regards to the behavioral symptoms (facilitator)</td>
<td>&quot;Sometimes it just ultimately again it takes me back, you need to take a step back, who are you treating? Are you treating the carer who wants a certain amount given so somebody is peaceful or a certain amount of investigation is done, or are we treating the staff members who are treating the patient because they want a peaceful night or a peaceful day on the ward, or are we making a decision to make our own lives easier. And we just have to take a step back sometimes.&quot; [GP 5]</td>
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<tbody>
<tr>
<td>Social influences</td>
<td>• Social pressure to prescribe (barrier)</td>
<td>• “So I feel under pressure to knock this person out, anesthetize this patient, who they see as, shouldn’t be challenging. And they’re already completely oversedated and the staff want them to be even more sedated.” [Consultant psychiatrist of old Age 2]</td>
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<td></td>
<td>• Reliance on accurate information from NH staff (facilitator/barrier)*</td>
<td>• “I think people can be a little bit biased in how they can present a case to you at times to get to the ends that they want. I know there has been one incident where... a staff member [was overheard] saying ‘sure just tell her she’s had hallucinations.’” [GP 3]</td>
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<td></td>
<td>• Modelling of prescribing behavior (facilitator/barrier)*</td>
<td>• “A lot of our learning seems to come from the consultations and referrals that we actually see what the psychiatry of the elderly prescribe in these situations, and we have been led by that, so quetiapine just seems to be one they seem to use.” [GP 5]</td>
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<td></td>
<td>• Prevailing culture of care (facilitator/barrier)*</td>
<td>• “Medication comes first in Ireland. ‘Give it to them as much as possible.’” [Family member 1]</td>
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<tr>
<td>Social/professional role and identity</td>
<td>• Advocacy role of NH staff and family members (facilitator)</td>
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<td></td>
<td>• Professional identity (facilitator/barrier)*</td>
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<td></td>
<td>• Variable sense of responsibility for prescribing decisions (facilitator/barrier)*</td>
<td>• “See mom didn’t have a voice, nobody would listen to her even when she was speaking, she wasn’t listened to and I was her voice.” [Family member 1]</td>
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<td></td>
<td>• Leadership role of NH manager (facilitator)</td>
<td>• “It depends on what background you are coming from and when you trained, how you view the medications and the use of medications. I think there is a difference, between the younger generation of nurses and the older generation of nurses. There appears to be more of a reluctance, I think, in the younger generation of nurses with giving out, I suppose the high risk medications like [antipsychotics]... And I think there is a difference there then because you’re not seeing your nursing profession as a medical profession, you’re almost a facilitator... and when you see it from that perspective then medication isn’t always the first kind of thing that pops into your head.” [Nurse 6]</td>
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<td></td>
<td>• Traditional hierarchy (barrier)</td>
<td>• “But I suppose it’s up to the prescriber to be able to sort the wheat from the chaff and see what’s a good grounded opinion and what’s maybe not as reliable you know.” [HCA 3]</td>
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<td></td>
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<td>• “You need a manager who is supporting staff and is knowledgeable and roles out good training to the staff. And has good experience, and ideally good mental health experience because not all of them have good mental health experience but it is important for the manager, if you meet the manager, you can usually see the tone of the home.” [Consultant Psychiatrist of Old Age 2]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• “As it stands and we’re talking about the real world, it’s really the nursing staff and the GP, I don’t have an influence there. If I get the script, we just have to hand it over.” [Pharmacist 2]</td>
</tr>
</tbody>
</table>

NPIs, nonpharmacologic interventions.

*This determinant could be a barrier or a facilitator depending on the individual circumstance.

standard, there was consensus that these interventions were staff-intensive and not always feasible.

“You need to have the time to be with somebody, staffing levels don’t really give you the opportunity to sit with somebody all day long or all afternoon... you can come and go but you can’t stay with the person.” [Nurse 4]

The physical environment was believed to have a profound impact on residents. Some participants believed that if the environment was better suited to meet the needs of the resident, then there would be less of a need to prescribe.

“I think if we had properly designed purpose-built modern dementia units that allowed us to offer a different environment than the standard ward environment... I do think that would be far more humane and you’ll probably get better overall results than resorting to the old fashioned chemical restraints.” [Consultant geriatrician 2]

Participants described how treatment culture impacted the resident in terms of prescribing, both positively (eg, being resident-centered) and negatively (eg, being task-orientated). There was a general agreement that every NH was completely different, and what may be acceptable in 1 NH may not be acceptable in another.

Knowledge

Both healthcare workers and family members were aware that antipsychotics cause side effects. However, nonconsultants in
In-depth knowledge of the resident was believed to be paramount. Knowing the resident and understanding their life story helped NH staff to adapt the environment to meet the needs of the resident and often prevented unnecessary prescribing.

“I think just knowing the person. Knowing that they have been on them [antipsychotics] for years. Looking at them now, their state of deterioration and you know in your heart and soul they don’t need them.” [Nurse 5]

Memory, attention, and decision processes

The importance of conducting a holistic assessment of the resident was emphasized by participants. There was agreement that antipsychotics were only appropriate after all potential reversible causes of BPSPD were ruled out. In one NH, where a comprehensive assessment protocol was recently introduced, nurses explained how this protocol assisted them with their decision-making.

Social influences

Prescribers were based off-site so they relied on accurate and objective information about residents from nurses. Prescribers largely valued and trusted the nurses’ judgements and tended to make prescribing decisions based on the information provided. However, this could lead to a perception that behavioral symptoms were being exaggerated to increase the likelihood of prescription.

“I think people can be a little bit biased in how they can present a case to you at times to get to the ends that they want. I know there has been one incident where... a staff member [was overheard] saying ‘sure just tell her she’s had hallucinations.’” [GP 3]

Prescribers reported that pressure to prescribe antipsychotics arose from many sources including individual staff members, family members, the NH organization, and from society itself.

“So I feel under pressure to knock this person out, anesthetize this patient, who they see as, shouldn’t be challenging. And they’re already completely over-sedated and the staff want them to be even more sedated.” [Consultant psychiatrist of old Age 2]

There was a perception by some of a prevailing culture where all behaviors may be attributed to the disease rather than an unmet need. However, other participants felt that because of the influence of HIQA, Nhs were moving toward a more social model of care. This shift in culture was broadly welcomed. However, some physicians feared that the pendulum had “swung too far” [Consultant psychiatrist of old age 1], and that GPs, in particular, may be fearful of using antipsychotics because of the perceived antimedication climate.

Social/professional role and identity

NH staff and family members viewed themselves as the resident’s advocate. This role empowered them to speak up on behalf of the resident.

