


RESEARCH ARTICLE

A nursing mentoring programme on non-pharmacological interventions against BPSD: Effectiveness and use of antipsychotics—A retrospective, before–after study

Roxane Plante-Lepage¹ | Philippe Voyer^{1,2,3} | Pierre-Hugues Carmichael^{2,3} | Edeltraut Kröger^{2,3,4} ¹Faculté des Sciences Infirmières, Université Laval, Laval, QC, Canada²Centre d'Excellence sur le Vieillissement de Québec, Québec, QC, Canada³Faculté des Sciences Infirmières, Université Laval, Québec, QC, Canada⁴Faculté de Pharmacie, Université Laval, Québec, QC, Canada**Correspondence**Edeltraut Kröger, Centre d'excellence sur le vieillissement de Québec, Hôpital St-Sacrement, 1050 Chemin Sainte-Foy, Québec, QC G1S 4L8, Canada.
Email: edeltraut.kroger.ciussccn@ssss.gouv.qc.ca**Funding information**

Canadian Consortium on Neurodegeneration in Aging (CCNA). Prevention and Treatment of Neuropsychiatric Symptoms (CCNA Team 11), Grant/Award Number: 2016-17; Centre d'excellence sur le vieillissement de Québec

Abstract

Behavioural and psychological symptoms of dementia (BPSD) are common and have significant implications for patients and caregivers. Non-pharmacological interventions (NPI) have shown to be effective in the management of BPSD. However, the use of antipsychotics to treat BPSD remains ubiquitous. This retrospective, before–after study aimed to examine whether a nurse mentoring programme promoting NPI for BPSD management had a significant association with the use of antipsychotics in older adults with major neurocognitive disorders residing in different settings. Results obtained from the medical files of 134 older adults having benefitted from the mentoring programme demonstrate that this intervention significantly reduced BPSD. The effect on antipsychotics use was modest: a 10% reduction in the use of antipsychotics has been observed among patients for which the NPI were effective. However, the use of antipsychotics remained widespread despite the nursing recommendations of the mentoring team of the Center of Excellence on Aging in Quebec (CEVQ).

KEYWORDS

antipsychotics, behavioural and psychological symptoms of dementia, dementia, non-pharmacological interventions

1 | INTRODUCTION

Behavioural and psychological symptoms of dementia (BPSD) are defined as a disturbance in perception, content of thought, mood or behaviour (Kales et al., 2015) and include symptoms such as agitation, depression, apathy, repetitive questioning, psychosis, aggression, sleep problems, wandering and other inappropriate behaviours (Preuss et al., 2016). The most common BPSD are listlessness, depression and anxiety (Olivieri-Mui et al., 2018), with agitation being the most frequent clinical manifestation, for a prevalence up to 80% (Selbaek et al., 2013).

In all types of living arrangements, older adults with major neurocognitive disorders (MNCD) will manifest one or more BPSD during the course of the disease: BPSD occur in more than 80% of these older adults (Kales et al., 2015; de Oliveira et al., 2015), rising to 92% in long-term care facilities (LTCF) (International Psychogeriatric Association (IPA), 2015). According to Preuss et al.'s (2016) study in community-based MNCD patients, 61% of them had at least one BPSD monthly, and those who did not initially develop at least one symptom within 18 months. BPSD decrease quality of life by affecting cognitive functioning and functional autonomy, in addition to

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2021 The Authors. *Nursing Open* published by John Wiley & Sons Ltd.

causing suffering and distress; they increase the likelihood of hospitalization, institutionalization, inappropriate medication prescribing, particularly of antipsychotics and death rates (Abraha et al., 2017). Furthermore, BPSD make the care of loved ones more complex for caregivers (Reed et al., 2020), so that they experience psychological distress and a feeling of helplessness (Abraha et al., 2017). Finally, the consequences for healthcare professionals are linked to feelings of failure, guilt and burnout (Dillon et al., 2013; Rey et al., 2016) since the management of BPSD causes work overload and stress.

There exist both pharmacological and non-pharmacological interventions (NPI) to address the clinical challenge of BPSD. NPI are specific interventions that meet the compromised needs of the older adult (Algase et al., 1996) and include most prominently behavioural techniques, staff training, changes in the living environment, group exercise, light or music therapy, social interactions, psychosocial activities, multimodal approaches, pet therapy or aromatherapy (Backhouse et al., 2016). Numerous studies have shown that NPI cause a reduction in BPSD and constitute an effective alternative to pharmacotherapy (Brodaty & Arasaratnam, 2012; Livingston et al., 2014; McClam et al., 2015; de Oliveira et al., 2015).

