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Complete List of Authors:	Faulkner, Guy; University of British Columbia, Kinesiology White, Lauren; University of Toronto, Faculty of Kinesiology and Physical Education Riazi, Negin; University of British Columbia, Kinesiology Latimer-Cheung, Amy; Queens University, Tremblay, Mark; Childrens Hospital of Eastern Ontario Research Institute,
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Canadian 24-Hour Movement Guidelines for Children and Youth: Exploring the perceptions of stakeholders regarding their acceptability, barriers to uptake, and dissemination

Guy Faulkner¹, Lauren White², Negin Riazi³, Amy E. Latimer-Cheung^{4,5} and Mark S. Tremblay⁶

- 1 Corresponding Author: School of Kinesiology, University of British Columbia, 2146 Health Sciences Mall, Vancouver, BC Canada V6T 1Z3; 604 822 2990 (Phone); 604 822 6842 (Fax); guy.faulkner@ubc.ca
- 2 Faculty of Kinesiology and Physical Education, University of Toronto, 55 Harbord Street, Toronto, ON Canada M5S 2W6; lauren.white@mail.utoronto.ca
- 3 School of Kinesiology, University of British Columbia, 2146 Health Sciences Mall, Vancouver, BC Canada V6T 1Z3; negin.riazi@alumni.ubc.ca
- 4 School of Kinesiology and Health Studies, Queen's University, 28 Division Street, Ottawa, ON Canada K1S 4E2; amy.latimer@queensu.ca
- 5 Healthy Active Living and Obesity research Group, CHEO Research Institute, 401 Smyth Road, Ottawa, ON Canada K1H 8L1
- 6 Mark S. Tremblay, Healthy Active Living and Obesity research Group, CHEO Research Institute, 401 Smyth Road, Ottawa, ON Canada K1H 8L1; mtremblay@cheo.on.ca

Abstract:

Engaging stakeholders in the development of guidelines and plans for implementation is vital. The purpose of this study was to examine stakeholders' (parents, teachers, exercise professionals, paediatricians, and youth) perceptions of the Canadian 24-Hour Movement Behaviour Guidelines for Children and Youth ('Movement Guidelines'). Stakeholders ($n = 104$) engaged in semi-structured focus groups or interviews to discuss the perceived acceptability of the guidelines, potential barriers to implementation, and preferred methods and messengers of dissemination. A thematic analysis was conducted. Overall, there was consistent support across all stakeholder groups, with the exception of youth participants, for the 'Movement Guidelines'. Stakeholders identified a range of barriers to the uptake of the guidelines including concerns with accurately defining key terms such as 'recreational' screen time; everyday challenges such as financial and time constraints; and the possibility of the 'Movement Guidelines' becoming just another source of stress and guilt for already busy and overwhelmed parents. Participants identified a range of recommended methods and messengers for future dissemination. School and medical settings were the most commonly recommended settings through which dissemination efforts should be delivered. Overall, participants representing a range of stakeholder groups were receptive to the new 'Movement Guidelines' and endorsed their value. In complementing the 'Movement Guidelines', messaging and resources will need to be developed that address common concerns participants had regarding their dissemination and implementation.

Keywords: Movement continuum, guidelines, children, physical activity, sedentary behaviour, screen time, sleep, public health.

Introduction

Physical inactivity and obesity among children and youth are significant public health concerns today. These are largely due to low engagement in moderate to vigorous physical activity (MVPA) and increasing time spent sedentary (Carson et al. 2016a; Colley et al. 2013; Coombs and Stamatakis 2015; Katzmarzyk et al. 2015; Pearson et al. 2014). As described in this special issue, there is growing evidence that light physical activity (LPA)(Carson et al. 2016b; Poitras et al. 2016) and adequate sleep (Chaput et al. 2016) are also important for the health of children and youth. There is also growing recognition of the need to examine the continuum of movement behaviours and to further understand the interactions between sleep, sedentary behaviour, and light to moderate-vigorous physical activity (Chaput et al. 2014; Chastin et al. 2015; Saunders et al. 2016). This recognition stimulated the development of the Canadian 24-Hour Movement Guidelines for Children and Youth [‘Movement Guidelines’](Tremblay et al. 2016).