“See mom didn’t have a voice, nobody would listen to her even when she was speaking, she wasn’t listened to and I was her voice.” [Family member 1]
Power and Knowledge: Complex Stakeholder Dynamics

The final theme refers to the complex interplay between the many different stakeholders involved in the care of residents. The symbiotic concepts of power and knowledge can help us to understand these complex stakeholder dynamics. There were different types of knowledge valued by participants: knowledge of the disease, the drug, and the resident. Often primacy was given to the latter. Hence, from this perspective, nurses’ in-depth knowledge of residents legitimized their power to request that an antipsychotic be started or stopped: “The GPs will do it [deprescribe], no problem, we need to instigate it, and it’s just the experience of knowing the person” [Nurse 5]. Conversely, others argued that those in higher positions of power had knowledge that was more important (ie, knowledge of drug and disease) in determining the best outcomes for residents: “Old age psych usually make a recommendation and then the GP will sign the prescription” [Nurse 8]. From this perspective, those in positions of power were perceived to have the most important knowledge in determining the appropriateness of antipsychotic prescribing.

Discussion

Using a novel multiperspective approach, we have generated a deeper understanding of the behavioral components of antipsychotic use in NH residents with dementia, the professional interactions that occur between different stakeholders, and the determinants of implementation of best-practice guidelines. Our findings highlight how implementing evidence-based practice in this area remains a significant challenge, despite advances in knowledge and stricter regulations. We identified that stakeholders strive to strike “a fine balance” but ultimately, as humans, are influenced by interacting emotional, environmental, organizational, and societal issues.

Comparison with Previous Research

This study builds on the findings of our systematic review where we identified 5 key concepts influencing decision-making: organizational capacity; individual professional capacity; communication and collaboration; attitudes; and regulations and guidelines. In this current study, we found all of these concepts also play a role in implementing evidence-based practice. With regards to organizational capacity, the fundamental issue of inadequate resources was discussed in almost all of our interviews. This current study also extends our understanding of the influence of regulations on practice. Our study confirms the important role of regulations, but also highlights unintended negative consequences that may occur as NHs undertake various workarounds. Similar workarounds have been reported in the US, where increasing diagnoses of schizophrenia in NH residents have been observed, in a suspected attempt to exempt antipsychotics from regulations. We identify 3 main challenges: lack of knowledge valued by participants: knowledge of the disease, the drug, and the resident. Often primacy was given to the latter. Hence, from this perspective, nurses’ in-depth knowledge of residents legitimized their power to request that an antipsychotic be started or stopped: “The GPs will do it [deprescribe], no problem, we need to instigate it, and it’s just the experience of knowing the person” [Nurse 5]. Conversely, others argued that those in higher positions of power had knowledge that was more important (ie, knowledge of drug and disease) in determining the best outcomes for residents: “Old age psych usually make a recommendation and then the GP will sign the prescription” [Nurse 8]. From this perspective, those in positions of power were perceived to have the most important knowledge in determining the appropriateness of antipsychotic prescribing.

Implications

It is evident that greater policy and institutional support is required to help stakeholders strike that “fine balance” and ultimately make better prescribing decisions. Development of national clinical guidelines may be one appropriate policy intervention. Such guidelines are currently being developed in Ireland as a priority action point of the national dementia strategy. An important implication of our study is the need to clarify existing regulations for stakeholders, as it is evident that they are unsure as to which prescribing scenarios are reportable and which are not, and residents may be adversely affected by this confusion.

Further consideration should also be given to the design of future NHs. Our findings highlight the importance stakeholders attribute to dementia SCUs in terms of meeting the needs of residents with dementia. However, resident outcomes from SCUs have been mixed, along with concern over higher levels of antipsychotic usage. Therefore, although SCUs may be desired by stakeholders, more evidence of the quality and safety of this approach is required before widespread adoption.

Despite guidance on avoiding antipsychotics in dementia, they can play an essential role in certain situations. Our study shows that because of the stigma attached to antipsychotics, some prescribers are fearful of prescribing them at all, risking unnecessary distress for a resident for whom the medications are indicated. A recent study demonstrated that discontinuation of antipsychotics, without non-pharmacologic substitution, can have a detrimental impact on residents’ health-related quality of life. Our findings suggest that an evidence-based, standardized approach involving interdisciplinary collaboration, careful documentation, and regular review is needed to ensure the most appropriate use of both pharmacologic and non-pharmacologic interventions. One such model program is the DICE (describe, investigate, create, and evaluate) approach, which promotes a holistic, person-centered approach to managing BPSD.

Educational programs are the most common intervention type used to tackle inappropriate antipsychotic prescribing (eg, the OASIS program, the Halting Antipsychotic use in Long-Term care [HALT] study, and the Reducing Use of Sedatives [RedUSE] project). Ongoing education and training to both NH staff and prescribers is an important aspect of ensuring appropriate antipsychotic prescribing,
but is not sufficient on its own. Drawing from existing programs, as well as our own findings, we recommend that future programs should include training on the assessment and management of BPSD, dealing with emotions, and managing expectations. It is important for prescribers to be empathetic and acknowledge the emotional and physical impact of BPSD, while assertively conveying the limited benefit and serious risks associated with antipsychotics. Likewise, nurses, as the key influencer on prescribing, should be aware of and communicate these issues to others within the NH and to family members. In particular, the OASIS communication training program enforces these key messages. Future research should focus on determining how best to deliver educational interventions, and alongside what, to achieve sustainable results.

Strengths and Limitations

The trustworthiness of our findings are underpinned by the involvement of different disciplines within our research team and the participation of multiple stakeholders from different organizations during the interviews. Triangulation of analysts and participants also contributed toward the credibility of the results. Interviews took place in one region in Ireland, but transferability is supported by the provision of sufficient contextual information to enable readers to determine how applicable our findings are to their own situation. Detailed reporting of well-established methods with diagrammatic audit-trails contributed toward the dependability of our findings. Finally, in terms of conﬁrmability, detailed reporting of participants’ quotations helped ensure that our ﬁndings were primarily borne from the data.

Although 66%/4% of NHs and 71% (27/38) of individuals agreed to participate in our study, it is possible that only those with strong views on this topic took part. Furthermore, although we employed a purposive sampling approach, Directors may have recommended individuals for participation who were more likely to provide favorable responses about practices in their NH. Hence, the possibility of selection bias cannot be excluded. Random sampling of participants along with a larger sample may have reduced this problem and may have allowed us to explore differences in perceptions between respondent groups and settings in greater detail.

Another limitation was the small number of family members recruited. The challenges of recruiting family members of residents with dementia to research studies have been previously reported. Despite engaging with our advisors on this issue and reminding Directors to identify potential participants, we only managed to recruit 3 family members. It is possible that family members were apprehensive about taking part because of the emotive nature of this topic. Furthermore, it is possible that the Directors may have been overprotective of family members.

Conclusions

Implementing evidence-based antipsychotic prescribing practices for NH residents with dementia remains a significant challenge, despite advances in knowledge and stricter regulations. In striving to strike “a fine balance”, stakeholders are influenced by interacting emotional, environmental, organizational, and societal issues. Greater policy and institutional support is required to help stakeholders strike that “fine balance” and ultimately make better prescribing decisions. This study provides us with a deeper understanding of this complex issue and will inform the development of a theory and evidence-based intervention.

