

Physician perspectives on care of individuals with severe mobility impairments in primary care in Southwestern Ontario, Canada

Colleen McMillan BES MSW PhD^{1,2}, Joseph Lee MD CCFP FCFP MCISc(FM)^{1,3}, James Milligan BScPT MD CCFP^{1,3}, Loretta M. Hillier MA^{4,5} and Craig Bauman DC^{1,3}

¹Centre for Family Medicine Family Health Team, Kitchener, Ontario, Canada, ²Renison College, University of Waterloo, Waterloo, Ontario, Canada, ³Department of Family Medicine, McMaster University, Hamilton, Ontario, Canada, ⁴Specialized Geriatric Services, St. Joseph's Health Care London, London, Ontario, Canada and ⁵Aging, Rehabilitation & Geriatric Care Research Centre, London, Ontario, Canada

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Correspondence

Dr Colleen McMillan
Centre for Family Medicine
10 B Victoria Street South
Kitchener, Ontario, Canada N2G 1C5
E-mail: c7mcmill@uwaterloo.ca

What is known about this topic

- Adults with physical disabilities are less likely to receive the same level of basic and preventative care as able-bodied adults.
- They are at high risk of poor health outcomes.
- Persons with physical disabilities go to the hospital for things that could have been prevented with better primary care.

What this paper adds

- Physicians concur that there are significant barriers and gaps to primary care for patients with impaired mobility.
- Decisions about improving clinical capacity to manage patients with mobility impairments are impacted by low volumes of patients with disabilities and remuneration issues.
- Capacity to manage this patient population is diminished by lack of access to best practice guidelines and tools, such as evidence-informed decision-making checklists or algorithms, screening, assessment and monitoring tools, and other resources that facilitate optimal care.

Abstract

Despite the high health risks associated with severe mobility impairments, individuals with physical disabilities are less likely to receive the same level of primary care as able-bodied persons. This study explores family physicians' perspectives on primary care for individuals with mobility impairments to identify and better understand the challenges that prevent equitable service delivery to this group of patients. Semi-structured interviews were conducted in the autumn of 2012 with a purposeful sample of 20 family physicians practising in Southwestern Ontario to gather their perspectives of the personal and professional barriers to healthcare delivery for individuals with mobility impairments, including perceptions of challenges, contributing reasons and possible improvements. A thematic analysis was conducted on the transcripts generated from the interviews to identify perceptions of existing barriers and gaps in care, needs and existing opportunities for improving primary care for this patient population. Eight themes emerged from the interviews that contributed to understanding the perceived challenges of providing care to patients with mobility impairments: transportation barriers, knowledge gaps and practice constraints resulting in episodic care rather than preventive care, incongruence between perceived and actual accessibility to care, emergency departments used as centres for primary care, inattention to mobility issues among specialist and community services, lack of easily accessible practice tools, low patient volumes impact decision-making regarding building decreased motivation to expand clinical capacity due to low patient volume, and lastly, remuneration issues. Despite this patient population presenting with high healthcare needs and significant barriers and care gaps in primary care, low prevalence rates negatively impact the acquisition of necessary equipment and knowledge required to optimally care for these patients in typical primary care settings. Novel approaches to address inequitable healthcare practices for this vulnerable group are needed.

Keywords: access, disability, health services, mobility impairment, primary care

Introduction

Mobility impairment is the inability to ambulate in a normal manner without the use of an assistive device such as a cane, walker or wheelchair. Mobility can be affected by neurological conditions such as spinal cord injury (SCI), multiple sclerosis and musculo-skeletal conditions such as severe arthritis and extreme obesity. In Canada, 2,923,000 adults (11.5% of the population) are affected by mobility impairments (Statistics Canada 2007), with at least 155,000 community-dwelling Canadians requiring a wheelchair (Shields 2004). Mobility impairments place people at high risk for falls (Chang & Ganz 2007), decreased independence in activities of daily living (Shields 2004, Hasegawa *et al.* 2008), condition-specific secondary complications and can lead to co-morbid health conditions such as obesity, diabetes and cardiovascular disease (Krassioukov *et al.* 2003, Sharts-Hopko & Sullivan 2003, Chen *et al.* 2005). Despite these health risks, adults with physical disabilities are less likely to receive the same level of preventative care (Iezzoni *et al.* 2000) and twice as likely to report unmet health needs as able-bodied individuals (McColl *et al.* 2010).

Individuals with mobility impairments experience many challenges when attempting to access health-care. Studies examining the perceptions of persons with mobility impairments and physical disabilities have identified issues related to being refused medical care because of a disability (Nosek & Howland 1997, Veltman *et al.* 2001), limited physician knowledge about specific disabilities and how these impact activities of daily living and health (O'Day *et al.* 2002, Kroll *et al.* 2003), negative attitudes towards disabilities (Abresch *et al.* 1998) and poor communication with physicians leaving patients with unmet needs and potentially inappropriate care (Kroll *et al.* 2003). An Ontario-based survey of 1026 individuals with physical disabilities found that 19% believed they were receiving inadequate healthcare and 22% believed their disability prevented them from receiving appropriate primary care (Veltman *et al.* 2001).

