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1 Influences on Decision-Making Regarding Antipsychotic Prescribing in  
2 Nursing Home Residents with Dementia: a Systematic Review and  
3 Synthesis of Qualitative Evidence  
4

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19 **Keywords**

20 Antipsychotic; Prescribing Behavior; Dementia; Nursing Home; Qualitative Research; Systematic  
21 Review

22 **Running Title:**

23 Antipsychotic prescribing in dementia

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## 44 **Abstract**

### 45 **Background**

46 Antipsychotic prescribing is prevalent in nursing homes for the management of behavioral and  
47 psychological symptoms of dementia (BPSD), despite the known risks and limited effectiveness.  
48 Many studies have attempted to understand this continuing phenomenon, utilizing qualitative  
49 research methods, and have generated varied and sometimes conflicting findings. To date, the  
50 totality of this qualitative evidence has not been systematically collated and synthesized.

### 51 **Aims**

52 To synthesize the findings from individual qualitative studies on decision-making and prescribing  
53 behaviors for antipsychotics in nursing home residents with dementia, with a view to informing  
54 intervention development and quality improvement in this field.

### 55 **Methods**

56 A systematic review and synthesis of qualitative evidence was conducted (PROSPERO protocol  
57 registration CRD42015029141). Six electronic databases were searched systematically from  
58 inception through July 2016 and supplemented by citation, reference and gray literature searching.  
59 Studies were included if they utilized qualitative methods for both data collection and analysis, and  
60 explored antipsychotic prescribing in nursing homes for the purpose of managing BPSD. The Critical  
61 Appraisal Skills Programme (CASP) assessment tool was utilized for quality appraisal. A meta-  
62 ethnography was conducted to synthesize included studies. The Confidence in the Evidence from  
63 Reviews of Qualitative research (CERQual) approach was used to assess the confidence in individual  
64 review findings. All stages were conducted by at least two independent reviewers.

### 65 **Results**

66 Of 1,534 unique records identified, 18 met the inclusion criteria. Five key concepts emerged as  
67 influencing decision-making: Organizational Capacity; Individual Professional Capability;

68 Communication and Collaboration; Attitudes; Regulations and Guidelines. A 'line of argument' was  
69 synthesized and a conceptual model constructed, comparing this decision-making process to a  
70 dysfunctional negative feedback loop. Our synthesis indicates that when all stakeholders come  
71 together to communicate and collaborate as equal and empowered partners, this can result in a  
72 successful reduction in inappropriate antipsychotic prescribing.

## 73 Conclusion

74 Antipsychotic prescribing in nursing home residents with dementia occurs in a complex environment  
75 involving the interplay of various stakeholders, the nursing home organization and external  
76 influences. In order to improve the quality of antipsychotic prescribing in this cohort, a more holistic  
77 approach to BPSD management is required. While we have found the issue of antipsychotic  
78 prescribing has been extensively explored using qualitative methods, there remains a need for  
79 research focusing on how best to change the prescribing behaviors identified.

## 80 Keywords

81 Antipsychotic; Prescribing Behavior; Dementia; Nursing Home; Qualitative Research; Systematic  
82 Review

## 83 Introduction

84 Antipsychotics are commonly prescribed to manage the behavioral and psychological symptoms of  
85 dementia (BPSD).<sup>1</sup> These medications have a role to play in BPSD when there is a danger of harm to  
86 self or others, when there is a psychosis, or when non-pharmacological approaches have not been  
87 effective.<sup>2</sup> However, these agents are often prescribed inappropriately, despite evidence of an  
88 increased risk of stroke and mortality, and a lack of effectiveness in these patients.<sup>1,3,4</sup> People with  
89 dementia are prescribed significantly more of these agents than the general older population,<sup>5,6</sup> and  
90 it is in the nursing home setting where the majority of this prescribing occurs.<sup>7</sup>

91 A 2014 systematic review found that many interventions are effective in the short-term at reducing  
92 the inappropriate prescribing of antipsychotics in nursing homes to people with dementia.<sup>8</sup> The  
93 authors highlighted the need for a greater understanding of the contextual drivers of inappropriate  
94 prescribing in order to improve the long-term sustainability of the reviewed interventions.

95 Qualitative research allows for a rich understanding of complex social environments such as nursing  
96 homes and can be used to develop and improve interventions in this context.<sup>9</sup> A number of original  
97 qualitative studies have been conducted on antipsychotic prescribing in people with dementia but to  
98 date these have not been the subject of a systematic review.

99 The most commonly utilized method for synthesizing qualitative evidence is meta-ethnography.<sup>10</sup>

100 This seven-step method of qualitative evidence synthesis employs an inductive approach moving  
101 from specific observations to broader generalizations. It is a systematic interpretive approach that is  
102 particularly useful for generating new theories or concepts, which can influence policy and  
103 practice.<sup>11</sup> For example, recently published clinical guidelines on multimorbidity<sup>12</sup> have been  
104 informed by a high-quality meta-ethnography in this similarly complex field.<sup>13</sup>

105 The aim of our study was to synthesize the findings from individual qualitative studies in order to  
106 develop novel interpretations of the influences on decision-making regarding the prescribing of  
107 antipsychotics in nursing home residents with dementia, with a view to informing intervention  
108 development and quality improvement in this field.

## 109 **Methods**

110 We conducted a systematic search of primary qualitative studies exploring antipsychotic prescribing  
111 in non-acute, long-term care institutions. We used a 'meta-ethnographic synthesis',<sup>10</sup> as adapted by  
112 Atkins *et al*,<sup>14</sup> to guide our methods. The review protocol was registered with the PROSPERO  
113 international prospective register of systematic reviews (registration number: CRD42015029141).

114 Six electronic databases were searched from inception to July 2016; Medline, PubMed, EMBASE,  
115 CINAHL, PsycINFO and Academic Search Complete. Database-specific search strategies were  
116 developed with assistance from a medical librarian. Search terms included a combination of Medical  
117 Subject Heading terms, keywords and a comprehensive list of synonyms of the following: 'dementia'  
118 AND 'prescription' AND 'antipsychotic agents' with the aim of being as sensitive as possible. The  
119 search was not limited by dates of publication or country of origin. To supplement the database  
120 search, we conducted hand-searches of key journals and conference proceedings; citation searches  
121 of highly cited key studies; reviews of reference lists of key studies; and contacted authors of  
122 relevant conference abstracts and studies. The gray literature search was further supplemented by  
123 checking the first 100 hits from Google Scholar and by consulting the websites and key personnel  
124 from various international Alzheimer's Societies (supplementary material table S1).

125 We included any English-language, peer-reviewed primary study, published in full, using recognized  
126 qualitative research methods of both data collection and analysis. Mixed-methods studies were only  
127 included if they utilized qualitative methods as a component of the study. Only the qualitative  
128 components of these studies were extracted for analysis. We only included questionnaire studies if  
129 the written comments had been analyzed using qualitative methods.

130 For the first stage of study selection, one reviewer (KW) conducted preliminary screening of titles to  
131 exclude records that were clearly not relevant (e.g. pre-clinical studies). For the second stage, two  
132 reviewers (KW and RD) independently screened titles and abstracts, against inclusion criteria, to  
133 identify potentially relevant studies. In the third stage, two reviewers (KW and RD) independently  
134 reviewed full texts of studies. Consensus on inclusion in stages two and three was reached by  
135 discussion between both reviewers, with arbitration by a senior reviewer (ST) if required. The Critical  
136 Appraisal Skills Programme (CASP) assessment tool for qualitative research was used to assess the  
137 quality of included studies,<sup>15</sup> by two reviewers (KW and JB) independently, and consensus was  
138 reached by discussion. Studies were not excluded based on the assessed level of quality.