Despite the efficacy of NPI and the low success rate of pharmacological interventions (McClam et al., 2015), the prescription of antipsychotics, particularly for the treatment of agitation and aggression, remains frequent (Backhouse et al., 2016). In Quebec, the Canadian province with the highest antipsychotics consumption (Canadian Institute for Health Information (CIHI), 2016), the prevalence of antipsychotics use among older adults aged 65 and over living in the community increased by 13.3% from 2006 to 2009 (Institut national d'excellence en santé et en services sociaux, 2012), despite numerous advisories on the risks of antipsychotics use in older adults. The UK and the USA have also developed interventions to reduce the use of antipsychotics against BPSD (Backhouse et al., 2016).

In conclusion, NPI have a well-described effectiveness and represent an important alternative to pharmacotherapy (McClam et al., 2015; Staedtler & Nunez, 2015). However, current evidence is limited on the correlation between effective NPI and the use of antipsychotics. The question arising is whether the effectiveness of NPI has an impact on the prescribing of antipsychotics to older adults with BPSD. To our knowledge, no study has examined nurses' recommendations on the use of antipsychotics. This study aimed to observe the impact of a nursing mentorship programme promoting NPI for the management of BPSD and its association with the use of antipsychotics in older adults with MNCD in different living arrangements.

2 | METHODS

2.1 | Design and study sample

This retrospective chart analysis study assessed whether the manifestations of BPSD or the use of antipsychotics had changed in older adults affected by MNCD, after the intervention of a nursing

mentorship team mandated by the Centre of Excellence in Aging in Quebec City, Canada. The area for which the mentoring team provides services is mostly urban and comprises about 800,000 persons in 2020. The target population comprised all older adults affected by MNCD and presenting with one or more BPSD having benefitted from a nursing mentorship intervention; initially, all files of eligible older adults were analysed. They contained data on BPSD measures, NPI recommendations and medication use, before and after the intervention. The mentoring team's second-line interventions started in January 2011, and data collection for this study ended in January 2017. The places of residence or care of the older adults were either a hospital centre, an assisted living facility, an intermediate care residence, a religious institution, a LTCF or their personal home. The request for the mentoring team's intervention came from professional caregivers and in most cases from nurses: the residents thus lived in public or private care facilities in the great majority of cases (97.7%) or received nursing care at home (2.3%). There were many differences with regard to disease status, comorbidities and age, with an age range from 49 to 98 (please refer to the Results section for more detail). These differences, however, well represent the diversity of persons affected by MNCD. Excluded were only older adults with a record of a mental health disorder in addition to MNCD, for example, schizophrenia, a personality disorder or any other invasive psychiatric comorbidity.

2.2 | Intervention and measurements

The mentoring team comprised registered nurses with a bachelor's degree in nursing, experience in geriatric care and expertise in evaluation and clinical interventions. The team offered an intervention aimed at improving the skills of healthcare teams or family caregivers, particularly concerning BPSD: a request from the resident's caregivers was first examined by the mentoring team; then one team member visited the resident's place of care for an assessment and an educational intervention with the caregivers on NPI suitable for and accessible to this resident, as well as for an evaluation of the resident's medical history and medication (Rey et al., 2016). Team members developed a plan for NPI based on the needs' assessment in the care environment. The plan always comprised a basic needs' assessment and the adjustment of the care plan to the resident's needs (physical, psychological, social and spiritual), as well as sensory and behavioural interventions for the majority of residents. Depending on the needs' assessment, further NPI were, in decreasing frequency, patient specific, environmental, exercise based, recreative and sometimes cognitive. This plan was then applied by the nursing staff or family caregiver. About four weeks after the initial assessment, one team member visited the facility, or the family caregiver for at home interventions, to assess the effectiveness of the proposed interventions, as applied by the caregivers. Throughout the BPSD management process, members of the mentoring team worked closely with the care team, not limited to the intervention plan, but including help

for the resolution of problems encountered during its implementation. Team members were available for telephone or in-person support. They also made recommendations to the treating physician about the use of antipsychotics; at the time of the study, no nurse practitioners worked in the LTCF. Proposed interventions were based on current evidence on optimal care practices and medication for the management of BPSD. The initial ("before") and the effectiveness ("after") assessments of BPSD were based on two widely used, validated scales: (a) the Cohen-Mansfield Agitation Inventory (CMAI) (Cohen-Mansfield et al., 1989), the validity, reliability of which have been shown (Chrisman et al., 1991; Finkel et al., 1992; Koss et al., 1997), also for the French translation (Deslauriers et al., 2001) and (b) the Cummings' neuropsychiatric inventory score (CNIS) (Aalten et al., 2003; Cummings, 1997; Cummings et al., 1994), validated in French by Robert et al. (1998). The senior's pharmacological profile was consulted before and after the intervention.