Acknowledgments

The authors wish to thank all participants who kindly participated in this qualitative study. In addition we wish to extend our gratitude to Carmel Geoghegan, Dr Emer Begley, Dr Bernadette Rock, the Irish Dementia Working Group, the Alzheimer Society of Ireland, and to our PPI advisory group members for their helpful contributions. We would also like to thank Dr Justin Presseau and Dr Andrea Patey, Ottawa Hospital Research Institute for their advice on the analysis. The investigators were solely responsible for the design, methods, subject recruitment, data collections, analysis and preparation of paper and the funding sources did not participate in this process.

References

36. Walent RJ, Kayser-Jones J. Having a voice and being heard: Nursing home residents and in-house advocacy. J Gerontol Nurs 2008;34:34–42.
### Appendix

#### Supplementary Table S1

**Consolidated criteria for reporting qualitative research (COREQ) Checklist**

<table>
<thead>
<tr>
<th>Domain 1: Research Team and Reflexivity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>1. Interviewer/facilitator</td>
<td>KW conducted the interviews At the time of undertaking the interviews KW’s credentials were BPharm, MPharm, MPSI</td>
</tr>
<tr>
<td>2. Credentials</td>
<td>KW is an Irish registered pharmacist, who was undertaking a PhD in Population Health and Health Services Research, when this study was conducted.</td>
</tr>
<tr>
<td>3. Occupation</td>
<td>Male KW completed training in utilization of NVivo software and received qualitative research methods training at Oxford University, UK. KW has also conducted and published a systematic review and synthesis of qualitative evidence previously.</td>
</tr>
<tr>
<td>4. Sex</td>
<td></td>
</tr>
<tr>
<td>5. Experience and training</td>
<td></td>
</tr>
</tbody>
</table>

| Relationship with participants         |                                  |
| 6. Relationship established            | There were no established relationships between any of the 27 participants and the researcher or research team prior to study commencement. |
| 7. Participant knowledge of the interviewer | KW had disclosed to all participants that he was a pharmacist undertaking this study as part of his PhD, prior to conducting the interviews. |
| 8. Interviewer characteristics        | KW is a registered pharmacist with community pharmacy and qualitative research experience, and was conducting this study as part of his PhD exploring antipsychotic prescribing in NH residents with dementia. This information was disclosed to participants ahead of the interview. |

#### Domain 2: Study Design

<table>
<thead>
<tr>
<th>Theoretical framework</th>
<th>Framework Analysis as described by Ritchie and Lewis, using the TDF as the a priori defined framework.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Methodological orientation and Theory</td>
<td>Participants were purposively sampled to ensure a heterogeneous group with maximum variation according to 2 main predetermined criteria (Professional/social role and NH type). We also used snowball sampling to fulfil our sampling framework requirements.</td>
</tr>
<tr>
<td>Participant selection</td>
<td>Six different NH sites were selected based on our sampling framework, through publicly available directories of registered nursing homes on the Health Information and Quality Authority (HIQA) and Nursing Home Ireland websites.</td>
</tr>
<tr>
<td>10. Sampling</td>
<td>The Directors of each NH (Directors of Nursing or Medical Directors) were contacted by KW by email initially and informed about the study, with a follow up phone-call if no response. Once the Directors agreed access, they were interviewed themselves by KW and they then recommended other potential participants connected to their nursing home, whom KW would approach face-to-face or via email/telephone with information about the study. All relevant visiting staff (ie, GPs, consultant psychiatrists of old age, consultant geriatricians and pharmacists) serving each of the sites were invited to participate in the study. The Directors approached family members initially about the study before recommending to KW that they were suitable to be contacted.</td>
</tr>
<tr>
<td>11. Method of approach</td>
<td>27 Of 6 nursing homes contacted by KW via their respective Director, 4 participated and 2 did not respond.</td>
</tr>
<tr>
<td>12. Sample size</td>
<td>Of the 4 pharmacists serving the 4 different NH sites, 2 participated. 1 said they was too busy and 1 did not respond.</td>
</tr>
<tr>
<td>13. Nonparticipation</td>
<td>Of the 9 GPs serving the 4 different NH sites, 5 participated. 2 initially agreed but never followed up with a definite date for interview and 2 did not respond.</td>
</tr>
<tr>
<td></td>
<td>Of 10 nurses across the 4 different sites who were contacted by KW, 8 participated; 1 said they were too busy and 1 did not respond.</td>
</tr>
</tbody>
</table>
|                                        | Of 5 family members who were contacted by KW, 3 participated; 1 initially agreed but never followed up with a definite date for interview; 1 initially agreed but then canceled because the rest of the family didn’t want to be involved. An unknown number of family members were informally approached about the

*(continued on next page)*
study by the Directors of each NH site, but did not agree to participate.
Of 3 consultant geriatricians contacted by KW, 2 participated. 1 initially agreed but never followed up with a
definite date for interview.
Of 2 consultant psychiatrists of old age contacted by KW, both participated.
Of 5 HCAs contacted by KW, all 5 participated.
Total nonparticipators: n = 2 nursing homes, n = 11 individuals directly contacted by KW

### Setting

14. Setting of data collection
Where was the data collected (eg, home, clinic, workplace)?

All interviews took place either in the participant’s place of work, home or an office in the researcher’s university, depending on participant’s preference.

15. Presence of nonparticipants
Was anyone else present besides the participants and researchers?

No

16. Description of sample
What are the important characteristics of the sample (eg, demographic data, date)?

Refer to Table 2

### Data collection

17. Interview guide
Were questions, prompts, guides provided by the authors? Was it pilot tested?

Three types of topic guides were in circulation at any one time. They were broadly similar for content, but differed primarily for language:
1 for healthcare professionals (physicians, nurses, and pharmacists),
1 for healthcare assistants
1 for family members.
The topic guides were pilot tested by 5 participants (1 nurse, 1 HCA, 1 pharmacist, 1 GP, and 1 family member) to ensure appropriate content and language for the different groups. All topic guides were revised slightly after every pilot interview. Only the latter interview conducted with a family member was subsequently included in the analysis, as this topic guide was agreed to be close enough to the final version.
Throughout the remainder of the study, the topic guides underwent iterative revision to ensure that emerging themes were captured in subsequent interviews.

18. Repeat interviews
Were repeat interviews carried out? If yes, how many?

No

19. Audio/visual recording
Did the research use audio or visual recording to collect the data?

All interviews were audio recorded.

20. Field notes
Were field notes made during and/or after the interview or focus group?

Field notes were written immediately after the interviews, and were referred to during analysis, and refinement of topic guides.

21. Duration
What was the duration of the interviews or focus group?

The median interview length was 23 minutes and the range was 12–56 minutes.

22. Data saturation
Was data saturation discussed?

The Francis et al method was used to determine when data saturation had been reached. We sampled until no new ideas emerged from the interviews and then conducted a further 3 interviews without any new ideas emerging to ensure that data saturation had been reached.