As a result of these barriers to primary care, individuals with mobility impairments often access emergency departments (ED) for issues that could be prevented if access to and quality of primary care were better (Jaglal *et al.* 2009, Guilcher *et al.* 2010). For example, better bladder care for patients with SCI could potentially reduce urinary tract infections, which are the most frequent reason for ED visits (Guilcher *et al.* 2013). Inadequate prevention and treatment of secondary complications in primary care has been identified as a significant factor contributing

to re-hospitalisation within the first year following acute rehabilitation (Jaglal *et al.* 2009, Munce *et al.* 2009). Rates of re-hospitalisation following rehabilitation can be as high as 57% (Cardenas *et al.* 2004) and while there may be many factors contributing to these rates, less than optimal community-based care may be one of them.

While the challenges associated with accessing primary care have been studied from the perspective of patients, fewer studies have examined barriers to care from the perspective of physicians, particularly as related to gaps in their practices, requisites to fill these gaps and potential opportunities for improving care for individuals with mobility impairments. One study found that physicians identified examination room and examination table inaccessibility as a significant barrier to care in their practices and almost half of the respondents reported feeling uneasy in caring for individuals with physical disabilities (Larson McNeal *et al.* 2002). Interviews conducted with family physicians in Eastern Ontario revealed that they were unaware of how to provide assistance to patients with physical disabilities, viewed them as an economic liability, and were less likely to conduct a physical examination because of the burden and amount of time to do so (McColl *et al.* 2008).

The purpose of this study was to explore family physicians' perspectives on primary care for individuals with mobility impairments to identify the factors of why sub-standard care for this vulnerable group exists. A deeper understanding of the barriers from care can inform the development of strategies and alternative models of care better suited for persons with mobility impairments.

For the purpose of this study, mobility impairment was defined as physical impairment resulting from any type of neurological (SCI, multiple sclerosis, stroke) or musculo-skeletal (arthritis, general frailty) conditions requiring patients to use a wheelchair as this indicates significant mobility impairment and potentially greater barriers to primary care in comparison with those who are ambulatory, even though they may use a mobility aide.

Methodology

The study was framed by a qualitative exploratory design intended to capture the meanings associated with a phenomenon and to gain a deeper understanding into the complexity of a situation (Creswell 2007). The underlying premise of our research design reflects a constructivist approach to understanding these phenomena in that findings were expected to be multiple, contradictory and reflective of the social

and historical contexts in which family physicians currently work (Neuman 2000).

Four of the five authors (family physicians, social worker and chiropractor) provide primary care to individuals with mobility impairment at a Family Health Team (FHT). They share an ideological standpoint regarding the need for equitable and accessible healthcare to those with mobility impairments.

This study was approved by the McMaster University Research Ethics Board.

Participants

Invitations to participate in telephone interviews were distributed to a purposeful sample of 28 family physicians working in FHTs in the Waterloo Wellington region of Ontario. The participants were identified as key informants as known by two of the authors. The sample used maximal variation in gender and length of time in clinical practice, with at least one physician representing each of the FHTs located in the region (with the exception of the study FHT), which includes the urban areas of Kitchener, Waterloo, Guelph and Cambridge, and the surrounding rural areas. In Ontario, FHTs are interprofessional teams of family physicians and allied health professionals working collaboratively to provide primary care to patients; they present an opportunity to develop new models of caring for vulnerable populations (Rosser *et al.* 2010). There are currently 184 FHTs in Ontario.

Participants were identified through a key informant or snowball approach made possible by the geographical area covered by the study and the informal networks established by this group of physicians. Twenty-eight letters of information and an invitation to participate were sent through email. Interviews were completed with 20 physicians, 12 males and 8 females, who had been in practice an average of 16 years (SD = 10.6), with a range of 1.5–38 years. On average, these physicians had 5.5 patients who they identified as wheelchair dependent (SD = 4.1, range = 1–15; median = 4), most commonly due to SCI, arthritis/osteoarthritis, multiple sclerosis, stroke and obesity.

