CrossMark

SYSTEMATIC REVIEW

Relationship between Organizational Culture and the Use of Psychotropic Medicines in Nursing Homes: A Systematic Integrative Review

Mouna Sawan[1] ⓘ · **Yun-Hee Jeon**[2] · **Timothy F. Chen**[1]

Abstract

Background Psychotropic medicines are commonly used in nursing homes, despite marginal clinical benefits and association with harm in the elderly. Organizational culture is proposed as a factor explaining the high-level use of psychotropic medicines. Schein describes three levels of culture: artifacts, espoused values, and basic assumptions.

Objective This integrative review aimed to investigate the facets and role of organizational culture in the use of psychotropic medicines in nursing homes.

Method Five databases were searched for qualitative, quantitative, and mixed method empirical studies up to 13 February 2017. Articles were included if they examined an aspect of organizational culture according to Schein's theory and the use of psychotropic medicines in nursing homes for the management of behavioral and sleep disturbances in residents. Article screening and data extraction were performed independently by one reviewer and checked by the research team. The integrative review method, an approach similar to the method of constant comparison analysis was utilized for data analysis.

Results Twenty-four studies met the inclusion criteria: 13 used quantitative methods, 9 used qualitative methods, 1 was quasi-qualitative, and 1 used mixed methods. Included studies were found to only address two aspects of organizational culture in relation to the use of psychotropic medicines: artifacts and espoused values. No studies addressed the basic assumptions, the unsaid taken-for-granted beliefs, which provide explanations for in/consistencies between the ideal use of psychotropic medicines and the actual use of psychotropic medicines.

Conclusions Previous studies suggest that organizational culture influences the use of psychotropic medicines in nursing homes; however, what is known is descriptive of culture only at the surface level, that is the artifacts and espoused values. Hence, future research that explains the impact of the basic assumptions of culture on the use of psychotropic medicines is important.

✉ Mouna Sawan
  mouna.sawan@sydney.edu.au

  Yun-Hee Jeon
  yun-hee.jeon@sydney.edu.au

  Timothy F. Chen
  timothy.chen@sydney.edu.au

1 Faculty of Pharmacy, The University of Sydney, N507, Pharmacy and Bank Building (A15), Camperdown, NSW 2006, Australia

2 Faculty of Nursing and Midwifery, The University of Sydney, M02A, 88 Mallett Street, Building A, Camperdown, NSW 2006, Australia

⚠ Adis

1 Introduction

Psychotropic medicines are often prescribed in nursing homes to manage behavioral and sleep disturbances in the elderly, despite extensive data showing merely marginal clinical benefits and their association with serious harm [1–4]. Potential harmful adverse effects include falls, tardive dyskinesia, pneumonia, cognitive and functional decline, and death [4–7]. The reported frequency of psychotropic medicines use in nursing homes is 47 and 72% in Australia and the US, respectively [8, 9]. In the US, 30% of prescribed psychotropic treatments for residents in nursing homes are reported to be inappropriate, with numerous studies revealing psychotropic medicines are used longer than recommended, at high doses, or outside approved indications [9]. Additionally, residents who are prescribed psychotropic medicines are likely to remain on treatment due to the lack of reassessment, thereby exposing residents to unnecessary risks [9]. There is sufficient evidence showing variation in the level of psychotropic medicine use across nursing homes, indicating that psychotropic medicines are not prescribed solely based on resident characteristics (such as age, indication, comorbidities) and that other factors drive the high use of psychotropic medicines [10, 11].

Factors associated with the use of psychotropic medicines include nursing home characteristics such as bed capacity, staffing levels, and ownership type [12–14]. Kamble et al. [12] reported nursing homes with 200 beds or more had increased use of antipsychotic medicines. Higher

nurse staffing levels are correlated with the low use of benzodiazepines [13], and for-profit operated nursing homes are associated with overall increased antipsychotic medicine use [14]. When accounting for nursing home characteristics, other studies have shown residents are likely to be prescribed an antipsychotic medicine if they enter a nursing home that has a high prescribing rate [10, 11, 15]. A number of studies have proposed organizational culture as the explanation for the normalization of psychotropic prescribing in some nursing homes, as well as the variation in psychotropic medicine use [10, 16]. These findings suggest that some nursing homes have cultures that are permissive to the use of psychotropic medicines for reasons that address the needs of staff rather than that of the resident [17]. Several interventions have been employed to safeguard residents from inappropriate prescribing that adopts a multidisciplinary professional approach, such as pharmacist-led medication reviews and multidisciplinary team meetings [18, 19]. However, previous systematic reviews also suggest culture as a factor that reflects how these interventions are actually utilized, as well as their outcomes [20–22].

There are many definitions of organizational culture, and there are also diverse opinions on how organizational culture should be measured and observed [23]. Organizational culture is generally described as the 'attitudes, values, beliefs and norms of members of an organization' [24]. However, this definition is broad and can be interpreted in a variety of ways, often leading to inaccurate interpretations of organizational culture [25]. While there is a broad range of definitions and theories, there is agreement that organizational culture is more than the accepted ways of doing things within an organization and that it extends to the ways of thinking about and making sense of problems and challenges that percolate among its members [26]. Schein's theory emphasizes the role of basic assumptions that are the deeper, unsaid cognitions understood among members that underpin behavior and practices and distinguish one culture from another [25]. It is a widely accepted definition of organizational culture that has been applied in the healthcare setting [25, 27, 28]. Schein's theory also recognizes the layered nature of organizational culture, capturing the role of basic assumptions [29], and provides a clear definition of the aspects of culture [29]. Therefore, it is helpful to use Schein's definition of culture as it provides an in-depth explanation of what constitutes culture that can be pieced together to form a comprehensive study of how and why there is inappropriate psychotropic prescribing within the nursing home.

According to Schein, culture has three layers (Fig. 1). The first layer of culture is the artifacts that explain 'how' and 'what' is taking place in an organization [29, 30]. Artifacts may be visible or non-visible. Visible artifacts are
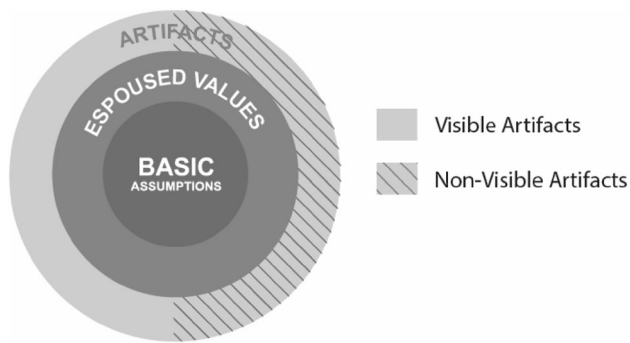
Fig. 1 Three layers of organizational culture, from Sawan et al. [40]

those that are 'seen, heard and felt' within an organization. In the nursing home, this includes processes and observed behaviors [29]. The non-visible artifacts are the perception of members of the organization regarding their work environment and interactions with each other or outsiders [29, 31]. Schein refers to these perceptions as the climate of the organization. The middle layer is the espoused values that are the ideal standards and goals of an organization [29]. The core layer is the basic assumptions, defined as the unsaid, taken-for-granted beliefs and values [29]. This layer of culture explains why the espoused values may or may not be congruent with what is taking place at the level of artifacts.

This review aimed to investigate the facets and role of organizational culture in the use of psychotropic medicines in nursing homes. Our objectives were to investigate what facets of organizational culture have been previously examined in original studies and to establish the role of organizational culture in the use of psychotropic medicine use.

2 Methods

2.1 Design

This review used a systematic approach by following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for the identification of articles [32]. The review also followed an integrative review methodology by including qualitative, quantitative and mixed method empirical studies relevant to the research question for inclusion in this review [33]. The decision to not restrict the review to quantitative studies was based on increasing recognition of qualitative research as a rich evidence source for systematic reviews [34]. Qualitative research provides a nuanced understanding of how aspects of organizational culture influence the use of psychotropic medicines by describing staff experiences and

behaviors related to the work environment, as well as revealing their perceptions and beliefs to explain behaviors [23].

2.2 Search Strategy

A search of secondary databases—Joanna Briggs Institute (JBI), PROSPERO, and Cochrane reviews—identified that no previous systematic review has been conducted on this topic. A search of PROSPERO, a register of systematic review protocols that have not been published, confirmed no current review of the same research question.

Relevant articles were searched using the MEDLINE, EMBASE, PubMed, International Pharmaceutical Abstracts (IPA) and Cumulative Index to Nursing and Allied Health Literature (CINAHL) electronic databases. A comprehensive search strategy using Medical Subject Headings (MeSH) and keywords was developed by the research team (MS, YHJ and TFC) for MEDLINE, and adapted for other search databases. MeSH, keywords, proximity operators, and wildcards were searched in a Boolean search strategy. The search strategy included three concepts: nursing homes (concept 1), psychotropic medicines (concept 2), and organizational culture (concept 3). There was a lack of MeSH for organizational culture (concept 3) that mapped to Schein's theory. Additionally, using 'organizational culture' as a MeSH or keyword on its own did not produce relevant articles. We therefore broadened our search to include other MeSH or keywords related to the concept of organizational culture, such as 'attitude of health personnel', 'inter-professional relations', 'communication', beliefs* and assumptions*. In addition, the perspectives of both on-site staff (nursing home managers, licensed registered nurses, enrolled nurses, and nursing assistants) and visiting staff (general practitioners [GPs], community pharmacists, accredited pharmacists, specialist medical practitioners, nurse practitioners, and clinical nurse consultants), as well as residents and their families, were integral to our research question. We therefore included search terms such as 'Physicians', 'Nursing staff', Pharmacists', 'Mental health services', 'Professional-family relations' and 'Professional-patient relations. Psychotropic medicines (concept 2) included MeSH and keywords that referred to antipsychotics, hypnotics/sedatives, antidepressants, and antidementia drugs. Nursing homes (concept 1) also refers to residential facilities, long-term care, or care homes. There was no restriction of year applied for the search strategy and articles were searched up to 20 October 2016. Update searches were run on 13 February 2017. The search strategy was limited to the English language.