2.3 | Statistical analyses

Central tendency and dispersion measures were used to describe the socio-demographic characteristics of the sample's residents: gender, age, living or care arrangements and the Charlson comorbidity index (Charlson et al., 1987). BPSD analyses were based on the CMAI and the CNIS. Student's *t* test was used to determine whether the difference between the proportion of improved and unimproved older adults about BPSD was significant after the implementation of the NPI. A chi-square test examined the relationship between the matched samples (before/after) to compare the results. Measures of central tendency and dispersion were used to study the difference in the number and dose of prescriptions for psychotropic medications. *t* Tests examined differences for these variables between the assessments before and after the intervention. To model the effect of the NPI intervention on the use of psychotropics, regression analyses were used, such as Poisson regression adjusted for overdispersion, and negative binomial regression, since the majority of older adults had small numbers of psychotropics and only a minority had a large number of such prescriptions. Repeated measurement analyses were used to account for the correlation between the measurements before and after the intervention among the participants. Sensitivity analyses allowed to verify whether there was a relationship between the effectiveness of the NPI intervention and the use of antipsychotics.

2.4 | Ethical considerations

The study consisted of chart reviews and analyses of second line interventions performed by care teams of the local health board. No patient consent was required for this care or for the chart review, and the study protocol received ethical approval from the local ethics review board (CÉR CIUSSSCN 2017-2018-03).

3 | RESULTS

3.1 | Study sample

There was a total of 428 files of older adults having received a mentoring team intervention for the management of BPSD. We excluded 294 files (68.7%) for various reasons: older adult's death between assessments, relocation to an area outside of the team's range of practice, unconfirmed MNCD, hospitalization, mental health disorder, withdrawal from the intervention, no effectiveness evaluation, intervention plan not applied and some unspecified reasons, leaving 134 files for analyses.

The sample included more women ($n = 88$) than men ($n = 43$), and the average age of the older adults was 80.2 years (median: 82 years; range: 49–98). The majority of participants resided in assisted living facilities (47.7%) followed by LTCF (38.5%), hospital (6.2%), an intermediate residence (1.5%), a religious institution (3.9%) or a private home (2.3%). The mean Charlson comorbidity index was 6.2 (*SD*: 2.0). Alzheimer's disease was the most common type of MNCD (47.5%); followed by mixed MNCD (23.8%), MNCD of the vascular type (7.4%), the frontotemporal type (4.1%), Parkinson's disease (2.5%), Lewy body disease (2.5%), Korsakoff MNCD (1.6%) and some cases of mild cognitive impairment (10.7%); 12 files did not include information on the specific type of MNCD but were included in analyses. Table 1 presents the different BPSD manifested by the older adults who received an intervention, as noted in their intervention plans.

3.2 | Results on the effectiveness of NPI

At about 4 weeks following the intervention, 93.3% (125 of 134) of the sample had an improvement in BPSD according to the CMAI; 10 interventions (7.5%) had an effectiveness rate of 50% or more. According to the CNIS, 99.3% (133 of 134) of the residents showed an effect on BPSD and 106 interventions (79.1%) had an effectiveness rate of 50% and more. Table 2 presents the results for the mean scores of the CMAI and the CNIS, before and after the implementation of the intervention.

3.3 | Results on the effectiveness of NPI and the use of antipsychotics in the management of BPSD

For the medication results, 35 seniors whose pharmacological profile was absent or incomplete, before or after the intervention, had to be excluded, leaving 99 participants for analyses. A relative decrease in the proportion of antipsychotics users was observed after the intervention, both for regular (78% or 78.8% before and 73% or 73.7% after) and as needed antipsychotics (51% or 51.4% before and 44% or 44.4% after). These differences were not statistically significant ($p = .4$), similar to those between the proportions of seniors using any other class of psychotropic or

TABLE 1 Distribution of different types of BPSD^a among the study participants

BPSD type	n	% ^b
[N = 131] Delusional thoughts	15	11.6
Hallucinations	5	3.9
Agitation	82	63.6
Agressivity	81	62.8
Depression	12	9.3
Dysphoria	10	7.8
Anxiety	67	51.9
Apathy	8	6.2
Disinhibition	8	6.2
Irritability/Instability	42	32.6
Motor behaviour abnormality	19	14.7
Sleeping problems	9	7.0
Lack of appetite	2	1.6
Resistance to care	27	20.9

^aBehavioural and Psychological Symptoms of Dementia (BPSD).

^bNote that the total exceeds 100%, because participants frequently showed more than one type of BPSD.

mean number of antipsychotics prescriptions for residents having benefitted from NPI.

3.4 | Relation between the success of the intervention and antipsychotics use

Sensitivity analyses demonstrated that the 10% decrease in mean numbers of antipsychotics in the total sample of 99 residents remained significant in adjusted models for different scenarios, that is, (a) excluding residents whose BPSD were not improved on the CNIS or CMAI or (b) excluding those for which the mentoring team had not made a recommendation on antipsychotics. In fact, the ratio of mean antipsychotics prescriptions per resident, after versus before the intervention, remained at 0.9 for both scenarios, for a decrease of 10% ($p < .05$), regardless of the effectiveness of the NPI.