23. Transcripts returned
Were transcripts returned to participants for comment and/or correction?

No

### Domain 3: Analysis and Findings

#### Data analysis

24. Number of data coders
How many data coders coded the data?

Four (KW, CS, AF, JMcS)

25. Description of the coding tree
Did authors provide a description of the coding tree?

The TDF was used as a basis for the coding tree

26. Derivation of themes
Were themes identified in advance or derived from the data?

We utilized both deductive and inductive approaches to analysis throughout the 5 framework stages (familiarization, identifying a thematic framework, indexing, charting, and mapping and interpretation). First KW became familiar with the data by reading and re-reading transcripts and field notes and open coded across the entire dataset. The 14 TDF domains were then deductively applied systematically to the data during indexing while emerging concepts were coded and categorized inductively. These indexing steps were conducted independently by at least 2 authors for 7 transcripts (KW and AF/JMcS), who met to discuss differences in application of the TDF or interpretation of emerging concepts, and came to consensus. The indexing of the remaining transcripts was conducted by KW using agreed understandings of the TDF domains.

Charting of the data, with distilled summaries in matrix format was used to identify the predominant domains influencing the target behaviors (appropriate requesting and prescribing). This activity was performed independently by 2 authors (KW and CS), who then discussed any disagreement until consensus was reached. From these predominant domains, the determinants (ie, barriers and facilitators) of the target behaviors were identified by KW, with input from the whole team.

For the final mapping and interpretation step, we iteratively developed links between barriers and
<table>
<thead>
<tr>
<th></th>
<th>Facilitators, predominant domains, initial categories and theory to provide overall explanations for the findings. This was conducted by KW, with input from the whole research team.</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.</td>
<td>Software</td>
</tr>
<tr>
<td>28.</td>
<td>Participant checking</td>
</tr>
<tr>
<td>29.</td>
<td>Reporting</td>
</tr>
<tr>
<td>30.</td>
<td>Quotations presented</td>
</tr>
<tr>
<td>31.</td>
<td>Data and findings consistent</td>
</tr>
<tr>
<td>32.</td>
<td>Clarity of major themes</td>
</tr>
<tr>
<td>33.</td>
<td>Clarity of minor themes</td>
</tr>
<tr>
<td>34.</td>
<td>Major themes clearly presented in the findings?</td>
</tr>
</tbody>
</table>
### Supplementary Table S2
Sampling Framework

<table>
<thead>
<tr>
<th>Professional/Social Role</th>
<th>NH Type</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private NH</td>
<td>Voluntary NH</td>
</tr>
<tr>
<td>GP</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Nurse</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HCA</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Family member</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Consultant psychiatry of old age</td>
<td>2*</td>
<td></td>
</tr>
<tr>
<td>Consultant geriatrician</td>
<td>2*</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td></td>
</tr>
</tbody>
</table>

The number in each box refers to the number of participants recruited, according to the 2 main predetermined criteria (professional/social role and NH type). 
*These participants worked across all NH types (private, voluntary and public).
1. Pilot Topic Guides (Version 1):

1A. Healthcare professional (HCP)

(Prompts if necessary: Is it appropriately prescribed in all cases? Is it necessary? What are the benefits and harms?)

In the context of NH residents with dementia, how would you define an “appropriate prescription” of an Antipsychotic or Psychotropic (AP/P)?

(Prompts if necessary: What would an “appropriate prescription” entail in terms of indication, drug, dosage, frequency of review, duration, who needs to be consulted?)

What do you believe to be the main barriers to an “appropriate prescription”?

(Rephrase if necessary: What prevents the use of alternative nonpharmacologic approaches in residents who may not necessarily need AP/P medications?)

Conversely, what do you believe enables “appropriate prescribing”?

(Rephrase if necessary: What facilitates the use of alternative nonpharmacologic approaches in residents who may not necessarily need AP/P medications?)

What are your views on nonpharmacologic approaches in residents who exhibit behaviors that challenge, such as massage therapy, reminiscence therapy, and music therapy?

(Prompts if required: Are they effective? Whose role is it? Are they being used first-line for challenging behavior?)

Can you describe your general approach to: receiving (physician) requesting or administering (nurses) dispensing (pharmacists)

dispersing (pharmacists)

a prescription for AP/P medications to a typical resident with dementia, who may be exhibiting behaviors that challenge?

(Prompts if necessary: How would you start this process or journey for a NH resident with dementia? What is the first thing you would always do? Use of NPs? What would you do next? Would you always do this? Anything else?)

Do you believe that everyone involved in the care of residents with dementia (including consultants, General Practitioner (GP), nurses, pharmacists, Healthcare assistant (HCA), and family members) are sufficiently aware of the risk/benefits of AP/P prescribing?

(Prompts if necessary: Why do you think this? Is there any group of people in particular that you feel could benefit from more training and education? What specifically do you think they need to know more about?)

If not mentioned from above) Furthermore do you believe that everyone involved in the care of residents with dementia, knows how to effectively manage someone who is exhibiting behaviors that challenge?

(Prompts if necessary: Why do you think this? Is there any group of people in particular that you feel could benefit from more training and education? What do you think they need to know more about?)

In the literature, the importance of “knowing the resident” is emphasized in relation to AP/P prescribing. Do you agree with this statement?

(Prompts if necessary: Why/why not? Does it enable a person-centered care approach? What is the best way to “get to know” the resident?)

Thinking about AP/P prescribing in NH residents with dementia, what would you consider your responsibilities to be as ensuring that the residents receive an appropriate prescription?

(Prompts if required: Is there anything that you would consider to be beyond your responsibility as ensuring an appropriate AP/P prescription?)

What other aspects of the environment influence whether or not these agents are appropriately prescribed and reviewed?

(Prompts if required: Is there any resource issues that could lead to inappropriate prescribing?)

Who or what do you believe is important to measure, so that people can determine for themselves whether they felt the intervention was as successful or not?

(Rephrase if required: Are they effective? Whose role is it? Are they being used first-line for challenging behavior?)

In an ideal world, what would you consider to be crucial components of an intervention to enable the appropriate and rational use of AP/P in NH residents with dementia?

(Prompts if required: Are they effective? Whose role is it? Are they being used first-line for challenging behavior?)

Can you describe your general approach to:

receiving (physician)

requesting or administering (nurses)

1B. Healthcare assistant

1. In your own words, tell me what your views are regarding the prescribing of antipsychotics (such as Zyprexa, Seroquel) and other psychotropics (such as Xanax, Lustral, and Stilnoct) to NH residents with dementia.

(continued on next page)
In your own words, can you describe what your views are towards the use of medications in your loved one with dementia? (Prompts if necessary: have they been beneficial? Have you noticed any improvements? Have they caused any side effects?)

The focus of my PhD research is on the usage of a group of medications called antipsychotics and another broader group of medications called psychotropics in NH residents with dementia. From reviewing the literature we have found that interventions are quite complex and often involve a number of different components. This makes it difficult to identify which components are the most important in terms of improving patient outcomes and achieving appropriate and rational prescribing.