2.3 Selection Criteria (Inclusion and Exclusion Criteria)

Empirical studies that were related to any facet of organizational culture according to Schein's theory, and the use of psychotropic medicines in nursing homes for the management of behavioral and sleep disturbances in residents, were included. Additionally, studies related to other elements of culture evaluation that are not necessarily part of Schein's theory, and the use of psychotropic medicines in nursing homes, were also included. Studies were excluded if the setting was other than the nursing home, the study did not relate to any facet of organizational culture and the use of psychotropic medicines, or made no direct links to aspects of organizational culture and the use of psychotropic medicines. Detailed inclusion and exclusion criteria can be found in electronic supplementary material 1.

2.4 Study Selection

Articles retrieved from the five databases were combined and duplicates removed. The titles and abstracts were screened for eligibility by one author (MS). A sample of articles excluded by titles and abstracts was also reviewed by TFC to ensure that no relevant articles were removed. Using the study selection criteria, the full texts of the remaining articles ($n = 42$) were assessed for relevance by one author (MS), and arising issues regarding the selection process were further discussed among the research team (MS, TFC and YHJ) until agreement was reached.

2.5 Data Extraction and Analysis

Data extraction of each full-text article in the final selection was conducted by one researcher using a data extraction form agreed by the research team (MS, TFC, and YHJ). Data extracted included author, year, country, study aim relevant to the systematic review, level of organizational culture investigated (according to Schein's theory), other elements of organizational culture evaluation (dissimilar to Schein's theory of organizational culture), study method, characteristics of participants (number and staff type) and setting, aspect of medication management investigated, and results section (participants' quotes and authors' findings). For the purpose of this review, medication management was defined as steps underpinning medication use in the nursing home. This was adapted from the cycle described by Stowasser et al., which describes processes including the initiation, review, monitoring, and cessation of medicines [35]. Table 1 demonstrates other operational definitions used in this review.

The data analysis process was influenced by the integrative review method, an approach similar to the method of constant comparison analysis [33], and consisted of three levels of analysis. The first level of analysis involved open coding of extracted data from included studies by one reviewer (MS). To ensure the credibility of the coding, another reviewer (TFC) coded extracted data from 10% of selected studies and differences in interpretation were discussed. Consensus was then reached. The second level of analysis involved assigning the codes into the aspects of culture according to Schein's theory. The purpose was intended to place the studies into a recognizable context from which healthcare professionals and stakeholders can better understand the role of culture in the use of psychotropic medicines. The research team (MS, YHJ, TFC) met multiple times to discuss the grouping of codes, with discrepancies resolved by discussion until all researchers reached agreement. In the third level of analysis, the extracted codes within each aspect of culture were placed in categories. Categories then gave rise to themes that identified patterns and derived meaning to explain the behavior and decisions to use psychotropic medicines by on-site and visiting staff. The research team frequently met to review and refine emerging themes until no new themes emerged.

3 Results

3.1 Study Selection

A total of 1495 articles were identified through the database search. The process of review and elimination as per the PRISMA guidelines (Fig. 2) identified 42 potentially relevant articles that appeared to meet the inclusion criteria. The search resulted in three papers of the same study [36–38], however two papers were excluded as they did not relate to any facet of organizational culture and the use of psychotropic medicines in the nursing home [36, 38]. Two papers of the same study were included because they investigated different aspects of culture associated with psychotropic prescribing [39, 40]. A total of 25 papers reporting on 24 studies met the inclusion criteria and were reviewed. Table 2 outlines the characteristics and summary of the papers included in this review.

3.2 Study Characteristics

The studies included ($n = 24$) were conducted in nine different countries: six in the US [37, 41–45], three in Australia [39, 40, 46, 47], four in the UK [48–51], three in The Netherlands [52–54], three in Belgium [55–57], and the remaining five in four other countries [58–62]. Of the

Table 1 Operational definitions

Term	Definition
Organizational culture	According to Schein organizational culture comprises three layers [30]. Artifacts are the outer layer of culture that explain 'how' and 'what is taking place in an organization [25]. They may be visible or non-visible. The middle and third layers are the espoused values and basic assumptions [30]
Level 1: Visible artifacts	The outer layer of organizational culture representing that which is 'seen, heard and felt' within the organization such as structures, processes, observed behaviors, e.g. meetings, formal checks [30]
Level 1: Non-visible, known as organizational climate	A component of the outer layer of organizational culture defined as the perceptions of members of the organization regarding their work environment and interactions with each other and outsiders [30]
Level 2: Espoused values	Ideal values and goals of the organization [30]
Level 3: Basic assumptions	Represents the core layer of culture defined as the unsaid, taken for granted beliefs and values [30]
Nursing homes	Aged care settings that provide accommodation and nursing care particularly for the elderly with frailty
Psychotropic medicines	Psychotropic medicines include antipsychotics, antidepressants, antidementia drugs and sedatives/hypnotics [5]
Medication management	Steps and processes which underpin medication use in the nursing home. They include initiation, review, monitoring and cessation of medications [35]
(a) Initiation	Refers to prescribing of treatment by the general practitioner (GP) once it is considered necessary for the resident. Some countries may also give prescribing rights to nurse practitioners (e.g. US, UK, Australia)
(b) Review	Review of medication-related problems or clinical appropriateness of the prescribed medicine by the GP as well as the pharmacists, RN or nurse practitioner who report assessment of the impact of the use of medicine to the GP
(c) Monitoring	The process of assessing patients' clinical signs before administration or monitoring their response to medicines. Responses to medicines may be both positive and negative
(d) Cessation	Discontinuation of treatment ordered by the general practitioner
On-site staff	Health care providers that are permanently based in the nursing home e.g. nursing home managers, licensed registered nurses, enrolled nurses, nursing assistants, personal carers
Visiting staff	Health care providers that may not be permanently based in the nursing home e.g. specialists medical practitioner, general practitioner, community pharmacists, accredited pharmacist, nurse practitioners, clinical nurse consultant

included studies, 13 used quantitative methods that were cross-sectional designs [37, 42–46, 52, 53, 56, 57, 60–62], 9 used qualitative methods (focus groups, semi-structured interviews, structured interview, and a case study) [39, 40, 47–51, 54, 55, 58], one was quasi-qualitative (open-ended questionnaire) [41], and one used mixed methods [59].

All papers were conducted in nursing homes, however three studies only specified the nursing home type [39, 40, 55, 56]. There were three groups of study participants: on-site staff ($n = 19$), visiting staff ($n = 14$), and non-professionals/resident advocates/families ($n = 3$). Of the on-site staff, 11 studies included nursing assistants or licensed practical nurses [39, 40, 42, 44–46, 50, 53, 54, 56, 60, 61]. Of the visiting staff, 13 studies included GPs [37, 39, 40, 47–50, 52, 54, 56–59, 61], and only two studies included pharmacists [39, 40, 49].

Of the 24 included studies, 23 uncovered at least one facet of organizational culture according to Schein's theory. Most of the articles addressed culture at the first level ($n = 21$). Of these studies, 19 revealed facets of climate

