Alternate Level of Care Patients in Canada: a Scoping Review

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ABSTRACT

Background

There has been increasing concern over the growing number of Alternate Level of Care (ALC) patients in Canada who must wait in hospitals for more appropriate settings to meet their needs. ALC patients may have to stay in hospitals for days or months due to a lack of available long-term care capacity, home care services, or other discharge routes.

Method

We used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews (PRISMA-ScR) method to review 35 papers on the topic of ALC patients and delayed discharge in Canada from different perspectives, including (1) the shared characteristics of ALC patients in Canada; and (2) their impact on the Canadian health-care system, medical staff, and family members. Furthermore, from the reviewed works, (3) we also investigate the factors that impact the length of the hospital stays.

Results

We highlighted how the ALC problem is increasing health-care costs, disrupting services, increasing waiting times, and compromising access to valuable resources. We found evidence suggesting that this far-reaching crisis affects the patients, their families, and the medical personnel. We discovered several logistical issues (such as access to long-term care) affecting the patient's hospital length of stay.

Conclusions

Our research contributes to understanding this intricate problem, and helps policymakers take steps to tackle this challenge to ensure timely and appropriate care for all patients.

Key words: alternate level of care; delayed discharges; ALC characteristics; length of stay

INTRODUCTION

According to the Canadian Institute for Health Information (CIHI[(1)]), a patient who occupies a bed in a hospital and does not require the intensity of resources or services provided in that care setting is called an Alternate Level of Care (ALC) patient. Generally, ALC refers to a classification when the level of care needed is less than the level of resources or services available in that context. An ALC designation typically occurs when a patient is ready to be discharged, but no suitable care settings are available (such as home care, assisted living, or Long-Term Care (LTC) beds).[(2)] A patient can be designated ALC in an acute, mental health, or rehabilitation setting. The shortages in available LTC capacity, home care services, or other discharge channels can result in ALC patients remaining in the hospital for days, sometimes even months and years.[(3,4,5)] This leads to a shortage of inpatient hospital beds, increases Emergency Department (ED) wait times, generates service cancellations, and reduces the overall health-care system efficiency.[(1)] In Canada, prolonged occupation of hospital beds by ALC patients has been identified as a chronic and significant problem for health-care systems.[(6)] Studies report total hospital bed occupancy by ALC patients in Canada at nearly 20%.[(7,8)]

Moreover, elderly patients' hospitalization may lead to a complex physiological change called deconditioning. Since patients with ALC designations frequently are older persons with continuous care requirements, a lack of—or a reduction in—services could result in functional decline, falls, increased feelings of uncertainty, and infection chance due to hospitalization.[(9)] Following a period of inactivity, bed rest, or a sedentary lifestyle, functionalities reduce in areas like mental state, degree of continence, and capacity to carry out daily activities.[(10)] This functional deterioration can increase by 3% to 5%, which may extend hospital stays, delay discharges, affect post-discharge placement, and lead to early institutionalization.[(11)] Given the complexity and individuality of health-care organizations, it is essential to comprehend how

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each system functions to manage ALC patients.[12] Hospital discharges must not be considered an "endpoint", but a new stage in the patient's journey through acute inpatient treatment.[13] In this transitional stage, several stakeholders are involved in the delivery and coordination of health care to guarantee the secure transfer of care.

Each patient's journey through the health-care system is unique and involves its own set of complex challenges. One significant factor in impending acute care establishments' ability to perform at their peak levels is the protracted departure of hospital patients.[14] Clinicians and decision-makers in Canada seek to comprehend ALC from a systemic and patient-centric standpoint.[15] Although ALC has been the subject of several reports (i.e., CIHI, the Ontario Hospital Association), such studies consider ALC at the system level and provide little insight into the ALC patient's characteristics, which help the hospital staff in the ALC designation task. Motivated by this, we performed a scoping review to identify the common characteristics of ALC patients and the focus areas of recent ALC studies in Canada. We also investigated important factors that influence the length of hospital stay of patients and the impact of delayed discharges in Canadian hospitals.

To be more specific, we have investigated the following research questions:

RQ1: Are there shared characteristics among ALC patients reported in the reviewed literature?

RQ2: Is there a consensus in the reviewed literature regarding what impacts ALC patients have on the Canadian health-care system, the medical personnel, and patient families?

RQ3: Is there a consensus in the reviewed literature regarding which factors impact patients' Length of Stay (LOS) at hospitals?

METHODS

In this study, we follow the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) extension for scoping reviews (PRISMA-ScR)[16] method to conduct our review.

A systematic search of PubMed, Scopus, OpenAlex, and Google Scholar was conducted. We restricted our search exclusively to articles in English from 2012 to 2023 on the issues of ALC patients in the Canadian health-care system. Therefore, a list of search phrases was developed by the research team, which included "Alternate Level of Care," "ALC Patients," "ALC," "Delayed discharge," and "Canada." Each database was searched independently using these keywords, with the criteria that relevant material must pertain to:

a) The characteristics of ALC patients, including social, demographic, or medical;

b) ALC patients' challenges and factors influencing the length of hospital stay; and

c) The impact of delayed discharges in Canadian hospitals.

