The association between the level of institutional support for dementia care in primary care practices and the quality of dementia primary care: A retrospective chart review

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Abstract

Introduction: Institutional support, encompassing financial and training support, as well as interdisciplinary teams, may be important for the quality of dementia primary care for persons living with dementia. The aim of this study was to measure the association between the level of institutional support provided to primary care practices and the quality of dementia care.

Methods: This was a cross-sectional chart review in 33 Canadian primary care practices to measure the quality of dementia primary care using a quality of follow-up score. The score was based on the assessment of 10 indicators. Practices were chosen using a purposeful sampling method with varying levels of institutional support for dementia primary care (e.g., financial support, training, interdisciplinary team). A linear mixed-effect model was used to measure the association between the level of institutional support and the quality of dementia care.

Results: There was a significant association between the level of institutional support and the quality of dementia care (mean difference = 23.5, 95% confidence interval: 16.4, 30.6).

Discussion: Providing more institutional support for primary care practices could be a promising avenue to improve the care of persons living with dementia.

KEYWORDS
dementia, institutional support, primary care, quality of care

1 | INTRODUCTION

The World Health Organization (WHO) recognized dementia as a global health crisis in 2015, highlighting the high economic cost and suboptimal quality of current dementia care. Dementia care is often fragmented, uncoordinated, and inaccessible, and persons with dementia have lower chances of receiving the same quality of care compared to those without. In light of these challenges, policymakers and providers are searching for approaches to improve the organization of services for persons with dementia.
There has been considerable effort in Canada to improve dementia care. There have been several Canadian dementia strategies that have been introduced provincially\textsuperscript{8–12} and nationally,\textsuperscript{13} which among other elements, intend to improve dementia care by increasing financial support and training and are based on current Canadian guidelines.\textsuperscript{14} As such, these strategies recommend dementia management to be rooted in primary care and many take advantage of existing interdisciplinary care team structures, allowing for an integrated approach to dementia primary care.\textsuperscript{2}

However, whether this effort is associated with better quality of care is unclear. Financial support, training, and interdisciplinary teams are potential elements for implementing appropriate practices for improving dementia care. The WHO\textsuperscript{15} has indicated the importance of funding or financial commitment to a dementia strategy, such as investing in the health system and services and in implementing and sustaining dementia care strategy. Training the workforce to be equipped to handle dementia care was also identified as a priority for strategies in addressing dementia care was also identified as a priority for strategies in implementing and sustaining dementia care strategy. Training the workforce to be equipped to handle dementia care was also identified as a priority for strategies to address.\textsuperscript{15} In addition, interdisciplinary teams may be an ideal environment to implement good quality dementia care practices. Specifically, existing and established primary care teams and funding were instrumental in implementing new targeted programs for dementia in three Canadian provinces.\textsuperscript{16} Thus, institutional support, when defined as financial and training resources provided by varying levels of health authorities to interdisciplinary primary care teams, could contribute to improving the quality of dementia primary care.

Our study sought to measure the association between the level of institutional support for dementia care in primary care practices and the quality of dementia primary care for persons living with dementia in Canada.

2 | METHODS

2.1 | Design, study population, and setting

We conducted a cross-sectional retrospective chart review in 33 purposefully sampled primary care practices across various Canadian regions in the three Canadian provinces of Ontario, Quebec, and New Brunswick. These practices received various levels of institutional support for dementia primary care by regional health authorities.\textsuperscript{17–19} The level of institutional support of each region was categorized by (1) consulting with primary care clinicians in the practices and with experts in the field (11 physicians, five managers and decision-makers, three patient and caregiver representatives) and (2) examining documentation of regional health authorities’ policies. Specifically, institutional support was defined by whether the practice was in a region that provided financial support for dementia care (yes or no), training for dementia care (yes, to some extent, no), and/or interdisciplinary care teams (yes or no). We categorized the level of institutional support received in three levels: intensive, moderate, and none (Table 1).

An intensive level of institutional support for dementia care had extensive training to all primary care clinicians, and funding incentive to hire more nurses and social workers into existing comprehensive interdisciplinary primary care teams. A moderate level of institutional support for dementia care had training to selected primary care clinicians interested in dementia care, already working in a comprehensive interdisciplinary team without additional funding. No institutional support had no specific training, funding, or interdisciplinary teams.