Data collection and analysis

A comprehensive literature review on healthcare challenges for individuals with disabilities informed a semi-open-ended interview guide. Questions were framed to capture the meanings family physicians associated with personal and professional barriers to healthcare delivery for individuals with mobility impairments. In this context, healthcare delivery

pertains to the provision of primary care, including preventive care, episodic care aimed at assessing and managing acute illnesses, and chronic care aimed at assessing, monitoring and managing chronic conditions. These included perceptions of challenges, contributing reasons and possible improvements. Participants were also asked for their opinions on alternative models of care for this group of patients. Three overarching questions framed the interview guide:

- What do you perceive as current barriers for persons with mobility impairments to access primary care from their family physicians?
- What do you identify as (overall) gaps in care for patients with mobility impairments within primary care? How do you currently attempt to manage these?
- What is needed, such as knowledge, resources or supports, to make healthcare delivery more accessible for this patient group? Of particular interest were needs for practice tools that facilitate optimal care and practice improvements, such as evidence-informed decision-making checklists or algorithms, screening, assessment and monitoring tools, best practice guidelines, and lists of available community resources and services.

Interviews were conducted via telephone by one of the authors, who did not know the participants. Telephone interviews were selected over face-to-face interviews to accommodate physicians' work schedules and maximise the response rate. Verbal consent was obtained to digitally record the interviews. The interview guide was forwarded to the participants prior to the interview so that they could reflect upon the questions. The interviews were approximately 25 minutes in length and conducted between 16 October and 12 November 2012. Interviews were conducted to the point of thematic saturation (Strauss & Corbin 1998).

Transcripts were analysed using a qualitative naturalistic enquiry approach (Lincoln & Guba 1985). Congruent with our research design, the lens of analysis reflected the constructivist paradigm, acknowledging multiple perspectives to specific phenomena, such as a better understanding of physician perspectives within the context of their practice for patients with mobility issues (Denzin & Lincoln 2002). Initial coding allowed for the generation of broad categories and the identification of emerging themes which went through several iterations to achieve greater clarity (Braun & Clarke 2006). Three of the five authors independently coded the data with discussion occurring between subsequent iterations augmented by revisiting the literature as a form of

rigour. This also allowed the authors to remain close to the data, while remaining sensitive to discourses that emerged outside the interview questions. The inter-rater coding also acted as a way of avoiding selection bias regarding affirmative quotes. Negative case statements in the transcripts were also looked for. A total of three iterations resulted in broad themes and smaller, nuanced sub-themes delineated within four categories (Miles & Huberman 1994). Questions asked related to barriers to healthcare delivery for individuals with mobility impairments, including perceptions of challenges, contributing reasons and possible improvements served as a frame of reference for the generation of themes. The authors concluded the analysis by comparing memo notes taken during the coding process to determine whether observations of the data reflected an emerged theme or represented a new direction outside the interview questions (Berg 2001).

Findings

The process of collapsing categories by the three authors resulted in four categories and eight themes being identified.

Barriers to current care category

Limited assistance with transportation

Issues related to transportation to medical offices, such as the lack of or difficulty accessing suitable transportation was a shared concern to family physicians practising in both urban and rural contexts. The pragmatics associated with simply moving was noted as a barrier:

When somebody is fairly home bound and it's not easy to get around, I think that the issue is getting them to the office. So, are they going to have a person to assist them and get them into a vehicle and then transfer them from their dwelling into a car and for some people it's a barrier. I think they'd rather stay home.

Rural geography was a sub-theme that emerged under transportation barriers as public or community-sponsored transportation is absent in rural communities:

We don't have a public transport service here [rural area]. We don't have buses. So for people who say in the winter months need to get into town who either choose not to drive because of the weather or whatnot, their only option would be to have a cab. It's kind of expensive when people are coming from [local town]. I heard it could be \$20 each way, so that's \$40 to come to a doctor's appointment. There is no option for bus or really any other transport.

The physical health of the caregiver was identified as a potential barrier, as assistance getting into and out of vehicles and removing and storing wheelchairs requires some physical strength. In the absence of a caregiver or companion, particularly someone physically fit for the task, travel to the doctor's office is not possible or is saved for urgent issues:

His wife finds it difficult to bring him [patient with disability] in. She's frail herself. I just find it's so difficult to get him into the wheelchair and get him to our office, so that it's probably limited the number of visits that I can see him.

In this situation, the frailty of the caregiver adds to the complex needs of the partner with disability further complicated by the lack of safe transportation.

Knowledge gaps

Most physicians reported they were not adequately prepared to assess and manage patients with mobility impairments, particularly as related to secondary complications. Multiple dimensions emerged regarding the category of knowledge; these included learnt knowledge, specific knowledge and knowledge of guidelines.

Participants noted their knowledge related to mobility-related impairments has been gained largely through 'on-the-job' training as minimal attention was paid to these topics during medical school and residency training, focused more on the pathology of impairment, rather than practicalities of managing this patient population in family practice. The outcome was an uncertainty pertaining to specific knowledge areas, including skin integrity and wound care, chronic oedema, management of complications associated with chronic catheter use, sexual dysfunction, and standardised tools or protocols to guide assessment and care, and resource issues such as obtaining and funding for assistive devices. The lack of medical school training combined with minimum clinical practice opportunities was highlighted:

With respect to the other issues that are more specific to the patients in wheelchairs like the autonomic dysreflexia and things like that, I don't have as much experience with them. I think that it is a challenge for me because I don't feel I've been adequately trained and need more training in those areas so I can adequately take care of them.