139 Methodological limitations of included studies were accounted for in the 'Confidence in Evidence  
140 from Reviews of Qualitative research' (CERQual) assessments (discussed below).<sup>16</sup>

141 Four reviewers (KW, RD, EC and CS) read and re-read the included studies, with a focus on the  
142 content and context. As a group, we identified what we believed to be the conceptually-richest  
143 'index paper',<sup>17</sup> and used this as the starting point. Three reviewers (KW, RD and EC) read all 18  
144 included studies starting with the 'index paper' and then chronologically. One reviewer (KW) open  
145 coded the study findings of all included studies (results and discussion sections), focusing specifically  
146 on first-order interpretations (views of the participants) and second-order interpretations (views of  
147 the authors). To ensure credibility and dependability of coding, another reviewer (CS) coded the  
148 'index paper' and two other randomly selected studies,<sup>18,19</sup> and differences in interpretation were  
149 discussed and consensus reached.<sup>20</sup> The four reviewers convened several times to discuss  
150 independently derived concepts and patterns from the studies. Reflexivity was preserved as one  
151 reviewer (KW) conducted memo writing.<sup>20</sup> As a multidisciplinary group, we were cognisant of our  
152 professional biases, therefore we ensured that there was a balance between clinical (KW and CS)  
153 and non-clinical (EC and RD) reviewers at this stage.

154 Collectively, we developed five key concepts to reflect the main findings of all included studies. We  
155 developed a matrix of these concepts and assessed how each individual study related to each  
156 concept. Two reviewers (KW and SB) independently extracted data regarding contextual information  
157 from each included study. Discrepancies were resolved through discussion between both reviewers.  
158 QSR International's NVivo version 11 was used to assist with data analysis and synthesis.<sup>21</sup>

159 In line with the constant comparative method of qualitative analysis,<sup>22</sup> the first- and second-order  
160 interpretations were compared and contrasted across primary studies to identify similarities and  
161 disagreements. The importance of context to each interpretation was carefully observed. In this  
162 way, reciprocal and refutational translations were conducted.<sup>11</sup> All eight reviewers were involved in



163 this and the following stages to ensure no important meanings were lost upon translating one study  
164 into the next.

165 We collaboratively developed third-order interpretations by synthesizing first- and second-order  
166 interpretations, from each study. The synthesis required refining the key concepts and building on  
167 the analysis iteratively. This process was repeated until we were satisfied that the third order  
168 interpretations added to, but were still representative of, the findings of the total dataset. These  
169 interpretations act as testable, novel hypotheses, which are still grounded in the data.<sup>14</sup> We then  
170 linked these using a 'line of argument' in order to develop an overarching conceptual model  
171 explaining the phenomenon.<sup>13</sup> Noblit and Hare describe this 'line of argument' synthesis as a means  
172 of uncovering novel understandings that were hidden in the individual studies (discovering a 'whole'  
173 among a set of parts).<sup>10</sup>

174 We reported our results in line with the 'Enhancing Transparency in Reporting the Synthesis of  
175 Qualitative Research' (ENTREQ) statement<sup>23</sup> (supplementary material table S2), and expressed our  
176 search strategy results as a 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses'  
177 (PRISMA) flow diagram<sup>24</sup> (Fig. 1). To present the findings of the review in a manner useful for policy-  
178 makers, we used CERQual.<sup>16</sup> This tool allows assessment of the confidence in synthesized qualitative  
179 findings. We assessed the extent to which the review findings (i.e. third-order interpretations) were  
180 reasonable representations of the phenomenon of interest, by independent application of CERQual,  
181 by two reviewers (KW and RD), with discussion until consensus was reached.

## 182 Results

### 183 Search Results

184 A total of 1,534 unique records were found after duplicate removal (Fig. 1).<sup>24</sup> After the exclusion of  
185 records based on title screening (n=631) and subsequent title and abstract screening (n=800), the  
186 remaining 103 full texts were assessed for eligibility. We excluded 85 records at this stage (Fig. 1,

187 and supplementary material table S3). In our final review, we included 18 studies describing 17 study  
188 cohorts.

## 189 Characteristics of Included Studies

190 Table 1 outlines the characteristics of the 18 included studies. The studies were conducted in six  
191 different countries: UK (n=7),<sup>19,25-30</sup> US (n=5),<sup>18,31-34</sup> Australia (n=3),<sup>35-37</sup> Canada (n=1),<sup>38</sup> The  
192 Netherlands (n=1)<sup>17</sup> and South Africa (n=1).<sup>39</sup> Eleven of the studies employed a purely qualitative  
193 methodology,<sup>17-19,25-27,30,35-37,39</sup> while seven utilized mixed-methods.<sup>28,29,31-34,38</sup> A total of 1,609 unique  
194 participants were involved: nurses (n=479), other nursing home staff (n=657), family carers (n=239),  
195 physicians (n=144), pharmacists (n=49) and old age advocates (n=6). One study did not provide a  
196 disciplinary breakdown for its 35 participants.<sup>18</sup> No study included the voice of the person with  
197 dementia. Of the 114 included nursing homes that had their 'for-profit' status described, 68 were  
198 for-profit, 40 were not-for-profit and 6 were described as "other."

## 199 Quality Appraisal

200 The overall quality of included studies was assessed to be moderate to high for 17 of the 18 studies  
201 (Table 2). A common weakness, found in twelve studies, was inadequate researcher  
202 reflexivity.<sup>17,18,25,27-33,35,39</sup> The relationship between the researcher and participants had not been  
203 effectively addressed in these studies. The overall quality of one study was assessed to be low due to  
204 concerns across several CASP domains.<sup>28</sup> Despite these weaknesses, we believed that on the whole,  
205 these studies were sufficiently robust to contribute to our meta-ethnography and to the  
206 development of our conceptual model.

## 207 Translation

208 We identified five key concepts (in bold and numbered) encompassing eight sub-themes (in bold)  
209 that reflected the main influences on this decision-making process. These are reported below

210 supported by first-order (italicized quotations) and second-order (non-italicized quotations)  
211 interpretations (supplementary material Table S4).

212 The complexity of the decision-making process was evident throughout. Overall, *“the aim of*  
213 *improving care”* for residents was a priority,<sup>25</sup> but there was tension as to how this was best  
214 achieved. The options for managing BPSD were generally perceived to be binary – antipsychotic  
215 prescribing or non-pharmacological interventions - with the former option considered to be the  
216 *“quick-fix.”*<sup>19,26,38</sup>

## 217 1. Organizational Capacity

218 **Resources and access to services:** Understaffing and insufficient time to engage with residents, to  
219 conduct thorough assessments of underlying causes, and perform non-pharmacological  
220 interventions was mentioned throughout the reviewed studies:<sup>17-19,26,27,29,30,32,33,35-39</sup> *“The greatest*  
221 *impact on good outcomes for behaviour management is time limits. Nurses are always under*  
222 *pressure to hurry.”*<sup>35</sup> In some studies there was a suggestion that medication was used to  
223 compensate for poor staffing levels:<sup>19,37</sup> *“sometimes [it’s] easier to give a tablet.”*<sup>19</sup> This understaffing  
224 issue was further compounded by a lack of access to specialist services such as psychiatrists,  
225 therapists and pharmacists.<sup>25,26,29,32,33</sup>

226 In some studies, nursing home managers working in the public sector stated that there was very  
227 little they could do to solve staff shortages due to the lack of funding.<sup>29,32,37</sup> Financial issues were a  
228 parallel concern in private sector nursing homes, and were associated with the use of antipsychotics  
229 as a means to deal with constrained expenditure on staff:<sup>17,26,37</sup> *“The desire to make money means*  
230 *that [managers] have to make choices about staffing levels and staffing quality that is good for the*  
231 *money making side but not necessarily good for the patient side... That’s where controlling and*  
232 *managing the patient might come in.”*<sup>37</sup>

233 **Coping with the severity of behaviors:** Many studies reported a struggle to manage residents with  
234 severe behavioral problems.<sup>17,26,30,31,38,39</sup> Nurses reported that they were constantly *“putting out*