RESULTS

Our search process yielded 1,103 articles that matched the search criteria. The first two authors of this paper assessed the articles' relevancy (MM, ER). After removing 119 duplications, MM and ER independently examined the titles and abstracts of the remaining 984 unique articles and excluded 909 unrelated ones. Three authors (MM, ER, and MT) reviewed the remaining 74 papers and investigated the reference list of these articles for possible relevant papers. They excluded 39 articles because the studies evaluated an implemented program, were not peer-reviewed, or were not specific to ALC patients. Any conflicts were resolved through discussion and consensus among authors. All four authors reviewed the entire process and the papers selected for this review. The search process yielded 35 relevant articles, which are summarized in Figure 1.

DISCUSSION

Our evidence summary is presented according to the research questions defined earlier.

RQ1. Common Characteristics of ALC Patients

The decision to designate a patient as ALC is a clinical responsibility made by the appropriate care team members, including physicians, long-term care assessors, patient care managers, discharge planners, or other care team members.[17] Except for one study,[14] which created a rule of its own, all reviewed papers referred to the CIHI guidelines to identify ALC patients.

Barnable *et al*.[11] studied ALC patients in the Western region of Newfoundland and Labrador in Canada to identify influencing factors within this population. They found that older female adults with comorbidities who access ED services often were admitted to a hospital and experienced a functional decline that may also result in being designated ALC. The average age of patients (67.9% female) in this study was 80.44 yrs. Most ALC patient admissions (58.9%) originated from home, and 3% were via the ED. Respiratory illness, falls, fractures, injuries, and unspecified dementia were the most common problems, and 85.7% had at least one comorbid illness. Little *et al*.[18] studied the proportion and distribution of ALC days in mental health settings across Ontario, Canada, using clinical assessment data. They reported that 3.5% of all patients were identified as ALC, with a median of 17 ALC days. Of all patients, 51.90% were male, 34.10% were older than 65, and 33% lived alone. The study found that schizophrenia and cognitive disorders occur significantly more often in the ALC group compared to the non-ALC group. Also 25.80% of ALC patients had cognitive disorders, compared to 5.10% among non-ALC patients.

Bai *et al*.[14] developed a clinical prediction rule to identify patients at risk of delayed discharge. They conducted a retrospective cohort study of consecutive General Internal Medicine (GIM) patients admitted at a large tertiary care hospital in Canada. They identified seven significant risk factors for ALC,

including age (age ≥ 80 yrs), sex (female), dementia, diabetes with complications, referrals to physiotherapy, occupational therapy, and speech-language pathology. According to Jerath *et al*.,[19] prolonged ALC after surgery was observed in older patients (mean age: 75 yrs for elective surgery, 80 yrs for emergency surgery), women, individuals with greater levels of comorbidity, those residing in urban areas, and patients from lower median household income neighborhoods.

Costa et al.[20] reviewed the characteristics of ALC patients from a dataset with 17,111 acute hospital admissions designated ALC between April 2009 and April 2011 within a southern Ontario, Canada region. The mean age of ALC patients was 77.1 yrs; most were female (57.7%), and 15.5% were under age 50. They reported that more than 50% of ALC patients awaiting nursing home admission had impairment in activities of daily living (ADL) and cognitive impairment. A significant proportion of these patients had low informal care capacity. Alzheimer's disease and related dementia were common, while other neurological conditions were rare. Finally, this study reported that the principal characteristics that extend the ALC days are obesity, a psychiatric diagnosis, abusive behaviours, stroke, being male, and receiving anxiolytics, antidepressants, and antipsychotics.

Amy *et al*.[21] examined the characteristics of Traumatic Brain Injury (TBI) patients using three years of administrative data from hospitals in Ontario. They demonstrated that increasing age and comorbidity were the leading causes of delayed discharge in Acquired Brain Injury (ABI) patients, as with other populations. The study found that psychiatric comorbidity increased ALC days among TBI and non-TBI patients by 73% and 85%, respectively.