There is no simple solution to addressing physical inactivity among children and youth. A multi-sectoral and multi-level approach that includes supportive policies and environments, modifies social norms, and provides strategies to help children and families engage in physical activity and reduce sedentary time are needed. A starting point may be the establishment of guidelines – evidence-based behavioural benchmarks that are associated with optimal health if individuals across the lifespan adhere to them. These then provide one basis for public health messaging and surveillance at a population level (Tremblay and Haskell 2012). However, as others have noted, “guidelines tell people what to do, but not why or how they should do it” (Brawley and Latimer 2007, p. S171). The guidelines must be complemented with persuasive

communications about the benefits of achieving the movement guidelines, and how to use the guidelines within different contexts (e.g., home, school and work environments).

In developing new guidelines it is essential to engage with the stakeholders who will ultimately be the target of dissemination and implementation efforts. Central to knowledge translation approaches, such as the knowledge-to-action framework (Graham et al. 2006), it is recommended that end-users be included at the early stage of guideline or intervention development to ensure that the knowledge and its subsequent implementation are relevant to their needs. This is even the case when the benefits of an initiative seem as obvious as warmer homes for older adults in a United Kingdom policy initiative (Armstrong et al. 2006). There was little uptake of free central heating among eligible individuals given potential recipient concerns about upheaval and mess, health concerns, and fear of increased heating costs.

In the current case for example, do people perceive a need for 24-hour movement guidelines and are the recommendations perceived as relevant, achievable and acceptable to their lives as a parent, qualified exercise professional, or paediatrician? Involving end-users in the process may help identify strategies for persuasively communicating guidelines and developing related knowledge translation products that provide guidance on how to implement the guidelines (Latimer-Cheung et al. 2013). To the best of our knowledge, published qualitative research examining stakeholder perceptions of existing guidelines has been conducted only *after* their release, including the Canadian Sedentary Behaviour Guidelines for the Early Years (Carson et al. 2014) and UK Physical Activity and Sedentary Behaviour Guidelines (Bentley et al. 2015), and Canada's Physical Activity Guide (CPAG; Public Health Agency of Canada 1998)(Berry et al. 2010).

If guidelines are to play a role in public health initiatives then presumably awareness of their existence is necessary and implementation strategies are essential. However, physical activity and sedentary behaviour guideline awareness has typically been low internationally (Knox et al. 2013) and in Canada (LeBlanc et al. 2015). Furthermore, resources to actually implement and activate the guidelines have been limited at best. Engaging end-users in the development of dissemination and implementation plans, for example, by identifying preferred methods and messengers for receiving health information (Lavis et al. 2003), is also valuable. Dissemination efforts can then be matched to the preferences of target audiences. Concurrent with the development of the new guidelines, the objectives of this study were to explore stakeholder (parents, teachers, exercise professionals, paediatricians, and youth) perceptions of the 'Movement Guidelines' and identify their acceptability, perceived barriers to implementation, and recommended methods and messengers of dissemination.

Methods

Data collection

Through existing networks, parents, teachers, paediatricians, and qualified exercise professionals who have and/or work with children and youth between the ages of 5 and 17 years were purposefully recruited to participate in focus groups. For example, parents of children attending recreation programs at the University of Toronto and the University of British Columbia were recruited using preexisting communication channels of the recreation services. Teachers were recruited using contacts in the School of Education at the University of British Columbia and through the Ontario Association for the Support of Physical and Health Educators. Qualified exercise professionals were recruited at the annual meeting of the professional association. Paediatricians were recruited using a preexisting listserv at the Children's Hospital of

Eastern Ontario (CHEO). Additionally, youth aged 15 to 17 years were recruited to participate from local YMCA community centres in Vancouver and the Boys and Girls Clubs of Canada in Toronto. Given the short timeline to complete this study, only older adolescents were invited to participate given parental consent was not required. Focus group research brings together small groups of people to discuss specific issues and is used to discover new information and to obtain different perspectives on the same topic (Litosseliti 2003). After obtaining informed consent (obtained in English and French languages), a short questionnaire gathering demographic information was administered at the beginning of each focus group for describing the sample. Ethics approval was obtained from the institutional Research Ethics Boards in Ontario and British Columbia, where focus groups were held.