235 *fires,*<sup>38</sup> causing them to feel “overwhelmed.”<sup>37</sup> Prescribers reported that “they had little option but  
236 to prescribe” to help relieve these situations.<sup>26</sup> Consequently, staff felt they were “*letting the*  
237 *residents down,*”<sup>30</sup> thus contributing to poor staff morale.<sup>30,31,33,37,39</sup>

238 Nursing home staff reported conflicting priorities. Dealing with escalating behavioral issues could be  
239 perceived as a barrier to completing other nursing tasks:<sup>18,30,35,38</sup> “Medications were viewed as a  
240 resource that allowed nurses... to reduce the agitation and complete daily care tasks successfully.”<sup>38</sup>

## 241 2. Individual Professional Capability

242 **Skills:** Possessing the necessary skills was considered critical for effective BPSD management.<sup>17-19,26-</sup>  
243 <sup>35,37-39</sup> Staff and family members realized the importance of good interpersonal skills when dealing  
244 with residents,<sup>27,31,39</sup> because approaching residents “in the wrong way” could trigger behavioral  
245 symptoms<sup>27</sup> , while good interpersonal skills could have a positive effect.<sup>27</sup>

246 There was a belief that some staff, particularly newly qualified healthcare assistants, were not  
247 adequately trained to deal with behavioral symptoms.<sup>18,26,30,37,39</sup> Prescribers commented that these  
248 deficiencies were contributing towards the pressure to prescribe antipsychotics<sup>26</sup> “*to ensure that*  
249 *there is no colorful behavior.*”<sup>37</sup>

250 In some studies, staff appeared unable to effectively apply a range of individualized non-  
251 pharmacological interventions to the residents.<sup>18,35,38</sup> Participants noted that familiarity with the  
252 resident, training, sharing of experiences and practice improved their confidence in applying non-  
253 pharmacological approaches.<sup>18,30,32,34,35,37-39</sup>

254 **Knowledge:** In several studies, both prescribers and staff were perceived to lack adequate  
255 knowledge on the risks and benefits of antipsychotics,<sup>17,19,28,32,34,35</sup> and to lack awareness regarding  
256 the nature and range of alternative approaches.<sup>18,26,29,32,34,35,38</sup> In one study, prescribers believed  
257 nurses and family members expressed “unfounded high expectations” of the effectiveness of  
258 antipsychotics,<sup>17</sup> while in other studies, staff felt that it was the prescribers who did not have enough

259 knowledge.<sup>19,29,32</sup> The authors of one study concluded “that poor staff knowledge of appropriate use  
260 of antipsychotics may underlie the high rate of administration, despite the reported limitations to its  
261 use.”<sup>35</sup>

262 There was a strong desire by participants for more hands-on, interdisciplinary training and  
263 education,<sup>18,29,30,32-35,37-39</sup> that can “help staff relinquish the need for control in favor of  
264 understanding.”<sup>18</sup>

265 Knowing the resident and understanding their individual behaviors was critical to performing  
266 person-centered care.<sup>17-19,25,27,30,31,35-39</sup> However this took a lot of time, staff consistency and close  
267 involvement with the family, which was not always possible.<sup>17-19,27,30,31,36,38,39</sup>

### 268 3. Communication and Collaboration

269 **Communication within healthcare teams and with the family:** Effective communication was viewed  
270 as an essential component to successful BPSD management.<sup>17-19,25-33,36-38</sup> Good communication  
271 between all those involved in the care of residents, with close involvement of the family, promoted a  
272 sense of trust and mutual respect.<sup>17,25-27,30-33,36-38</sup> Listening to concerns and valuing everybody’s  
273 opinion was critical,<sup>17,19,25,28-30,36,37</sup> and participants felt that “*by jointly looking at the problems and by*  
274 *learning from each other... we gained more clarity, much more peace, and also had a significant*  
275 *decrease in prescribed medication.*”<sup>17</sup>

276 Working together, with a shared goal, was perceived to be essential.<sup>17,19,25,27,29,30,32,33,36-38</sup>

277 Interdisciplinary medication reviews were good examples of different stakeholders working together  
278 to reduce inappropriate antipsychotic use.<sup>17,25,32,36</sup>

279 In contrast, poor communication and collaboration led to sub-standard dementia care.<sup>18,19,25,28-32,35-37</sup>

280 Staff saw themselves as a “*cog in a wheel*”: if they all worked together everything ran smoothly, but  
281 if one person was not pulling their weight, the whole system fell apart.<sup>30</sup> One study discussed issues

282 regarding primary care physicians not attending medication review meetings and the subsequent  
283 barrier this presented to reducing inappropriate antipsychotic prescribing.<sup>36</sup>

284 **Clarity of Roles and Responsibilities:** There was a sense of uncertainty regarding roles and  
285 responsibilities in relation to antipsychotic prescribing, particularly between different care  
286 settings.<sup>25,26,28-30,32,35,37</sup> Primary care physicians felt that the responsibility for antipsychotic  
287 prescriptions belonged to the hospital physician who initiated them, *“as the psychiatrist started it*  
288 *they will not stop prescribing it.”*<sup>29</sup> In some studies, this caused “confusion,”<sup>29</sup> which promoted the  
289 belief that it was the job of nursing home staff *“to clean up the situation.”*<sup>33</sup>

290 A perception of being a victim of professional hierarchy was raised in several studies.<sup>19,25,29,36,37,39</sup> In  
291 these studies, staff felt unable to question the prescriber in relation to the appropriateness of a  
292 prescription,<sup>19,36,37</sup> due to the existence of “professional norms that were very traditional and  
293 hierarchical in nature.”<sup>37</sup> However in other studies, it was the prescriber who did not feel  
294 empowered to say no to a request from nurses,<sup>17,25,26,29,37</sup> because *“they [nurses] want it and it’s very*  
295 *difficult to refuse.”*<sup>25</sup>

#### 296 4. Attitudes towards people with dementia and the management of BPSD

297 **Personal Attitudes:** Attitudes towards antipsychotics were on a spectrum,<sup>17-19,25,27-31,33,35,38-40</sup> ranging  
298 from being viewed as *“really beneficial”*<sup>19</sup> to *“chemical cosh.”*<sup>28</sup> Participants in some studies were  
299 concerned by their usage and believed the side-effect profile to be unacceptable.<sup>17,18,26-28,30,33,35-39</sup>  
300 Other participants had a more *“pro medicine”* attitude,<sup>38</sup> and it appeared that they might have used  
301 antipsychotics for convenience.<sup>18,19,30,38</sup>

302 Participants in several studies believed that antipsychotics were required for the greater good.<sup>18,37,38</sup>  
303 Primary care physicians in one study considered the potentially serious side effects “a worthwhile  
304 trade-off” if they improved residents’ quality of life,<sup>29</sup> and in another study perceived them as a  
305 *“necessary evil,”* to help staff deal with their high workload.<sup>37</sup>

306 Participants generally held positive views towards people with dementia<sup>27,30,37-39</sup> and “expressed  
307 great empathy with residents.”<sup>39</sup> However participants in some studies voiced dismissive attitudes  
308 towards people with dementia,<sup>19,30,31,37,39</sup> and expressed a desire to manage the resident rather than  
309 assess the underlying cause.<sup>17-19,26,28,30,37</sup> In one study, a staff member stated that they found  
310 residents’ behaviors “*annoying*.”<sup>19</sup>

311 Fear of behavior recurrence was expressed in several studies,<sup>17,25,28,30,31,39</sup> hence “there can even be  
312 resistance from nurses and family to withdraw [antipsychotics], especially when considerable effort  
313 was put into stabilizing the [behaviors].”<sup>17</sup>

314 **Organizational and Societal Attitudes:** The pressure to prescribe from nursing homes was a key  
315 finding in a number of studies.<sup>17,19,25,26,29,36-38</sup> One primary care physician admitted that this pressure  
316 to prescribe forced them to withdraw their medical services to a particular nursing home as they felt  
317 it was at odds with evidence-based practice.<sup>37</sup>

