Barriers to Physical Activity and Restorative Care for Residents in Long-Term Care: A Review of the Literature

Kathleen Benjamin, Nancy Edwards, Jenny Ploeg, and Frances Legault

Despite the benefits of physical activity, residents living in long-term care (LTC) are relatively sedentary. Designing successful physical activity and restorative care programs requires a good understanding of implementation barriers. A database search (2002–2013) yielded seven studies (nine articles) that met our inclusion criteria. We also reviewed 31 randomized controlled trials (RCTs) to determine if the authors explicitly discussed the barriers encountered while implementing their interventions. Eleven RCTs (13 articles) included a discussion of the barriers. Hence, a total of 18 studies (22 articles) were included in this review. Barriers occurred at resident (e.g., health status), environmental (e.g., lack of space for physical activity), and organizational (e.g., staffing and funding constraints) levels. These barriers intersect to adversely affect the physical activity of older people living in LTC. Future studies targeting physical activity interventions for residents living in LTC are needed to address these multiple levels of influence.

Keywords: exercise, nursing homes, homes for the aged, assisted living, residential

Common conditions among older adults—such as physical frailty, chronic pain, and depression—can reduce their quality of life. Evidence indicates that physical activity can help improve these conditions and reduce related outcomes such as falls (Cameron et al., 2010; de Carvalho Bastone & Filho, 2004; Dechamps et al., 2010; Ouslander et al., 2005; Simmons, Ferrell, & Schnelle, 2002; Williams & Tappen, 2008). However, low physical activity levels among residents living in long-term care (LTC) have been described (Bates-Jensen et al., 2004; Egerton & Brauer, 2009; Ruuskanen & Parkatti, 1994). Low levels of physical activity suggest the existence of important underlying barriers to physical activity and restorative care programs in LTC settings. (Restorative care focuses on restoring or maintaining a resident’s physical function so that the resident can maintain the highest level of function as possible (Resnick et al., 2008). Residents are encouraged to “do for self” (e.g. dress oneself) rather than having care providers “do” for the residents. Restorative care is also referred to as function-focused care.) Physical activity and restorative care programs differ with respect to the type of exercises used and their mode of delivery. However, they share a common goal: to maintain or improve function. Hence, for this review, we combined physical activity and restorative care articles to gain a broad understanding of the barriers related to different activity programs provided in LTC settings.

Without a thorough understanding of the barriers, strategies to tackle this problem will be inadequate. Socioecological models suggest that barriers must be understood not only at the individual level, but also at other system levels (i.e., organizational, public policy, environmental; Green, Richard, & Potvin, 1996; Richard, Potvin, Kishchuk, Prlic, & Green, 1996; Sallis & Owen, 1997; Sallis et al., 2006). No previous reviews of the literature related to the barriers to physical activity or restorative care were found.

The main objective of this article is to present an overview of the literature related to the barriers to physical activity and restorative care within LTC settings. A better understanding of barriers is pivotal to the successful implementation of physical activity and restorative care strategies aimed at increasing the physical activity levels of residents living in LTC.

Methods

Database Search: Articles Focusing on Barriers

An English-language search of MEDLINE, Cumulative Index to Nursing and Allied Health Literature (CINAHL), AgeLine, and SPORTDiscus was conducted to identify journal articles published from 2002 to 2013. The following keywords were used: barriers, physical activity, exercise, restorative care, function-focused care, long-term care, long term care, nursing homes, homes for the aged, assisted-living, and residential, singly and in combination.
This identified 110 articles. The abstracts were reviewed using the following inclusion criteria: (a) research was conducted in a nursing home, LTC home, home for the aged, assisted-living, or residential care; and (b) barriers to physical activity, exercise, restorative care, or function-focused care were examined. Full articles were retrieved if they met all eligibility criteria or if the abstract did not contain adequate screening information, eliminating 101 articles. Another 45 articles were eliminated because they were conducted in community- or home-based settings rather than LTC, and 57 articles were eliminated as they did not focus on the barriers to physical activity, exercise, restorative care, or function-focused care.