[37, 39, 41–43, 45, 46, 48, 49, 51–58, 60, 62], and 9 uncovered features of visible artifacts [40, 41, 47, 48, 52–54, 57, 58]. Three studies covered the second level of culture—espoused values [49, 54, 59], while no studies addressed the third level of organizational culture—basic assumptions. The remaining three studies used other assessments of culture evaluation as they were interested in investigating the relationship between 'treatment culture' and the use of psychotropic medicines [44, 50, 61]. Treatment culture was measured using a questionnaire that intended to measure nurses' beliefs and norms about drug and non-drug interventions for managing behavior and sleep disturbances, as well as their interactions with pharmacists and mental health workers [44]. Of these three studies, two also used additional assessment of culture; one used the Competing Values Framework (CVF) to investigate organizational culture [61], and one used both treatment culture and Schein's theory in their qualitative analysis [50]. Our evaluation of both studies revealed that they uncovered aspects of organizational climate [50, 61].
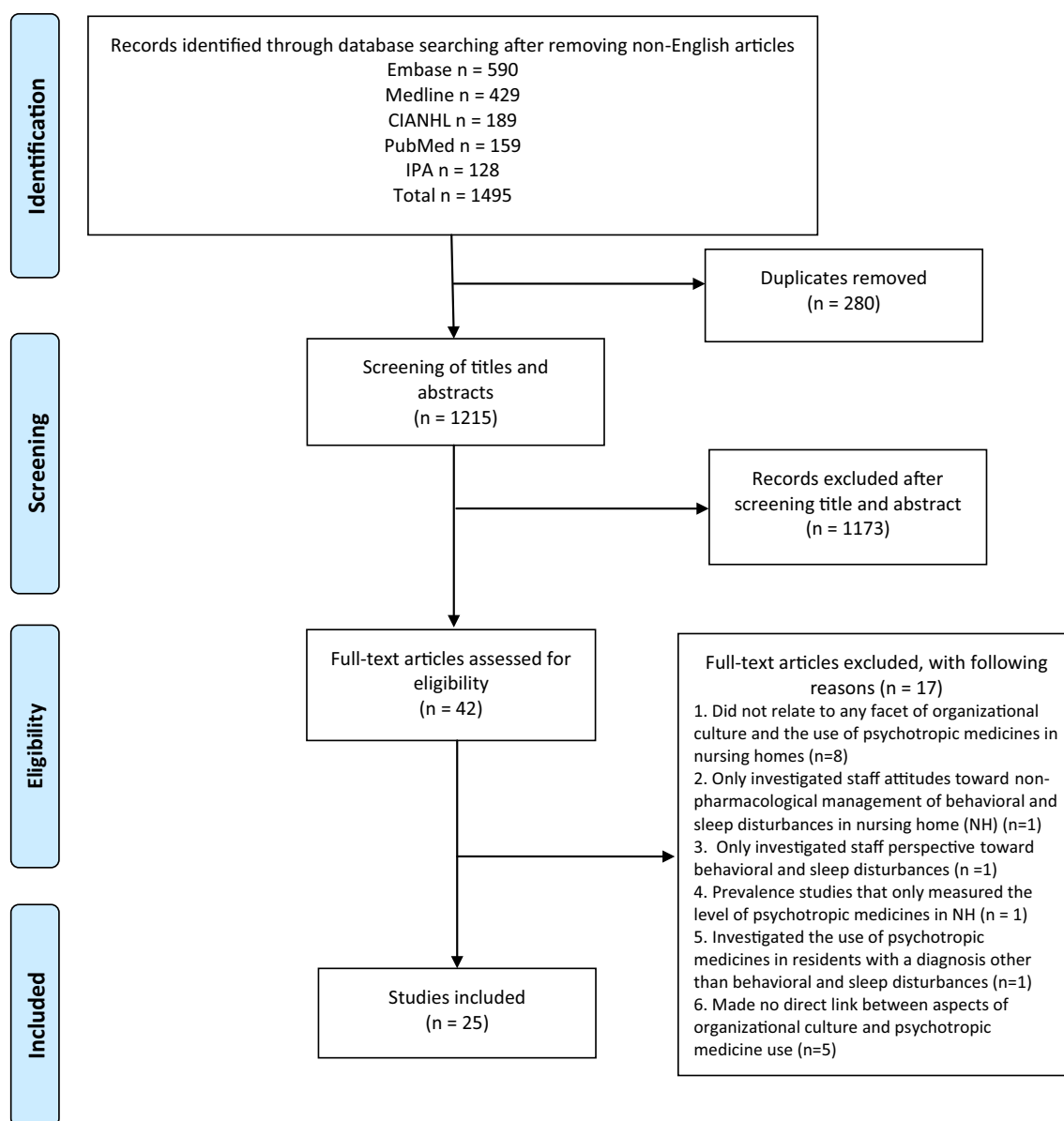
Fig. 2 PRISMA flowchart. *PRISMA* Preferred Reporting Items for Systematic Reviews and Meta-Analyses, *NH* nursing home, *IPA* International Pharmaceutical Abstracts

3.3 Results of Thematic Analysis

The themes were organized using Schein's theory and the included studies confirmed the role of three aspects of organizational culture in the use of psychotropic medicines in the literature: organizational climate, visible artifacts, and espoused values (Table 3). Three themes were related to organizational climate and included 'on-site and visiting staff perceived level of resources', 'on-site staff perceived level of burden' and 'on-site staff interactions with GPs'. Two themes, 'informal and formal meetings with residents or families' and 'review of psychotropic medicines', were

related to visible artifacts. The remaining two themes related to espoused values: teamwork and person-centeredness.

3.3.1 Aspect of Organizational Culture 1: Organizational Climate

This aspect of culture relates to on-site and visiting staff perceptions of nursing home work conditions and interactions with each other [29]. Features of organizational climate related to the use of psychotropic medicines was derived from a majority of the included articles (21 of the

Table 2 Summary of reviewed papers

Authors (year) country	Aims	Study methods	Participants and settings	Aspects of medication management investigated	Aspects of culture investigated	Key findings
Anthierens et al. (2009) [55] Belgium	To explore how nurses perceive their own role in the use of benzodiazepines in NH	Qualitative study Focus groups and semi-structured interviews	33 RNs five NHs (1 private, 2 community social services, 2 religious charities)	Initiation, review, cessation of benzodiazepines	Level 1: Organizational climate	Organizational climate: Participants perceived non-pharmacological management of behaviors was limited due to minimal staffing RNs felt overwhelmed by work pressures which stimulated use of benzodiazepines Benzodiazepines was seen as necessary to minimize the workload of nurses at night time RNs sensed GPs had an authoritarian attitude and were apprehensive to provide input into benzodiazepines withdrawal
Azermai et al. (2014) [56] Belgium	To identify barriers to antipsychotic discontinuation among GPs and nurses	Quantitative Cross-sectional study Questionnaire	226 nurses and NAs 181 GPs 4 NHs (3 were private not for-profit and 1 public NH)	Cessation of antipsychotic medicines	Level 1: Organizational climate	Organizational climate: Major barrier for antipsychotic discontinuation was the concern for recurring behavioral problems after discontinuation The potential of a higher workload was perceived as a barrier to discontinuation
Bourgeois et al. (2014) [57] Belgium	To identify barriers to benzodiazepines discontinuation among GPs and nurses	Quantitative Cross-sectional study Questionnaire	25 GPs 16 RNs 5 NHs NH type not stated	Cessation of benzodiazepines	Level 1: Visible artifact and organizational climate	Visible artifact: GP and RN reported: resistance for benzodiazepine discontinuation from residents was high, resistance from families was to be low Organizational climate: Benzodiazepine discontinuation was perceived to increase the care burden on staff as alternative strategies were more time consuming
Cohen-Mansfield and Jensen (2008) [37] US	To describe GPs' attitudes toward treatment of behavioral disturbances	Quantitative Cross-sectional study Questionnaire	110 GPs Number of NHs not stated	Initiation of psychotropic medicines	Level 1: Organizational climate	Organizational climate: Most GPs agreed that NH staff requested psychotropic medication too quickly (69%) and that there were insufficient resources for the use of non-pharmacological interventions (56%)

Table 2 continued

Authors (year) country	Aims	Study methods	Participants and settings	Aspects of medication management investigated	Aspects of culture investigated	Key findings
Cornege-Blokland et al. (2012) [52] The Netherlands	To identify reasons for prescribing antipsychotic medicines by physicians and the role of nurses and residents' family in antipsychotic prescribing decisions	Quantitative Cross-sectional study Questionnaire	27 Physicians, 27 RNs 32 residents' family member 23 NH NH type not stated	Initiation of antipsychotic medicines	Level 1: Visible artifact and organizational climate	Visible artifacts: GPs felt pressured to prescribe antipsychotic medicines by the residents' family Majority of residents' family reported that they were insufficiently informed about the side effects of antipsychotic therapy Organizational climate: Two thirds of GPs reported antipsychotic medicines were initiated by NH staff Physicians identified the high use of prescribing antipsychotics was related to the lack of qualified staff, inadequate staffing and lack of time to implement non-pharmacological interventions
Ellis et al (2015) [41] US	To examine strategies that have been implemented by NHs to reduce antipsychotic medication use	Quasi-qualitative open ended questionnaire	276 Participants (DON, NH administrators, managers, nurses, social worker) Number of NHs not stated	Initiation, review and monitoring of antipsychotic medicines	Level 1: Visible artifacts and organizational climate	Visible artifact: Participants reported interdisciplinary care meetings, inclusive of other professionals, and pharmacists review of antipsychotic medicines reduced antipsychotic medicines Organizational climate: On-site staff reported that more nursing staff to provide one on one care and improve nurse training was needed for the reduction of antipsychotic medicines
Ervin et al. (2012) [46] Australia	To investigate staff perceptions toward the management of BPSD	Quantitative Cross-sectional study Questionnaire	130 participants (RNs, ENs, NAs) 6 NH in rural Australia NH type not stated	Initiation of antipsychotic medicines	Level 1: Organizational climate	Organizational climate: Nearly a third of on-site staff reported they sometimes requested the GP to prescribe antipsychotic medicines Most reported barriers to the implementation of non-pharmacological interventions for nurses were time constraints

Table 2 continued

Authors (year) country	Aims	Study methods	Participants and settings	Aspects of medication management investigated	Aspects of culture investigated	Key findings
Flick et al. (2012) [58] Germany	To explore physicians opinions on drug treatment of sleep problems in NHs	Qualitative study Semi-structured interviews	20 physicians 16 NHs NH type not stated	Initiation, cessation of hypnotic medicines	Level 1: Visible artifacts and organizational climate	Visible artifacts: Some physicians felt pressured to prescribe hypnotic medication by residents or their families and would recede to their requests. Some reported to spend time with resident or their families to explain the risks of hypnotic treatment. Organizational climate: Some physicians reported that sleep medication were necessary to help nurses do their work at night without being disturbed by residents. Some reported to prescribe sleep medication to address sleep disturbances in residents that created increased workload for nurses
Hughes and Goldie (2009) [48] UK	To explore residents' involvement in prescribing of medicines	Qualitative study Focus groups and semi-structured interviews	8 GPs 9 managers Number of NHs not stated	Initiation of psychotropic medicines	Level 1: Visible artifacts and organizational climate	Visible artifacts: GPs reported that residents' family request the initiation of psychotropic medicines. Organizational climate: GPs reported that prescribing of psychotropic medicine is led by on-site staff who want to 'settle down the resident'