This study was approved by the Research Ethics Boards of the Centre Intégré Universitaire de Santé et de Service Social (CIUSSS) du Centre-Ouest- de-l’île-de-Montréal and from each Centre Intégré de Santé et de Service Social or CIUSSS involved in Quebec, the University of Waterloo, the Université de Moncton and both regional health boards in New Brunswick. Consent from the patients was not required/possible. Rather, the director of each site granted our team permission to access patients’ charts for research purposes.
TABLE 1 Description of level of support for dementia care in primary care practices in the research settings

| Institutional Support | Description |
|-----------------------|-------------|
| Intensive Institutional support | Training: yes; extensive training to all primary care clinicians with academic detailing, online CME; interdisciplinary teams: yes; financial support: yes; for hiring additional nurses, social workers |
| Moderate Institutional support | Training: some; moderate training with academic detailing to selected primary care clinicians interested in dementia care; interdisciplinary teams: yes; financial support: no; no additional funding |
| No Institutional support | Training: no; no additional training; interdisciplinary teams: no; financial support: no; no additional funding |

* CME, continuing medical education.

2.2 Quality of follow-up score

For each practice, we conducted a retrospective cross-sectional chart review of randomly selected patients age 75+ years living with dementia who had a visit at the primary care practice during a 9-month observation period (between October 1, 2014 and July 1, 2016). The quality of dementia primary care was measured using a quality of follow-up score. The quality of follow-up score was based on validated tools, current recommendations, and consensus guidelines. The score was calculated with 10 indicators: documentation in the patient’s chart for the assessment of their cognitive status, functional status, presence or absence of behavioral and psychological symptoms of dementia, weight, caregiver needs, aptitude to drive, home care needs, community service needs (e.g., Alzheimer’s Society), absence of anticholinergic medication, and discussion to introduce dementia-specific medications. The score was calculated as the percentage documented completion of ten indicators in the patient’s chart: cognitive status, functional status, presence, or absence of behavioral and psychological symptoms of dementia, weight, caregiver needs, aptitude to drive, home care needs, community service needs (e.g., Alzheimer’s Society), absence of anticholinergic medication, and discussion to introduce dementia-specific medications. Moderate institutional support included training, financial support, and interdisciplinary teams; moderate institutional support included some training to interested physicians and interdisciplinary teams; no institutional support did not include financial support, training, or interdisciplinary care. Means are unadjusted.

2.3 Statistical analysis

2.3.1 Descriptive statistics

The mean and standard deviations (SD) of continuous variables (age, quality of follow-up score) and frequency with proportions for categorical data (sex, level of institutional support) were calculated.

2.3.2 Modeling

A linear mixed model was used to measure the association between the main explanatory variable, the level of institutional support, and the quality of dementia follow-up score. Additional explanatory variables were patient age and sex. To account for the clustering of patients within a practice, a practice number was included as a random effect. We assessed the homogeneity of variances using a Levene’s test with the dependent variable (quality of follow-up score) according to the group (institutional support). Estimates and associated 95% confidence intervals (CIs) were derived for each variable in the model. R statistical software was used. In addition, a bar plot of the unadjusted mean quality of follow-up score of each institutional support group was produced.

3 RESULTS

In total, 734 patients 75+ living with dementia from 33 primary care clinics (17 intensive institutional support, 8 moderate institutional support, 8 no institutional support) had a chart review. There were 7.2% patients from clinics with no institutional support, 32.8% from moderate level of institutional support clinics, and 59.9% from intensive level of institutional support. Mean age was 84.5 (SD = 5.4), 61% were female (Table 2). The mean age was similar across groups, while there were slightly fewer women in the moderate group. The Levene test showed that the variances between groups were not significantly different. The unadjusted mean quality of follow-up score of the 734 patients was 48.6 (SD = 22.0). Figure 1 shows the unadjusted mean quality of follow-up scores across patients at each level of institutional support. The intensive institutional support group had a higher mean quality of follow-up score.
TABLE 2  Demographic characteristics of sample in primary care practices included in the study

| Variable | Overall N = 734 | No institutional support | Moderate institutional support | High institutional support |
|----------|----------------|--------------------------|-------------------------------|---------------------------|
| N (%)    |                | 53 (7.2)                 | 241 (32.8)                   | 440 (59.9)                |
| Female, n (%) |            | 450 (61.3)              | 34 (64.2)                    | 138 (57.3)                | 278 (63.2)          |
| Age, mean (SD) |          | 84.4 (5.4)              | 85.9 (5.9)                   | 84.6 (5.5)                | 84.2 (5.3)          |
| Quality of Care Score, mean a (SD) | | 48.6 (22.0) | 34.3 (17.0) | 35.3 (19.9) | 57.7 (18.9) |