Seven studies (nine articles) were retained and included in this review: those by Benjamin et al. (2009, 2011); Chen (2010); Galik, Resnick, and Pretzer-Aboff (2009); Guerin, Mackintosh, and Fryer (2008); Kalinowski et al. (2012); Philip and Flesner (2013); and Resnick et al. (2006, 2008; Table 1). Two articles (Benjamin, Edwards, & Caswell, 2009; Benjamin, Edwards, Guittard, Murray, Caswell, & Perrier, 2011) reported on the findings of different components of one multisite study. Similarly, the two articles by Resnick et al. (2006, 2008) reported the findings of different components of a single restorative care study.

To assess the trustworthiness of the seven studies, we used questions from a tool developed by Polit and Beck (Beck, 2009). Overall, our assessment found the studies to be trustworthy. Questions we used from this tool included the following: “Was the research tradition and theoretical framework mentioned?” and “Was the methodology congruent with the research tradition?”

Chen (2010) described three main categories of barriers to physical activity: resident-related (e.g., health status, lack of motivation), organizational (e.g., staffing and funding constraints), and environmental (e.g., lack of outdoor walking paths). We used these three categories to organize this review. However, we also added a fourth category—intersecting barriers—to capture barriers at different system levels that are nested within each other and interdependent.

Database Search for RCTs

Although the focus of RCTs is not on barriers, we anticipated that RCTs might include a description of the barriers encountered in the implementation of interventions, particularly if the intervention tested had not yielded the expected results. Thus, we also examined barriers described by those who had conducted physical activity and restorative care intervention studies in LTC settings by searching for randomized controlled trials (RCTs) on this topic. An English-language database search of MEDLINE for RCTs published from 2002 to 2013 was conducted using the keywords physical activity, exercise, restorative care, function-focused care, long-term care, long-term care, nursing homes, homes for the aged, assisted-living, and residential. This search yielded 68 articles.

We screened the abstracts of these 68 articles using the following inclusion criteria: RCT conducted in a nursing home, LTC facility, home for the aged, assisted-living, or residential care; subjects were age 65 years or older; the full text of the article was available online; and the single or multifaceted intervention included a physical activity, exercise, restorative care, or function-focused care component. Full articles were retrieved if they met all eligibility criteria or if the abstract did not contain adequate screening information. Following screening, 31 articles were retained (Appendix). These articles were reviewed to determine if the authors discussed the barriers they encountered while implementing their interventions. If the 31 articles, 13 included some discussion of the barriers. We also reviewed these 13 articles to determine adherence, dropout, and initial refusal rates. Although a framework was used to appraise the trustworthiness of the qualitative studies, we did not use a framework to assess the methodological quality of the quantitative studies. Our intent was not to draw statistically pooled conclusions but rather to provide a more comprehensive review of the barriers to physical activity, including those mentioned in quantitative intervention studies.

The two articles by Schnelle et al., (2002, 2003) and the two articles by Resnick et al., (2006, 2008) reported different components of one single study. Eleven RCTs studies (13 articles) were added to this review. Hence, a total of 11 RCTs (13 articles) and 7 barriers studies (9 articles) were included in this review (total of 18 studies).

Findings

The characteristics of the seven included barriers studies (nine articles) are presented in Table 1. With one exception (Kalinowski et al., 2012), all studies were qualitative in design, and most were exploratory in nature. Sample sizes across the studies ranged from seven to 217 participants and included staff members, residents, and significant others. Five studies focused on barriers to physical activity and two on barriers to restorative care. There was some diversity in the study settings; four were undertaken in the United States, one in Canada, one in Germany, one in Australia, and one in Taiwan.