15. In an ideal world, what would you consider to be crucial features of an intervention to enable the appropriate and rational use of AP/P in NH residents with dementia? (Rephrase if necessary: if resources were not an issue, what strategies would ensure that residents would not be exposed to AP/P unnecessarily?)

Prompts if required: Who should be involved in delivering these types of interventions in practice? Pharmacists, carers, HCAs, GPs, consultants, nurse? What do you think would help with the implementation of this intervention?

16. What do you think are important outcome measures in such an intervention study? (Rephrase if necessary: What do you think is important to measure, so that people can determine for themselves whether they felt the intervention was a success or not?)

Prompts if required: How would you be personally persuaded that such an intervention was successful? Number of AP/P prescribed? Quality of Life (QoL)? Satisfaction level? No. of challenging behaviours?

In recent times, there has been a push to get members of the public (ie, service users, carers, advocacy groups and patients themselves) actively involved in research rather than being simply research participants. For example, members of the public who may have dementia, may join an advisory group for a project.

17. What are your thoughts on Public Involvement in the designing of an intervention, such as one you have just described? (Prompts if required: Should members of the public be actively involved in the decisions about medicines they or their loved ones may be prescribed? Is it feasible?)

That brings us to the end of the interview.

18. Is there anything else I haven’t asked you today that you would like to mention?

### 1C. Family member

In your own words, can you describe what your views are towards the use of medications in your loved one with dementia? (Prompts if necessary: have they been beneficial? Have you noticed any improvements? Have they caused any side effects?)

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### 1C. Family member

In your own words, can you describe what your views are towards the use of medications in your loved one with dementia? (Prompts if necessary: have they been beneficial? Have you noticed any improvements? Have they caused any side effects?)

The focus of my PhD research is on the usage of a group of medications called antipsychotics and another broader group of medications called psychotropics in NH residents with dementia. From reviewing the literature we have found that interventions are quite complex and often involve a number of different components. This makes it difficult to identify which components are the most important in terms of improving patient outcomes and achieving appropriate and rational prescribing.

15. In an ideal world, what would you consider to be crucial features of an intervention to enable the appropriate and rational use of AP/P in NH residents with dementia? (Rephrase if necessary: if resources were not an issue, what strategies would ensure that residents would not be exposed to AP/P unnecessarily?)

Prompts if required: Who should be involved in delivering these types of interventions in practice? Pharmacists, carers, HCAs, GPs, consultants, nurse? What do you think would help with the implementation of this intervention?

16. What do you think are important outcome measures in such an intervention study? (Rephrase if necessary: What do you think is important to measure, so that people can determine for themselves whether they felt the intervention was a success or not?)

Prompts if required: How would you be personally persuaded that such an intervention was successful? Number of AP/P prescribed? Quality of Life (QoL)? Satisfaction level? No. of challenging behaviours?

In recent times, there has been a push to get members of the public (ie, service users, carers, advocacy groups and patients themselves) actively involved in research rather than being simply research participants. For example, members of the public who may have dementia, may join an advisory group for a project.

17. What are your thoughts on Public Involvement in the designing of an intervention, such as one you have just described? (Prompts if required: Should members of the public be actively involved in the decisions about medicines they or their loved ones may be prescribed? Is it feasible?)

That brings us to the end of the interview.

18. Is there anything else I haven’t asked you today that you would like to mention?
2. Topic Guides (Version 5):

2A. Healthcare professionals

In your own words, tell me what your views are regarding the use of antipsychotics and other psychotropics in NH residents with dementia. (Prompts: Is it appropriately prescribed in all cases? Is it necessary?)

In the context of NH residents with dementia, what would you define as an “appropriate” usage of these agents? (Prompts: indication, frequency of review, duration, who needs to be consulted?)

If not mentioned already, can you talk to me through your general approach to: prescribing (physician)/requesting (nurses)/dispensing (pharmacist) a prescription for, AP/P medications to a typical resident with dementia, who may be exhibiting behavior that challenge? (Prompts: What do you currently do when this occurs? What other strategies do you use to effectively manage someone who is exhibiting behavior that challenge?)

Knowing the resident’s diagnosis is important in relation to AP/P prescribing. What is the best way for those involved in the care of residents with dementia to “get to know” the resident? (Prompts: How would this help? Would it enable a person-centered care approach?)

Thinking about AP/P prescribing in your loved one with dementia, what would you consider your responsibilities to be as a family member in ensuring that he/she receives an appropriate prescription? (Prompts: Is there anything that you would consider to be beyond your responsibility as a family member in ensuring an appropriate prescription?)

What (other) aspects of the environment influence whether or not these agents are appropriately prescribed and reviewed? (Prompts: If necessary: Are there any resource issues that could lead to inappropriate prescribing?)

How do you think that your views and opinions, and that of others, influence the prescriber, in relation to AP/P prescribing? (Prompts: If necessary: Are there any resource issues that could lead to inappropriate prescribing?)

Our research group is interested in developing interventions or strategies to support appropriate and rational use of AP/P in NH residents with dementia. From reviewing the literature we have found that interventions are quite complex and often involve a number of different components. This makes it difficult to identify which components are the most important in terms of improving patient outcomes and achieving appropriate and rational prescribing.

In an ideal world, what would you consider important in an intervention to enable the appropriate and rational use of AP/P in NH residents with dementia? (Prompts: If necessary: Are there any resource issues that could lead to inappropriate prescribing?)

Who or what would influence your decision about whether or not to prescribe an AP/P to a resident with dementia? (Physician only) (Physician: Why/Why not?)

Do you believe the main barriers to appropriate prescribing of AP/P medications in NH residents with dementia? (Physician: Why/Why not?)

What are your views on nonpharmacologic approaches? (Prompts: Are they effective? Whose role is it? Are they being used first-line for challenging behaviors?)

Do you believe that everyone involved in the care of residents with dementia knows enough about these medications? (Prompts: Why/Why not?)

What do you think they need to know more about? (Prompts: Why do you think this? Is there any group of people in particular that you feel could benefit from more training and education?)

Do you believe that everyone involved in the care of residents with dementia knows how to effectively manage someone who is exhibiting behaviors that challenge? (Prompts: Why do you think this? Is there any group of people in particular that you feel could benefit from more training and education?)

2B. Individual residents

In your own words, tell me what your views are regarding the use of antipsychotics and other psychotropics in NH residents with dementia. (Prompts: Is it appropriately prescribed in all cases? Is it necessary?)

In the context of NH residents with dementia, what would you define as an “appropriate” usage of these agents? (Prompts: indication, frequency of review, duration, who needs to be consulted?)

If not mentioned already, can you talk to me through your general approach to: prescribing (physician)/requesting (nurses)/dispensing (pharmacist) a prescription for, AP/P medications to a typical resident with dementia, who may be exhibiting behavior that challenge? (Prompts: Why do you think this? Is there any group of people in particular that you feel could benefit from more training and education?)

Knowing the resident’s diagnosis is important in relation to AP/P prescribing. What is the best way for those involved in the care of residents with dementia to “get to know” the resident? (Prompts: How would this help? Would it enable a person-centered care approach?)