aMeans are unadjusted.
Abbreviation: SD, standard deviation

TABLE 3  Results of mixed linear model

| Variable | Estimated mean difference | 95% confidence interval |
|----------|---------------------------|-------------------------|
| Sex (F)  | -1.39                     | -4.20, 1.41             |
| Age      | -0.18                     | -0.44, 0.07             |
| Intensive level of institutional support a | 23.49 b | 16.40, 30.57 |
| Moderate level of institutional support b | 1.08 | –6.66, 8.83 |

aIn reference to the no institutional support patients.
 bSignificant according to 95% confidence interval.

(57.7) than both the moderate and no institutional support groups (35.3 and 34.3, respectively).

The results of mixed linear model showed that the intensive level of institutional support was associated with a higher quality of follow-up score (intensive vs. no institutional support estimated mean difference = 23.5, 95% CI 16.4, 30.6; moderate vs. no institutional support estimated mean difference = 1.1, 95% CI: –6.7, 8.8; Table 3).

4 | DISCUSSION

Our study found that a higher level of institutional support for dementia care in primary care practices, such as financial support, training, and interdisciplinary primary care teams, was strongly associated with a higher quality of dementia care. On average, the patients at practices with moderate institutional support only had a 1.1 percentage point increase in the quality of dementia follow-up score compared to no institutional support; patients in practices with intensive institutional support had a 23.5 percentage point increase compared to patients in practices with no institutional support.

Previous studies have looked at the impact of training on dementia care and have shown only modest results on quality of care and primary care knowledge in dementia.24,25 The literature on the impact of financial support on the quality of care for dementia is surprisingly scarce. Our study is the first to demonstrate that institutional support that combines financial, training, and an interdisciplinary primary care team had a positive association with quality of care. This is especially stark considering that moderate institutional support, in which interdisciplinary teams and training was provided to only clinicians interested in dementia care, did not demonstrate a clinically meaningful difference on quality of dementia primary care compared to those sites receiving no institutional support. This suggests that providing more comprehensive support to primary care’s dementia care, such as training to all clinicians and additional funding, has a larger association with quality of dementia primary care.

Our results align with a growing literature on the need for improving our health-care systems for persons living with dementia.26–29 Other research has found that multi-faceted support from policymakers is essential for complex populations.30 Institutional support is an important factor for effectively supporting dementia care within primary care practices and sustaining programs for dementia.16 Our results continue to highlight the need for institutional support for dementia primary care for delivering better quality of primary care for persons living with dementia.

Our study had several strengths and some limitations. The quality of dementia primary care was measured using a quality of follow-up score, which measured the adherence to dementia care guidelines.22,32 Process measures, such as follow-up care, are an aspect of quality of care.31 Furthermore, the chart reflects not only physician, but also nurse and other health-care professionals’ activities. While the cross-sectional design and unbalanced samples from each region (i.e., there were more patients and sites in intensive institutional support than the other support levels) does not allow us to measure causation, this is a large study with the collaboration from 33 practices across Canada, offering a diversity of institutional support structures. In addition, the unbalanced samples generally widen the confidence intervals and thus, give more conservative results. Although the measure of institutional support was not a continuous variable, the categories were collaboratively defined by consulting clinicians and experts and analyzing regional policies. Close monitoring of the data collection of the patient’s chart yielded no missing data. Our study has not considered organizational culture or clinician attitudes, which could also impact quality of dementia primary care.

5 | CONCLUSION

As the development and implementation of dementia initiatives and strategies continues in Canada with a focus on strengthening primary
dementia care, this study suggests that institutional support is a valuable aspect for the quality of dementia primary care. Without such support, primary care practices might not be able to provide appropriate dementia care. A coordinated national and subnational effort to provide financial, training, and interdisciplinary care teams to all primary care practices and clinicians would help provide high quality of care in primary care practices for a growing population of persons with dementia.