Resident-Related Barriers. Resident-related barriers to physical activity and restorative care were reported by staff, residents, and/or significant others across six studies. Poor health status was a barrier reported by both staff and residents (Benjamin et al., 2009; Benjamin et al. 2011; Chen, 2010; Galik et al., 2009; Guerin et al., 2008; Phillips & Flesner, 2013; Resnick et al., 2006, 2008). For instance, residents reported that poor health and physical limitations such as stroke, limited mobility, and lack of energy limited their participation in regular physical activity (Chen, 2010). Nursing assistants reported that residents or their families had not encouraged restorative care activities such as toileting because these activities were thought to cause pain or shortness of breath for
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<tr>
<th>Investigator, country, focus</th>
<th>Design sample, methods</th>
<th>Resident-related</th>
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<tr>
<td>Benjamin et al., 2011, Canada, focus on physical activity</td>
<td>Qualitative 62 staff, 48 residents, 42 significant others, 9 LTC homes 26 audiotaped focus groups, Thematic analysis</td>
<td>Health issues (e.g., stroke, paralysis, inability to mobilize)</td>
<td>Inadequate support for physical activity (e.g., lack of funding) Presence of rigid institutional routines Care practices highly structured</td>
<td>Lack of space because of increased storage/equipment needs and lack of designated room for physiotherapy Physical bottlenecks (e.g., narrow hallways, limited number of elevators, steep ramps), lack of exercise equipment</td>
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<td>Benjamin et al., 2009, Canada, focus on physical activity</td>
<td>Qualitative 9 administrators, 9 LTC homes, Audiotaped walkabout interviews Content analyses</td>
<td>Residents’ condition more medically complex; needed more help to get to exercise classes and to participate in classes</td>
<td>Lack of staff, funding cutbacks (i.e., physiotherapy and recreational services) Staff attitudes (e.g., did not see value of exercise for bedridden residents with contractures)</td>
<td>Ramps, uneven flooring, heavy doors, lack of circular design on units Lack of space because of increased equipment storage needs (e.g., wheelchairs, walkers)</td>
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<td>Chen, 2010, Taiwan, focus on physical activity</td>
<td>Qualitative exploratory 90 residents from 6 nursing homes Audiotaped interviews Content analyses</td>
<td>Physical health/frailty (e.g., arthritis), uncomfortable symptoms (e.g., muscle soreness), limited mobility Fear of falling, injury or falling again (2nd most frequent barrier reported); activity seen as too risky owing to poor eyesight or balance Past history of sedentary lifestyle—less likely to perform activity (no interest, never thought of doing activity) Lack of knowledge (e.g., did not see value at their age, old age is time to rest) and lack of motivation owing to lack of perceived effectiveness of physical activity</td>
<td>Activities arranged by staff (15 min of group exercise); some residents found these exercises boring</td>
<td>Lack of accessible space (e.g., lack of suitable outdoor walking path) and lack of exercise equipment</td>
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<td>Guerin et al., 2008, Australia, focus on exercise classes in low-level residential care</td>
<td>Qualitative</td>
<td>Three major themes were health limitations, external constraints, and intrinsic constraints</td>
<td>External constraints</td>
<td>Early morning class problematic—need to do toilet routines, morning stiffness, fatigue</td>
<td>Location of classes—some residents needed help to get to exercise class</td>
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<td>Separate focus group (n = 23) Residents, nurses, and allied health care providers (i.e., physiotherapists, physioassistants, occupational therapists)</td>
<td>Health limitations: Pain (exercise may be painful or it may increase existing pain), sensory impairment (poor eyesight or hearing), poor memory, depression, continence issues, poor physical capabilities (unable to do exercise or get to classes independently)</td>
<td>Location of classes—some residents needed help to get to exercise class</td>
<td>Lack of support from nurses, families, doctors</td>
<td>If doctors did not recommend the senior to exercise then the residents often did not attend.</td>
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<td>Timing of classes—early morning fatigue, need to do toilet routine, or medication effects, class coincided with other activities</td>
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<td>Intrinsic constraints: dislike of group format</td>
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<td>Some residents felt they were “too old,” they did not need exercise, or unaware of the benefits of activity</td>
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<td>Fear of falling and/or reinjury, lack of motivation, not a past history of exercise</td>
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<td>Anxiety and agitation; nursing assistants avoided resident anxiety and agitation rather than optimizing function</td>
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<td>Communication breakdown among staff</td>
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<td>Fear of injury for resident and staff (e.g., when transferring)</td>
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<td>Use of medications to control behavior, sedated residents less likely to participate</td>
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<td>Galik et al., 2009, Maryland (U.S.), focus on restorative care</td>
<td>Qualitative</td>
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<td>7 nursing assistants on dementia unit, focus groups Audiotaped, interviews content analyses</td>
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<td>Kalinowski et al., 2012, Germany, focus on physical activity</td>
<td>Quantitative Structured survey residents and administrators Face-to-face interviews with 217 residents in 40 nursing homes</td>
<td>86% of resident reported that they had no opportunity to influence exercise programming. About 33% of residents stated they have no interest in the programs</td>
<td>50% of the homes did not employ therapists (occupational therapist or physical therapist) 65% of residents stated they did not receive any instructions how to enhance their physical activity and their home did not promote physical activity Most of the programs were group programs that lack tailoring—a one-size-fits-all approach common Programs did not appear evidence-based and were not tailored to residents’ needs (group programs and a one-size-fits-all approach common); no standardization regarding instructor qualifications Inadequate lighting (dim) in living areas Lack of seating for rest periods in the corridors</td>
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<td>Phillips &amp; Flesner, 2013, U.S., focus on physical activity in residential/assisted living facilities</td>
<td>Qualitative Focus group with 47 residents from six facilities Two broad categories emerged—individual and situational</td>
<td>Laziness, boredom, impaired sight, pain, musculoskeletal problems, neurological conditions, poor balance, past history of falling, fear of falling Competing demands—family visits, in-house recreational activities</td>
<td>Need to have physician permission and staff supervision to use equipment NB—author did comment that personal and situational factors converged to sabotage individual efforts (e.g., lady could not use exercise bike because she could not adjust the seat due to poor eyesight) No dedicated space for exercise equipment Extremes in weather interfered with outdoor walking</td>
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<td>Resnick et al., 2008, U.S. (location not reported), focus on restorative care</td>
<td>Qualitative 93 nursing assistants from 6 LTC homes who had participated in restorative care intervention Focus groups, content analyses</td>
<td>Cognitive impairment, refusal to participate Learned dependency, resident expected certain level of care Medication use, fatigue, pain</td>
<td>Nursing assistants felt pressure to get care done, felt that residents could not do activities, and feared they would be accused of abuse if they encouraged self-care activities Family expectations that residents should be “waited on;” overuse of wheelchair by families and staff Lack of quality time for bonding with resident; lack of nursing support; need for more information on how to motivate residents with cognitive impairment</td>
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<td>Resnick et al., 2006, U.S.</td>
<td>Qualitative 13 nursing assistants from 1 nursing home, audiotaped focus groups, content analyses</td>
<td>Refusal to participate, lack of motivation High function seen as prerequisite to restorative care</td>
<td>Lack of support from nurses; lack of communication among staff; not giving nursing assistants more voice in planning resident care Time and workload demands, pressure to get work done, family demands to complete specific tasks, fear that resident would fall or sustain injury</td>
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Note. LTC = long-term care.