Interview guides were developed for youth and adult (i.e. parents, teachers, paediatricians, qualified exercise professionals) stakeholders (available from the first author on request). At the beginning of each focus group, stakeholders were provided with the current Canadian Sedentary Behaviour (Tremblay et al. 2011a) and Physical Activity (Tremblay et al. 2011b) Guidelines for Children and Youth (aged 5 to 17 years). Participants reviewed the sheets to familiarize themselves with the terminology used. Then participants engaged in open-ended discussions about the need for an integrated guideline (e.g., “What are your thoughts on a guideline that includes physical activity, sleep, and sedentary behaviour?”; “Would you find these integrated guidelines helpful or not helpful?”). Next, participants were provided with an initial draft of the ‘Movement Guidelines’. Participants were asked for feedback on the specific wording of this initial draft (data not reported here), and then invited to share reactions to the guidelines and potential barriers or challenges to using these new guidelines at home or in their work environment (e.g., “Are there any barriers to implementing these guidelines at home or work?”).

Then participants were asked for their perspectives on their preferred methods of dissemination for the guidelines (e.g., “Who would be the best individuals to provide information about the guidelines to you?”; “What is the best way to present or communicate the guidelines?”). Probes were used throughout to stimulate discussion. Three authors (GF, LW, NR) lead the focus groups and interviews in Ontario (LW) and British Columbia (GF, NR). An additional research assistant was hired to lead the focus groups held in French. Each focus group had two researchers present at all times, with one researcher assisting and taking notes. Focus groups were audio-recorded and transcribed verbatim.

Participants

A total of 104 parents, teachers, paediatricians, qualified exercise professionals, and youth participated in this study. Twenty focus groups were conducted (parents $n = 9$, teachers $n = 3$, paediatricians $n = 1$, qualified exercise professionals $n = 4$, youth $n = 3$). The total number of stakeholders in each focus group ranged from three to eight participants. Twelve participants (teachers $n = 6$; paediatricians $n = 2$; qualified exercise professionals $n = 4$) were either interviewed individually or with another participant since they could not attend the scheduled focus group times (representing an additional eight consultation sessions). Focus groups and interviews were conducted from October 2015 to January 2016 in Toronto, Hamilton, Ottawa, and Vancouver. Focus groups and interviews were conducted in English ($n = 26$) and French ($n = 2$). Youth ($n = 14$) included both male ($n = 6$) and female ($n = 8$) participants between the ages of 15 and 17 years. The majority of youth were Caucasian (57%) and all were currently attending high school. Adult stakeholders included parents ($n = 52$), teachers ($n = 17$), paediatricians ($n = 5$), and qualified exercise professionals ($n = 16$). These participants included both males ($n = 33$) and females ($n = 66$) between the ages of 23 and 77 years, with a mean age of 38 years. The

majority of participants were Caucasian (74%) and had completed post-secondary education (90%). Two focus groups were conducted among parents ($n = 15$) who had a high school education only. Focus groups ranged from 30 minutes to an hour and a half. On average, focus groups lasted 58 minutes.

Analysis

The audiotaped focus groups and interviews were transcribed during the data collection phase. Inductive data analysis was employed, which involved a process of close scrutinization of the text, in order to be immersed in the data and understand the perceptions of group participants. Following an established protocol described by Braun and Clarke (2006), the transcribed focus groups and interviews were then subjected to a thematic analysis. The transcribed focus groups and interviews were read line-by-line and quotations were coded to form the basic units of analysis (Coffey and Atkinson 1996). Using the constant comparative method (Glaser and Strauss 1967) each coded data unit was compared and contrasted to allow categorization into themes. Relationships between these themes were grounded in the data (Strauss and Corbin 1994) and form the basis of the findings and discussion section in this paper.