McCloskey *et al*.[22] investigated the social and health characteristics of ALC patients by using data from two hospitals in New Brunswick, Canada where ALC patients occupied 33% of all hospital beds. The median length of stay was 182 days, and the mean age of ALC patients was 79.3 yrs, with 64.8% being females. In addition, 83.7% of admissions were through ED, and 41.9% of these patients were receiving health-care support before their admission. On average, these patients had five chronic conditions: hypertension, ischemic

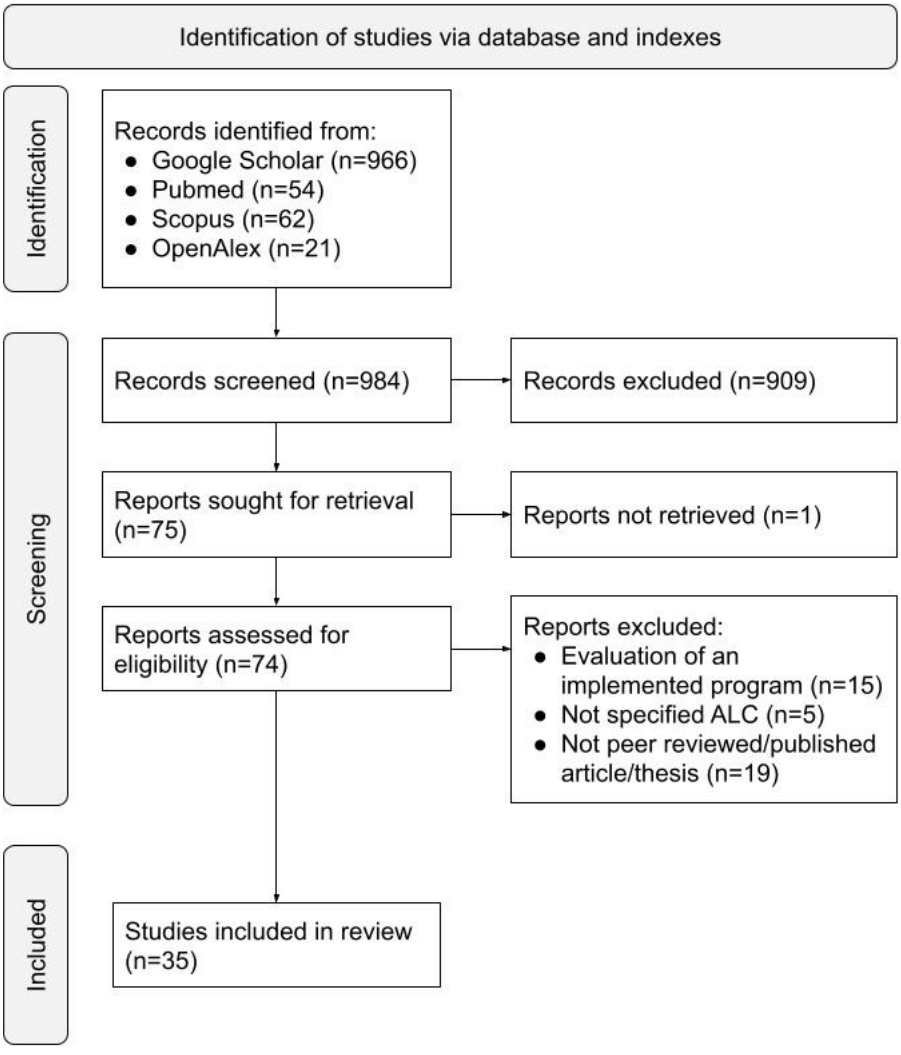

FIGURE 1. Scoping review based on PRISMA-ScR

heart disease, diabetes, chronic obstructive pulmonary disease, and stroke. Most patients in this study were admitted with a medical illness because they and their families could no longer take care of the patient.[22] One of the main findings of this study was that 63.6% of ALC patients were diagnosed with dementia, and 33.7% did not receive a diagnosis of dementia before hospital admission. This percentage is considerably less than the estimated number of people living in the community with undiagnosed dementia (64%).

Slaney *et al*.[23] investigated the proportion of ALC patients receiving Potentially Inappropriate Medications (PIMs) and experiencing selected PIM-related adverse events. They studied a cohort of 52 ALC patients from an acute care community hospital, of which 58% are male, more than half had a history of falls (60%), and 67% were diagnosed with dementia or cognitive impairment. The mean age of patients was 82.69 yrs, and the mean length of stay was 156 days. The authors argued that ALC patients could be at a higher risk of adverse events, especially those with ALC status for longer and those exposed to PIMs.

Stock *et al*.[24] examined influencing factors on ALC patients with hypoxic-ischemic brain injury. They reported that these patients had a higher proportion of ALC days than the patients with other types of acquired brain injury. The authors used data from the Institute for Clinical Evaluative Sciences Data Repository. According to this study, patients aged between 20 and 34 yrs had higher rates of ALC days per length of stay than those aged 65 to 79 yrs. Also, less severity (measured by special care unit hours) is considered a unique predictor, unlike other reports.

Azimi *et al*.[4] investigated the medication regimens of ALC patients at two health-care institutions in Toronto, Canada. The mean age of the 82 ALC patients was 75.6 yrs, and 52% were female. The mean number of chronic conditions before admission was 6.4. The work reported that the ALC patients were taking 17 medications on average and that the overall pill burden was 18.5 per day. Eighty-two per cent of the ALC patients were awaiting discharge to the long-term care beds. They reported that polypharmacy was common, and exposure to PIMs was high among the ALC patients.