A final dimension of the knowledge theme regarded the void of practice guidelines available for family physicians:

I feel they [patients with SCI] do need a special approach in terms of just preventative care, but I don't really feel like we have any great guidelines. There's certainly none that I follow to specifically identify what issues there may be.

Care gaps category

Incongruence between perceived and actual accessibility

Although almost all of the physicians described their medical practices as physically accessible as defined by features such as handicapped washrooms, automatic doors, ground floor location and office design, over half were aware that patients had difficulties getting into their medical office due to inaccessible parking areas, and limited assistance with preparation and travel. Most physicians associated the word 'accessibility' to that of a wheelchair, as in 'they can access any part of the clinic' later followed by:

The procedure room with the high/low table is actually quite far away, so if we need to access it, convenience can be a bit of an issue sometimes to get in there.

Physicians who described their offices as equipped to manage patients with mobility impairments acknowledged that despite the presence of specialised equipment, it may in fact not be used because of the lack of additional staff required to use the equipment, or was housed in a room in an inconvenient location, used primarily for other purposes, or clinicians forget where it is stored:

You know I'm not sure. I'm not sure. I think we might have some [equipment] that are portable, but again because they're really never used, I'm not sure whether we do or not or where they are located.

Similarly, physicians reported that even though their practice had a height adjustable examination table, in the absence of a transfer mechanism (e.g. lift), which none of the physicians reported having, patients with more severe mobility impairments were unable to get on the table preventing a thorough physical examination of the lower extremities:

The most difficult thing would be when we have to get a person out of the wheelchair and on to an examining bed. They all need step stools to get on to, we don't have any beds that lower down to a lower level to get on, so it usually means we have a couple of nurses who have to assist someone to get on the examining bed.

None of the physicians had access to a wheelchair scale resulting in patient weights being estimated, which was identified as a concern for monitoring health-related weight issues and medication dosing.

Use of specialist care and EDs for primary care

When specialised equipment or assistance was needed but unavailable, patient care for things that are routinely managed in primary care was deferred elsewhere, such as to a gynaecologist for pap smears

demonstrated by the following quote, 'I can't really get them up on a table to do a pap smear, or even an abdominal exam. For this, I usually have to refer them elsewhere [as in] to a specialist' or alternatively to the local ED or hospital as a last resort, 'If all else fails I would use the hospital'. In rural areas where family physicians also work in the ED, access to and provision of care in the ED was perceived as a viable alternative (referred to as the 'rural solution') to care that cannot be offered within primary care settings.

Focus on episodic care

Physicians reported that for individuals with mobility impairments, there is greater focus on episodic rather than preventative care, resulting in more serious (and preventable) outcomes, such as those related to the urinary tract infections:

People with mobility issues lose out on a lot of primary care, like the preventative stuff . . . I'm just thinking about my one guy who I think we're always just following for urinary tract infections or skin breakdowns or his asthma and I can't remember if we ever have checked his cholesterol.

This was attributed to challenges patients experience accessing primary care and the difficulties physicians experience conducting physical examinations due to time constraints, lack of specialised equipment and extra staff needed to use the equipment. As with the knowledge gap category, participants noted the absence of clinical guidelines and preventive care protocols resulting in the urgent nature of treating complications such as urinary tract infections and skin breakdown.

Needed resources to improve care category

Lack of attention to mobility issues among specialists and community services

Optimal community-based care for this patient population was viewed as compromised by inaccessible laboratories, diagnostic imaging centres, specialists' offices and long wait lists for community services such as occupational and physical therapy because the needs of this patient population are not prioritised. Frustration with community-based support services was summed up by one physician who said:

As much as you may think that their issues are a priority and require attention soon because of the risk of things getting worse in a hurry, home care doesn't always have the same opinion. Even if you call to find out what the delay is, there always is one.

Similarly, it was noted that inconsistent and insufficient home-based wound care, or standard items

such as blood tests were not possible because patients could not access community services in a timely manner.

Even if the patient was referred to a specialist, it could not be assumed that the patient could access care:

I wanted to have him [patient with mobility impairment] see a specialist and again, I think no wheelchair accessibility for the one specialist that I have referred them to, and then another they didn't have a table where they could examine him.

The belief that health needs of persons with mobility impairments were ignored by specialist and community services was shared among this physician group of participants.