*Interviews that took place while the administrator and the interviewer walked about the facility.
residents (Resnick et al., 2006). In the Canadian study (Benjamin et al., 2009), administrators reported that staffing constraints had made it challenging to promote physical activity, noting that residents being admitted to LTC were becoming older and sicker and required more assistance with their activities.

Another barrier to restorative care, reported by nursing assistants, was resident anxiety and agitation (Galik et al., 2009). To prevent behavioral outbursts, the nursing assistants encouraged sedentary activities or tried to distract residents so that the assistants could get their care done as quickly as possible (Galik et al., 2009). The use of sedative medications was reported as a barrier to physical activity because it reduced residents’ interest and ability to participate in activities (Galik et al., 2009; Guerin et al., 2008; Resnick et al., 2008).

Fear of falling and/or injury was another concern identified in five studies (Chen, 2010; Galik et al., 2009; Guerin et al., 2008; Phillips & Flesner, 2013; Resnick et al., 2006). Nursing assistants reported being fearful that they or their residents could be injured during activities such as walking or transferring (Galik et al., 2009; Resnick et al., 2006). Similarly, nurses were concerned that residents would fall due to balance issues related to sedation use (Guerin et al., 2008). Residents described a fear of falling due to poor eyesight and balance, and some residents were concerned that engaging in physical activity was just too “risky” for them (Chen, 2010; Phillips & Flesner, 2013).