Aaltonen *et al*.[25] studied differences in ALC between patients with and without dementia using administrative data from British Columbia, Canada. They found dementia to be the most influential factor in the designation of ALC and reported that patients with dementia have longer ALC days.

Table 1 summarizes these eleven reviewed studies based on their focus, the ALC designation method, and the data sources. A summary of ALC patient's characteristics is presented in Table 2. Table 3 summarizes the prominent characteristics observed in the ALC patients during their stay. We report the shared characteristics of ALC patients mentioned in the literature in Table 4. In the Appendix, Table A1 presents the study characteristics of the 23 papers reviewed in this article. The other 12 articles did not include characteristics of the ALC patients.

Below, we include all characteristics shared among at least two works in the reviewed literature.

Dementia is the most widely reported characteristic of ALC patients. Most works agree that dementia is a prevalent characteristic of the ALC patient population.[11,14,20,19,22,23,25]

TABLE 1.
ALC status determination methods used in the data/studies

Focus of the ALC Study	*ALC Designation Method*	*Designated By*	*The Data Source for ALC Status*
Generic[20]	Unspecified	Unspecified	Discharge Abstract Database (DAD), Hamilton Niagara Haldimand Brant, Community Care Access Centre's Client Health Related Information System (CHRIS), and Resident Assessment Instrument-Home Care Assessment System
Dementia[22]	Unspecified	Discharge planners	Patient charts
Acquired Brain Injury[21]	Unspecified	Unspecified	Discharge Abstract Database
Potentially Inappropriate Medications[23]	Unspecified	Unspecified	Patient charts, Electronic Medical Record
Generic[11]	CIHI Guidelines	Nurse manager or designate(s)	Patient charts
Brain Injury[24]	Unspecified	Unspecified	Discharge Abstract Database
Medication[4]	Unspecified	Unspecified	Patients record in a hospital computer system
General Internal Medicine[14]	CIHI Guidelines	Physician	Patient electronic medical records, Discharge Abstract Database
Mental Health[18]	CIHI Guidelines	Unspecified	Resident Assessment Instrument-Mental Health (RAI-MH)
Dementia[25]	Unspecified	Unspecified	Administrative health care data
Surgical[19]	CIHI Guidelines	Unspecified	Patient charts and administrative data

TABLE 2.
Summary of demographic and clinical characteristics from the studies

Focus of the ALC Study	*Prominent demographic characteristics*		*Prominent Clinical Characteristics*	*Effect Measures*
	Age (Range, mean, or group)	*Gender*		
Generic[20]	> 65	Female	ADL, cognitive impairment	Effectiveness of interventions targeting specific sub-populations
Dementia[22]	79	Female	Undiagnosed dementia before hospital admission	Comprehensive care improvement of dementia in primary care settings
Acquired Brain Injury[21]	groups: 19–54, 55–64, 65–74, 75–84 and 85+	Male	Comorbidities	Barriers to identification of post-discharge to inform policies reducing ALC days
Potentially Inappropriate Medications[23]	> 65	Male	Dementia, cognitive impairment	Regular medication review and monitoring
Generic[11]	> 80	Female	Comorbidities, cardiovascular illness, diabetes	Patient prevention from being designated ALC
Brain Injury[24]	50−64	Male	Comorbidities, less severity of injury	Cost of ALC days, patient exposure to adverse events, patient outcomes
Medication[4]	60–90	Female	Polypharmacy	Deprescribing and optimizing medication use
General Internal Medicine[14]	≥ 80	Female	Dementia and diabetes	Clinical prediction rule
Mental Health[18]	≥ 65	Female	Schizophrenia and cognitive disorders	RAI-MH indicators to predict ALC designation risk effectively.
Dementia[25]	Unspecified		Dementia	Maintaining continuity of care with a general practitioner (GP)
Surgical[19]	≥ 75	Female	Comorbidities	Optimizing early discharge planning, improving local access to community care services

TABLE 3.
Summary of characteristics during the ALC stay from the studies

Focus of the ALC Study	*Prominent Characteristics Observed During the ALC Stay*	*Discharge Destination*
Generic[20]	ADL and cognitive impairment	Complex continuing care facility
Dementia[22]	Falling	Nursing Home
Acquired Brain Injury[21]	Comorbidities as well as complications associated with brain injury	Inpatient rehabilitation or long-term care
Potentially Inappropriate Medications[23]	Behavioral and psychological symptoms of dementia	Nursing home
Generic[11]	Unspecified	Nursing home
Brain Injury[24]	Psychiatric/behavioral comorbid condition	Long-term care
Medication[4]	Use of gastrointestinal drugs	Long-term care
General Internal Medicine[14]	Nosocomial infections	Rehabilitation
Mental Health[18]	Resource intensive care	Unspecified
Surgical[19]	Acute illnesses and physiologic derangement	Home care or facilities with skilled nursing care