Finally, the participants' charts comprised notes on recommendations made by mentoring team nurses about medication. Among the 97 residents receiving either regular or as needed antipsychotics prior to the intervention, drawn from the total sample of 134 residents, the mentors recommended reducing or stopping antipsychotics for 91 or 93.8% of them. In the charts with this recommendation,

TABLE 2 Results at the CMAI^a and the CNIS^b before and after the mentoring team intervention

Instrument	Mean	SD	Difference between means	Range of results		% of reduction	t-value
				Min.	Max.		
CMAI, before [N = 134]	51.9	15.4		29	97		
CMAI, after [N = 134]	37.8	10.0		29	98		
			-14.1			27.2%	<0.001
CNIS, before [N = 134]	33.7	16.9		2	81		
CNIS, after [N = 134]	11.0	9.7		0	56		
			-22.7			67.4%	<0.001

^aCohen-Mansfield Agitation Inventory (CMAI) score (29–203).

^bCummings' Neuropsychiatric Inventory Score (CNIS) (0–144).

analgesic medications, before and after the intervention, both for regular and as needed medications (see Tables S1 and S2 in the Appendix S1).

With regard to mean numbers of prescriptions per resident for different psychotropic and analgesic medication classes, we found a significant reduction of about 10% for the mean number of prescribed antipsychotics between the initial and the follow-up assessment ($p = .03$). These results remained significant after an adjustment for age, sex and the Charlson comorbidity index ($p < .026$). According to adjusted results, the mean number of antipsychotics prescriptions was 1.2 before and 1.09 after the mentoring intervention. The ratio of mean antipsychotics prescriptions per resident after versus before the intervention was 0.90, also indicating a 10% decrease in antipsychotics prescriptions ($p = .026$ in the fitted model). We thus observed a significant, albeit small, reduction in the

73 residents (80.2%) had data on psychotropic medication both before and after the intervention: in five files (6.7%), antipsychotics were stopped following the mentors' recommendations, while in 11 (15.1%), the dose or the number of antipsychotics was reduced; 57 files (78.1%), however, showed no change in prescriptions.

4 | DISCUSSION

This before–after study of a nursing mentoring intervention on NPI showed a positive effect on the frequency and severity of BPSD which were improved for 125% or 93.3% of seniors on the CMAI and for 133% or 99.3% on the CNIS. These results corroborate others from prior studies on the effectiveness of NPI for BPSD (Livingston et al., 2014; McClam et al., 2015; Staedtler & Nunez, 2015; Testad

et al., 2014; Zwijsen et al., 2015). The present study however shows that, even if BPSD decreased, prescribing of antipsychotics remained highly prevalent, with small reductions: our results show a significant 10% reduction in the mean number of prescribed antipsychotics per resident four weeks after the intervention.

A somewhat similar study succeeded in reducing BPSD during hygiene care for older adults: verbal behaviour decreased by 17.8% and combined verbal and physical behaviour by 18.6% ($p < .05$) (Gozalo et al., 2014). Of the 101 residents with complete information on medication before and after the intervention, 29 consumed antipsychotics and were analysed: the proportion of older adults using antipsychotics decreased from 28.7% to 19.8%, or by 8.9% ($p = .002$), while in our study, the mean number of antipsychotics per resident decreased by 10%. Thus, both studies suggest that training programmes can be effective in reducing BPSD and decreasing antipsychotics use somewhat.

A study by Ballard et al. (2016) obtained results diverging from ours. A close examination of antipsychotics use, associated with NPI in the form of social interaction or exercise, showed that NPI succeeded in significantly reducing the use of antipsychotics by 50% (odds ratio: 0.17, 95% CI = 0.05 to 0.60). In Ballard et al.'s study, participating LTCF were among the best facilities in the country according to the Care Quality Commission. Therefore, nursing staff may have been particularly open to NPI implementation and to review the pharmacological profiles, out of a pronounced concern for the quality of care. In addition, the already low baseline prescription of antipsychotics of 18% may have been attributable to the quality of care of the facilities in this study (Ballard et al., 2016). Baseline use of antipsychotics in this study is quite low when compared with numerous LTCF, and in particular to the baseline use of antipsychotics by 78.8% of residents (78 out of 99) with BPSD in our study. The antipsychotics use we observed concerned older adults presenting BPSD in different types of residential settings and requiring a second-line intervention. These interventions also did not necessarily take place in a controlled environment governed by quality-of-care standards. Moreover, LTCF participating in our study were not selected from a list of best residences: methodological differences, such as selection bias, could thus partly explain the greater reduction results in Ballard et al.'s study. Nevertheless, both studies support the idea that a close examination of antipsychotics, associated with NPI, may decrease their use. Indeed, medication reviews are frequently used to optimize the use of medications (Rankin et al., 2018), and a systematic review by Huiskes et al. (2017) demonstrated the effectiveness of a medication review, but supported the idea that it must be accompanied by interventions to counter the symptoms for which the medication was started.