Table 2 continued

Authors (year) country	Aims	Study methods	Participants and settings	Aspects of medication management investigated	Aspects of culture investigated	Key findings
Janus et al. (2017) [53] The Netherlands	To identify reasons for nurses and NAs to requests antipsychotic medicines in residents with dementia in NH	Quantitative Cross-sectional study	81 nurses (31 nurses, 50 NA) 1 large NH organization Number of NH not stated	Initiation of antipsychotic medicine	Level 1: Visible artifacts and organizational climate	Visible artifacts: Majority of respondents disagreed that the resident or family would demand antipsychotic use Organizational climate: Majority (63%) of respondents (nurses and NA) have asked a physician/nurse specialists to prescribe an antipsychotic medicines in the last 3 months Over half of respondents were inclined to request the prescribing of antipsychotic medicines as it would result in less psychological burden for staff, less staff distress and lower workload for staff Only half (51%) of respondents felt confident to asks a physician to prescribe an antipsychotic
Lemay et al. (2013) [42] US	To measure on-site staff attitudes toward antipsychotic medicines	Quantitative Cross-sectional study	27 medical directors, 56 DON, 345 RN, 161 licensed practical nurse, 434 NA 29 NHs NH type not stated	Initiation of antipsychotic medicines	Level 1: Organizational climate	Organizational climate: More two thirds of direct care staff (RNs and NA) felt that they were unable to 'manage' challenging behaviors without using psychotropic medicines Managers believed on-site staff could manage challenging behaviors without using psychotropic medicines
Lhermite et al. (2015) [59] France	To examine the views of non-HCPs and HCPs about involuntarily treatment of behavioral problems in NHs	Mixed methods	101 non-professionals, 20 nurses, 20 psychologists, 10 physicians Number of NHs not stated	Initiation of psychotropic medicines	Level 2: Espoused value	Espoused value for patient-centeredness: Participants felt it was important to respect residents' wishes and spend time talking with them about psychotropic treatment Physicians viewed respect for residents' autonomy as an important consideration to treating a resident Psychologists viewed taking time to talk to resident and that treating residents against their will is unacceptable

Table 2 continued

Authors (year) country	Aims	Study methods	Participants and settings	Aspects of medication management investigated	Aspects of culture investigated	Key findings
Mort et al. (1993) [43] US	To investigate the attitude of nurses toward the use of psychotropic medicines	Quantitative Cross-sectional Questionnaire	314 nurses 62 NHs NH type not stated	Not specified (states 'use of psychotropic medicines')	Level 1: Organizational climate	Organizational climate: Half of nurses reported that they were usually or always involved in decisions to use of psychotropic medicines (although it is unclear what aspect with respect to use of psychotropic medicines they are involved in)
Patterson et al. (2007) [49] UK	To explore the views of professionals in the UK regarding the suitability of pharmacists having direct input in achieving optimal outcomes in the NH	Qualitative study Focus groups and semi structured interviews	20 Pharmacists 8 GPs 10 NH managers 6 Resident advocates Number of NHs not stated	Initiation, review of psychotropic medicines	Level 1: Organizational climate Level 2: Espoused value	Organizational climate: Pharmacists and GPs reported that psychotropic medicines were requested by NH staff Espoused value for teamwork Participants considered that the pharmacists had an important role to improve prescribing in NH. Inter-disciplinary team work would ideally entail direct communication with the GP
Pekkarinen et al. (2006) [60] Finland	To examine whether job demand and job control were independent predictors of the prevalence of antipsychotic medicine use as restraints	Quantitative Cross-sectional study Questionnaire	977 NH staff (56.6% LPNs, 24.1% RNs, 14.6% NAs, 4.7% head nurses) 31 NH (residential homes, 8 health centers)	Prevalence of antipsychotic medicines	Level 1: Organizational climate	Organizational climate: NHs with high job demand (work load, insufficient time to work) and low level of control (active learning and a sense of competence, ability to develop new skills, job requiring skill) was associated with high level use of antipsychotic medicines as a restraint
Peri et al. (2015) [61] NZ	To investigate: 1. NH organizational culture and psychotropic medicine use. 2. NH treatment culture and psychotropic medicine use	Quantitative Cross-sectional study Questionnaire	10 nurse managers 44 RNs 145 NAs 19 GPs 14 NHs	Prevalence of antipsychotic medicines	Level 1: Organizational climate Competing values framework (CVF) Treatment culture	Organizational climate: NHs rated as a hierarchical organizational type by NAs were associated with higher level of psychotropic medicine use Other elements of culture evaluation: NH rated as having low treatment scores by GPs had higher level of psychotropic prescribing than in other NH

Table 2 continued

Authors (year) country	Aims	Study methods	Participants and settings	Aspects of medication management investigated	Aspects of culture investigated	Key findings
Sawan et al (2017) [39] Australia	To explore organizational climate and the use of psychotropic medicines in NHs	Qualitative study Semi-structured interviews	40 participants (managers, RNs, EN, NA, GPs, pharmacists, specialists, clinical nurse consultant) 8 NH (for-profit and not for-profit)	Initiation, monitoring, review, cessation	Level 1: Organizational climate	Organizational climate: Participants reported psychotropic prescribing was related to limitations in on-site staffing and training. Psychotropic medicines were prescribed to assist on-site staff to cope with heavy workload and distress. Withdrawal and cessation were unwelcomed by on-site staff. Managers' support for on-site and visiting staff involvement in monitoring of psychotropic medicines stimulated the reduction in the use of psychotropic medicines. Trust and respect between on-site and visiting staff was important for teamwork to reduce inappropriate psychotropic prescribing
Sawan et al. (2016) [40] Australia	To explore the adoption of visible components of organizational culture and how it influences the use of psychotropic medicines in NHs	Qualitative study Semi-structured interviews	40 participants (managers, RNs, EN, NAs, GPs, pharmacists, specialists, clinical nurse consultant) 8 NH (for-profit and not for profit)	Initiation, review, cessation	Level 1: Visible artifacts	Visible artifacts: Interdisciplinary meetings, pharmacist-led medication management reviews and meetings with the resident or their families were used purposefully by some NHs. This led to the reduction in the prescribing of psychotropic medicines. Whereas in other NH, these components of culture were used as a logistical function which resulted in no changes to psychotropic prescribing
Schmidt and Svarstad (2002) [62] Sweden	To explore the influence of nurse-physician communication on the use of psychotropic medicines	Quantitative Cross-sectional study Questionnaire	Nurses 197 34 NHs	Prevalence of psychotropic medicines	Level 1: Organizational climate	Organizational climate: Poor nurse-physician communication is related to higher use of psychotropic medicines

Table 2 continued

Authors (year) country	Aims	Study methods	Participants and settings	Aspects of medication management investigated	Aspects of culture investigated	Key findings
Shaw et al. (2016) [50] UK	To explore the treatment culture of psychotropic medicines in NHs for older people with dementia	Qualitative Study Semi-structured interviews	5 managers 7 nurses 13 NA 2 GPs 6 NHs NH type not stated	Initiation	Level 1: Organizational climate and treatment culture	Organizational climate: Participants felt addressing behavioral disturbances (one on one) was problematic because of insufficient staffing levels Some on-site staff felt that they were unable to question GPs decision to prescribe psychotropic medicines Limited face to face contact contributed to the poor cooperation between on-site staff and GPs
Smeets et al. (2014) [54] The Netherlands	To identify reasons for why psychotropic medicines are prescribed for neuropsychiatric symptoms in NHs	Qualitative study Semi-structured interviews	15 physicians 4 RNs 10 NA 12 NH NH type not stated	Initiation and cessation	Level 1: Visible artifact and organizational climate Level 2: Espoused values	Visible artifacts: Physician felt pressured to prescribe psychotropic medicines and faced resistance for withdrawal from residents or their relatives Organizational climate: Physicians felt pressured by nurses to start prescribing psychotropic medicines and faced resistance for withdrawal from nurses Physicians and nurses reported insufficient number of on-site staff, led to increased prescription of psychotropic medicines Physicians reported that hypnotics were prescribed to address the workload of on-site staff Both nurses and physicians emphasized the importance of clear communication between both professionals for deciding on psychotropic treatment Espoused value for patient-centeredness and teamwork: Physicians felt that prescribing of psychotropic medicines should be done with careful consideration, evaluation and attempt at dose reduction or cessation Physicians reported a multidisciplinary approach and involvement of families would limit the use of psychotropic medicines

Table 2 continued

Authors (year) country	Aims	Study methods	Participants and settings	Aspects of medication management investigated	Aspects of culture investigated	Key findings
Smith et al. (2002) [47] Australia	To examine the medication review process in NHs	Qualitative study Structured interviews	21 GPs 14 NH NH type not stated	Review and cessation of hypnotics	Level 1: Visible artifact	Visible artifact: GPs indicated that they felt coerced by residents or their relatives to prescribe psychotropic medicines (hypnotics) therefore were unable accept pharmacists' recommendation to change, reduce or cease psychotropic therapy
Svarstad et al. (2001) [44] US	To examine NH treatment culture and use of psychotropic medicines	Quantitative Cross-sectional study Questionnaire	89 RNs 102 practical nurses 16 NHs	Prevalence of psychotropic medicines	Treatment culture	Other elements of culture evaluation: Study found variation in 'treatment culture' scores across NHs. Five out of the 16 NHs had resident-centred philosophy—a score of 1.7 or higher. NH categorized as 'resident-centred' had lower levels of antipsychotic prescribing than in other NHs
Thurmond (1999) [45] US	To assess the perceptions of nurses regarding the use of psychotropic medicines	Quantitative Cross-sectional study Questionnaire	38 RNs 22 licensed practical nurses 6 NHs NH type not stated	Initiation of psychotropic medicines	Level 1: Organizational Climate	Organizational climate: Some participants (20%) reported a need for increased staff as an alternative to the use of psychotropic medicines
Wood-Mitchell et al. (2008) [51] UK	To explore why psychiatrists prescribe psychotropic medicines for BPSD	Qualitative study Semi-structured interviews	12 psychiatrists Number of NHs not stated	Initiation, monitoring	Level 1: Organizational Climate	Organizational climate: Psychiatrists felt pressured to prescribe psychotropic medicines Psychiatrists reported the use of psychotropic medicines was due to the perception among nurses and GPs that non-pharmacological treatments were time-consuming Psychiatrists felt that non-pharmacological approaches were limited due to the 'lack of resources' in NH, with some homes likely resistant to this option