318 Managers were seen to play a key role in communicating messages about best practice.<sup>27,30,36,37,39</sup>

319 Managers that emphasized the value of non-pharmacological approaches created a culture where  
320 alternative approaches were exhausted before antipsychotics were used. One pharmacist observed  
321 that: “*If the attitude’s right at the top, then it filters through. If you have management that don’t*  
322 *really do the right thing or don’t really care, then that filters through as well.*”<sup>37</sup> In most studies  
323 management culture was highlighted as a driver of the quality of healthcare provided.<sup>18,19,27,30-32,34-39</sup>

324 **5. Regulations and Guidelines:** Regulations and guidelines produced mixed

325 reactions.<sup>17,18,26,29,32,33,36</sup> Regulations were perceived as the “driving force” for improving standards in  
326 nursing homes,<sup>18</sup> but prescribers expressed “ambivalence” towards the influence of guidelines.<sup>17</sup>

327 Regulations were only mentioned in studies conducted in the US<sup>18,32-34</sup> and Australia.<sup>36</sup> According to  
328 one US study author: “regulatory oversight has altered the landscape.”<sup>18</sup> In Australia, although the

329 conduct of pharmacist-led medication reviews were mandatory for residential settings, there was  
330 great variability between nursing homes in how the resultant recommendations were utilized.<sup>36</sup>  
331 Guidelines were perceived to be less influential with regards to changing antipsychotic  
332 prescribing.<sup>17,26,29</sup> In one study, prescribers felt that guidelines were unhelpful as they often  
333 contradicted their own clinical experience and caused *“more problems.”*<sup>26</sup> Prescribers from another  
334 study argued that some guidelines could be interpreted to allow for greater levels of prescribing.<sup>17</sup>  
335 *“What was more influential was past experience of a drug, although guidelines... were taken into*  
336 *account.”*<sup>26</sup>

### 337 The Impact of Context on Findings

338 The professional background of the research team tended to influence the focus of inquiry of  
339 included studies. In general, researchers from a nursing or social science background tended to focus  
340 on the person with dementia, in an attempt to understand these behavioral issues.<sup>18,27,28,30,31,38,39</sup>  
341 *“they’re frustrated because they can’t explain how they’re feeling.”*<sup>27</sup> Whereas researchers from a  
342 medical or pharmacy background tended to focus on more structural (e.g. resources) or  
343 organizational (e.g. interprofessional relationships) issues:<sup>17,25,26,29,32-34,36,37</sup> *“homes are dealing with a*  
344 *greater level of illness and disturbance than they were designed for.”*<sup>26</sup> However there were some  
345 contradictions and not every study followed this pattern.<sup>19,35</sup> Furthermore, the majority of included  
346 studies explored both perspectives to varying degrees.<sup>17-19,27-30,33,35-39</sup>

347 Time has also impacted on the findings. The earliest of these studies, published in 2003, discussed  
348 antipsychotics as an option for BPSD management, without necessarily attributing positive or  
349 negative connotations to this practice.<sup>31</sup> However studies published since (2007-2016), have  
350 generally advocated a more cautious approach.<sup>17-19,25-28,30,32-39</sup> This is possibly due to the publication  
351 of a meta-analysis in 2005 providing evidence of the risks associated with antipsychotic prescribing  
352 in people with dementia.<sup>3</sup>



## 353 Synthesis

354 Synthesizing these first- and second-order interpretations resulted in 20 distinct third-order  
355 interpretations. Consequently, each key concept was linked to multiple third-order interpretations;  
356 Organizational Capacity (n=5), Individual Professional Capability (n=4), Communication and  
357 Collaboration (n=3), Attitudes (n=6) and Regulations and Guidelines (n=2). These third order  
358 interpretations, and the CERQual confidence levels associated with them are shown in Table 3 and  
359 supplementary material Table S5. There were eight third-order interpretations in which we have  
360 high confidence. Therefore, we believe it is highly likely that these third-order interpretations are  
361 reasonable representations of the phenomenon of interest.

362 By linking all 20 third-order interpretations together we developed a 'line of argument', which is  
363 outlined below and expressed as a conceptual model in Figure 2. This conceptual model describes  
364 the process of a dysfunctional negative feedback loop where any 'challenging behavior' in a person  
365 with dementia promotes either antipsychotic prescribing or a non-pharmacological intervention, or  
366 sometimes both, all with the goal of suppressing the 'challenging behavior' and restoring calm. The  
367 'challenging behavior' may push decision-making towards an exclusively pharmacological solution,  
368 especially if staff feel overwhelmed. Once the 'challenging behavior' is suppressed, the need for an  
369 intervention is reduced. However, the fear that these behaviors may return at any time, or confusion  
370 surrounding roles and responsibilities facilitates maintenance of antipsychotic prescribing, breaking  
371 the feedback loop.

372 The five key concepts, and eight sub-themes described above, act as the overarching influences on  
373 this decision-making process as a whole. The conceptual model illustrates that some or all of these  
374 influences may come into play when a 'challenging behavior' arises (Fig. 2). These influences interact  
375 with each other, often in an unpredictable and complex manner, and ultimately determine the  
376 response behaviors from staff.

377 Our synthesis indicates that different stakeholders struggle to see things from other stakeholders'  
378 perspective and do not acknowledge the pressure the others are under. However, when all  
379 stakeholders come together to communicate and collaborate as equal and empowered partners the  
380 inappropriate use of antipsychotics can be reduced.

## 381 Discussion

382 This study is the first to our knowledge, to systematically review and synthesize the qualitative  
383 evidence surrounding antipsychotic prescribing in nursing home residents with dementia.  
384 Additionally, we believe that this study is the first to apply CERQual to a meta-ethnography. Our  
385 findings highlight the complexity of this topic and the various influences on decision-making. We  
386 have conceptualized these influences in a 'line of argument' that moves beyond the findings of the  
387 individual studies, as a dysfunctional negative feedback loop, which we believe will be useful for  
388 clinicians, researchers and policy-makers.

## 389 Comparison with previous research

390 A systematic review exploring the quantitative relationship between facility characteristics and  
391 antipsychotic usage concluded that in general, as nursing staff levels decrease, antipsychotic usage  
392 increases.<sup>41</sup> The authors also reported a positive association between for-profit nursing homes and  
393 antipsychotic usage.<sup>41</sup> However these associations are not always clear-cut.<sup>42-45</sup> The focus on  
394 qualitative evidence in our review helped us to tease out these more complicated elements. Our  
395 findings reinforce that nursing homes are struggling with understaffing and poor access to important  
396 services. Consequently, staff can become overwhelmed by behaviors in these resource-poor  
397 environments. Nursing home managers, particularly in the for-profit sector, may be tempted to use  
398 antipsychotics as a more economical solution to the problem. However it is important to  
399 acknowledge that the use of antipsychotics as a cost-saving measure appeared in not-for-profit  
400 nursing homes also.

401 Knowledge of the risks and benefits of prescribing antipsychotics in dementia has been found to be  
402 quite variable, and often sub-optimal.<sup>46-48</sup> Some authors have commented that these deficits in  
403 knowledge may be contributing to a concerning belief that antipsychotics are highly effective for  
404 BPSD.<sup>46,47</sup> Furthermore, staff have often been found to be inadequately trained in person-centered  
405 care.<sup>46,47,49</sup> Our findings suggest that inadequate skills and knowledge are enabling inappropriate  
406 antipsychotic prescribing. Even in highly capable individuals, we found a tension between doing the  
407 ‘right thing’ and doing what’s practical, given resource limitations and their duty of care to other  
408 residents.