Given the effect of NPI on BPSD, the nurses of the mentoring team made recommendations about the use of antipsychotics to the treating physicians. They more specifically provided information about the optimal use of medication against BPSD. In addition, mentors provided available evidence to support their recommendations. Thus, the nurses of the mentoring team recommended reducing or stopping antipsychotics use for 91% out of 97% or 93.8% of older

adults who used them. However, the results show that the nursing recommendations led to a discontinuation of antipsychotics use for only 6.7% of these older adults and to a decrease in the dose for 15.1% of them (results not shown).

A review of randomized controlled trials on interventions to reduce the prescribing of antipsychotics showed reduced use in all included studies (Dills et al., 2018) and that antipsychotics could be effectively stopped in 50% of the older adults in several studies. The review concludes that antipsychotics cessation was successful when there was close collaboration between the various health professionals: indeed, one of the most effective interventions for reducing antipsychotics included recommendations about medication from pharmacists. According to another review on physicians' and pharmacists' perspectives on drug use, recommendations made by pharmacists to physicians led to a reduction in prescriptions in 48%–68% of the studies (Toverud et al., 2015).

In a cluster randomized trial by Martin et al. (2018), pharmacists provided an evidence-based opinion to recommend deprescribing of inappropriate medications to the treating physician. Their recommendations resulted in reducing inappropriate medications in the intervention group by 43%, compared with 12% in the control group (risk difference, 31% [95% CI, 23% to 38%]). This study showed that pharmacists' recommendations may have a significant impact on the optimal use of medication: almost half of their recommendations were accepted by the physicians. These results differ from ours, but they concern deprescribing of different medication types, which was not the main focus of our study. The discrepancy of observed results about antipsychotics use between the deprescribing studies and our results could also be due to the fact that the recommendations in several of the reviewed studies came from pharmacists while in our study, they were made by nurses. This fact may have influenced the doctors' decision to accept them or not. Indeed, literature has emphasized that the review of the pharmaceutical profile and the initiation of drug recommendations to physicians are generally attributed to pharmacists (Rankin et al., 2018).

So even though NPI were effective, when nurses made recommendations about the use of antipsychotics, in most cases, doctors did not change the pharmacological profile in our study.

4.1 | Strengths and limitations

The present study which followed the STROBE guidelines for observational studies is innovative since it concerns a nursing mentoring programme dedicated to NPI for the management of BPSD in older adults in different living arrangement. NPI and nurse leadership in this context are often poorly documented. The study is also new since it assessed the impact of nursing mentorship on BPSD and the use of antipsychotics. Indeed, few studies have evaluated the association between the effectiveness of NPI and the use of antipsychotics at the same time. Most other studies on antipsychotics use focussed on deprescribing. This study is original in that the nurse played a leadership role in setting up NPI and making recommendations on

antipsychotics. The use of validated tools (CMAI, CNIS) to measure BPSD in this study has shown to be a strength.

This study has certain limitations. One of the main limitations of this study are some missing data. Older adults' medical charts were maintained by the mentoring team, but some records were incomplete. Data missing for older adults having received an intervention reduced the study's sample size and power. It cannot be excluded that the smaller sample size ($n = 134$), as compared to the target sample ($n = 428$), may have led to selection bias, although we have no reason to believe that this bias would have been differential. Also, it was not possible to identify which type of the recommended NPI was used most successfully for which participant. Finally, since the research was based on information previously recorded, the retrospective nature and the before–after design made it impossible to control for possibly confounding characteristics not previously measured, which might have influenced the obtained results. Future research may focus on several methodological improvements to limit bias: (a) use of a control group, (b) a longer study period to examine long-term effects of the mentoring intervention and (c) comprise special efforts to reduce missing data.

5 | CONCLUSION

This study shows that the application of a duly developed intervention plan on NPI significantly reduced BPSD and the mean number of antipsychotics per resident, albeit only by 10%. The study also examined nursing recommendations for antipsychotics, aimed at decreasing their use and found a limited effect. Since other research has shown that antipsychotics reduction is greater when recommendations come from pharmacists, it may be beneficial for nurse mentors to partner with pharmacists and to collaborate in the review of pharmacological profiles and medication recommendations to physicians. Such partnerships could be the subject of future research, to measure their impact to better manage BPSD and antipsychotics use.