Thinking about AP/P prescribing in your loved one with dementia, what would you consider your responsibilities to be as a family member in ensuring that he/she receives an appropriate prescription? (Prompts: Is there anything that you would consider to be beyond your responsibility as a family member in ensuring an appropriate prescription?)

What (other) aspects of the environment influence whether or not these agents are appropriately prescribed and reviewed? (Prompts: If necessary: Are there any resource issues that could lead to inappropriate prescribing?)

How do you think that your views and opinions, and that of others, influence the prescriber, in relation to AP/P prescribing? (Prompts: If necessary: Are there any resource issues that could lead to inappropriate prescribing?)

Our research group is interested in developing interventions or strategies to support appropriate and rational use of AP/P in NH residents with dementia. From reviewing the literature we have found that interventions are quite complex and often involve a number of different components. This makes it difficult to identify which components are the most important in terms of improving patient outcomes and achieving appropriate and rational prescribing.

In an ideal world, what would you consider important in an intervention to enable the appropriate and rational use of AP/P in NH residents with dementia? (Prompts: If necessary: Are there any resource issues that could lead to inappropriate prescribing?)

Who or what would influence your decision about whether or not to prescribe an AP/P to a resident with dementia? (Physician only) (Prompts: Why/Why not?)

Do you believe the main barriers to appropriate prescribing of AP/P medications in NH residents with dementia? (Physician: Why/Why not?)

What are your views on nonpharmacologic approaches? (Prompts: Are they effective? Whose role is it? Are they being used first-line for challenging behaviors?)

Do you believe that everyone involved in the care of residents with dementia knows enough about these medications? (Prompts: Why/Why not?)

What do you think they need to know more about? (Prompts: Why do you think this? Is there any group of people in particular that you feel could benefit from more training and education?)

Do you believe that everyone involved in the care of residents with dementia knows how to effectively manage someone who is exhibiting behaviors that challenge? (Prompts: Why do you think this? Is there any group of people in particular that you feel could benefit from more training and education?)

That brings us to the end of the interview.

Is there anything else I haven’t asked you today that you would like to mention?

(continued on next page)
2B. HCAs

In your own words, tell me what your views are regarding the use of medications in dementia residents who are exhibiting challenging behaviors. (Prompts: Antipsychotics such as Zyprexa and Seroquel. Other relaxers such as Xanax or Ativan. Is it appropriately prescribed in all cases? Is it necessary? What are the benefits and harms?)

In these residents, what would you define as an “appropriate” use of these kind of medications?
(Prompts: indication, frequency of review, duration, who needs to be consulted?)

If not mentioned) Can you talk me through your general approach to requesting a prescription for these agents to a dementia resident, who may be exhibiting challenging behaviour? (Prompts if necessary: Is something that you would normally do as a HCA? How would you start this process or journey for a NH resident with dementia? What is the first thing you would always do? Use of NPI? What would you do next? Would you always do this? Anything else? What about reviewing?)

Can you tell me about a case where you were able to manage someone without medications. What do you believe were the main facilitators? (What do you believe enables or facilitates “appropriate” use?) (Rephrase: What facilitates the use of alternative nonpharmacologic approaches in residents who may not necessarily need AP/P medications?)

Now can you tell me about a case where you were perhaps less successful. What do you believe were the main barriers in this case? How is it different? (What do you believe to be the main barriers to “appropriate” use?) (Rephrase: What prevents the use of alternative nonpharmacologic approaches in residents who may not necessarily need meds?)

What are your views on nonpharmacologic approaches in residents? (Prompts: massage therapy, reminiscence therapy and music therapy. Are they effective? Whose role is it? Are they being used first-line?)

Do you believe that everyone involved in the care of residents with dementia know enough about these meds? (Prompts: Why do you think this is? Is there any group of people in particular that you feel could benefit from more training and education? Consultants, GPs, nurses, pharmacists, HCAs, and family members. What specifically do you think they need to know more about?)

What about having the skills to effectively manage these challenging behaviours? (Prompts: Why do you think this is? Is there any group of people in particular that you feel could benefit from more training and education? What do you think they need to know more about?)

What would you consider your responsibilities to be as a HCA in ensuring that all residents receive these meds appropriately?

In general, do you think that a healthcare professional’s attitude toward dementia can influence their usage? Why/why not?

From your perspective, what would you consider an “appropriate” use of such a medication? (Prompts if necessary: Is there anything else that could be done?)

How do you think that your views and opinions, and that of others, influence the prescriber, in relation to AP/P prescribing? (Prompts: Individuals/groups of HCPs/finance/public opinion/guidelines. Anyone else?)

In general, do you think that a healthcare professional’s attitude toward dementia can influence their usage? Why/why not?

From your perspective, what would you consider an “appropriate” use of such a medication? (Prompts if necessary: Is there anything else that could be done?)

How do you think that your views and opinions, and that of others, influence the prescriber, in relation to AP/P prescribing? (Prompts: Individuals/groups of HCPs/finance/public opinion/guidelines. Anyone else?)

What is your opinion on the influence of HIQA on AP/P prescribing in the NH setting? What about the Irish Dementia Strategy? (Prompts: HIQA have released new updated Standards with an increased emphasis on restraint use in NH residents with dementia, are you familiar with them? Any thoughts? Positive or negative light?)

That brings us to the end of the interview.

Is there anything else I haven’t asked you today that you would like to mention?

2C. Family members

In your own words, can you describe what your views are towards the use of medications in the care of your loved one? (Prompts if necessary: have they been beneficial? Have you noticed any improvements? Have they caused any side effects?)

The focus of my PhD research is on the usage of a group of medications called Antipsychotics and another broader group of medications called Psychotropics in NH residents with dementia. Common examples of Antipsychotics include Zyprexa, Seroquel and Serenace. Common examples of other Psychotropics include Xanax, Halcion, and Lustral. These drugs are sometimes prescribed to people with dementia if they are severely distressed or displaying some behavior that others may find challenging such as aggressive or agitation behaviour.

What do you believe facilitates the “appropriate” use of these medications?
(Rephrase if necessary: Can you tell me about a time when you were able to manage a challenging behavior without medications. What facilitates the use of alternative non medicine approaches in residents who may not necessarily need AP/P medications?

What do you believe to be the main barriers to the “appropriate” use?
(Rephrase if necessary: Now can you tell me about a time when you were perhaps less successful and had to resort to medications. What prevents the use of alternative nonpharmacologic approaches in residents who may not necessarily need AP/P medications?
What strategies would have helped in this situation?

What are your views on alternative approaches, such as massage therapy, reminiscence therapy and music therapy? (Prompts if required: Do they work? Whose role is it? Are they being used before medications?)

Do you believe that everyone involved in the care of residents with dementia know enough about these drugs? (Prompts if necessary: Why do you think this is? Is there any group of people in particular that you feel could benefit from more training and education? What specifically do you think they need to know more about?)