409 Previous research has found that communication breakdown is an impediment to the delivery of  
410 person-centered care,<sup>50</sup> and is also a barrier to deprescribing.<sup>51</sup> Professional hierarchies in the  
411 nursing home setting have previously been reported as a barrier to evidence-based practice.<sup>50,52,53</sup>  
412 Furthermore, primary care physicians have expressed frustration at the lack of communication from  
413 hospital consultants with regards to the management of antipsychotics,<sup>54</sup> as well as the pressure to  
414 prescribe from nursing homes.<sup>47</sup> Our findings add to this knowledge by identifying a lack of  
415 empowerment at all levels of the healthcare team and among family members as a barrier to  
416 informed antipsychotic prescribing decision-making.

417 The concept of ‘treatment culture’ in nursing homes has been discussed in the literature in an  
418 attempt to explain why certain nursing homes continue to have high levels of antipsychotic  
419 prescribing independent of residents’ clinical characteristics.<sup>55-57</sup> Treatment culture can be defined as  
420 the “beliefs, values, and normative practices associated with medication prescribing and  
421 administration.”<sup>56</sup> Nursing homes with a traditional culture (i.e. rigid routines) have been associated  
422 with higher levels of antipsychotic prescribing than those with a resident-centered culture (i.e.  
423 person-centeredness).<sup>56</sup> Our research confirms this notion of treatment culture and the impact of  
424 conformity on prescribing decisions. Our findings add to existing evidence by highlighting the

425 important role of the manager, who can diffuse a philosophy of person-centered dementia care  
426 throughout the organization.<sup>58</sup>

427 Our findings indicate that an underlying fear of behavior recurrence may be one factor driving the  
428 desire for control. Negative connotations of dementia have been described in the literature,  
429 comparing the effect BPSD has on people to becoming “dehumanised.”<sup>59</sup> Based on the findings of  
430 our review, we believe that a lack of understanding of the nature and progression of dementia can  
431 lead to the inappropriate maintenance of antipsychotics.

## 432 Implications

433 The conceptualization of decision-making as a dysfunctional negative feedback loop with the  
434 ultimate aim of controlling residents, challenges us in the way we perceive dementia. We need to re-  
435 frame the way we view so-called ‘challenging behaviors’. These behaviors may not necessarily be  
436 challenging to the person with dementia – only to us. There have been discussions surrounding the  
437 nuances of terminology in this area, with a term such as ‘responsive behaviors’ being preferable.<sup>60</sup>  
438 There needs to be an appreciation that these behaviors are generally due to some unmet need,<sup>61</sup>  
439 and often do not respond to antipsychotics.<sup>62,63</sup> Therefore it is imperative that interdisciplinary  
440 training and education is delivered to all involved in the care of residents with dementia, including  
441 family members.

442 Furthermore, communication structures and interdisciplinary practices need to be optimized in  
443 order to improve the flow of vital information. It is important that peripheral members of this  
444 interdisciplinary team are not excluded from decision-making as they can often hold the key to  
445 successful behavioral management. There is also evidence to support the inclusion of pharmacists in  
446 these teams.<sup>8</sup> Shared decision-making, a collaborative process that allows people with dementia,  
447 family members, and their healthcare team to make healthcare decisions together, should be  
448 encouraged.<sup>64</sup> Shared decision-making takes into account the best clinical evidence available, as well  
449 as values and preferences of the person with dementia and the family.<sup>65</sup>

450 Our CERQual assessments identify areas that policy-makers can potentially target. For instance,  
451 policy-makers need to carefully re-examine resource allocation issues, as we have high confidence  
452 that nursing homes are utilizing antipsychotics to substitute for inadequate resources and poor  
453 access to specialist services. Given that the use of antipsychotics in this population is not evidence-  
454 based, it is concerning that these agents are being used to cut costs. Therefore in light of the  
455 strength of our evidence, we argue that increasing the staff to resident ratio, or increasing access to  
456 services, may possibly result in a reduction in inappropriate antipsychotic prescribing.

457 We now have a greater understanding of this complex prescribing behavior. However it is still  
458 unclear how it can be sustainably changed.<sup>8</sup> Behavior change interventions need to be guided by the  
459 best available evidence and appropriate theory.<sup>66</sup> Important contextual issues unique to each  
460 healthcare system need to be explored before pilot studies can be conducted.<sup>67</sup> More primary  
461 qualitative research is needed, focusing on aspects that are currently under-researched e.g.  
462 influence of national regulations. It is also crucial that the voice of the person with dementia is  
463 ethically and meaningfully included, either as participants of research,<sup>68</sup> or as co-researchers in the  
464 intervention design process.<sup>69</sup> Additionally, our conceptual model identified specific influencing  
465 factors, such as confusion surrounding roles and responsibilities, and fear of behavior recurrence.  
466 These identified factors may be suitable for future targeted interventions.

467 We believe that the interdisciplinary and interdependent nature of this decision-making process is  
468 such that it is unlikely that targeting a single stakeholder group will result in any sustainable change  
469 in prescribing behaviors. Therefore, we argue that a holistic, person-centered approach to behavior  
470 change is required, involving both the prescribers and requesters of antipsychotics.

## 471 **Strengths and Limitations**

472 The main strength of our study is its robustness. Measures were put in place to ensure the high  
473 quality of the analysis including maintaining reflexivity, utilizing independent multiple analysts and  
474 transparency through careful adherence to the PROSPERO protocol. The study was conducted by an

475 experienced multidisciplinary team. Consequently, we believe that our included studies were  
476 analyzed to a high standard and the resultant conceptual model provides the reader with a rich, in-  
477 depth and valid new interpretation of a complex phenomenon.

478 Another strength was the great number and diversity of healthcare professionals and family  
479 members represented in the included studies. The multiple perspectives allows for a more holistic  
480 view of the factors influencing this complex phenomenon.

481 A limitation of our study, which is true of all systematic reviews of qualitative evidence, is the  
482 difficulty retrieving qualitative research from databases. Unlike randomized controlled trials,  
483 qualitative research has historically been inconsistently indexed in databases, preventing  
484 comprehensive and reproducible searches.<sup>70</sup> Therefore it is possible that we may have missed a  
485 potentially relevant study. However, as our team conducted a systematic and thorough search, we  
486 are reasonably confident that we have captured all relevant studies.

## 487 Conclusions

488 Antipsychotic prescribing in nursing home residents with dementia occurs in a complex environment  
489 involving the interplay of various stakeholders (with differing levels of skills and knowledge, who  
490 often have conflicting views on the role of antipsychotics and who may not be equally empowered),  
491 the nursing home organization (with its own treatment culture and level of resources) and external  
492 influences (such as guidelines, regulations and societal influences). In order to improve the quality of  
493 antipsychotic prescribing in this cohort, a paradigm shift is required towards a more holistic  
494 approach to BPSD management. While we have found the issue of antipsychotic prescribing has  
495 been extensively explored using qualitative methods, there remains a need for research focusing on  
496 how best to change the prescribing behaviors identified.