BPSD Behavioral and Psychological Symptoms of Dementia, *EN* enrolled nurses, *GP* general practitioner, *HCP* health care professionals, *LPN* licensed practical nurse, *NA* nursing assistant, *NH* nursing home, *RN* registered nurse

Table 3 Themes and key messages identified from reviewed papers

Aspect of culture	Themes	Key messages	Studies
Organizational climate	On-site and visiting staff perceived level of resources	'Insufficient resources' to address non-pharmacological interventions was a barrier to reduce psychotropic medicines	Cohen-Mansfield and Jensen (2008) [37] Wood-Mitchell et al. (2008) [51]
		On-site staff were unable to provide non-pharmacological interventions to address behavioral and sleep disturbances due to 'staff shortages'	Anthierens et al. (2009) [55] Cornege-Blokland et al. (2012) [52] Ellis et al. (2015) [41] Shaw et al. (2016) [50] Thurmond (1999) [45] Smeets et al. (2014) [54] Sawan et al. (2017) [39]
		High-level use of psychotropic medicines associated with limited on-site staff training to address resident behavioral or sleep disturbances	Sawan et al. (2017) [39] Cornege-Blokland et al. (2012) [52] Ellis et al. (2015) [41] Pekkarinen et al. (2006) [60] Smeets et al. (2014) [54]
		Limited time to provide non-pharmacological interventions as the cause for the use of psychotropic medicines	Cornege-Blokland et al. (2012) [52] Bourgeois et al. (2014) [57] Wood-Mitchell et al. (2008) [51] Ervin et al. (2012) [46]
	On-site staff perceived level of burden	Resident behavioral and sleep disturbances increased workload of on-site staff and lead to increased use of psychotropic medicines	Lemay et al. (2013) [42] Bourgeois et al. (2014) [57] Anthierens et al. (2009) [55] Azermai et al. (2013) [56] Flick et al. (2012) [58] Smeets et al. (2014) [54] Sawan et al. (2016) [39] Pekkarinen et al. (2006) [60] Janus et al. (2017) [53]
		Use of psychotropic medicines to lower on-site staff workload at sundown or at night	Anthierens et al. (2009) [55] Flick et al. (2012) [58] Sawan et al. (2017) [39] Smeets et al. (2014) [54]
		The potential for escalation of behavioral disturbances, which would increase on-site staff workload, was a barrier for the reduction or cessation of psychotropic medicines	Azermai et al. (2013) [56] Bourgeois et al. (2014) [57] Sawan et al. (2017) [39] Smeets et al. (2014) [54]
		Distress and burden from workload related to on-site staff requests for the use of psychotropic medicines	Janus et al. (2017) [53] Sawan et al. (2017) [39]

Table 3 continued

Aspect of culture	Themes	Key messages	Studies
	On-site staff interactions with the general practitioners (GPs)	Psychotropic medicines were prescribed due to requests from on-site to the GP to initiate treatment	Cohen-Mansfield and Jensen (2008) [37] Cornege-Blokland et al. (2012) [52] Ervin et al. (2012) [46] Flick v (2012) [58] Janus et al. (2017) [53] Hughes and Goldie (2009) [48] Patterson et al. (2007) [49] Wood-Mitchell et al. (2008) [51] Smeets et al. (2014) [54] Sawan et al. (2017) [39]
		GPs felt 'pressured to prescribe' psychotropic medicines by on-site staff	Cornege-Blokland et al. (2012) [52] Flick et al. (2012) [58] Smeets et al. (2014) [54] Hughes and Goldie (2009) [48]
		Traditional hierarchical structures limited review of psychotropic treatment	Sawan et al. (2017) [39] Anthierens et al. (2009) [55] Shaw et al. (2016) [50] Peri et al. (2015) [61]
		Trust and respect among on-site and visiting staff facilitated review and cessation of psychotropic medicines	Sawan et al. (2017) [39]
		Managerial support for the involvement of other on-site staff in the review of psychotropic medicines facilitated the reduction of psychotropic prescribing	Sawan et al. (2017) [39]
		Other inter-professional interactions influenced use of psychotropic medicines	Mort et al. (1993) [43] Schmidt and Svarstad (2002) [62]
Visible artifacts	Informal and formal meetings with residents or families	GPs were coerced to prescribe psychotropic medicines from residents or their families	Cornege-Blokland et al. (2012) [52] Flick et al. (2012) [58] Hughes and Goldie (2009) [48] Smith et al. (2002) [47] Smeets et al. (2014) [54] Sawan et al. (2016) [40] Bourgeois et al. (2014) [57]
		Families had had little or no involvement in benzodiazepine discontinuation or antipsychotic prescribing decisions	Bourgeois et al. (2014) [57] Janus et al. (2017) [53]
		GPs or on-site staff spent limited or no time explaining the risk versus benefits of psychotropic treatment	Cornege-Blokland et al. (2012) [52]
		Some GPs spent time explaining the risk versus side effect of treatment with the resident or their families	Flick et al. (2012) [58] Sawan et al. (2016) [40]

Table 3 continued

Aspect of culture	Themes	Key messages	Studies
	Review of psychotropic medicines	Interdisciplinary care meetings involving the review of the level of psychotropic medicines facilitated appropriate psychotropic prescribing	Ellis et (2015) [41] Sawan et al. (2016) [40]
		Utilization of pharmacist-led reviews influenced the use of psychotropic medicines	Ellis et (2015) [41] Smith et al. (2002) [47] Sawan et al. (2016) [40]
Espoused values	Teamwork	Collaboration with on-site and visiting staff considered important for optimizing non-pharmacological treatment and reviewing psychotropic medicines	Smeets et al. (2014) [54] Patterson et al. (2007) [49]
	Person-centeredness	Tailoring psychotropic treatment for the resident and resident involvement in discussions	Lhermite et al. (2015) [59] Smeets et al. (2014) [54]

24). These were 'on-site and visiting staff perceived level of resources', 'perceived level of burden' and 'on-site interactions with the GP'.

On-Site and Visiting Staff Perceived Level of Resources On-site and visiting staff perceptions regarding the provision of resources by nursing homes was a major aspect of organizational climate related to the use of psychotropic medicines. Participants indicated the use of psychotropic medicines in place of non-pharmacological interventions, to manage behavioral or sleep disturbances, was due to limited on-site staffing levels and training. Twelve studies cited that participants perceived nursing home work conditions were a barrier to the provision of non-pharmacological interventions [37, 39, 41, 45, 46, 50–52, 54, 55, 57, 60]. Of these studies, two reported on the work environment broadly by citing that visiting staff viewed 'limited nursing home resources' as a barrier to non-pharmacological interventions [37, 51]. For example, most GPs held the opinion that on-site staff requested psychotropic medicines too quickly and that there were 'insufficient resources' for the use of non-pharmacological interventions [37]. Seven studies within this theme specifically reported on-site staff attributed their inability to provide non-pharmacological interventions to staff shortages, which increased the use of psychotropic medicines [39, 41, 45, 50, 52, 54, 55], while in only five studies, on-site staff reported that high-level use of psychotropic medicines was associated with their limited training to address resident behavioral or sleep disturbances [39, 41, 52, 54, 60]. A number of studies highlighted time to provide non-pharmacological interventions was viewed by on-site staff and visiting staff as a limited resource and the use of psychotropic medicines was viewed as an alternative [46, 51, 52, 57].

On-Site Staff Perceived Level of Burden On-site and visiting staff perceptions of the level of on-site staff workload is another aspect of organizational climate connected to the use of psychotropic medicines. Multiple studies ($n = 9$) reported staff perceived that resident behavioral and sleep disturbances increased on-site staff workload, which led to the increased use of psychotropic medicines [39, 42, 53–58, 60]. Within this theme of workload, several studies made specific reference to the use of psychotropic medicines in order to minimize the workload of staff at sundown or at night-time by reducing the disruptiveness of residents [39, 54, 55, 58]. The impact of workload on the withdrawal of psychotropic treatment was also identified in four studies [39, 54, 56, 57]. Studies cited the potential for escalation of behavioral disturbances that would increase on-site staff workload was a barrier for the reduction or cessation of psychotropic medicines.

A number of studies cited that on-site staff were unable to manage behavioral and sleep disturbances without using psychotropic medicines [42, 57]; however, no further details were provided to explain why on-site staff were unable to cope with behavioral and sleep disturbances. Only two studies specifically identified a relationship between the distress or burden of on-site staff caused by increased workload and the use of psychotropic medicines [39, 53]. Janus et al. [53] described that half of the participants were 'inclined' to request psychotropic medicines to reduce psychological burden, whereas Sawan et al. [39] further revealed on-site staff experiencing distress and burden tended to request psychotropic medicines in some nursing homes.

On-Site Staff Interactions with General Practitioners The most common finding regarding organizational climate was

that decisions regarding psychotropic treatment were influenced by the involvement of on-site staff ($n = 15$) [37, 39, 43, 46, 48–55, 58, 61, 62]. Ten studies reported that psychotropic medicines were prescribed by GPs due to requests from on-site staff to initiate treatment [37, 39, 46, 48, 49, 51–54, 58]. Of these, four studies specifically identified that GPs felt 'pressured' by on-site staff to prescribe psychotropic medicines [48, 52, 54, 58]. In addition, two studies cited that on-site staff reported having actually requested GPs or nurse specialists (similar to nurse practitioners) to initiate psychotropic medicines [46, 53].

A number of studies detailed complexities in on-site staff and GP interactions that influenced the review of psychotropic treatment. In three studies, on-site staff expressed feeling disregarded by the GP due to their views on traditional hierarchical structures or perceived negative relationships with the GP [39, 50, 55]. This was reported to be a barrier for on-site staff review of psychotropic medicines and discussing concerns with psychotropic treatment with the GP. Another study reported that hierarchical-type organizations were associated with higher use of psychotropic medicines [61]. In another study, visiting and on-site staff reported both trust and respect to be an important aspect of cooperation and teamwork among on-site staff and the GP leading the review and cessation of psychotropic treatment [39]. Additionally, the study by Sawan et al. [39] was the only study that identified that managerial support for the involvement of other on-site staff in monitoring and review of psychotropic treatment led to open communication with the GP, which stimulated the reduction in the use of psychotropic medicines.