What about having the skills to effectively manage someone who is exhibiting behavior that challenge? (Prompts if necessary: Without using medicines. Why do you think this is? Is there any group of people in particular that you feel could benefit from more training and education? What do you think they need to know more about?)

What would you consider your responsibilities to be as a family member in ensuring that he/she receives an appropriate prescription of these medications?

How do you think that your views and opinions, influence the prescriber, in relation to prescribing of these agents? What about the views of others? (Prompts if required: Individuals/groups of HCPs/financial/public opinion/guidelines/dementia strategy. Anyone else?)

General, do you think that a healthcare professional’s attitude toward dementia can influence their usage of these drugs? Why/why not?
(Rephrase: Some studies in the literature found that HCPs with a positive attitude toward People with Dementia (PwD) were less likely to use APM. Would you agree with this statement?)

If not mentioned already) (You may or may not be aware but HIQA have recently started conducting dementia-themed inspections of NH, and have released updated standards with an increased emphasis on chemical restraints.) What is your opinion on the influence of HIQA on AP/P prescribing in the NH setting? What about the Irish Dementia Strategy? (Prompts: HIQA have released new updated Standards with an increased emphasis on restraint use in NH residents with dementia, are you familiar with them? Any thoughts? Positive or negative light?)

That brings us to the end of the interview.

Is there anything else I haven’t asked you today that you would like to mention?

3. Topic Guides (Version 10):

3A. Healthcare professionals

In your own words, tell me what your views are regarding the use of antipsychotics in nursing home residents with dementia. (Prompts: Is it appropriately prescribed in all cases? Is it necessary?) (What impact, if any, do resources and financial issues have an AP prescribing, in your experience?)

In the context of NH residents with dementia, what do you feel they should be prescribed as an “appropriate” use of these agents? (Prompts: indication, frequency of review, duration, who needs to be consulted?)
Supplementary Table S3 (continued)

| [If not mentioned] Can you talk me through your general approach to: prescribing (physician)/requesting (nurses)/dispensing (pharmacist) a prescription for, AP medications to a typical resident with dementia, who may be exhibiting behavior that challenge? (Rephrase: Talk me through a situation where this occurred. Prompts: How would you start this process or journey for a NH resident with dementia? What is the first thing you would always do? Use of NPI? What would you do next? Would you always do this? Anything else? What about reviewing? What about PRN usage?) Can you tell me about a case where you were successfully reduce someone's dosage of these agents or manage someone without medications. What do you believe were the main barriers? (What do you believe enables "appropriate" usage?) (Rephrase: What facilitates the use of alternative nonpharmacologic approaches in residents who may not necessarily need medications?) How can you tell me about a case where you were perhaps less successful. What do you believe were the main barriers in this case? How is it different? (What do you believe to be the main barriers to "appropriate" usage?) (Rephrase: What prevents the use of alternative nonpharmacologic approaches in residents who may not necessarily need medic?) What are your views on alternative nonpharmacologic approaches? (Prompts: Are they effective? Whose role is it? Are they being used first-line?) Do you believe that everyone involved in the care of residents with dementia knows enough about these medications? (Prompts: Why do you think this? Is there any group of people in particular that you feel could benefit from more training and education? What specifically do you think they need to know about more about?) What about having the skills to effectively manage someone who is exhibiting behaviors that challenge? (Prompts: Why do you think this? Is there any group of people in particular that you feel could benefit from more training and education? What specifically do you think they need to know more about?) What would you consider your responsibilities to be as a HCA in ensuring that all residents receive these meds appropriately? (If not answered) What strategies or resources are currently available to support you in ensuring their usage is appropriate? (Rephrase: What resources would you use/consult with first to ensure appropriateness eg, guidelines, pharmacists, GP.) As you may be aware, we are planning to undertake an intervention study in your NH to help support nurses, HCAs and doctors in ensuring prescribing of antipsychotics is to a high quality. What would you like to see in this intervention program? (Prompts: What would be helpful to you as a X? What would not be helpful to you?) Would who influence your decision about whether or not to prescribe an AP to a resident with dementia? What about guidelines? (Physician only) (Prompts: Why/Why not? Individuals/groups of HCPs/finance/NH itself/public opinion/guidelines. Anyone else?) (Rephrase: How, if at all, does the team communicate about APM usage?) OR How do you think that your views and opinions, and that of others, influence the prescriber, in relation to AP prescribing? What about guidelines? (nurses and pharmacists) (Prompts: Individuals/groups of HCPs/finance/NH itself/public opinion/guidelines. Anyone else?) Some people say that if a healthcare professional has a greater understanding of dementia then they might be less inclined to use antipsychotics. What do you think about that? (Rephrase: Some studies in the literature found that HCPs with a positive attitude toward PwD were less likely to use APM. Would you agree with this statement?) Do different nursing homes have different cultures? If so, what impact does this have on AP prescribing? (If working in multiple sites) (If not mentioned already) (You may or may not be aware but HIQA have recently started conducting dementia-themed inspections of NH, and have released updated standards with an increased emphasis on chemical restraints.) What is your opinion on the influence of HIQA on AP prescribing in the NH setting? (Prompts: HIQA have released new updated Standards with an increased emphasis on restraint use in NH residents with dementia, are you familiar with them? Any thoughts? Negative or Positive Light?) That brings us to the end of the interview. Is there anything else I haven't asked you today that you would like to mention? Thank you very much for giving up your time to talk to me today. I'll now stop recording.

3B HCAs

In your own words, tell me what your views are regarding the use of antipsychotic medications in dementia residents who are exhibiting challenging behaviors. (Prompts: Antipsychotics such as Zyprexa® and Seroquel®. Other relaxers such as Xanax® or Ativan®. Is it appropriately prescribed in all cases? Is it necessary? What are the benefits and harms?) In these residents, what would you define as an "appropriate" use of these kind of medications? (Prompts: indication, frequency of review, duration, who needs to be consulted?) (If not mentioned) Can you talk me through your general approach to requesting a prescription for these agents to a dementia resident, who may be exhibiting challenging behaviors? (Prompts: If necessary: Is that something you would normally do as a HCA? How would you start this process or journey for a NH resident with dementia? What is the first thing you would always do? Use of NPI? What would you do next? Would you always do this? Anything else? What about reviewing?) Can you tell me about a case where the team were able to successfully reduce someone's dosage of these agents and you were able to manage them without medications? What do you believe were the main facilitators? (What do you believe enables "appropriate" usage?) (Rephrase: What facilitates the use of alternative nonpharmacologic approaches in residents who may not necessarily need medications?) Now can you tell me about a case where you were perhaps unable to manage the patient without some form of medication? What do you believe were the main barriers in this case? How is it different? (What do you believe to be the main barriers to "appropriate" use?) (Rephrase: What prevents the use of alternative nonpharmacologic approaches in residents who may not necessarily need medcs?) What are your views on alternative approaches to managing behaviour, such as distraction, massage therapy, reminiscence therapy and music therapy? (Prompts if required: Do they work? Whose role is it? Are they being used before medications?) Do you believe that everyone involved in the care of residents with dementia know enough about these meds? (Prompts: Why do you think this is? Is there any group of people in particular that you feel could benefit from more training and education? Consultants, GPs, nurses, pharmacists, HCAs, and family members. What specifically do you think they need to know more about?) What about having the skills to effectively manage these challenging behaviors? (Prompts: Why do you think this is? Is there any group of people in particular that you feel could benefit from more training and education? What do you think they need to know more about?) What would you consider your responsibilities to be as a HCA in ensuring that all residents receive these meds appropriately? (If not answered) What strategies or resources are currently available to support this nursing home in ensuring the usage of these meds are appropriate? (Rephrase: What resources would they use/consult with first to ensure appropriateness eg, guidelines, pharmacists, GP.) As you may be aware, we are planning to undertake an intervention study in your NH to help support nurses, HCAs and doctors in ensuring prescribing of antipsychotics is to a high quality. What would you like to see in this intervention program? (Prompts: What would be helpful to you as a X? What would not be helpful to you?) How do you think that your views and opinions, and that of others, influence the prescriber, in relation to AP prescribing? (Prompts: Individuals/groups of HCPs/finance/public opinion/guidelines. Anyone else?) Some people say that if a healthcare professional has a greater understanding of dementia then they might be less inclined to use antipsychotics. What do you think about that? (Rephrase: Some studies in the literature found that HCPs with a positive attitude toward PwD were less likely to use APM. Would you agree with this statement?)
That brings us to the end of the interview. Is there anything else I haven't asked you today that you would like to mention?