A past history of a sedentary lifestyle reduced engagement in regular physical activity (Chen, 2010; Guerin et al., 2008). For instance, some residents explained that they had never got into the habit of exercising or never thought about physical activity. Other residents felt they did not need to engage in physical activity because they felt “good” or believed that they had worked hard most of their lives and now it was time to rest (Chen, 2010).

Organizational Barriers. Barriers at the organizational level were reported across all studies by staff, residents, and/or residents’ significant others. Funding limitations and staffing constraints were identified frequently. For instance, inadequate support for physical activity (e.g., inadequate staffing) emerged as a major theme in the study by Benjamin et al. (2011). An administrator explained that funding cutbacks resulted in loss of a part-time activity person, which in turn, reduced exercise opportunities for residents (Benjamin et al., 2009).

Staff reported a lack of time to incorporate physical activity into the residents’ daily routine (Benjamin et al., 2011; Resnick et al., 2008). For example, nursing assistants described the pressure they felt to get their work done, which left insufficient time for restorative care activities (Resnick et al., 2008). Competing demands and schedules (e.g., family visits, other recreational activities, and early-morning toileting routine) made it difficult for some residents to attend exercise classes (Benjamin et al., 2009; Guerin et al., 2008).

Lack of communication among staff (Galik et al., 2009) and lack of support from nurses, families, and doctors were seen as impediments to the provision of physical activities (Resnick et al., 2008; Guerin et al., 2008). Similarly, 65% of residents in the study by Kalinowski et al., (2012) reported that institution staff did not encourage them to be physically active or exercise, despite the fact that nearly two thirds (62%) of these residents were able to walk and more than one third (35%) were able to sit in a chair. In this study, many residents were unaware of the exercise programs being offered. The authors suggested that this lack of awareness was most likely due to communication gaps among staff in the nursing homes.

Barriers related to the type and delivery of physical activity programs were reported by staff, residents, and/or residents’ significant others (Benjamin et al., 2009; Benjamin et al., 2011; Chen, 2010; Guerin et al., 2008; Kalinowski et al., 2012). With a considerable range of physical abilities among residents, some found that the exercise classes were not challenging enough, described the classes as boring, or expressed fear that they would not be able to “keep up” with their peers (Benjamin et al., 2011; Chen, 2010, Guerin et al., 2008). These barriers suggest that physical activity programs were not adequately tailored; this was attributed in part to a failure to include residents in the planning of activities. For instance, residents reported that they were rarely consulted about their exercise preferences (Chen, 2010), or had no influence over the exercise programs implemented (Kalinowski et al., 2012).

The presence of pervasive institutional routines was also described as interfering with physical activity (Benjamin et al., 2011; Guerin et al., 2008). For example, bath days were scheduled, and residents would opt out of an exercise class if this meant they would miss their bath. (The Long-Term Care Act [2007] in Ontario stipulates that residents must be offered a minimum of two baths per week unless contraindicated for medical reasons; Government of Ontario [2010].) Staff talked about the challenge of adhering to scheduled care routines (e.g., scheduled mealtimes) while trying to meet residents’ basic care needs (e.g., hygiene).

Environmental Barriers. Indoor and outdoor environmental barriers were reported by staff members, residents, and/or residents’ significant others in four studies (Benjamin et al., 2009, 2011; Chen, 2010, Kalinowski et al., 2012; Phillips & Flesner, 2013). Limited living space and the lack of designated areas for exercise were described as impediments to physical activity. For instance, multipurpose rooms such as dining rooms were often used for exercise classes, which meant that staff had to rearrange the furniture before and after classes. Other environmental barriers included dim lighting, lack of space for exercise equipment, insufficient signposting for residents such as those with visual impairments to safely and independently navigate in their environment, and lack of seating in the corridors for residents to take rest breaks.
A lack of exercise equipment that could be used by residents beyond their scheduled group exercise class times (e.g., rowing machines, treadmill) was reported (Kalinowski et al., 2012). Residents’ offers to donate exercise equipment (e.g., stationary bike) were sometimes refused due to lack of space (Benjamin et al., 2009). In the indoor environment, a lack of circular design in the layout of the residents’ floors, uneven flooring, and steep ramps were described as impediments (Benjamin et al., 2009).