6 | IMPLICATIONS FOR PRACTICE

- Non-pharmacological interventions (NPI) are effective against Behavioural and psychological symptoms of dementia (BPSD), but the use of pharmacotherapy, particularly antipsychotics, remains widespread.
- A retrospective before–after study of 134 patients showed that nurse mentoring to promote NPI improved BPSD and significantly reduced antipsychotics use by 10%.
- The modest effect on antipsychotics use may be increased by improved nurse–pharmacist collaboration.

ACKNOWLEDGEMENTS

This study was supported by a grant from Team 11 of the Canadian Consortium on Neurodegeneration and Aging (2016–2017, CIHR,

Edeltraut Kröger) and received in-kind support from the Centre d'excellence sur le vieillissement de Québec.

CONFLICT OF INTEREST

All authors contributed to the development of the study, data collection, interpretation and writing of the manuscript. They declare that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

The data used for this study can be made available upon request to the corresponding author.

ORCID

Edeltraut Kröger  <https://orcid.org/0000-0002-5653-3979>

REFERENCES

- Aalten, P., de Vugt, M. E., Lousberg, R., Korten, E., Jaspers, N., Senden, B., Jolles, J., & Verhey, F. R. (2003). Behavioral problems in dementia: a factor analysis of the neuropsychiatric inventory. *Dementia and geriatric cognitive disorders*, 15(2), 99–105. <https://doi.org/10.1159/000067972>
- Abraha, I., Rimland, J. M., Trotta, F. M., Dell'Aquila, G., Cruz-Jentoft, A., Petrovic, M., Gudmundsson, A., Soiza, R., O'Mahony, D., Guaita, A., & Cherubini, A. (2017). Systematic review of systematic reviews of non-pharmacological interventions to treat behavioural disturbances in older patients with dementia. The SENATOR-OnTop Series. *British Medical Journal Open*, 7(3), e012759. <https://doi.org/10.1136/bmjopen-2016-012759>
- Algase, D. L., Beck, C., Kolanowski, A., Whall, A., Berent, S., Richards, K., & Beattie, E. (1996). Need-driven dementia-compromised behavior: An alternative view of disruptive behavior. *American Journal of Alzheimer's Disease*, 11(6), 10–19. <https://doi.org/10.1177/153331759601100603>
- Backhouse, T., Killeit, A., Penhale, B., & Gray, R. (2016). The use of non-pharmacological interventions for dementia behaviours in care homes: Findings from four in-depth, ethnographic case studies. *Age and Ageing*, 45(6), 856–863. <https://doi.org/10.1093/ageing/afw136>
- Ballard, C., Orrell, M., YongZhong, S., Moniz-Cook, E., Stafford, J., Whittaker, R., Woods, B., Corbett, A., Garrod, L., Khan, Z., Woodward-Carlton, B., Wenborn, J., & Fossey, J. (2016). Impact of antipsychotic review and nonpharmacological intervention on antipsychotic use, neuropsychiatric symptoms, and mortality in people with dementia living in nursing homes: A factorial cluster-randomized controlled trial by the Well-Being and Health for People with Dementia (WHELD) Program. *American Journal of Psychiatry*, 173(3), 252–262. <https://doi.org/10.1176/appi.ajp.2015.15010130>
- Brodsky, H., & Arasaratnam, C. (2012). Meta-analysis of nonpharmacological interventions for neuropsychiatric symptoms of dementia. *American Journal of Psychiatry*, 169(9), 946–953. <https://doi.org/10.1176/appi.ajp.2012.11101529>
- Canadian Institute for Health Information (CIHI) (2016). *Use of antipsychotics among seniors living in long-term care facilities*, 2014. https://secure.cihi.ca/free_products/LTC_AiB_v2_19_EN_web.pdf
- Charlson, M. E., Pompei, P., Ales, K. L., & MacKenzie, C. R. (1987). A new method of classifying prognostic comorbidity in longitudinal studies: Development and validation. *J Chronic Dis*, 40(5), 373–383. [https://doi.org/10.1016/0021-9681\(87\)90171-8](https://doi.org/10.1016/0021-9681(87)90171-8)
- Chrisman, M., Tabar, D., Whall, A. L., & Booth, D. E. (1991). Agitated behavior in the cognitively impaired elderly. *Journal of Gerontological Nursing*, 17(12), 9–13. <https://doi.org/10.3928/0098-9134-19911201-04>