3C. Family members

In your own words, can you describe what your views are towards the use of medications in the care of your loved one? (Prompts if necessary: have they been beneficial? Have you noticed any improvements? Have they caused any side effects?)

The focus of my PhD research is on the usage of a group of medications called Antipsychotics in NH residents with dementia. Common examples of Antipsychotics include Zyprexa, Seroquel and Serenace. These drugs are sometimes prescribed to people with dementia if they are severely distressed or displaying some behavior that others may find challenging such as aggressive or agitated behaviour.

If you have any experience in the use of these medications in your loved one, I’d be very interested to hear your story. (If not, then this is absolutely fine we can still talk about medication use in general) (Prompts if necessary: Why was he/she prescribed these drugs? Can you remember what it was he/she was prescribed? Did it help the situation? Were there any side effects? Is he/she still on it? Who stopped it and why?)

Whenever your loved one is a bit agitated or distressed, is there anything that helps to put them at ease? (Prompts if necessary: Reminiscing about the past? Activities? What about Medications?)

Have you ever requested a prescription for such a medication or have you ever requested it to be stopped or reviewed? If yes, could you describe for me in general what happened? (Prompts if necessary: Why did you do this? Is that something you would normally do as a family member? Would you always do this? Anything else?)

From your perspective, what would constitute an “appropriate” use of such a medication? (Prompts if necessary: Who needs to be consulted in the process? How long should they be on it, in general?)

What are your views on alternative approaches to managing behaviour, such as massage therapy, reminiscence therapy and music therapy? (Prompts if required: Do they work? Whose role is it? Are they being used before medications?)

Do you believe that everyone involved in the care of residents with dementia know enough about these drugs? (Prompts if necessary: Do family members know enough? Should they know more? Is there any group of people in particular that you feel could benefit from more training and education? What specifically do you think they need to know more about?)

What about having the skills to effectively manage someone who is exhibiting behavior that challenge? (Prompts if necessary: Without using medicines. Why do you think this? Is there any group of people in particular that you feel could benefit from more training and education? What do you think they need to know more about?)

What would you consider your responsibilities to be as-family member in ensuring that he/she receives an appropriate prescription of these medications? How do you think that your views and opinions, influence the GP, in relation to prescribing of these agents? What about the views of others? (Prompts if required: Individuals/groups of HCPs/financial/public opinion/guidelines/dementia strategy. Anyone else?, How are your views and opinions communicated to the GP?)

Some people say that if a healthcare professional has a greater understanding of dementia then they might be less inclined to use antipsychotics. What do you think about that? (Rephrase: Some studies have found that HCPs with a positive attitude toward PwD were less likely to use APM. Would you agree with this statement?)

That brings us to the end of the interview. Is there anything else I haven’t asked you today that you would like to mention?
Supplementary Material S4. Detailed Description of Data Analysis

Data Analysis

Data analysis followed the principles of framework analysis, and used NVivo v 11. We used deductive and inductive approaches to analysis throughout the 5 stages (familiarization, identifying a thematic framework, indexing, charting, and mapping and interpretation). First, the author became familiar with the data by reading transcripts and field notes and open-coded the data across the entire data set. During indexing, data from the transcripts were coded into 1 or more TDF domains according to the definitions for each domain (Table 1). Simultaneously, concepts emerging from the open coding were categorized inductively. These simultaneous indexing steps were conducted independently by 3 authors for 7 transcripts, who met to discuss differences in TDF application or interpretation of emerging concepts, and came to consensus. The indexing of the remaining transcripts was conducted by the primary author.

Charting of the data, with distilled summaries in matrix format was used to identify the predominant TDF domains influencing the target behaviors (appropriate requesting and prescribing). This was performed independently by 2 authors, who then discussed any disagreement until consensus was reached. From these predominant domains, the determinants (ie, barriers and facilitators) of the target behaviors were identified.

For the mapping and interpretation step, we iteratively developed links between determinants, predominant domains, categories and theory to provide overall explanations for the findings. This was achieved by constructing conceptual mind maps exploring possible relationships between all these different factors. By iteratively examining these evolving conceptual mind maps as an interdisciplinary research group, we were able to condense our findings into 3 explanatory themes and 1 overarching theme (Figure 1). Therefore, the behavioral determinants were the building blocks for the themes. These stages were not linear (Supplementary Figure S1), and the data collection and analysis phases occurred concurrently, to enable the exploration of emergent themes in subsequent interviews and to identify when data saturation occurred.

References


E2. QSR International Pty Ltd. NVivo Qualitative Data Analysis Software version 11, 2017.


Stage 1: Familiarization
Read and re-read all the data and associated field notes. Open coded the complete dataset.

Stage 2: Identifying a thematic framework
Selected the 14-domain Theoretical Domains Framework (TDF).

Stage 3: Indexing
Applied the 14 domains of the TDF systematically to the entire dataset. Generated initial categories of themes based on the open coding.

Stage 4: Charting
Created a matrix to summarize the data from each participant against the 14 TDF domains. Identified the 9 predominant domains influencing target behaviors using a consensus approach between authors. Re-analysed data to determine the barriers and facilitators to these target behaviors.

Stage 5: Mapping and Interpretation
Iteratively developed links between barriers and facilitators, domains, initial categories and theory to provide overall explanations for the findings. Generated explanatory themes with one overarching theme.

Supplementary Figure S1. The 5 iterative stages of Framework Analysis, moving from descriptive coding to explanatory interpretation.