Need for supportive resources, information and remuneration

A number of needed resources to enhance the care of individuals with mobility impairments were identified including point-of-practice tools, such as treatment algorithms and best practice guidelines, to ensure adherence to best practices and to assess care needs and guidelines for preventive and follow-up care. These resources were identified as particularly important because they cue physicians of care practices seldomly done and thus do not readily recall:

More standardised guidelines ... so if your patient has a traumatic SCI, these are the baseline things to do in practice, these are the follow-up things you should do, these are the recommendations for follow-up care that needs to be repeated in a year, 2, 3, 5 years down the road ... Guidelines for routine skin evaluation so that we're preventing things. These are the things we should be doing.

Physicians stated wanting quick and easy access to these resources suggesting a quickly accessible website or central repository, or electronic medical record stamp.

Also identified were needs for greater access to readily accessible consultation support to assist with problem-solving complex care issues, staff training on safe patient transfer techniques, continuing education on the management of mobility issues, government support for the purchase of special equipment and increased remuneration to reflect greater time commitment needed for this patient population.

Time and staffing constraints made it difficult for family physicians to do a thorough examination, with limited remuneration being noted for the extra time required to care for these patients, reflected as follows:

I had a patient just this morning ... with significant mobility impairment and she was booked for a physical for

20 minutes. Well, I can't even do a routine visit with her in 20 minutes ... Really I should be spending 40, 50 minutes with her instead of the 20 minutes that I would receive payment for.

Physicians felt that the low volume of patients on their caseload with mobility impairments limited their opportunities to gain and use new knowledge regarding the care of these patients, and did not justify the cost of specialised equipment or continuing education.

Opportunities to improve care category

Model of shared care

During the interview, physicians were asked for their thoughts on alternative models of care, including the option of specialised mobility clinics. Such a clinic was viewed as an opportunity to improve access to comprehensive assessment and care planning in a timelier manner than referrals to specialists (physiatrists). Moreover, a specialised clinic could function as a central hub to improve care co-ordination, integration and continuity within a shared care approach, though transportation to a centralised location, particularly for patients living in rural areas, poses a greater logistical challenge than the current delivery methods:

I can see a need to use it [specialised mobility clinic] certainly, yes. At the moment it's hodgepodge. We send them off to the neurologist and he gives us an opinion and the occupational therapist does an assessment ... somebody has to have a handle on comprehensive care rather than them [patients] sitting in between the gaps.

Other participants stated feeling more comfortable assuming a shared care approach to care, whereby they would continue to assume responsibility for acute episodic care with mobility clinics assuming responsibility for more complex preventative or specialised care needs:

I also think that the comfort level comes from managing a certain number of patients with conditions and I think that a more specialised centre would probably provide the best care.

Discussion

Primary care is challenged to meet the health needs of individuals with mobility impairments, particularly wheelchair users. A number of reoccurring themes were identified in this study highlighting gaps in care for physically disabled persons related to lack of specialised equipment, scarcity of preventive care and lack of availability of and access to standardised care

tools. In this study, physician perspectives of common care gaps are consistent with those of patients with mobility impairments (Branigan *et al.* 2001, Kroll *et al.* 2003). Physical barriers to care have been well documented (O'Day *et al.* 2002, Kroll *et al.* 2003) and were reconfirmed by the physicians in this study. Having accessible medical offices is perceived as only part of the equation; once patients access their family physicians, lack of specialised equipment or inability to locate and use the equipment compromises quality of care and potentially leads to adverse outcomes, such as when patient weight is incorrectly estimated in drug dose calculations in the absence of an accessible scale, or when early signs of secondary complications are missed because a proper examination is not possible. Lack of staffing, training or familiarity with transfer equipment was an additional concern regarding injury to staff or patients. Physicians in this study acknowledged the inability to conduct a thorough physical examination had resulted in patients either not being examined or being referred to the local ED or to specialists for issues that theoretically should be managed in primary care. The emphasis on episodic or acute care, over preventive care, potentially increased the likelihood of patients only receiving care for immediate needs and neglecting routine screening of conditions that may affect long-term health (diabetes, hypertension, immunisations and smoking).

The findings from this study provide some insight into physician's perspectives on potential opportunities for better supporting them to care for this patient population. The participants perceived themselves as ill-prepared from a knowledge, logistical and practice perspective, which was surprising given their access to allied health professionals as part of a FHT. This might suggest that while an interdisciplinary approach remains preferred because of the complexity of health issues presented by this patient population, more significant barriers are positioned within the current family physician practice culture and subsequent clinical approaches.

Despite current literature confirming the need for more specialised training and supports for family physicians caring for patients with physical disabilities (Larson McNeal *et al.* 2002, Aulagnier *et al.* 2005, Morrison *et al.* 2008), practice tools such as structured questionnaires and standardised protocols have not fully been integrated for patients with mobility issues into primary care (Mann *et al.* 2007). Furthermore, while the physicians in this study felt the solutions of continuing education initiatives, resources and access to consultation support were critical, they also stated these same solutions would be problematic due to

the necessary time commitment and effort, especially when considering the small proportion of their patients who presented with mobility impairments. More informal and innovative strategies for knowledge translation and mobilisation were stated to offer greater impact and ease of utility, such as point-of-practice tools that provide a cue for important care issues (e.g. algorithms and checklists) consistent with best practice guidelines.