Less frequent references were made to outdoor than indoor environmental barriers (Benjamin et al., 2009; Benjamin et al., 2011; Chen, 2010; Phillips & Flesner, 2013). For example, uneven surfaces (e.g., ramps, sills) made it difficult for residents to use outdoor spaces (e.g., gardens, balconies, greenhouses). Some residents reported that there were no suitable outdoor walking paths and extreme weather interfered with outdoor walking.

**Intersecting Barriers.** To identify “intersecting barriers,” we looked for instances where the author(s) explicitly or implicitly mentioned that barriers interacted at the same or different levels of the system. For example, Phillips and Flesner described how “personal and situational factors converged to sabotage individual efforts” to be more physically active (Phillips & Flesner, 2013, p. 43).

Although three sets of authors (Benjamin et al., 2011; Galik et al., 2011, Resnick et al., 2011b), used a sociocological model to frame their studies, only one made explicit reference to intersecting barriers at different system levels (Benjamin et al., 2011). For instance, when inadequate staffing (an organizational-level barrier) was coupled with a lack of sufficient elevators (an environmental-level barrier), transporting residents to planned physical activities was constrained. In a second example, a quality of care initiative that aimed to improve safe lifts and transfers involved the purchase of mechanical lifts. However, these lifts had to be stored in previously designated physical activity space.

**RCTs That Discussed Barriers**

Among the 31 reviewed, 11 RCTs (13 articles) included some discussion of the barriers to implementing a physical activity or restorative care intervention. The most common barriers mentioned were funding and/or staffing constraints (organizational level). Two RCTs (Rolland et al., 2007; Schoenfelder & Rubenstein, 2004) reported barriers at the resident level. None of the RCTs reported barriers at the environmental level.

Dropout rates across the studies ranged from 9% to 41%, with the main causes being death, illness, or transfer to alternative level of care. Initial refusal rates ranged from 14% to 48%. Only three articles provided information about exercise adherence, and two of these identified reasons for nonadherence. In a study that provided two different exercise interventions, the average attendance rates were 48.9% (Tai Chi program) and 38.8% (cognitive-action program; Dechamps et al., 2010). The average adherence rate to a biweekly group exercise intervention was 33.2 (± 25.5%) out of 88 exercise sessions (Rolland et al. 2007). Acute disease, increased activities of daily living disability, and unwillingness to continue the exercise program were identified as factors contributing to nonadherence. Fatigue was cited as the main reason why most participants completed only three of the four daily exercise/incontinence care sessions (Schnelle et al., 2003).

Human resource issues surfaced as barriers in a number of studies (Bates-Jensen et al., 2003; Lorenz et al., 2012; Resnick et al., 2009, Schnelle et al., 2002, 2003, 2010, Williams & Tappen, 2008). Some authors described the prohibitive staffing costs of implementing their exercise programs. For instance, the cost of a prompted voiding plus exercise program was estimated to be about four times the cost of usual care ($19.39 per day versus $4.76 per day), as it required an additional 2.5 nursing assistants plus additional time for nurses to supervise the program (Ouslander et al. 2005). In other studies, excessive work demands prevented staff from promoting physical activity. This was the case for those in more senior “champion” roles, as well as those who provided most of the hands-on care for residents (Benjamin et al., 2011; Resnick et al., 2011a).

**Discussion and Implications for Practice and Future Research**

**Health-Related Problems as Motivators for Physical Activity**

A common resident-related barrier was health problems related to the presence of chronic illness such as arthritis, chronic pain, and heart disease. Chen (2010) has suggested that health-related barriers to physical activity may also act as motivators for residents to be more physically active. For instance, it is well recognized that exercise can help to decrease pain for older adults with arthritis (Blackham, Garry, Cummings, Russell, & Dealleaume, 2008; Focht, 2006; Wilcox et al., 2006). Thus, some residents with arthritis may be motivated to begin an exercise program with the hope that it will help to reduce their pain and disability. This information can be used to inform practice. It is important that residents’ disease-related symptoms be considered when designing physical activity interventions. Providing exercises that residents can accomplish and tolerate may also act as a motivator.