497

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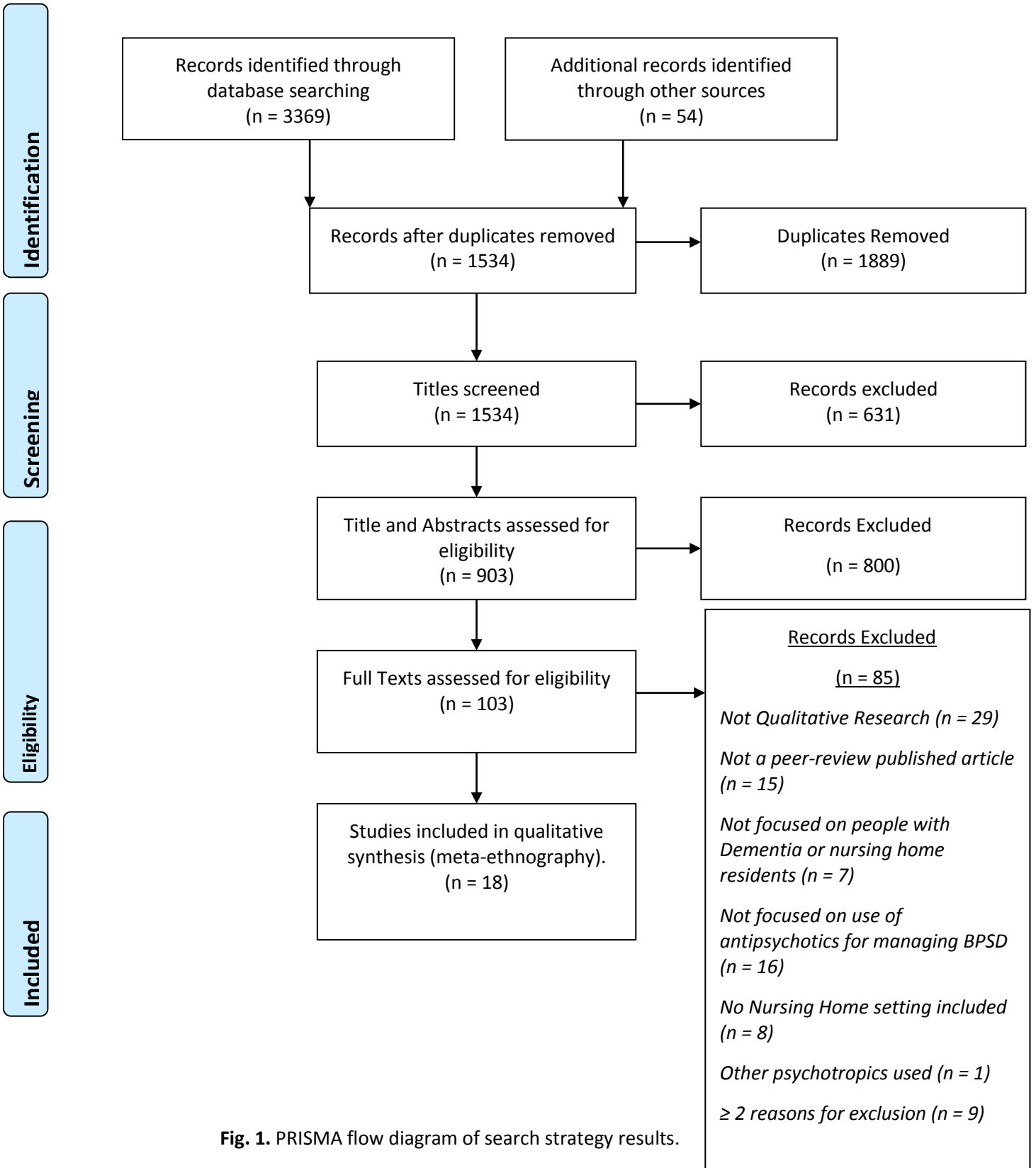


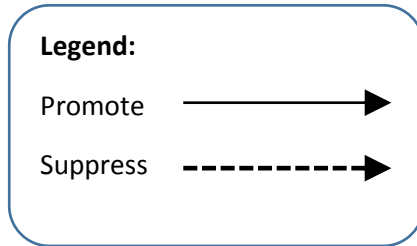
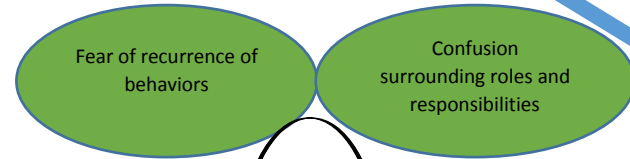
Fig. 1. PRISMA flow diagram of search strategy results.

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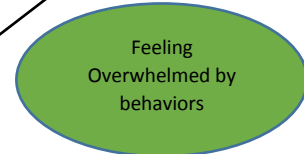
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**COMMUNICATION & COLLABORATION**  
*(Communication within healthcare teams and with the family;  
Clarity of Roles and Responsibilities)*

**INDIVIDUAL PROFESSIONAL CAPABILITY**  
*(Skills; Knowledge)*



“Challenging Behavior”



Antipsychotic Prescribing

Non-Pharmacological Intervention

**ATTITUDES TOWARDS PEOPLE WITH DEMENTIA AND THE MANAGEMENT OF BPSD**  
*(Personal Attitudes; Organizational and Societal Attitudes)*

**REGULATIONS & GUIDELINES**

**Stimulus (Resident)**

**Response Behaviors (Staff)**

**ORGANIZATIONAL CAPACITY**

*(Resources and access to services; Coping with the severity of behaviors)*

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**Fig.2.** Conceptual Model of Influences on Decision-Making Regarding Antipsychotic Prescribing in Nursing Home Residents with Dementia. Key concepts are in shown in **CAPITALS**; sub-themes are in *(italics)* beneath the relevant key concept; and specific factors influencing response behaviors are in green circles. All influences can impact upon the decision-making process at the core of this diagram. BPSD, Behavioral and Psychological Symptoms of Dementia

**Table 1.** Characteristics of Included Studies

First Author	Year of Publication	Country	Study Objectives	Methods	Data Collection	Qualitative Data Analysis	Participant characteristics (n)	Setting (n)
Foley <sup>31</sup>	2003	US	To explore staff perceptions of successful management of severe behavioral problems in dementia SCUs	M	Structured interviews with some open ended questions	Content analysis	Nursing staff (19), Activities co-ordinator or Social Worker* (4), unit co-ordinators [Nurses or Social Workers]* (9), Unknown Staff Role (4). <b>Total participants (36)</b>	<b>Nursing Home SCUs (36)</b>
Patterson <sup>25</sup>	2007	UK	To assess the suitability of an American model of pharmaceutical care for nursing home residents for application in nursing homes in the UK	Q	Focus groups and semi-structured interviews	Framework	Clinical Pharmacists (6), Resident Advocates (6), Prescribing Support Pharmacists (14), GPs (8), Nursing Home Managers (10). <b>Total participants (44)</b>	<b>Participants worked in in-patient, GP, nursing home and charity organisations settings (unknown numbers) §</b>
Wood-Mitchell <sup>26</sup>	2008	UK	To examine the process by which consultant old age psychiatrists prescribe for BPSD and explore the factors that influence their decision	Q	Semi-structured interviews	Grounded theory	Consultant Old Age Psychiatrists (8). <b>Total participants (8)</b>	<b>Psychiatrists worked in in-patient and community-care settings (unknown numbers) §</b>
Kolanowski <sup>18</sup>	2010	US	To explore nursing, recreational therapy and medical staff perceptions of barriers to the implementation of non-pharmacological interventions for BPSD	Q	Focus groups	Content and thematic	Registered Nurses, Licensed Practical Nurses, Certified Nursing Assistants, Recreational Therapists, Activity Personnel and Medical Directors. <b>Total participants (35)+</b>	<b>Nursing Homes (6)</b>
Molinari <sup>33</sup>	2011	US	To explore the justification of psychoactive medication prescription for new nursing home residents	M	Chart review with follow up focus groups	Content and thematic	Licensed Practical Nurses (8), Certified Nursing Assistants (20), Registered Nurses (13), Medical Directors (1), Social Workers (2). <b>Total participants (44)</b>	<b>Nursing Homes (7)</b>
Duxbury <sup>27</sup>	2013	UK	To explore the views of nurses, and relatives regarding the causes of, and most effective ways of responding to aggressive behaviour from people with dementia in residential care settings	Q	Semi-structured interviews with staff. Focus Groups with relatives	Thematic	Dementia Care Unit Manager (4), Registered Nurses (2), Care Assistants (2), Relatives (8). <b>Total participants (16)</b>	<b>Nursing Homes (4)</b>
Harding <sup>28</sup>	2013	UK	To explore carers experiences of the use of antipsychotic medications in people with dementia	M	Surveys with open ended questions (online and paper), focus groups and in-depth interviews	Inductive and deductive coding. Thematic	Carers and former carers of people with dementia(190). <b>Total participants (190)</b>	<b>Mixture of own home, nursing home and residential home (unknown numbers) §</b>
Janzen <sup>38</sup>	2013	Canada	To investigate the perceptions of LTC staff regarding the current use of NPI for reducing agitation in seniors with dementia and to identify facilitators and barriers that guide NPI implementation	M	Focus groups, semi-structured interviews and a survey with some open ended questions	Hermeneutic phenomenology	Registered Nurses (8), Registered Practical Nurses (13), Personal Support Workers (8), Recreation Specialist or Coordinators (6), Directors of Care (3), Unit Coordinators (2), Recreation Assistant (1), Resident Assessment Instrument Coordinator (1), Dietary Specialist (1), Art Therapist (1). <b>Total participants (44)</b>	<b>LTC facilities (5)</b>
Mavrodaris <sup>29</sup>	2013	UK	To investigate antipsychotic prescribing practices and patient review in primary care settings	M	Survey with some open ended questions.	Thematic	GPs (60), care home staff (28). <b>Total participants (88)</b>	<b>GP surgeries (60) and care homes (28) §</b>
Ervin <sup>35</sup>	2014	Australia	To explore residential aged care staff perceptions of the limitations to five commonly used methods of managing BPSD; pharmacological therapy and	Q	Survey with open ended questions.	Interpretive Description	Division 1 Registered Nurse (33), Division 2 Medication Endorsed Registered Nurse (29), Division 2 Registered Nurse (34), Personal Care Assistant (14), Students or Activities Coordinator (17), Not specified (3). <b>Total</b>	<b>Residential aged care facilities (6)</b>