Physicians in this study also identified the need for access to expertise for decision-making around complex health issues. Easy access to consultation support with minimal time commitment, such as a 'quick phone call' could potentially improve care with timely response to presenting patient problems. Opportunities for establishing consult support may exist immediately following inpatient rehabilitation with specialists working with primary care providers to facilitate a seamless transition from tertiary to primary care. Emerging electronic consultation processes provide a potential mechanism for consultation support between family physicians and rehabilitation specialists, either via email, telemedicine or other virtual platforms for quick time management advice (Kuo *et al.* 1998, Neufeld *et al.* 2007, Liddy *et al.* 2013).

Participant feedback also supported the use of self-management tools to improve healthcare by empowering patients to be proactive in identifying and managing secondary complications and other health concerns (routine health screening guidelines). For example, it was suggested that patients could bring in validated resources, such as the Spinal Cord Outreach Service Health Questionnaire (SOS-HQ) to the office visit as one way to prompt physicians to conduct regular and preventive care. This collaborative approach might result in the earlier identification of emerging or potential problems, provide cues to facilitate discussion around relevant physical and psychosocial issues and elicit information needed to make decisions about appropriate care (Mann *et al.* 2007). Using such tools could be easily incorporated into electronic medical records with reminders for follow-up care.

Lastly, our study supported the future exploration of alternative models of care for this patient population. Calls for healthcare reform aimed at improving primary care for persons with mobility impairments, particularly those transitioning to community following inpatient rehabilitation, have recommended co-ordinated and integrated care models that include community-based primary care that is patient-focused and ensures capacity building for healthcare providers (McColl *et al.* 2006, Hwang

et al. 2009). There is much support in the literature for building capacity and developing infrastructure supports in primary care to assess, manage and accommodate patients with disabilities and mobility impairments (Kroll *et al.* 2003, Mann *et al.* 2007). Collaborative, shared care models, with emphasis on enhancing health professional capacity for meeting the primary healthcare needs of individuals with mobility impairments, represent a significant move towards filling the knowledge gaps that exist in primary care with improved integrated and co-ordination of care across sectors (McCull *et al.* 2008). Although the prevalence of wheelchair dependence in primary care medical practices is not known, in this study it ranged from 1 to 15 patients across physicians, with a median of 4, suggesting that in most family physicians' caseload, the proportion of patients in who are wheelchair bound is likely quite low. It has been suggested that a low proportion of family physicians' caseload have severe physical disabilities, estimated at approximately 6% (Wallace & Seidman 2007, McCull & Dickenson 2009), but that this caseload uses 33% of primary care resources as care for this patient population can be complicated (McCull *et al.* 2013). Physicians in this study noted that low volumes of disabled patients in their practice impacted decision-making regarding the acquisition of specialised equipment and participation in education initiatives aimed at increasing capacity to assess and manage conditions that impair mobility. Specialised primary care-based clinics focusing on the assessment and management of mobility-related issues, including the provision of fully accessible medical offices furnished with equipment necessary to provide optimal preventive and episodic care, offer a significant opportunity for improving overall care by providing lower cost management at the primary care level. This is particularly relevant in Ontario, where healthcare is publically funded within various practice models, including solo practices, group practices, Family Health Organizations and FHTs (Muldoon *et al.* 2006), in which compensation is based on fee for service models, capitation models (in which physicians receive care capitation payments for all patients enrolled in the practice) or a combination of compensation models, though there is no specific funding model for specialised equipment. As it has been recommended that all medical practices improve accessibility consistent with the Accessibility for Ontarians with Disabilities Act by 2025, FHTs were able to apply for one-time government funding for height-adjustable examination tables and overhead lifts (McCull *et al.* 2013). However, this excluded solo and group practices,

which although publically funded operate as do private sector services, where there could be minimal incentive to fund specialised equipment privately. As such, the results of this study provide initial evidence towards policy change related to infrastructure improvements in primary care aimed at improving access to care, though more research is needed on the perspective of various key stakeholders and in particular, of those living with severe mobility impairments.

Methodological considerations

This study was conducted with a small sample of physicians practising in FHTs. The views of physicians working in non-FHT settings such as solo practices or community health centres may be different than those we found. Although this study focused on the perspectives of physicians and did not include patients, the findings were consistent with studies examining primary care from the perspectives of patients (Branigan *et al.* 2001, Kroll *et al.* 2003).