TABLE 4.
Enumeration of the shared characteristics of ALC patients reported by the reviewed papers

Citation	*Dementia*	*Comorbidities*	*Cognitive Impairment*	*Diabetes*	*Age*	*Falls*	*Schizophrenia*
Costa *et al*.[20]	x		x				x
McCloskey *et al*.[22]	x	x		x			
Amy *et al*.[21]		x			x		
Slaney *et al*.[23]	x		x			x	
Barnable *et al*.[11]	x	x					
Stock *et al*.[24]		x					
Azimi *et al*.[4]		x				x	
Bai *et al*.[14]	x			x	x		
Little *et al*.[18]			x				x
Aaltonen *et al*.[25]	x						
Jerath *et al*.[19]	x	x					
Total	7	6	3	2	2	2	2

Some of the few articles that do not mention dementia are those focused on specific populations, such as the study by Amy *et al*.[21] and that of Tardif *et al*.[26] which focus on delayed discharge for Traumatic and Non-Traumatic Brain Injuries, and the Stock *et al.* study[24] which focus on survivors of hypoxic–ischemic brain injury. On the other hand, works such as that of Little *et al*.[18] do not use the term dementia but focus on specific psychiatric disorders (Schizophrenia, anxiety disorders, personality disorders, and others). In the work by Azimi *et al*.,[4] the authors mentioned an indirect link between dementia and ALC patients. They found that psychotropic drugs were the third most commonly prescribed drug class to ALC patients and that antipsychotic use increases the risk of dementia. Lastly, in their study, Jerath *et al*.[19] created a multivariate logistic regression model using dementia as one potential predictor of the designation as an alternate level of care patient (suggesting that these two can be correlated). They found that dementia was associated with increased adjusted odds of delayed discharge.

The second most reported condition of ALC patients is the simultaneous presence of multiple chronic conditions or *Comorbidities*.[4,11,19,21,22,24] Although comorbidities can refer to multiple diseases, some works specifically indicate the diseases found in the population.[22] Others use the Charlson Comorbidity Index to assess comorbidities in the ALC patient without specifying any condition in particular.[21] Some studies mention morbid or chronic conditions (e.g., morbid obesity[20,23]) and chronic kidney disease.[23] However, they do not mention the study of multiple chronic conditions in the same patient.

Similarly, Little *et al*.[18] discusses psychiatric disorders that can be chronic (such as schizophrenia), but there is no mention of multiple conditions in the same patient. Likewise, Aaltonen *et al*.[25] mention dementia as a predominant characteristic of ALC patients. However, they do not mention other chronic or multiple conditions in the same patient (comorbidity). Like Bai *et al*.,[14] the study by Amy *et al*.[21] uses the Charlson Comorbidity Index. In the case of Bai's study, the authors created a logistic regression model that considered Charlson comorbidity categories as part of the predictors. They listed two of the Charlson comorbidity categories as significant predictors of ALC: diabetes with complications and dementia. However, they do not mention comorbidity as an important factor. Overall, there is a strong agreement that chronic conditions, such as diabetes, kidney disease, and dementia, are significant characteristics of ALC patients. Furthermore, numerous works report multiple chronic conditions in the same patient as a significant characteristic of the ALC patients.[4,22]

Concerning *Gender*, there is substantial variability in the most prevalent gender of the ALC patients. Some articles reported a higher proportion of females in the ALC patients,[14,22] and some reported a higher male proportion.[20,23] Overall, it seems that there is no strong evidence that suggests that there is a more prevalent gender among ALC patients.

Although with regard to *Age*, most studies reported that ALC is more common among older patients, some suggest it is not always true. For example, Jerath[20] reports that being 74 years old or younger significantly longer ALC lengths of stay, while being 85 to 95 years old substantially shortens ALC lengths of stay. Also, according to Stock,[24] patients aged 20 to 34 had higher rates of ALC days per length of stay than those aged 65 to 79. Furthermore, some studies report that being a certain age or older is a significant risk factor for ALC.[14] Additional investigation is required to find if younger patients are associated with longer ALC stays or elderly patients are associated with shorter ALC stays.

RQ2. Delayed Discharges in Canadian Hospitals

Delayed discharge is a common problem in hospitals worldwide, including in Canada. Patients who experience postponed discharge usually receive ALC designations.[27] Backlogs in discharging ALC patients challenge the effective flow of patients through several care areas. According to Sutherland *et al*.,[28] one ALC patient occupying an ED bed blocks four patients from accessing that department each hour. Thus, one ALC admission can effectively prevent dozens of acute admissions. Delayed discharge has broad health system repercussions for rapid access to acute care beds, including increased proposed wait times for elective surgery, revocation of scheduled surgical procedures, and longer wait times for critically ill patients in emergency departments who need a hospital bed.[29] The hospitals are overcrowded because the entire health-care system becomes too challenging to navigate, patients wait too long for care, and they frequently receive it in the wrong location.