			behavioural, emotional, cognitive and stimulation therapies				<b>participants (130)</b>	
<b>Smeets</b> <sup>17</sup>	2014	The Netherlands	To explore factors that elucidate reasons for psychotropic drug prescription for neuropsychiatric symptoms in nursing home residents with dementia	Q	Semi-structured interviews	Grounded theory	Elderly Care Physician (13), Resident in Elderly Care Medicine (1), Medical Doctor (1), Registered Nurses (4), Certified Nurse Assistants (9), Nurse Assistant (1). <b>Total participants (29)</b>	<b>Nursing Homes (12)</b>
<b>Bonner</b> <sup>34</sup>	2015	US	To describe the rationales that providers and family members cite for the use of Antipsychotic medications in people with dementia living in nursing homes	M	Medical Record Abstraction and Open ended interviews	Directed content analysis	Directors of Nursing (26), Registered Nurses and Licensed Practical Nurses (91), Certified Nursing Assistants (244), Physicians and Advanced Practitioner Prescribers (27), Pharmacists (23), Psychiatrists (14), Family Members (41). <b>Total participants (466)</b>	<b>Nursing Homes (26)</b>
<b>Ellis</b> <sup>32</sup>	2015	US	To explore strategies that have been implemented, to assess which strategies are evidence-based, and to make recommendations to improve upon practice to reduce antipsychotic medication use	M	Survey with both descriptive and open-ended questions.	Theme-based content analysis	Director of Nursing (109), Nursing Home Administrator (95), Social Worker (7), Other Nursing Home Staff (65). <b>Total Participants (276)</b>	<b>Nursing Homes (unknown number, approximately 227)</b>
<b>Lawrence</b> <sup>30</sup>	2015	UK	To contribute to an optimised training programme for care staff that supports the implementation of evidence-based psychosocial interventions in long-term care	Q	Focus groups	Thematic with constant comparison method	Care Assistants (53), Senior Care Assistants (30), Activity Therapists (13), Registered Nurses (6), Deputy Managers (5), Managers (2), Other Staff (10). <b>Total participants (119)</b>	<b>Care Homes (16)</b>
<b>Sawan</b> <sup>36</sup>	2016	Australia	To explore how visible artifacts in nursing homes influence the prescribing and use of psychotropic medicines, and how these artifacts were operationalized across nursing homes	Q	Semi-structured interviews	Thematic	Managers (8), Registered Nurses (8), Nursing Assistants (5), GPs (8), Pharmacists (6), Enrolled nurses (2), Specialist medical practitioner (1), Nurse Practitioner (1), Clinical Nurse Consultant (1). <b>Total participants (40) ‡</b>	<b>Nursing Homes (8)</b>
<b>Sawan</b> <sup>37</sup>	2016	Australia	To explore the key dimensions of organizational climate and their subsequent influence on the use of psychotropic medicines	Q	Semi-Structured Interviews	Thematic	Managers (8), Registered Nurses (8), Nursing Assistants (5), GPs (8), Pharmacists (6), Enrolled nurses (2), Specialist medical practitioner (1), Nurse Practitioner (1), Clinical Nurse Consultant (1). <b>Total participants (40) ‡</b>	<b>Nursing Homes (8)</b>
<b>Shaw</b> <sup>19</sup>	2016	UK	To explore and understand treatment culture in prescribing of psychoactive medications for older people with dementia in nursing homes	Q	Semi-structured interviews	Thematic and framework	Managers (5), Nurses (7), Care Assistants (13), GPs (2). <b>Total participants (27)</b>	<b>Nursing homes (6)</b>
<b>Van Wyk</b> <sup>39</sup>	2016	South Africa	To gain an understanding of what care home staff perceive to be distressed behaviour, their coping strategies and how they learned to work with residents with behavioral symptoms of dementia.	Q	Semi-structured interviews	Thematic and framework	Care Assistants (17). <b>Total participants (17)</b>	<b>Care Homes (4)</b>

678 Q, Qualitative Methods; M, Mixed Methods; BPSD, Behavioral and Psychological Symptoms of Dementia; NPI, Non-pharmacological interventions; LTC, Long-term care; SCU, Specialist Care Unit; GP, General  
679 Practitioner (also known as Primary Care Physicians).

680 \* Study did not obtain specific degree affiliation, thus unable to distinguish between social workers and nursing staff. † Unknown breakdown of participants. ‡ Research participants may not have been based in a  
681 Nursing Home Setting, but focus of study is on people with dementia in the Nursing Home Setting. ‡ The same study cohort in both studies.

**Table 2.** Quality Appraisal of Included Studies

First Author (Year of Publication)	Clear Statement	Qualitative Appropriate	Research Design	Sampling	Data Collection	Reflexivity	Ethics	Data Analysis	Discussion of Findings	Value	Overall Assessment of methodological quality
Foley (2003) <sup>31</sup>	✓	✓	✓	?	?	x	?	?	✓	✓	Moderate
Patterson (2007) <sup>25</sup>	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	Moderate-to-High
Wood-Mitchell (2008) <sup>26</sup>	✓	✓	✓	?	✓	✓	?	?	✓	✓	Moderate-to-High
Kolanowski (2010) <sup>18</sup>	✓	✓	✓	?	?	x	✓	✓	✓	✓	Moderate-to-High
Molinari (2011) <sup>33</sup>	✓	✓	✓	x	?	x	?	✓	✓	✓	Moderate
Duxbury (2013) <sup>27</sup>	✓	✓	✓	✓	?	x	✓	✓	✓	✓	Moderate-to-High
Harding (2013) <sup>28</sup>	✓	✓	✓	✓	x	x	?	x	x	x	Low
Janzen (2013) <sup>38</sup>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	High
Mavrodaris (2013) <sup>29</sup>	✓	✓	✓	✓	?	x	?	?	✓	✓	Moderate
Ervin (2014) <sup>35</sup>	✓	✓	✓	✓	?	x	✓	✓	✓	✓	Moderate
Smeets (2014) <sup>17</sup>	✓	✓	✓	?	✓	x	✓	✓	✓	✓	Moderate-to-High
Bonner (2015) <sup>34</sup>	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	Moderate
Ellis (2015) <sup>32</sup>	✓	✓	✓	x	✓	x	?	✓	✓	✓	Moderate
Lawrence (2015) <sup>30</sup>	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	Moderate-to-High
Sawan (2016) <sup>36</sup>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	High
Sawan (2016) <sup>37</sup>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	High
Shaw (2016) <sup>19</sup>	✓	✓	✓	?	✓	✓	✓	✓	✓	✓	High
Van Wyk (2016) <sup>39</sup>	✓	✓	✓	?	?	x	?	?	✓	✓	Moderate

682 ✓, Yes or Methodologically Sound; x, No or Not Methodologically Sound; ?, Can't tell whether Methodologically sound or not.