Conclusions

A number of significant primary healthcare gaps exist for persons with mobility impairments. The healthcare disparities between persons with physical disabilities and the general population are well documented and are associated with a disproportionate use of health system resources (McCull & Shortt 2006). The physicians in this study identified multiple potential care improvements for this patient population including more specialised equipment, increased remuneration for the additional time needed to care for patients with disabilities and more training and supportive resources. Low caseloads meant that many physicians did not perceive it practical to devote resources and efforts to building capacity beyond the minimum requirements (e.g. accessible doorways, washrooms). The majority of the family physician participants were in agreement for a centralised site that offered specific resources and expertise towards the best practice goal of making healthcare services both equitable and accessible to persons with mobility impairments.

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Conflicts of interest

The authors report no declarations of interest.

References

- Abresch R.T., Seyden N.K. & Wineinger M.A. (1998) Quality of life. Issues for persons with neuromuscular disease. *Physical Medicine and Rehabilitation Clinics of North America* **9**, 233–248.
- Aulagnier M., Verger P., Ravaud J.F., Souvile M., Lussault P.Y., Garnier J.P. & Paraponaris A. (2005) General practitioners' attitudes towards patients with disabilities: the need for training and support. *Disability and Rehabilitation* **27**, 1343–1352.
- Berg B.L. (2001) *Qualitative Research Methods for the Social Sciences*. Allyn & Bacon, Boston, Massachusetts.
- Branigan M., Stewart D.E., Tardif G.S. & Veltman A. (2001) Perceptions of primary healthcare services among persons with physical disabilities – part 2: quality issues. *Medscape General Medicine* **3**, 19.
- Braun V. & Clarke V. (2006) Using thematic analysis in psychology. *Qualitative Research* **3**, 101.
- Cardenas D.D., Hoffman J.M., Kirshblum S. & McKinley W. (2004) Etiology and incidence of rehospitalization after traumatic spinal cord injury: a multicenter analysis. *Archives of Physical Medicine and Rehabilitation* **85**, 1757–1763.
- Chang J.T. & Ganz D.A. (2007) Quality indicators for falls and mobility problems in vulnerable elders. *Journal of the American Geriatrics Society* **55**, S327–S334.
- Chen Y., Divivo M. & Jackson A. (2005) Pressure ulcer prevalence in people with spinal cord injury: age-period-duration effects. *Archives of Physical Medicine and Rehabilitation* **86**, 1208–1213.
- Creswell J.W. (2007) *Qualitative Inquiry and Research Design*. Sage, Thousand Oaks, California.
- Denzin N.K. & Lincoln Y.S. (2002) *The Landscape of Qualitative Research*. Sage, Thousand Oaks, California.
- Guilcher S.J.T., Munce S.E.P., Couris C.M., Fung K., Craven B.C., Verrier M. & Jaglal S.B. (2010) Health care utilization in non-traumatic and traumatic spinal cord injury: a population-based study. *Spinal Cord* **48**, 45–50.
- Guilcher S., Craven B.C., Calzavara A., McColl M.A. & Jaglal S. (2013) Is the emergency department an appropriate substitute for primary care for persons with traumatic spinal cord injury? *Spinal Cord* **51**, 202–208.
- Hasegawa R., Islam M.M., Lee S.C., Koizumi D., Rogers M.E. & Takeshima N. (2008) Threshold of lower body muscular strength necessary to perform ADL independently in community-dwelling older adults. *Clinical Rehabilitation* **22**, 902–910.
- Hwang K., Johnston M., Tulskey D., Wood K., Dyson-Hudson T. & Komaroff E. (2009) Access and coordination of health care service for people with disabilities. *Journal of Disability Policy Studies* **20**, 28–34.
- Iezzoni L.I., McCarthy E.P., Davis R.B. & Siebens H. (2000) Mobility impairments and use of screening and preventive services. *American Journal of Public Health* **90**, 955–961.
- Jaglal S., Munce S., Guilcher S., Couris C., Fung K., Craven B.C. & Verrier M. (2009) Health system factors associated with rehospitalizations after traumatic spinal cord injury: a population-based study. *Spinal Cord* **47**, 604–609.
- Krassioukov A., Furlan J. & Fehlings M. (2003) Medical comorbidities, secondary complications, and mortality in elderly with acute spinal injury. *Journal of Neurotrauma* **20**, 391–399.
- Kroll T., Beatty P.W. & Bingham S. (2003) Primary care satisfaction among adults with physical disabilities: the role of patient-provider communication. *Managed Care Quarterly* **11**, 11–19.
- Kuo D., Gifford D.R. & Stein M.D. (1998) Curbside consultation practices and attitudes among primary care physicians and medical subspecialists. *JAMA* **280**, 905–909.
- Larson McNeal M.A., Carrothers L. & Premo B. (2002) *Providing Primary Health Care for People with Physical Disabilities: A Survey of California Physicians*. Center for Disability Issues and the Health Professions, Pomona, California.
- Liddy C., Rowan M.S., Afkham A., Maranger J. & Keely E. (2013) Building access to specialist care through e-consultation. *Open Medicine* **7**, e1.
- Lincoln Y.S. & Guba E.G. (1985) *Naturalistic Inquiry*. Sage Publications, Newbury Park, California.
- Mann L., Middleton J.W. & Leong G. (2007) Fitting disability into practice. Focus on spinal cord injury. *Australian Family Physician* **36**, 1039–1042.
- McColl M.A. & Dickenson J. (2009) *Inter-Professional Primary Health Care: Assembling the Pieces*. Canadian Association of Occupational Therapists, Ottawa, Ontario.
- McColl M. & Shortt S. (2006) Another way to look at high service utilization: the contribution of disability. *Journal of Health Services Research and Policy* **11**, 74–80.
- McColl M.A., Shortt S.E.D., O'Brien P., Godwin M., Rowe K. & Smith K. (2006) *Models of Integrated Rehabilitation and Primary Care*. Final report to the Ontario Neurotrauma Foundation and Ontario Ministry of Health and Long-Term Care. Authors, Kingston, Ontario.
- McColl M.A., Forster D., Shortt S.E.D., Hunter D., Dorland J., Godwin M. & Rosser W. (2008) Physician experiences providing primary care to people with disabilities. *Health-care Policy* **4**, 129–147.
- McColl M.A., Jarzynowska A. & Shortt S.E.D. (2010) Unmet health care needs of people with disabilities: population level evidence. *Disability and Society* **25**, 205–218.
- McColl M.A., Davey S., Adair B., Athanasopoulos P. & Hauch N. (2013) *Improving Accessibility of Family Health Teams for People with Mobility Disabilities*. Canadian Disability Policy Alliance, Ottawa, Ontario. Available at: <http://www.disabilitypolicyalliance.ca/wp-content/uploads/2014/01/Family-Health-Teams.pdf> (accessed on 14/11/2014).
- Miles M. & Huberman A. (1994) *Qualitative Data Analysis: An Expanded Source Book*. Sage Publications, London, UK.
- Morrison E.H., George V. & Mosqueda L. (2008) Primary care for adults with physical disabilities: perceptions from consumer and provider focus groups. *Family Medicine* **40**, 645–651.
- Muldoon L., Hogg W. & Levitt M. (2006) Primary care (PC) and primary health care (PHC): What is the difference? *Canadian Journal of Public Health* **97** (5), 409–411.
- Munce S., Guilcher S., Couris C.M., Fung K., Craven B.C., Verrier M. & Jaglal S. (2009) Physician utilization among adults with traumatic spinal cord injury in Ontario: a population-based study. *Spinal Cord* **47**, 470–476.
- Neufeld J.D., Yellowlees P.M., Hilty D.M., Cobb H. & Bourgeois J.A. (2007) The e-Mental Health Consultation Service: providing enhanced primary care mental health services through telemedicine. *Psychosomatics* **48**, 135–141.