One study reported that on-site staff were involved in decisions to use psychotropic medicines [43]. Schmid and Svarstad [62] also reported that GP-registered nurse communication influenced the level of psychotropic medicines. However, both studies did not describe GP on-site interactions in detail or specify which aspects of medication management that it influenced.

3.3.2 Aspect of Organizational Culture 2: Visible Artifacts

Visible artifacts of organizational culture relate to how nursing homes adopt structures and processes [29]. Visible artifacts that were identified to influence the use of psychotropic medicines were derived from 9 of the 25 included studies and included informal and formal meetings with residents or families that involved discussions on psychotropic prescribing and how reviews of psychotropic medication were adopted by nursing homes.

Informal and Formal Meetings with Residents or Families The main contributor to visible artifacts was GP or on-site staff informal and formal meetings with residents or their families [40, 47, 48, 52, 53, 57, 58]. Seven studies reported that GPs were pressured to prescribe psychotropic medicines from residents or their families [40, 47, 48, 52, 54, 57, 58]. In addition, one study reported that, according to GPs and nurses, families demonstrated minimal resistance to discontinuation of benzodiazepine use [57], and another reported families or residents would not demand antipsychotic medicines [53]. On the other hand, from the resident families' perspective, they were insufficiently informed about the side effects of therapy [52].

The majority of studies reported that residents and their families influenced GPs to prescribe psychotropic medicines, although only two studies described the adoption of meetings with the resident, or family meetings, to discuss psychotropic treatment [40, 58]. Flick et al. [58] reported some GPs discussed the pros and cons of psychotropic treatment with residents or families to prevent the initiation of psychotropic treatment, whereas another study reported that few nursing homes utilized meetings with families to discuss the risk versus benefits of treatment [40] and to review psychotropic medicines and cease inappropriate treatment.

Review of Psychotropic Medicines Three studies described how routine medication reviews were undertaken in nursing homes and how this influenced psychotropic medicines [40, 41, 47]. Two studies referred to interdisciplinary meetings involving the participation of visiting staff, such as pharmacists and mental health clinical staff, that led to the reduction in psychotropic treatment [40, 41]. The interdisciplinary meetings involved reviewing the appropriateness of psychotropic medicines in residents and overuse of psychotropic medicine [40, 41]. One study described variation in the activities undertaken in interdisciplinary meetings across nursing homes [40]. In this study, some nursing homes used interdisciplinary meetings as a 'box-ticking exercise' for accreditation purposes, which led to no improvement in the use of psychotropic medicines, while in other nursing homes, meetings were embraced by nursing home managers to discuss ways to improve the level of psychotropic medicine use [40].

Another visible artifact that influenced the use of psychotropic medicines was the medication review conducted by a pharmacist. It is a requirement for nursing homes in countries such as the US and Australia that residents have their medications reviewed by a pharmacist [63]. Two studies described the utilization of pharmacist-led medication reviews and their influence on psychotropic prescribing [40, 47]. Smith et al. [47] identified GPs did not accept pharmacists' recommendations to cease or change psychotropic treatment as they felt that they would face

refusal from the resident or their families. This indicates that facing resistance from the resident or their families held considerable weight with the GP when prescribing psychotropic treatment. Only one study revealed that pharmacist-led medication reviews were embraced by on-site staff in some nursing homes, leading to dose reduction and cessation in psychotropic treatment [40].

3.3.3 Aspect of Organizational Culture 3: Espoused Values

Espoused values of organizational culture are the ideal standards and goals of an organization [29]. Espoused values were derived from three included studies that reported on-site and visiting staff valued teamwork and person-centeredness to ensure the appropriate use of psychotropic medicines. Two studies reported that participants cited the importance of tailoring treatment for the resident by involving the resident, as well as their families, in discussions [49, 54]. Teamwork among on-site and visiting staff was considered an important standard in nursing homes to achieve appropriate prescribing [54, 59].

4 Discussion

Organizational culture is a complex phenomenon that necessitates the use of a detailed and clear definition in order to identify its role in the use of psychotropic medicines. By using Schein's theoretical model [29], which provides a comprehensive framework to assess all layers of culture, this review identified that the majority of the studies reviewed addressed the surface aspects of culture, i.e. climate and visible artifacts. The basic assumptions of culture driving practices and behaviors [29] have not been addressed by any study. This integrative review contributes to the knowledge on culture by extracting findings from studies to identify the aspects of culture important to the use psychotropic medicines: perceptions of staff interactions, conditions of the work environment, and utilization of interventions for quality use of medicine in nursing homes. However, this review outlines that gaps in the examination of aspects of culture in the literature remain.

Our review identified that of the 24 original studies, no study uncovers the relationship between basic assumptions and use of psychotropic medicines, even though they are integral to understanding the relationship between organizational culture and the use of psychotropic medicines in nursing homes [29, 30]. According to Schein, basic assumptions are the taken-for-granted beliefs driving practices and behaviors [28–30], which explain in/consistencies between the ideal standards for the management of residents with behavioral and sleep disturbances and actual use of psychotropic medicines. For example, one study highlighted that on-site staff from one nursing home view psychotropic medicines as a solution to address workload, while in another study, on-site staff do not [39]. This difference in approach can be explained by basic assumptions of culture. Other discrepancies such as what staff may be inclined to do and what they actually do can be accounted for by basic assumptions. For instance, Janus et al. [53] reported that while respondents were inclined to request the prescribing of antipsychotic medicines as they believed it would result in less psychological burden for staff and lower workload for staff, it was found to not correlate with actual reported behavior. The failure of studies to uncover basic assumptions of organizational culture can be explained by methodological approaches undertaken [28, 29]. Qualitative research is required to examine the in/congruency between artifacts (visible artifacts and climate) and espoused values to uncover basic assumptions [28]. This entails identifying patterns and deriving meaning from qualitative data to build a comprehensive and contextualized understanding of the social phenomena taking place [64]. Quantitative measurements can then be used to test the hypothesis informed by qualitative research [28].

The investigation of climate uncovers complexities in staff interactions and conditions of the work environment relevant to the use of psychotropic medicines. However, the review showed there are gaps in organizational climate research. The majority of studies uncovered perceived levels of workload to be associated with higher use of psychotropic medicines; however, the relationship between staff experiences of distress and burden and psychotropic prescribing is revealed by only two studies [39, 53]. Sexton et al. [65] identified that behavior and attitudes of staff are influenced by work pressure and stress, therefore staff distress is an important dimension of climate to identify areas for improvement in psychotropic prescribing. Additionally, intervention studies have identified leadership support is foundational for facilitating on-site staff adoption of person-centered care for the management of behaviors related to dementia [66, 67]. Likewise, managerial supervision is an essential aspect of climate as managers play a key role in reinforcing goals for the optimization of psychotropic medications. Despite the importance of managerial supervision, only one study explored on-site and visiting staff perceptions of managerial expectations regarding the appropriate use of psychotropic medicines [39]. The study reported that managers were seen to establish accepted practices for the use of psychotropic medicines in behavioral and sleep disturbances. The review also highlighted there are gaps in research regarding the aspects of on-site and visiting staff interactions necessary for cohesion. Only one study demonstrated that trust and respect facilitated open communication among on-site and visiting staff and

resulted in the review and cessation of psychotropic medicines [39]. Consideration of the nuanced aspects of staff cohesion is needed to reveal how staff interactions can be improved to ensure the review and cessation of psychotropic medicines.

Another important finding was that several studies used different operational definitions of culture to investigate psychotropic medicine in nursing homes [44, 50, 61]. 'Treatment culture', defined by Svarstad et al. [44], is the beliefs and norms of nurses about drug and non-drug interventions for managing behavior and sleep disturbances, as well as their interactions with pharmacists and mental health workers. However, on closer examination, the questionnaire developed to measure 'treatment culture' focused on the surface aspects of culture, nurses' attitudes, and knowledge of psychotropic medicines. For this reason, 'treatment culture' cannot be used entirely to make assertions about nurses' basic assumptions and actual organizational norms regarding psychotropic prescribing. According to Schein, beliefs denote the basic assumptions explaining why psychotropic medicines are used in the presence of challenging work conditions that may be contrary to ideal standards [29, 30]. Additionally, one study used the CVF to investigate the relationship between organizational culture and psychotropic medicines [61]. CVF characterizes organizations as belonging to one of four categories/cultural types (clan, adhocracy, hierarchy, market) [28]; however, the CVF was originally developed for use in educational organizations [28] and then adapted to the healthcare setting by previous investigators to measure the overall culture [68]. It does not assess the culture specific to a process or outcome of care relevant to nursing homes. Furthermore, the CVF tool does not address underlying assumptions of organizational members [23, 29].

The majority of studies indicated that the use of psychotropic medicines in nursing homes involves contributions other than the prescriber (i.e. on-site staff and pharmacists). Almost half of studies included nursing assistants or licensed practical nurses; however, the participant sample is limited as only two studies included pharmacists. The inclusion of on-site staff, particularly nursing assistants, is important given that they spend the most time with the residents, and it has been demonstrated GPs do consider their suggestions when initiating and ceasing psychotropic medicines [39]. Similarly, pharmacists have an instrumental role in optimizing medicine use through medication reviews and participation in interdisciplinary meetings [40, 69]. In addition, many studies describe that resident and family engagement with on-site and visiting staff has implications on the prescribing and cessation of psychotropic medicines [54, 58]; however, only one study included resident families as participants [52]. Thus, studies exploring the link between culture and the use of psychotropic medicines need to broaden participant sample to include more than one staff type, as well as examine the role of families and residents.