- Cohen-Mansfield, J., Marx, M. S., & Rosenthal, A. S. (1989). A description of agitation in a nursing home. *The Journal of Gerontology*, 44(3), M77–M84. <https://doi.org/10.1093/geronj/44.3.M77>
- Cummings, J. L. (1997). The Neuropsychiatric Inventory Assessing psychopathology in dementia patients. *Neurology*, 48(5 Suppl 6), 10S–16S. https://doi.org/10.1212/wnl.48.5_suppl_6.10s
- Cummings, J. L., Mega, M., Gray, K., Rosenberg-Thompson, S., Carusi, D. A., & Gornbein, J. (1994). The Neuropsychiatric Inventory: Comprehensive assessment of psychopathology in dementia. *Neurology*, 44(12), 2308–2314. <https://doi.org/10.1212/wnl.44.12.2308>
- Deslauriers, S., Landreville, P., Dicaire, L., & Verreault, R. (2001). Validité et fidélité de l'Inventaire d'agitation de Cohen-Mansfield. *Canadian Journal on Aging*, 20(3), 374–384. <https://doi.org/10.1017/S0714980800012836>
- Dillon, C., Serrano, C. M., Castro, D., Leguizamón, P. P., Heisecke, S. L., & Taragano, F. E. (2013). Behavioral symptoms related to cognitive impairment. *Neuropsychiatric Disease and Treatment*, 9, 1443–1455. <https://doi.org/10.2147/ndt.S47133>
- Dills, H., Shah, K., Messinger-Rapport, B., Bradford, K., & Syed, Q. (2018). Deprescribing medications for chronic diseases management in primary care settings: A systematic review of randomized controlled trials. *Journal of the American Medical Directors Association*, 19(11), 923–935.e922. <https://doi.org/10.1016/j.jamda.2018.06.021>
- Finkel, S. I., Lyons, J. S., & Anderson, R. L. (1992). Reliability and validity of the Cohen-Mansfield agitation inventory in institutionalized elderly. *International Journal of Geriatric Psychiatry*, 7(7), 487–490. <https://doi.org/10.1002/gps.930070706>
- Gozalo, P., Prakash, S., Qato, D. M., Sloane, P. D., & Mor, V. (2014). Effect of the bathing without a battle training intervention on bathing-associated physical and verbal outcomes in nursing home residents with dementia: A randomized crossover diffusion study. *Journal of the American Geriatrics Society*, 62(5), 797–804. <https://doi.org/10.1111/jgs.12777>
- Huiskes, V. J., Burger, D. M., van den Ende, C. H., & van den Bemt, B. J. (2017). Effectiveness of medication review: A systematic review and meta-analysis of randomized controlled trials. *BMC Fam Pract*, 18(1), 5. <https://doi.org/10.1186/s12875-016-0577-x>
- Institut national d'excellence en santé et en services sociaux (2012). Étude sur l'usage des antipsychotiques. Volet III: Personnes âgées de 25 ans ou plus, principalement celles de 65 ans ou plus avec un diagnostic de démence. *ETMIS*, 8(11), 1–70. https://www.inesss.qc.ca/fileadmin/doc/INESSS/Rapports/Medicaments/ETMIS2012_Vol8_No11.pdf
- International Psychogeriatric Association (IPA) (2015). *The IPA complete guide to behavioral and psychological symptoms of dementia*. Specialists Guide. In.
- Kales, H. C., Gitlin, L. N., & Lyketsos, C. G. (2015). Assessment and management of behavioral and psychological symptoms of dementia. *BMJ*, 350, h369. <https://doi.org/10.1136/bmj.h369>
- Koss, E., Weiner, M., Ernesto, C., Cohen-Mansfield, J., Ferris, S. H., Grundman, M., & Whitehouse, P. J. (1997). Assessing patterns of agitation in Alzheimer's disease patients with the Cohen-Mansfield Agitation Inventory. *The Alzheimer's Disease Cooperative Study. Alzheimer Disease and Associated Disorders*, 11(Suppl 2), S45–S50. <https://doi.org/10.1097/00002093-199700112-00007>
- Livingston, G., Kelly, L., Lewis-Holmes, E., Baio, G., Morris, S., Patel, N., Omar, R. Z., Katona, C., & Cooper, C. (2014). Non-pharmacological interventions for agitation in dementia: Systematic review of randomised controlled trials. *British Journal of Psychiatry*, 205(6), 436–442. <https://doi.org/10.1192/bjp.bp.113.141119>
- Martin, P., Tamblyn, R., Benedetti, A., Ahmed, S., & Tannenbaum, C. (2018). Effect of a pharmacist-led educational intervention on inappropriate medication prescriptions in older adults: The D-PRESCRIBE randomized clinical trial. *JAMA*, 320(18), 1889–1898. <https://doi.org/10.1001/jama.2018.16131>
- McClam, T. D., Marano, C. M., Rosenberg, P. B., & Lyketsos, C. G. (2015). Interventions for neuropsychiatric symptoms in neurocognitive impairment due to Alzheimer's disease: A review of the literature. *Harv Rev Psychiatry*, 23(5), 377–393. <https://doi.org/10.1097/HRP.000000000000097>