- Neuman W.L. (2000) *Social Research Methods: Qualitative and Quantitative Approaches*. Allyn & Bacon, Boston, Massachusetts.
- Nosek M.A. & Howland C.A. (1997) Breast and cervical cancer screening among women with physical disabilities. *Archives of Physical Medicine and Rehabilitation* **78**, S39–S44.
- O'Day B., Dautel P. & Scheer J. (2002) Barriers to healthcare for people with mobility impairments. *Managed Care Quarterly* **10**, 41–51.
- Rosser W.W., Colwill J.M., Kasper J. & Wilson L. (2010) Patient-centered medical homes in Ontario. *New England Journal of Medicine* **362**, e7.
- Sharts-Hopko N.C. & Sullivan M.P. (2003) Obesity as a confounding health factor among women with mobility impairments. *Journal of the American Academy of Nurse Practitioners* **15**, 438–443.
- Shields M. (2004) Use of wheelchairs and other mobility support devices. *Health Reports* **15**, 37–41.
- Statistics Canada (2007) *Participation and Activity Limitation Study 2006 Analytical Report. Profile of Disability among Adults*. Statistics Canada, Ottawa, Ontario.
- Strauss A. & Corbin J. (1998) *Basics of Qualitative Research*. Sage Publications, Thousand Oaks, California.
- Veltman A., Stewart D.E., Tardif G.S. & Branigan M. (2001) Perceptions of primary healthcare services among people with physical disabilities – part 1: access issues. *Medscape General Medicine* **3**, 18.
- Wallace P. & Seidman J. (2007) Improving population health and chronic disease management. In: J. Dorland & M.A. McColl (Eds) *Emerging Approaches to Chronic Disease Management in Primary Health Care*, pp. 15–20. McGill-Queen's University Press, Montreal, Quebec and Kingston, Ontario.