**Strengthening Cross-Country Comparative Research**

A comparison of studies across countries could yield some useful insights on barriers, how they intersect, and how they impact on physical activity and restorative care. However, more details on LTC settings are needed for such comparisons. Context-specific variables that would ease international comparisons include funding levels and staffing ratios, indoor and outdoor design features of LTC.
settings, and the ethnic composition of LTC residents including cultural norms about physical activity. The systematic inclusion of such descriptions in future studies would allow for more rigorous comparisons across both qualitative and quantitative studies.

**Use of a Socioecological Model and a Multiple-Intervention Approach**

This review illuminates the barriers to physical activity and restorative care in LTC settings that can occur at multiple levels. The importance of examining factors and their interconnections across system levels when using socioecological models has been stressed by a number of authors (Green et al., 1996; Richard et al., 1996; Sallis & Owen, 1997; Sallis et al., 2006). Most of the literature reviewed lacked a description of barriers at multiple levels, suggesting the absence of an underlying socioecological model to guide variable selection. It is important to understand barriers at each level of an ecosystem and how they interact, because enhancing physical activity may require interventions oriented to more than one level of influence. Successful physical activity and restorative care interventions need to be tailored to ongoing system constraints in LTC settings such as funding and staffing limitations (Bates-Jensen et al., 2003; Dechamps et al., 2010; Schnelle et al., 2010). Understanding these macro- and mesolevel barriers is fundamental to building a systems-oriented strategy to embed physical activity into daily care.

**Need for More Explicit Discussions Regarding Barriers, Especially Environmental Barriers**

The restorative care studies by Galik et al., (2009) and Resnick et al., (2008, 2006) did not include any reference to environmental barriers. However, in a discussion paper that examined factors influencing function-focused care (restorative care) for LTC residents, Galik (2011) acknowledges the importance of the physical environment for residents’ health and well-being and suggests that environmental interventions (e.g., flat walking surfaces with limited transitions) can facilitate physical activity and function.

Although 13 of the 31 RCTs contained some discussion regarding barriers, the information was sparse. The most common barriers mentioned were funding and staffing constraints. None of the RCTs mentioned any environmental barriers. In the future, researchers conducting intervention studies need to make explicit the multilevel barriers they encounter when trying to implement their interventions. This would enhance the transferability of findings from one setting to another and help define parameters for scaling up effective interventions. Developing a typology of physical activity barriers that could be systematically assessed in all relevant LTC studies would be useful. This might encourage researchers to consider barriers in the design of physical activity interventions, potentially enhancing their effectiveness and sustainability.

A growing body of literature describes barriers to accessibility and universal design (e.g., wheelchair maneuverability) related to architectural features in community settings, such as homes, offices, and parks and other public places (Gossett, Mirza, Barns, & Feidt, 2009; Koontz, Brindle, Kankipati, Feathers, & Cooper, 2010; Rantakokko et al., 2010). This parallel literature could be used to inform future studies of environmental barriers to physical activity in LTC homes.

Fear of falling and/or injury was one of the most commonly cited barriers to physical activity or restorative care. A better understanding of the multidimensional ways in which this factor may act as a barrier is needed. For seniors, a fall event may cause fear of falling, which in turn, may lead to self-imposed physical activity restriction (Scheffer, Schurmans, van Dikk, van der Hooft, & de Rooij, 2008). For staff, meeting organizational goals for a culture of safety may influence patterns of care. This was seen in a Canadian study (Benjamin, 2011), in which some of the personal support workers used mechanical lifts to transfer residents from their beds to a chair rather than assisting them with a “stand and pivot” transfer, because this practice was considered safer and faster. However, this practice also reduced opportunities for residents to weight-bear. Our understanding of how competing policies and organizational goals influence physical activity promotion practices in LTC homes is limited. This gap is an important focus for future studies.