683 **Table 3.** CERQual Summary of Qualitative Findings

Review finding/Third-Order Interpretations	Relevant papers	CERQual assessment of confidence in the evidence	Explanation of CERQual assessment
<b>Organizational Capacity</b>			
1. Chronic under-staffing is a fundamental issue in Nursing Homes, leading to insufficient time and ability by Nursing Home staff to perform person-centered care.	(26, 18, 38, 29, 35, 17, 32, 30, 37, 19, 39)	<b>High confidence</b>	Minor concerns regarding methodological limitations and adequacy
2. The involvement of specialist services can influence antipsychotic prescribing, but there can sometimes be difficulty accessing these services.	(26, 18, 33, 29, 35, 17, 34, 32, 36, 37)	<b>High confidence</b>	Minor concerns regarding methodological limitations, coherence and adequacy.
3. To circumvent the problems of inadequate resources and/or poor access to specialist services, antipsychotics are 'employed' as cheap, fast and effective staff members.	(26, 18, 33, 38, 29, 35, 17, 32, 30, 19, 37)	<b>High confidence</b>	Minor concerns regarding methodological limitations and adequacy.
4. As behaviors escalate, a 'tipping-point' is reached, after which an urgency to resolve the situation arises. This is particularly true when Nursing Home staff feel "overwhelmed" by these behaviors. In these situations antipsychotics are perceived by Nursing Home staff to offer a "more guaranteed result".	(31, 26, 18, 38, 17, 30, 37)	<b>Moderate confidence</b>	Minor concerns regarding methodological limitations. Moderate concerns regarding adequacy
5. The perceived acuteness of situations forces Nursing Home staff to focus their attention on the "aggressive" residents, while the "passive" ones are left behind. Antipsychotics can sometimes be viewed as a way of equalizing attention given to both "passive" and "aggressive" residents.	(18, 38, 35, 17, 30, 37, 39)	<b>Low confidence</b>	Minor concerns regarding methodological limitations. Moderate concerns regarding coherence and adequacy
<b>Individual Professional Capability</b>			
6. Both prescribers and Nursing Home staff are often perceived to be poorly equipped to deal with BPSD in terms of deficiencies in dementia-specific skills and/or a lack of knowledge on the risk/benefits of antipsychotics, and the range and nature of non-pharmacological interventions. These deficiencies enable inappropriate antipsychotic prescribing.	(31, 26, 18, 33, 28, 38, 29, 35, 17, 34, 32, 19, 37, 39)	<b>Moderate confidence</b>	Minor concerns regarding methodological limitations and relevance. Moderate concerns regarding coherence
7. More training and education to help prescribers and nursing home staff to improve skills and knowledge with regards to BPSD management is desired.	(18, 33, 38, 35, 17, 34, 32, 30, 37, 39)	<b>High confidence</b>	Minor concerns regarding methodological limitations
8. Even in individuals with sufficient skills and knowledge regarding BPSD management, a tension can	(26, 18, 38, 17, 32,	<b>Moderate</b>	Minor concerns regarding

exist between 'doing the right thing' and doing what's practical, especially if the resources or suitable alternatives are not perceived to be there to support adequate implementation.	30, 19, 36, 37)	<b>confidence</b>	methodological limitations and coherence. Moderate concerns regarding adequacy.
9. Knowing the resident and understanding their behaviors contributes towards successful BPSD management.	(31, 26, 18, 27, 38, 17, 30, 19, 37, 39)	<b>High confidence</b>	Minor concerns regarding methodological limitations and adequacy.
<b><i>Communication and Collaboration</i></b>			
10. Effective communication and collaboration (involving sharing information and listening to others) between all members of the healthcare team are key enablers to reducing inappropriate prescribing of antipsychotics. The involvement of family members can also be important in this process.	(31, 25, 26, 18, 33, 27, 28, 38, 29, 17, 34, 32, 30, 19, 36, 37)	<b>High confidence</b>	Minor concerns regarding methodological limitations, coherence and relevance
11. A lack of empowerment at all levels of the healthcare team and among family members is a barrier to informed decision-making regarding antipsychotic prescribing.	(31, 25, 26, 27, 28, 29, 17, 32, 30, 19, 36, 37, 39)	<b>High confidence</b>	Minor concerns regarding methodological limitations, coherence and relevance.
12. Fragmentation between different levels of care creates confusion surrounding roles and responsibilities, which can lead to inappropriate maintenance of antipsychotics.	(25, 26, 18, 33, 28, 29, 32, 36)	<b>Moderate confidence</b>	Minor concerns regarding adequacy. Moderate concerns regarding methodological limitations
<b><i>Attitudes towards people with dementia and the management of BPSD</i></b>			
13. Although there is a preference to use non-pharmacological interventions in the first instance due to the unpleasant side effects of antipsychotics, it is acknowledged that antipsychotics are a "necessary evil" and are often unavoidable.	(31, 26, 18, 33, 27, 28, 38, 35, 29, 17, 32, 30, 19, 36, 37, 39)	<b>Moderate confidence</b>	Minor concerns regarding methodological limitations and relevance. Moderate concerns regarding coherence.
14. Negative attitudes by individuals towards people with dementia can result in inappropriate antipsychotic prescribing. Conversely, empathy towards people with dementia can be protective.	(31, 18, 27, 28, 38, 35, 17, 30, 19, 36, 37, 39)	<b>Moderate confidence</b>	Minor concerns regarding coherence, relevance and adequacy. Moderate concerns regarding methodological limitations
15. Fear of the recurrence of behaviors motivates maintenance of antipsychotic prescribing.	(31, 25, 28, 17, 30, 37, 39)	<b>Low confidence</b>	Minor concerns regarding relevance. Moderate concerns regarding methodological limitations and adequacy
16. Organizational and societal attitudes towards people with dementia and the management of BPSD, exerts pressure on prescribers to make prescribing decisions.	(25, 26, 18, 27, 28, 38, 29, 17, 30, 19,	<b>High confidence</b>	Minor concerns regarding methodological limitations and

	36, 37)		coherence.
17. The attitude of the nursing home manager towards people with dementia and the management of BPSD dictates the treatment culture of that nursing home, and this has a strong influence on antipsychotic prescribing.	(27, 38, 32, 30, 19, 36, 37, 39)	<b>Moderate confidence</b>	Minor concerns regarding methodological limitations. Moderate concerns regarding adequacy
18. Tensions can arise due to incompatible beliefs towards antipsychotics between prescribers and nursing homes; in these cases a battle of wills develops where there is often pressure on prescribers to “do something” in order to restore control – doing nothing is not tolerated. However, sometimes there is pressure on prescribers to discontinue antipsychotics, to which there can be resistance from prescribers.	(25, 26, 29, 17, 32, 30, 19, 36, 37)	<b>Moderate confidence</b>	Minor concerns regarding methodological limitations. Moderate concerns regarding adequacy
<b><i>Regulations and Guidelines</i></b>			
19. Regulations are perceived to be the driving force for antipsychotic reductions in nursing home residents with dementia, but adherence to them can be challenging.	(18, 33, 34, 32, 36)	<b>Very low confidence</b>	Moderate concerns regarding methodological limitations. Substantial concerns regarding adequacy
20. Guidelines exert little influence on antipsychotic prescribing, but may act indirectly to increase knowledge regarding the risk/benefits of antipsychotics.	(26, 29, 17)	<b>Very low confidence</b>	Moderate concerns regarding methodological limitations. Substantial concerns regarding adequacy

684 BPSD, Behavioral and Psychological Symptoms of Dementia; CERQual, Confidence in the Evidence from Reviews of Qualitative Research.

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