Furthermore, delayed discharges have several detrimental effects on patient safety, quality of service, health system consumption, and expenditures.[30] The likelihood of adverse outcomes, such as faster functional deterioration, hallucination, pressure sores, nosocomial infections, and falls, is increased by extended hospitalization. For instance, Bai *et al*.[31] reported that patient safety issues are exacerbated by delayed release because it increases hospital overpopulation and restricts access to scarce acute care resources. It also has adverse effects on emergency room boarding and bed space. Archer's article[32] regarding increased costs by the prolonged stay of ALC patients at hospitals shows that an ALC patient occupying an acute care bed costs an average of $1,100 per day in Canada.

Furthermore, backlogs connecting ALC patients with non-acute alternatives could lead to issues such as access block.[33, 34] Access block happens when a lack of beds disrupts patient flow within a hospital. For example, emergency department overcrowding and ambulance offloading delays can occur when patients face challenges being transferred to inpatient beds due to their limited availability. In addition, disrupted patient flow can block access to other hospital resources, force the cancellation or delay of elective surgeries, and increase wait times for all hospital services. Prolonged hospital stays can pose numerous challenges for the ALC patients themselves, such as feelings of anxiety or guilt about occupying acute care beds, loneliness, social isolation, physical and mental stagnation, functional decline, and a heightened risk of contracting an illness.[35] Lastly, Rojas-Garcia *et al*.[36] and McCloskey *et al*.[15] identified that a needless or protracted hospital stay causes stress and stigma for the patients' family members.

Concerning hospital personnel, staff providing care to ALC patients are at higher risk of injury when working in wards with a mix of ALC and non-ALC patients. They are also at greater risk of burnout, dissatisfaction, and low self-rated health.[37] Our review of the above papers helped us to identify several types of delayed discharge impact. Table 5 summarizes these impacts on ALC patients, their family members, and hospital personnel in Canadian hospitals.

Most reviewed articles mentioned delayed discharge consequences for hospitals, including more prolonged waiting times,[28,30,38,39] resource blocks,[39,28] and service disruptions.[20,36] Delayed discharge has negative impacts on the patients, including elevated costs[15,32,36] and functional decline,[35,36,28] among other health complications. Only a few works studied the impact of delayed discharge on the patient's family,[15,36] highlighting the importance of more work in this area.

TABLE 5.
Impacts of delayed discharges in Canadian hospitals

Study	*Impact of Delayed Discharge in Canadian Hospitals*
Sutherland *et al*.[28]	Preventing new acute admissions to the ED
Ontario *et al*.[29]	Prolonged wait time and revocation of scheduled treatments
Devlin *et al*.[39]	Treatment delivery in a dangerous environment
Rosman *et al*.[30] Rawal *et al*.[38]	Functional deterioration in ALC patients
Bai *et al*.[14]	Patient safety issues due to hospital overpopulation
Archer[32]	Increased cost of acute care beds
Forero *et al*.[33] Bretthauer *et al*.[34]	Increased access block to hospital resources for other patients
Wu *et al*.[35]	Increased feelings of anxiety, loneliness, social isolation, and physical and mental stagnation in ALC patients
Rojas-Garcia *et al*.[36] McCloskey *et al*.[22]	Increased stress and stigma among ALC patients and family members
Yassi *et al*.[37]	Increased dissatisfaction among hospital personnel

RQ3. Factors and Implications of Prolonged Hospital Stays

The Length of Stay (LOS) represents the duration between a patient's admission and discharge from the hospital. The LOS is one of the performance indicators for hospitals that shows how efficiently hospital beds are managed.[40] Patient characteristics and discharge destinations significantly influence the length of stay. Challis *et al*.[41] showed that patients' dependency and cognitive dysfunction substantially impacted delay. Furthermore, patients admitted to the orthopedics and trauma specialties were more likely to experience delayed discharge. Additionally, patients with the primary diagnosis of "respiratory" were more likely to have shorter LOS. Victor *et al*.[42] reported that discharge arrangements were more important predictors than patient characteristics. Furthermore, the decisions made by families, the availability of housing, and financial arrangements can all cause delays in admission to a residential long-term care facility. In another study, Russolillo *et al*.[43] investigated the relationship between various diagnoses of mental disorders and LOS in a cohort of homeless persons in Vancouver, Canada. The study identified that acute hospitalization and extended lengths of stay were strongly related to specific mental disorders and high-frequency non-psychiatric treatment use. They suggested that screening the homeless population to detect those at high risk for acute illnesses is crucial in putting resources in place to encourage recovery and reduce the need for recurring hospitalization.