Most studies predominantly investigated initiation or cessation of psychotropic medicines. Also important to the medication management pathway is the review of psychotropic medicines. Once initiated for the management of behavioral and sleep disturbances, psychotropic medicines are recommended to be reviewed with attempts at dose reduction or cessation [70]. There is an extensive body of literature on the success of interventions for quality use of medicine in nursing homes, such as medication reviews and interdisciplinary meetings, in optimizing the appropriate use of psychotropic medicines [20, 71]. However, prior to 2016, there were no studies on the views and experiences of on-site and visiting staff with the use of interventions to reduce inappropriate use of psychotropic medicines that form part of national policy in many countries such as Australia and the US [40]. Studies that capture the utilization of visible artifacts associated with psychotropic medicines will reveal not only barriers to the review of psychotropic medicines but also how nursing homes adopt interventions to ensure they are successful in optimizing appropriate psychotropic prescribing.

The nursing home culture is a factor that plays a significant role in shaping the behavior and practices of on-site staff, with important implications for prescribing of psychotropic medicines. An important administrative approach to affect psychotropic prescribing practices is the examination of all aspects of organizational culture by stakeholders to identify what is actually taking place in nursing homes and how it influences decisions to use psychotropic medicines [40]. An investigation into organizational climate identifies the attitudes of staff towards the work environment that are likely to shape psychotropic treatment decisions [39]. Studies have found that independent of the staffing levels, a good working environment that entails perceived support from the manager and interprofessional relations is important to patient outcomes [72, 73]. Similarly, identification of the nursing home organizational climate is required to find areas for improvement in psychotropic prescribing, such as staff perceptions of the level of interdisciplinary teamwork and communication, and managerial supervision to reinforce goals for the optimization of medications [39]. The assessment of visible artifacts related to psychotropic prescribing, for example the adoption of meetings with residents or families that allows a discussion of the benefit and risk of medications between stakeholders and pharmacist-led medication review, will identify areas for improvement to achieve the quality use of psychotropic medicines [40]. In addition to visible artifacts and organizational climate, the basic assumptions of culture are required to be

considered by nursing home industry leaders and managers since they are the rationale for why staff do not adhere to ideal practices within the challenging environment of nursing homes. Thus, an investigation into how nursing home staff internalize the standards for appropriate practices and what is actually taking place is important to find ways to support all staff involved in providing care. In addition, interventions to improve inappropriate prescribing need to consider the organizational culture of the nursing home to foster a more holistic approach to psychotropic prescribing practice changes.

5 Strengths and Limitations

A strength of this review is that it adopted a theoretical approach using Schein's theory of organizational culture. Schein was chosen because it provides a clear and detailed comprehensive framework to investigate the role of culture in the use of psychotropic medicines. Schein's theory also considers the layered nature of organizational culture, paying attention to basic assumptions that drive staff behaviors and practices [28]. By using Schein's theory, what is known of organizational culture was extracted from previous studies in the literature, which identified the gaps in the knowledge of culture. Other organizational culture theories were considered, [25] however they were not systematically appraised because of the lack of a framework for evaluating these theories [74]. Another strength is the robust process of searching the literature and the use of very strict inclusion and exclusion criteria. Papers were selected if they examined an aspect of organizational culture according to Schein's theory and psychotropic medicine use in the nursing home. A limitation of this review is that it included several papers which did not explicitly examine organizational culture or use the term 'organizational culture'. However, the selection of papers was not based on the term 'culture' alone, but rather what constitutes culture according to Schein's theory. The selection criteria provided a comprehensive review of the literature and a holistic view of the role of culture in psychotropic treatment decisions. Finally, judgment to decide the choice of MeSH terms, which consistently map to the layers of Schein's organizational culture, what studies to be included, and the extraction of information was based on triangulation among the research team, which enhanced the rigor of their findings.

6 Conclusions

Studies have suggested that organizational culture influences the use of psychotropic medicines in nursing homes, however this is currently supported by a relatively limited number of studies that explain the role of organizational culture only at the surface level. Further research using a clear theoretical basis of organizational culture is required. This will allow a comprehensive assessment of what part of the organizational culture influences the use of psychotropic medicines and why. It is only then we can decide on how to address organizational culture to improve psychotropic medicine use in nursing homes. This review highlights the complexities of, and challenges associated with, investigating organizational culture, and confirmed Schein's theory as a useful framework to assess the role of organizational culture in healthcare practices.

References

1. Seitz DP, Gill SS, Herrmann N, Brisbin S, Rapoport MJ, Rines J, et al. Pharmacological treatments for neuropsychiatric symptoms of dementia in long-term care: a systematic review. Int Psychogeriatr. 2013;25(2):185–203.
2. Maher AR, Maglione M, Bagley S, Suttorp M, Hu J-H, Ewing B, et al. Efficacy and comparative effectiveness of atypical antipsychotic medications for off-label uses in adults: a systematic review and meta-analysis. JAMA. 2011;306(12):1359–69.
3. Bourgeois J, Elseviers MM, Bortel LV, Petrovic M, Vander Stichele RH. Sleep quality of benzodiazepine users in nursing homes: a comparative study with nonusers. Sleep Med. 2013;14(7):614–21.
4. Ballard C, Waite J. The effectiveness of atypical antipsychotics for the treatment of aggression and psychosis in Alzheimer's disease. Cochrane Database Syst Rev. 2006;25(1):CD003476.
5. Olazarán J, Valle D, Serra JA, Cano P, Muñiz R. Psychotropic medications and falls in nursing homes: a cross-sectional study. J Am Med Dir Assoc. 2013;14(3):213–7.
6. Schneider LS, Dagerman KS, Insel P. Risk of death with atypical antipsychotic drug treatment for dementia: meta-analysis of randomized placebo-controlled trials. JAMA. 2005;294(15):1934–43.
7. Aparasu RR, Chatterjee S, Chen H. Risk of pneumonia in elderly nursing home residents using typical versus atypical antipsychotics. Ann Pharmacother. 2013;47(4):464–74.
8. Snowdon J, Galanos D, Vaswani D. Patterns of psychotropic medication use in nursing homes: surveys in Sydney, allowing comparisons over time and between countries. Int Psychogeriatr. 2011;23(9):1520–5.
9. Simoni-Wastila L, Wei YJ, Luong M, Franey C, Huang TY, Rattinger GB, et al. Quality of psychopharmacological medication use in nursing home residents. Res Soc Adm Pharm. 2014;10(3):494–507.

10. Chen Y, Briesacher BA, Field TS, Tjia J, Lau DT, Gurwitz JH. Unexplained variation across US nursing homes in antipsychotic prescribing rates. Arch Intern Med. 2010;170(1):89–95.

11. Huybrechts KF, Rothman KJ, Brookhart MA, Silliman RA, Crystal S, Gerhard T, et al. Variation in antipsychotic treatment choice across US nursing homes. J Clin Psychopharmacol. 2012;32(1):11–7.

12. Kamble P, Chen H, Sherer J, Aparasu RR. Antipsychotic drug use among elderly nursing home residents in the United States. Am J Geriatr Pharmacother. 2008;6(4):187–97.

13. Svarstad BL, Mount JK. Chronic benzodiazepine use in nursing homes: effects of federal guidelines, resident mix, and nurse staffing. J Am Geriatr Soc. 2001;49(12):1673–8.

14. Hughes CM, Lapane KL, Mor V. Influence of facility characteristics on use of antipsychotic medications in nursing homes. Med Care. 2000;38(12):1164–73.

15. Rochon PA, Stukel TA, Bronskill SE, Gomes T, Sykora K, Wodchis WP, et al. Variation in nursing home antipsychotic prescribing rates. Arch Intern Med. 2007;167(7):676–83.

16. Zuidema SU, de Jonghe JF, Verhey FR, Koopmans RT. Psychotropic drug prescription in nursing home patients with dementia: influence of environmental correlates and staff distress on physicians' prescription behavior. Int Psychogeriatr. 2011;23(10):1632–9.

17. Cody M, Beck C, Svarstad BL. Challenges to the use of non-pharmacologic interventions in nursing homes. Psychiatr Serv. 2002;53(11):1402–6.

18. Schmidt I, Claesson CB, Westerholm B, Nilsson LG, Svarstad BL. The impact of regular multidisciplinary team interventions on psychotropic prescribing in Swedish nursing homes. J Am Geriatr Soc. 1998;46(1):77–82.

19. Alldred DP, Zermansky AG, Petty DR, Raynor DK, Freemantle N, Eastaugh J, et al. Clinical medication review by a pharmacist of elderly people living in care homes: pharmacist interventions. Int J Pharm Pract. 2007;15(2):93–9.

20. Thompson Coon J, Abbott R, Rogers M, Whear R, Pearson S, Lang I, et al. Interventions to reduce inappropriate prescribing of antipsychotic medications in people with dementia resident in care homes: a systematic review. J Am Med Dir Assoc. 2014;15(10):706–18.

21. Li J, Porock D. Resident outcomes of person-centered care in long-term care: a narrative review of interventional research. Int J Nurs Stud. 2014;51(10):1395–415.

22. Nishtala PS, McLachlan AJ, Bell JS, Chen TF. Psychotropic prescribing in long-term care facilities: impact of medication reviews and educational interventions. Am J Geriatr Psychiatry. 2008;16(8):621–32.

23. Scott T, Mannion R, Davies H, Marshall M. The quantitative measurement of organizational culture in health care: a review of the available instruments. Health Serv Res. 2003;38(3):923–45.

24. Davies HT, Nutley SM, Mannion R. Organisational culture and quality of health care. Qual Health Care. 2000;9(2):111–9.

25. Scott T, Mannion R, Davies HT, Marshall MN. Implementing culture change in health care: theory and practice. Int J Qual Health Care. 2003;15(2):111–8.