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CONFLICTS OF INTEREST
MH, GAL, and NS have no disclosures. CGS had a 2019–2021 Canadian Institutes of Health Research (CIHR) Fellowship “Amélioration des soins offerts par les cliniciens de première ligne aux personnes atteintes de la maladie d’Alzheimer: quel impact sur leurs trajectoires de soin?”; 2016–2019 Vanier Canada Graduate Scholarship “Amélioration des soins offerts par les médecins de famille aux personnes atteintes de la maladie d’Alzheimer: quel impact sur leurs trajectoires de soin?”; Canadian Institutes of Health Research (CIHR); support for research for Contract Academic Staff (CAS); McGill University Health Center (MUHC) Department of Medicine; Canadian Institutes of Health Research (CIHR) Operating Grant: COVID-19 May 2020 Rapid Research Funding Opportunity. Improving the care of older adults living with dementia across Canada during the COVID pandemic: a mixed methods study to inform policy and practice; Appel à projets conjoints sur la crise de la Covid 19 du Réseau 1 Québec. RRSPQ et RISUQ: “Impact of social vulnerability in older persons on mental health and health service use in Quebec during the COVID-19 crisis”; Département de médecine de famille et de médecine d’urgence, Université de Montréal – Concours Sadok Besrour 2020, Soutien à la Recherche “Impact des équipes interdisciplinaires sur l’utilisation de l’urgence et des hôpitaux chez les personnes atteintes de la maladie d’Alzheimer et maladies apparentées: Influence du niveau de ruralité”; Canadian Institutes of Health Research (CIHR) PUPPYStudy. Problems Coordinating and Accessing Primary Care for Attached and Unattached Patients Exacerbated During the COVID 19 Pandemic Year: A longitudinal Mixed Methods Study with Rapid Reporting and Planning for the Road Ahead; Réseau québécois de recherche sur le vieillissement “Comparaisons de la qualité des soins et services de santé des hommes et des femmes atteints de troubles neurocognitifs majeurs vivant en milieu rural et urbain au Québec”; RQRV – Réseau Québécois de Recherche sur le vieillissement “Development of indicators to compare patterns of care and health service use for older persons with multimorbidity in Quebec and Ontario”; Canadian Institutes of Health Research (CIHR) - Canadian Consortium for Neurodegeneration and Aging (CCNA). “Assessing care models implemented in primary health care for persons with Alzheimer’s disease and related disorders”; travel Award: North American Primary Care Research Group’s Annual Meeting (NAPCRG 2018); travel Award: North American Primary Care Research Group’s Annual Meeting (NAPCRG 2018); invitation at the 2019 Canadian Association for Health Services and Policy (CAHSPR) Conference; travel and collaboration award to complete a research project at the Lille University; travel award: 39èmes Journées Annuelles de la Société Française de Gériatrie et de Gérontologie Canadian Institutes of Health Research (CIHR); travel award: Canadian Association for Health Services and Policy (CAHSPR 2020) Réseau Québécois de Recherche sur le Vieillissement (RQRV) IV: Canadian Institute of Health Science.