We adopted a number of criteria to enhance the ‘trustworthiness’ of our study. First, the focus group and interview transcripts were analyzed by three authors. This analysis independently confirmed the primary outcome themes generated. Second, throughout the analysis process, interpretations were also shared and discussed within the broader research team in order to challenge the identified themes and their connections in a form of peer debriefing (Lincoln and Guba 1985). Third, qualitative research is usually characterized by rich description and narrative is used to more closely represent the experience of participants. Accordingly, we invite readers to ask a range of questions regarding the text. For example, is there enough evidence, in the form of

participant voices, to enable the reader to judge our interpretations? To maintain confidentiality of participants and for reader interpretation, quotes were identified as belonging to a specific stakeholder group. Each stakeholder group was defined as follows: YTH (youth), PAR (parent), TEA (teacher), PED (paediatrician), or EXP (qualified exercise professional). The letters that follow this designation represent participants' gender (M-male; F-female), whether they participated in a focus group (FG) or an interview (I), and their language (E-English; F-French). For instance, a participant code such as TEA;M;FG;E represents a male teacher who attended a focus group in English.

Results

Receptivity: Fitting things together like one big puzzle

With the exception of youth participants, there was consistent and unambiguous support among the majority of participants for the development of the 'Movement Guidelines'. Participants liked the guidelines in establishing a 'target' for all children and youth. Notably, there was consistency across all adult stakeholder groups about their receptivity towards the 'Movement Guidelines', regardless of profession (e.g., teacher, paediatrician), location (e.g., Toronto, Ottawa, Vancouver), or educational background. Although most youth were less engaged in considering the 'Movement Guidelines', one youth participant explained that the guidelines would be helpful for him because "they [guidelines] ensure and tell you what's a healthy amount to do" (YTH;M;FG;E).

All stakeholder groups discussed how the guidelines presented a 'holistic' approach by integrating all four movement behaviours into one encompassing guideline. For participants, this holistic view illustrated the inter-relationship between all behaviours while identifying the importance of each behaviour. One teacher explained the benefits of having an integrated

guideline:

It [guideline] is really trying to instill changes of attitudes and habits... it would allow kids to understand the more holistic nature of health. So we think it's important to be active as well as ensuring that you have enough sleep ... I think it's much more holistic and we can't compartmentalize and think 'ok I've done my hour of physical activity now I can sit all day' ... I think the other thing that helps is to see how they're more interrelated and connected. So all of a sudden if I increase my screen time and staying up all night that's going to affect my sleep.

(TEA;F;FG;E)

The majority of participants, especially parents, teachers, and qualified exercise professionals, appreciated that the 'Movement Guidelines' provided a spectrum of physical activity that distinguishes between all levels of intensity and activities that can be part of one's daily life. Specifically, the inclusion of LPA and the emphasis on 'lifestyle habits' were highly valued by those participants. Multiple stakeholders also commented on the disconnect of the current guidelines and how movement is not strictly based on the two ends of the continuum (i.e. very active versus very sedentary):

Sometimes we talk a bit more to physical activity, we talk about sedentary behaviour, we don't necessarily talk about that light physical activity... I think having that idea of integrating all of those things into our day is a positive thing because we focus so much on the end of the spectrum and not necessarily on that other part that fills a large chunk of our day. (EXP;F;FG;E)

Similar to other focus group participants, a paediatrician discussed the benefits of including information related to sleep:

I think it's important to balance both sides of the equation ... If you don't sleep, well you don't have as much energy to expend or to conduct the activities of your day. I think you're less likely to engage in physical activity. We know that there are links between sedentary behaviour, sleep, and obesity risk as well. So a lot of the outcomes that you're targeting with this [guideline] are going to be affected by sleep as well. So it all kind of fits together as one big puzzle. (PED;F;FG;E)

Incorporating information about LPA and sleep in the 'Movement Guidelines' helps all stakeholders understand the interplay of the movement behaviours and further achieve healthy lifestyle habits. In particular, there was overwhelming agreement that the integration of sleep into the 'Movement Guidelines' was important and necessary.