26. Davies H, Mannion R, Jacobs R, Powell A, Marshall M. Exploring the relationship between senior management team culture and hospital performance. Med Care Res Rev. 2007;64(1):46–65.

27. Hughes CM, Lapane K, Watson MC, Davies HTO. Does organisational culture influence prescribing in care homes for older people? A new direction for research. Drugs Aging. 2007;24(2):81–93.

28. Scott T, Mannion R, Marshall M, Davies H. Does organisational culture influence health care performance? A review of the evidence. J Health Serv Res Policy. 2003;8(2):105–17.

29. Schein EH. Organizational culture and leadership. 4th ed. San Francisco, CA: Jossey-Bass; 2010.

30. Schein EH. Coming to a new awareness of organizational culture. Sloan Manag Rev. 1984;25(2):3–16.

31. Schein EH. Sense and nonsense about culture and climate. In: Ashkanasy NM, Wilderom CPM, Peterson MF, editors. Handbook of organizational culture & climate. Thousand Oaks: Sage; 2000. p. xxiii–xxx.

32. Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. BMJ. 2009;339:b2535.

33. Whittemore R, Knafl K. The integrative review: updated methodology. J Adv Nurs. 2005;52(5):546–53.

34. Dixon-Woods M, Fitzpatrick R, Roberts K. Including qualitative research in systematic reviews: opportunities and problems. J Eval Clin Pract. 2001;7(2):125–33.

35. Stowasser DA, Allinson YM, O'Leary M. Understanding the medicines management pathway. J Pharm Pract Res. 2004;34(4):293–6.

36. Cohen-Mansfield J, Jensen B. Physicians' perceptions of their role in treating dementia-related behavior problems in the nursing home: actual practice and the ideal. J Am Med Dir Assoc. 2008;9(8):552–7.

37. Cohen-Mansfield J, Jensen B. Nursing home physicians' knowledge of and attitudes toward nonpharmacological interventions for treatment of behavioral disturbances associated with dementia. J Am Med Dir Assoc. 2008;9(7):491–8.

38. Cohen-Mansfield J, Jensen B. Assessment and treatment approaches for behavioral disturbances associated with dementia in the nursing home: self-reports of physicians' practices. J Am Med Dir Assoc. 2008;9(6):406–13.

39. Sawan M, Jeon YH, Fois RA, Chen TF. Exploring the link between organizational climate and the use of psychotropic medicines in nursing homes: a qualitative study. Res Social Adm Pharm. 2017;13(3):513–23.

40. Sawan MJ, Jeon YH, Fois RJ, Chen TF. A qualitative study exploring visible components of organizational culture: what influences the use of psychotropic medicines in nursing homes? Int Psychogeriatr. 2016;28(10):1725–35.

41. Ellis ML, Molinari V, Dobbs D, Smith K, Hyer K. Assessing approaches and barriers to reduce antipsychotic drug use in Florida nursing homes. Aging Mental Health. 2015;19(6):507–16.

42. Lemay CA, Mazor KM, Field TS, Donovan J, Kanaan A, Briesacher BA, et al. Knowledge of and perceived need for evidence-based education about antipsychotic medications among nursing home leadership and staff. J Am Med Dir Assoc. 2013;14(12):895–900.

43. Mort JR, Singh YN, Gaspar PM, Adams PL, Singh NN. Attitudes and knowledge of long term care nurses toward psychotropic medication for the elderly. Clin Gerontol. 1993;12(3):13–31.

44. Svarstad BL, Mount JK, Bigelow W. Variations in the treatment culture of nursing homes and responses to regulations to reduce drug use. Psychiatr Serv. 2001;52(5):666–72.

45. Thurmond JA. Nurses' perceptions of chemical restraint use in long-term care. Appl Nurs Res. 1999;12(3):159–62.

46. Ervin K, Finlayson S, Cross M. The management of behavioural problems associated with dementia in rural aged care. Collegian. 2012;19(2):85–95.

47. Smith MA, Simpson JM, Benrimoj SI. General practitioner acceptance of medication review in Sydney nursing homes. J Pharm Pract Res. 2002;32(3):227–31.

48. Hughes CM, Goldie R. "I just take what i am given" adherence and resident involvement in decision making on medicines in nursing homes for older people: a qualitative survey. Drugs Aging. 2009;26(6):505–17.

49. Patterson SM, Hughes CM, Lapane KL. Assessment of a United States pharmaceutical care model for nursing homes in the United Kingdom. Pharm World Sci. 2007;29(5):517–25.

50. Shaw C, McCormack B, Hughes CM. Prescribing of psychoactive drugs for older people in nursing homes: an analysis of treatment culture. Drugs Real World Outcomes. 2016;3(1):121–3.

51. Wood-Mitchell A, James IA, Waterworth A, Swann A, Ballard C. Factors influencing the prescribing of medications by old age psychiatrists for behavioural and psychological symptoms of dementia: a qualitative study. Age Ageing. 2008;37(5):547–52.

52. Cornege-Blokland E, Kleijer BC, Hertogh CM, van Marum RJ. Reasons to prescribe antipsychotics for the behavioral symptoms of dementia: a survey in Dutch nursing homes among physicians, nurses, and family caregivers. J Am Med Dir Assoc. 2012;13(1):80.e1–6.

53. Janus SIM, van Manen JG, Ijzerman MJ, Bisseling M, Drossaert CHC, Zuidema SU. Determinants of the nurses' and nursing assistants' request for antipsychotics for people with dementia. Int Psychogeriatr. 2017;29(3):475–84.

54. Smeets CHW, Smalbrugge M, Zuidema SU, Derksen E, de Vries E, van der Spek K, et al. Factors related to psychotropic drug prescription for neuropsychiatric symptoms in nursing home residents with dementia. J Am Med Dir Assoc. 2014;15(11):835–40.

55. Anthierens S, Grypdonck M, De Pauw L, Christiaens T. Perceptions of nurses in nursing homes on the usage of benzodiazepines. J Clin Nurs. 2009;18(22):3098–106.

56. Azermai M, Vander Stichele RR, Van Bortel LM, Elseviers MM. Barriers to antipsychotic discontinuation in nursing homes: an exploratory study. Aging Mental Health. 2014;18(3):346–53.

57. Bourgeois J, Elseviers MM, Azermai M, Van Bortel L, Petrovic M, Vander Stichele RR. Barriers to discontinuation of chronic benzodiazepine use in nursing home residents: perceptions of general practitioners and nurses. Eur Geriatr Med. 2014;5(3):181–7.

58. Flick U, Garms-Homolova V, Rohnsch G. "And mostly they have a need for sleeping pills": Physicians' views on treatment of sleep disorders with drugs in nursing homes. J Aging Stud. 2012;26(4):484–94.

59. Lhermite A, Munoz Sastre MT, Sorum PC, Mullet E. French lay people's and health professionals' views regarding the acceptability of involuntary treatment of nursing home residents. Int J Law Psychiatry. 2015;38:38–43.

60. Pekkarinen L, Elovainio M, Sinervo T, Finne-Soveri H, Noro A. Nursing working conditions in relation to restraint practices in long-term care units. Med Care. 2006;44(12):1114–20.

61. Peri K, Kerse N, Moyes S, Scahill S, Chen C, Hong JB, et al. Is psychotropic medication use related to organisational and treatment culture in residential care. J Health Organ Manag. 2015;29(7):1065–79.

62. Schmid IK, Svarstad BL. Nurse-physician communication and quality of drug use in Swedish nursing homes. Soc Sci Med. 2002;54(12):1767–77.

63. Hughes CM, Roughead E, Kerse N. Improving use of medicines for older people in long-term care: contrasting the policy approach of four countries. Healthc Policy. 2008;3(3):e154–67.

64. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77–101.

65. Sexton JB, Helmreich RL, Neilands TB, Rowan K, Vella K, Boyden J, et al. The Safety Attitudes Questionnaire: psychometric properties, benchmarking data, and emerging research. BMC Health Serv Res. 2006;6(1):44.

66. Stein-Parbury J, Chenoweth L, Jeon YH, Brodaty H, Haas M, Norman R. Implementing person-centered care in residential dementia care. Clin Gerontol. 2012;35(5):404–24.

67. Beer C, Horner B, Almeida OP, Scherer S, Lautenschlager NT, Bretland N, et al. Current experiences and educational preferences of general practitioners and staff caring for people with dementia living in residential facilities. BMC Geriatr. 2009;9(1):1–8.

68. Scott-Cawiezell J, Jones K, Moore L, Vojir C. Nursing home culture: a critical component in sustained improvement. J Nurs Care Qual. 2005;20(4):341–8.

69. Nishtala PS, Hilmer SN, McLachlan AJ, Hannan PJ, Chen TF. Impact of residential medication management reviews on drug burden index in aged-care homes: a retrospective analysis. Drugs Aging. 2009;26(8):677–86.

70. Ballard C, Corbett A. Management of neuropsychiatric symptoms in people with dementia. CNS Drugs. 2010;24(9):729–39.

71. Verrue CL, Petrovic M, Mehuys E, Remon JP, Vander Stichele R. Pharmacists' interventions for optimization of medication use in nursing homes: a systematic review. Drugs Aging. 2009;26(1):37–49.

72. Aiken LH, Cimiotti JP, Sloane DM, Smith HL, Flynn L, Neff DF. Effects of nurse staffing and nurse education on patient deaths in hospitals with different nurse work environments. Med Care. 2011;49(12):1047–53.

73. Estabrooks CA, Midodzi WK, Cummings GG, Ricker KL, Giovannetti P. The impact of hospital nursing characteristics on 30-day mortality. J Nurs Adm. 2011;41(7–8 Suppl):S58–68.

74. Hewison A. Organizational culture: a useful concept for nurse managers? J Nurs Manag. 1996;4(1):3–9.