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REFERENCES
1. World Health Organization. The Epidemiology and Impact of Dementia: Current State and Future Trends. 2015.
2. Canadian Academy of Health Sciences. Improving the Quality of Life of Persons Living With Dementia and Their Caregivers. ON2019.
3. Organization WH. Global action plan on the public health response to dementia 2017-2025. 2017.
4. Borson S, Frank L, Bayley PJ, et al. Improving dementia care: the role of screening and detection of cognitive impairment. Alzheimer’s Dement. 2013;9:151-159.
5. Wenger NS, Solomon DH, Roth CP, et al. The quality of medical care provided to vulnerable community-dwelling older patients. Ann Intern Med. 2003;139:740-747.
6. Moore A, Patterson C, Lee L, Vedel I, Bergman H. Fourth Canadian Consensus Conference on the diagnosis and treatment of dementia: recommendations for family physicians. Canadian Family Physician. 2014;60:433-438.
7. Bronskill S, Camacho X, Corbett L, et al. Health System Use by Frail Ontario Seniors: an in-depth examination of four vulnerable cohorts. Instit Clin Evaluat Sciences.; 2011.
8. Ontario Ministry of Health and Long-Term Care. Developing Ontario’s Dementia Strategy: A discussion paper. 2016.
9. Ministère de la Santé et des Services Sociaux du Québec. Relever le défi de la maladie d’Alzheimer et des maladies apparentées: une vision centrée sur la personne, l’humanisme et l’excellence. Rapport du comité d’experts en vue de l’élaboration d’un plan d’action pour la maladie d’Alzheimer. Rapport président par le Professeur Howard Bergman. 2009.
10. Government of Newfoundland and Labrador, Department of Health and Community Services, Alzheimer Society of Newfoundland and Labrador. The Provincial Strategy For Alzheimer Disease And Other Dementias: A Plan of Action/2004.
11. Government of Nova Scotia, Department of Health and Wellness. Towards understanding: A dementia strategy for Nova Scotia. 2015.
12. Government of New Brunswick, Council on Aging. We are all in this together: an aging strategy for New Brunswick. 2017.
13. Government of Canada. A dementia strategy for Canada: together we aspire. 2019.
14. Gauthier S, Patterson C, Chertkow H, et al. Recommendations of the 4th Canadian Consensus Conference on the diagnosis and treatment of dementia. Canadian geriatrics journal. 2012;15:120-126.
15. World Health Organization. Dementia A Public Health Priority. 2012.
16. Crowell K, McKay R, Dionne É, et al. Evaluating the implementation of three integrated care programs for older adults with major neurocognitive disorders. Comparat Health Reform Analys. 2020;8.
17. Vedel I, Monette M, Lapointe L. Portrait des Interventions mises en place au sein des groupes de famille pour les patients avec des troubles cognitifs liés au vieillissement (TCV). Rapport présenté au ministère de la Santé et des Services sociaux du Québec (MSSS). 2012.
18. Lee L, Hillier LM, Stolee P, et al. Enhancing dementia care: a primary care–based memory clinic. J Am Geriatr Soc. 2010;58:2197-2204.
19. Moore A, Patterson C, White J, et al. Interprofessional and integrated care of the elderly in a family health team. Canad Family Physic. 2012;58:e436-e41.
20. Third Canadian Consensus Conference on diagnosis and treatment of dementia. Montreal2007.
21. Reuben DB, Roth CP, Frank JC, et al. Assessing care of vulnerable elders-Alzheimer’s disease: a pilot study of a practice redesign intervention to improve the quality of dementia care. J Am Geriatr Soc. 2010;58:324-329.
22. Vedel I, Souriô N, Arsenault-Lapierre G, Godard-Sebillotte C, Bergman H. Impact of the Quebec Alzheimer’s plan on the detection and management of Alzheimer’s disease and other neurocognitive disorders in primary health care: a retrospective study. CMAJ open. 2019;7:E391-E8.
23. Bates D, Maechler M, Bolker B, Walker S. Fitting linear mixed-effects models using lme4. J Stat Softw. 2015;67:1-48.
24. Perry M, Drašković I, Lucassen P, Vernooy-Dassen M, van Achterberg T, Rikkert MO. Effects of educational interventions on primary dementia care: a systematic review. Int J Geriatr Psychiatry. 2011;26:1-11.
25. Wilcock J, Liliffe S, Griffin M, et al. Tailored educational intervention for primary care to improve the management of dementia: the EVIDEM-ED cluster randomized controlled trial. Trials. 2013;14:397.
26. Khachaturian ZS. Revised criteria for diagnosis of Alzheimer’s disease: national Institute on Aging-Alzheimer’s Association diagnostic guidelines for Alzheimer’s disease. Alzheimer’s & Dementia. 2011;7:253-256.
27. Chertkow H. Diagnosis and treatment of dementia: Introduction. (em)Introducing a series based on the Third Canadian Consensus Conference on the Diagnosis and Treatment of Dementia(em). Can Med Assoc J. 2008;178:316.
28. Committee BCGPA. Cognitive impairment in the elderly – recognition, diagnosis and management. British Columbia, Canada: British Columbia Ministry of Health; 2014.
29. Organizing Committee: Canadian Consensus Conference on the Assessment of Dementia. Assessing dementia: the Canadian consensus. Can Med Assoc J. 1991;144:851-853.
30. Breton M, Gray CS, Sheridan N, et al. Implementing community based primary healthcare for older adults with complex needs in Quebec, Ontario and New-Zealand: describing nine cases. Int J Integr Care. 2017;17:12.
31. Hanefeld J, Powell-Jackson T, Balabanova D. Understanding and measuring quality of care: dealing with complexity. Bull World Health Organ. 2017;95:368-374.
32. Wenger NS, Roth CP, Shellers P, ACOVE Investigators. Introduction to the assessing care of vulnerable elders-3 quality indicator measurement set. J Am Geriatr Soc. 2007;55:S247-S52.

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APPENDIX 1: THE RESEARCH ON ORGANIZATION OF HEALTHCARE FOR ALZHEIMER’S (ROSA) TEAM COLLABORATORS

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