Emond *et al*.[44] also researched four EDs in Canada to study older persons living in the community who were not delirious, ascertain the prevalence of delirium, and describe its effects on hospital LOS after an 8-hour exposure to the ED setting. One of eight independent or semi-independent older people showed incident delirium following an 8-hour ED exposure. An episode of delirium lengthens hospital stay by four days, which substantially impacts patients and may result in ED crowding due to a negative feedback loop. According to an CIHI report,[45] seniors with dementia are more likely to experience hospital harm, spend more time in the ED, and have higher hospitalization rates than their counterparts among Canadians aged 65 and older. The median LOS for patients with dementia was 1.3 to 2 times greater than that of patients without dementia. With younger seniors, the disparity was more noticeable.

Although exceedingly unusual, the proportion of elderly individuals with dementia (0.85% versus 0.12%) who experienced extremely lengthy hospital stays of six months or more was also significantly higher. One in five seniors with dementia had an ALC component to their stay, compared to one in 15 seniors without dementia. These seniors were three times more likely to have ALC days. Younger seniors experienced a more significant difference in ALC stays, mirroring the difference in total duration of stay. Amy *et al*.[21] examined the factors associated with acute care ALC days among patients with Acquired Brain Injury (ABI). They used administrative data from an Ontario hospital and divided the ABI population into Traumatic Brain Injury (TBI) and Non-Traumatic Brain Injury (nTBI). According to their findings, TBI patients had longer ALC stays (23.9 days) than nTBI patients (19.6 days) overall. In addition, 17.5% of the TBI patients had at least one ALC day during their stay. Dvorak *et al*.[46] showed that delayed surgeries can worsen the patient's condition and even the length of hospital stay. They showed that patients who underwent early surgery had shorter hospital stays. Table 6 summarizes the factors influencing the protracted length of stay in hospitals.

Besides the characteristics of patients that can impact delayed discharges, such as dementia[43] or cognitive dysfunction,[41] several works highlighted logistic aspects as factors influencing the length of stay. This includes the availability of housing and financial arrangements,[42] delayed surgeries,[46] and long exposures to the emergency department (which leads to delirium and, in turn, leads to longer lengths of stay).[44] Our review stresses the importance of addressing the ALC problem holistically, as some non-medical aspects impact the length of stay.[19] Availability and affordability of discharge destinations (such as rehabilitation and long-term care) are fundamental to tackling the ALC problem. Factors such as short time from injury to surgery[46] and short wait times in EDs for older adults[44] can reduce adverse effects such as delirium and the length of stay.

While many Canadian hospitals use CIHI guidelines to designate ALC patients, there is no worldwide policy that is accepted and followed by many countries. However, the World Health Organization (WHO) provided a framework to integrate people-centred health services and identify transitional or intermediate care as one of the key priorities. To prevent hospital readmission and delayed discharge in hospitals, teams manage transfers from hospitals to patients' homes and offer rapid community assessment, treatment, rehabilitation, or palliative and end-of-life care. Services are provided throughout the shifts from the hospital to the home and from illness or

TABLE 6.
Factors that influence the length of hospital stay

Study	*Factors That Influence the LOS*
Challis *et al*.[41]	Patient characteristics and discharge destinations
Russolillo *et al*.[43]	Mental disorders and high-frequency non-psychiatric treatment
Emond *et al*.[44]	Prevalence of delirium among not-delirious older persons
CIHI[45]	Dementia in seniors
Tardif et al.[26] Amy *et al*.[21]	Traumatic Brain Injury (TBI)
Dvorak *et al*.[46]	Delayed surgery in acute traumatic spinal cord injury(tSCI)
Jerath *et al*.[19]	Emergency surgery, postoperative complications

injury to recovery and independence through transitional care and intermediate care. These services usually continue for a few weeks, and have specific goals such as limiting hospital stays, preventing readmissions, and speeding up the transition to post-acute care. Care management programs that target discharges from hospitals to homes have shown significant success in raising standards and cutting expenses.[47]

Limitations

There are a few limitations to our study. While we stated the sources of evidence, a critical appraisal of these sources of evidence was not conducted. Although we are confident regarding the selected keywords and research databases, it is possible that this scoping review missed some relevant articles related to delayed discharge. It should be highlighted that this study reviewed Canadian studies and focused on the issue of ALC and delayed discharge in hospitals in Canada, while the topic of delayed discharge has been vastly studied worldwide.

CONCLUSIONS

This work reviews the literature on the growing challenge of ALC patients in Canada. We studied this problem from different dimensions: a) characteristics of ALC patients, b) the impact of delayed discharges of ALC patients on the Canadian health-care system, and c) factors and implications of prolonged hospital stays. Understanding these dimensions is crucial for addressing the escalating issue of ALC patients in Canada and optimizing resource allocation. It also facilitates the development of tailored interventions and policies to reduce the burden on the health-care system and improve patient outcomes.