**Need for Innovative and Pragmatic Approaches to Promote Physical Activity**

Typically, a program approach is used to deliver physical activity and exercise interventions a few times per week in LTC homes. There is a need to rethink how these programs are delivered (Benjamin et al., 2011). Current exercise guidelines for older adults suggest that seniors should engage in physical activities most days of the week. One possible strategy is to embed physical activity into daily care.

Personal support workers (also known as nursing aides and health care aides) typically provide the greatest proportion of direct care to residents in LTC homes in Canada and the United States. They are well situated to play a pivotal role in assisting and encouraging residents to be more physically active (Benjamin, 2011; Benjamin et al., 2011). However, the focus of personal support workers’ work is often on “getting their work done” (i.e., activities of daily living) and not on the promotion of physical activity (Benjamin, 2011; Resnick et al., 2008). Results of a recent institutional ethnographic study revealed that the promotion of physical activity was not viewed as part of a personal support worker’s role (Benjamin, 2011). Rather, physical activity promotion was seen as an activity that should be provided as a separate add-on program and designated as a professional activity, in the purview of physiotherapists. Our understanding of
the work of physiotherapists related to the promotion of daily physical activity in LTC settings, and the factors that influence this work is limited. Future studies using an institutional ethnographic approach (Campbell & Gregor, 2004; Smith, 2005) would help us better understand what physiotherapists “do,” related to the promotion of daily physical activity and how text-based materials such as policies and legislation actually influence their work related to physical activity in LTC homes. Key messages of this study are as follows:

- Barriers to physical activity operate at multiple and intersecting levels. The use of a socioecological framework would help to identify barriers and their interactions at multiple system levels.
- Because barriers to physical activity and restorative care occur at multiple and intersecting levels, a multiple-intervention approach is needed when designing physical activity interventions. The use of a socioecological model would help to frame these interventions studies.
- There is a need to refine and further develop existing typologies such as the one used by Chen (2010) so that barriers are systematically assessed in all studies addressing physical activity in LTC. A typology might also encourage researchers to consider barriers in the design of physical activity interventions, potentially enhancing effectiveness.
- There is a need for innovative and pragmatic interventions to promote physical activity in LTC settings. One such strategy is to embed the promotion of physical activity into the daily care of personal support workers.

Limitations

This review was limited to an English-language search of published articles that focused on the barriers to physical activity or restorative care, specifically in the LTC setting. No hand searching or Internet searches were done, and we did not contact experts in the field to inquire about unpublished work. Thus, some research in this field may have been missed; however, we augmented our review with an examination of implementation barriers discussed by authors of RCTs. Hence, we believe that this article presents a relatively comprehensive search focusing on the barriers to physical activity and restorative care in the LTC setting.

Conclusion

Understanding barriers to physical activity and restorative care in LTC settings is critical for the appropriate design of physical activity programs for residents. This review indicates that barriers operate at multiple levels. Thus, socioecological frameworks, which emphasize the importance of examining factors and their interconnections at multiple levels of a system (e.g., individual, organizational, policy; Richard et al., 1996; Sallis et al., 2006) would be useful to guide future research on how barriers intersect and how they can be addressed through multiple-intervention programs. The consistent use of a typology of resident, organizational, environmental, and other barriers to the promotion of physical activity in LTC would help to inform the development of cost-effective and sustainable approaches to physical activity enhancement in these settings. Researchers need to explicate the barriers they encounter when implementing their interventions in LTC, as well as any strategies they used to offset these barriers. Lastly, future research is needed to improve our understanding of how policies and legislation intersect and influence the work of professional and unregulated care providers regarding the promotion of physical activity and restorative care in the LTC setting.

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A similar manuscript was included in the first author’s manuscript-based doctoral dissertation (deposited December 2011). This thesis is available to interested parties from the University of Ottawa and the Library and Archives, Canada.

References

*RCTs that met inclusion criteria and did not include a discussion of the barriers. †RCTs that met inclusion criteria and included some discussion of the barriers.


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Barriers to Physical Activity and Restorative Care