- Oliveira, A. M. D., Radanovic, M., Mello, P. C. H. D., Buchain, P. C., Vizzotto, A. D. B., Celestino, D. L., Stella, F., Piersol, C. V., & Forlenza, O. V. (2015). Nonpharmacological interventions to reduce behavioral and psychological symptoms of dementia: A systematic review. *BioMed Research International*, 2015, 9. <https://doi.org/10.1155/2015/218980>
- Olivieri-Mui, B. L., Devlin, J. W., Ochoa, A., Schenck, D., & Briesacher, B. (2018). Perceptions vs. evidence: Therapeutic substitutes for antipsychotics in patients with dementia in long-term care. *Aging & Mental Health*, 22(4), 544–549. <https://doi.org/10.1080/13607863.2016.1277974>
- Preuss, U. W., Wong, J. W., & Koller, G. (2016). Treatment of behavioral and psychological symptoms of dementia: A systematic review. *Psychiatria Polska*, 50(4), 679–715. <https://doi.org/10.12740/pp/64477>
- Rankin, A., Cadogan, C. A., Patterson, S. M., Kerse, N., Cardwell, C. R., Bradley, M. C., Ryan, C., & Hughes, C. (2018). Interventions to improve the appropriate use of polypharmacy for older people. *Cochrane Database Systematic Review*, 9, CD008165. <https://doi.org/10.1002/14651858.CD008165.pub4>
- Reed, C., Belger, M., Scott Andrews, J., Tockhorn-Heidenreich, A., Jones, R. W., Wimo, A., Dodel, R., & Haro, J. M. (2020). Factors associated with long-term impact on informal caregivers during Alzheimer's disease dementia progression: 36-month results from GERAS. *International Psychogeriatrics*, 32(2), 267–277. <https://doi.org/10.1017/s1041610219000425>
- Rey, S., Voyer, P., & Juneau, L. (2016). Prise en charge des SCPD. Perturbation ou besoin à combler? Une étude descriptive analyse la concordance entre les pratiques planifiées par les infirmières de l'équipe de mentorat du Centre d'excellence sur le vieillissement de Québec et les étapes suggérées par les lignes directrices. *Perspectives Infirmières*, 13(4), 56–60. <https://www.oiiq.org/sites/default/files/uploads/periodiques/Perspective/vol13no04/13-recherche.pdf>
- Robert, P. H., Medecin, I., Vincent, S., Staccini, P., Cattelin, F., & Goni, S. (1998). L'inventaire neuropsychiatrique: validation de la version française d'un instrument destiné à évaluer les troubles du comportement chez les sujets déments. *L'année Gériatrique*, 5, 63–87.
- Selbaek, G., Engedal, K., & Bergh, S. (2013). The prevalence and course of neuropsychiatric symptoms in nursing home patients with dementia: A systematic review. *Journal of the American Medical Directors Association*, 14(3), 161–169. <https://doi.org/10.1016/j.jamda.2012.09.027>
- Staedtler, A. V., & Nunez, D. (2015). Nonpharmacological therapy for the management of neuropsychiatric symptoms of Alzheimer's disease: Linking evidence to practice. *Worldviews on Evidence-Based Nursing*, 12(2), 108–115. <https://doi.org/10.1111/wvn.12086>
- Testad, I., Corbett, A., Aarsland, D., Lexow, K. O., Fossey, J., Woods, B., & Ballard, C. (2014). The value of personalized psychosocial interventions to address behavioral and psychological symptoms in people with dementia living in care home settings: A systematic review. *International Psychogeriatrics*, 26(7), 1083–1098. <https://doi.org/10.1017/s1041610214000131>
- Toverud, E. L., Hartmann, K., & Håkonsen, H. (2015). A systematic review of physicians' and pharmacists' perspectives on generic drug use: What are the global challenges? *Applied Health Economics and Health Policy*, 13(Suppl 1), S35–S45. <https://doi.org/10.1007/s40258-014-0145-2>
- Zwijsen, S. A., Gerritsen, D. L., Eefsting, J. A., Smalbrugge, M., Hertogh, C. M., & Pot, A. M. (2015). Coming to grips with challenging

behaviour: A cluster randomised controlled trial on the effects of a new care programme for challenging behaviour on burnout, job satisfaction and job demands of care staff on dementia special care units. *International Journal of Nursing Studies*, 52(1), 68-74. <https://doi.org/10.1016/j.ijnurstu.2014.10.003>

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

How to cite this article: Plante-Lepage, R., Voyer, P., Carmichael, P.-H., & Kröger, E. (2022). A nursing mentoring programme on non-pharmacological interventions against BPSD: Effectiveness and use of antipsychotics—A retrospective, before–after study. *Nursing Open*, 9, 181–188. <https://doi.org/10.1002/nop2.1042>