In addressing our research question regarding the common characteristics of ALC patients, we identified certain prominent features within the ALC patient population that the reviewed literature consistently reported. For example, dementia was one of the most commonly reported characteristics of ALC patients. Most works reported chronic conditions, and some conveyed the presence of multiple chronic conditions (comorbidity) in the same patient. Cognitive impairment was also mentioned repeatedly in the reviewed literature. Finally, several studies reported diabetes, a history of falls, and schizophrenia as the common characteristics of ALC patients. There is some conflicting evidence about the gender and age of the ALC patients as an indicative factor. However, all studies reported that the ALC population had an average advanced age.

For our second research question on the impacts of delayed discharge patients, we have identified several recurrent issues that summarize the effects of delayed discharges on the health-care system (i.e., longer waiting time, resource blocks, service disruptions, elevated costs, and functional decline [and other health complications]). We also found some studies highlighting the impact of delayed discharges on the patient's family.

For the third research question on the factors influencing the length of stay, we identified medical and non-medical aspects. Some medical reasons include patients' dependency and cognitive dysfunction. On the other hand, some non-medical reasons reported are access to long-stay care, prolonged exposure to ED for advanced-age patients, and access to early surgery. Understanding the source of delayed discharges and factors influencing the length of stay is fundamental to designing policies to alleviate the problem. Given that patients and health-care providers can significantly benefit from addressing these influencing factors, further studies should be conducted to identify each factor in detail.

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CONFLICT OF INTEREST DISCLOSURES

We have read and understood the *Canadian Geriatrics Journal*'s policy on conflicts of interest disclosure and declare no competing interests.

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APPENDIX

TABLE A1. Study characteristics of reviewed papers

Citation	*Study Size (ALC/Non ALC)*	*Place*	*Period*	*Average Age (yrs)*	*Female Proportion*
Costa *et al*.[20]	17,111 / —	A health region in Southern Ontario, Canada	Discharged between April 1, 2009 and March 31st 2011	77.1	57.7%
McCloskey *et al*.[22]	181 / —	Two hospitals in New Brunswick: (1) Specialized geriatric hospital (2) Tertiary care hospital.	All patients designated as ALC on July 1, 2009	79.3	64.8%
Amy *et al*.[21]	9,111 / —	All hospitals in Ontario, Canada	April 1, 2007 to March 31, 2010	-	46.9%
Slaney *et al*.[23]	52 / —	Acute Care Community Hospital in Atlantic Canada (unspecified province)	ALC as of September 1, 2012	82.69	42.3%
Barnable *et al*.[11]	56 / —	Western Regional Health Authority in Newfoundland and Labrador, Canada	Designated ALC during 2013	80.44	67.9%
Stock *et al*.[24]	491 / —	Ontario, Canada	2002/03 to 2011/12	20 years or older	35.6%
Azimi *et al*.[4]	82/ —	Mount Sinai Hospital and Bridge-point Active Healthcare in Toronto, Ontario	May to July 2017	75.6	52.4%
Bai *et al*.[14]	255 / 4056	Large tertiary care hospital in Canada (unspecified province)	January 1, 2015 to January 1, 2016	81	58%
Little *et al*.[18]	10,390 / 283,396	Mental health patients in units across Ontario, Canada	2005 to 2014	-	48.1%
Aaltonen *et al*.[25]	— / —	British Columbia, Canada	In 2001/02, 2005/06, 2010/11, and 2015/16	-	-
Jerath *et al*.[19]	53,722 / 722,538	Ontario Hospitals, Canada	2006 to 2016	77.25	59.3%
Devlin *et al*.[39]	4,665/–	Ontario, Canada	As of November 2018	-	-
Rosman *et al*.[30]	104 /–	Sheba Medical Center, Israel	January 1, 2013 to June 30, 2013	76	47.1%
Rawal *et al*.[38]	207/–	2 academic hospitals in Toronto, Canada	September 1, 2016, to September 1, 2017	60.3	39.6%
Archer *et al*.[32]	93/–	Kingston General Hospital	As of mid-July 2016	-	-
McCloskey[15]	118/–	New Brunswick, Canada	May 2012 and November 2012	85.1	68.7%
Walker *et al*.[27]	26/4	All provinces except Quebec and Manitoba	April 1, 2007 to March 31, 2008	80	58%
Challis *et al*.[41]	186	North West of England	July 2004 to January 2005	79.3	69.4%
Russolillo *et al*.[43]	433	Vancouver, Canada	October 2009 to April 2011	30.1	26.1%
Émond *et al*.[44]	338/-	Four Emergency Departments in Canada	March-July 2015	76.8	51.2%
Tardif *et al*.[26]	4885/–	Intensive Care Units, Québec, Canada	2007-2012	-	26.3%
Needham *et al*.[40]	Total patients: 1117090	Ontario, Canada	1997/8	-	-
Victor *et al*.[42]	456/–	England	February 1997 to September 1997	85+	68%