The positive reception to the proposed 'Movement Guidelines' was largely attributed to them providing a holistic guide in that it "puts a whole day into perspective" (EXP;M;I;E). From a logistical standpoint, the guidelines were easy to understand and would be useful in helping schedule a day:

It's nice to think about it in a 24-hour period because it makes you accountable for every day. It's kind of easier to give that [guideline] to children and say 'what did you do today?' ... You can have them keep track of that. It makes them [children] accountable. (TEA;M;I;E)

One parent further explained the simplicity of the combined guidelines:

I think it gives me a picture – a bigger picture – of what would be good for my children. As opposed to saying, 'well they should have no more than 2 hours of screen time', well that's just one little piece of the pie chart. But to see the whole clock laid out like that I can sort of relate to that. (PAR;M;FG;E)

Although the majority of adult participants were receptive towards having a 24-hour, integrated guideline, a few participants did not think it was necessary. One paediatrician described why the ‘Movement Guidelines’ are not needed, “I don’t need these guidelines. I’ve been doing this in my whole career. This is not rocket science, this to me is common sense” (PED;M;1;E). Similarly, the majority of youth lacked interest and were less engaged with the ‘Movement Guidelines’:

I’m going to forget about it [guidelines] like literally 30 minutes after this – I’m going to forget about it. If they [guideline developers] say in the future, when you’re old, ‘you’re going to have bad bones’ – you don’t really care right now because it’s when you’re old. So you’re like, ‘oh I’m going to deal with that when I’m older’ ... I would want to know them [guidelines] but I won’t follow them. (YTH;F;FG;E)

Given that their future health was not of immediate concern, youth were less engaged in considering how the ‘Movement Guidelines’ might be of relevance. Overall, the majority of participants from a range of stakeholder groups expressed support for the creation of the ‘Movement Guidelines’ and reported being receptive to their dissemination.

Barriers to Uptake

Although the majority of participants valued the holistic, 24-hour structure of the ‘Movement Guidelines’, three themes were identified that captured potential barriers to their adoption and implementation. These included concerns with accurately defining and interpreting terms such as MVPA, LPA, and ‘recreational’ screen time; everyday challenges such as financial and time constraints; and the possibility of the ‘Movement Guidelines’ becoming just another source of stress and guilt for already busy and overwhelmed parents.

Definitional Confusion: I don't know what light physical activity is

The most prominent barrier to the 'Movement Guidelines' was potential confusion with understanding terms such as MVPA, LPA, and 'recreational' screen time. The majority of participants recognized that they themselves and children and youth may not fully understand the meaning of MVPA:

If you ask them [students] to try and identify it [MVPA] and use it in their own language it's hard for them to explain ... There are some [teachers] that don't necessarily understand it [MVPA] themselves. There are maybe opportunities where they [teachers] think that they're getting their kids moving within a qualification of moderate to vigorous activity but really it isn't. (TEA;M;I;E)

Participants demonstrated varied perceptions of the indicators of intensity for moderate and vigorous physical activities. As one qualified exercise professional commented, "perception of what moderate to intense is, or intense workouts and activity, may not [be] well understood by the general public" (EXP;F;FG;E). Many participants were not aware that the suggestion of 'one hour of MVPA' could be accumulated throughout the day rather than completed all at once. Moreover, the majority of parents tended to equate MVPA with organized activities such as physical education or sport. As one parent described:

I think if organized activities either through community centres or things like this, we're able to state that this activity, one hour of gymnastics, accounts for MVPA of the guidelines. Parents would be like, 'great I got it. My kid has got it taken care of'. (PAR;F;FG;E)

The term LPA was also misunderstood across all stakeholder groups where participants were unclear as to what type of physical activities and/or daily activities were included under this

movement behaviour. One parent discussed her confusion with LPA, “I don’t know what light physical activity is. That’s the hard part where I go ‘does that include sitting at school and doing your homework or is that sedentary?’”(PAR;F;FG;E). Many participants also did not know how to distinguish LPA from sedentary behaviours as they were unsure as to what intensity characterized LPA. Additionally, many participants were concerned over how to accumulate the suggested hours of LPA.

The term that provoked the most discussion was ‘recreational’ screen time and how to distinguish recreational from other forms of screen time:

If they’re [screens] being marketed as educational tools then unless you are extremely vigilant to police between what’s an ABC and what’s a car game then it’s difficult. They’re [children] going to morph that into saying ‘oh no it was actually for school because I was learning my multiplication tables’. They’re [screen time] all very very blurred lines. (PED;F;FG;E)

Youth and teacher participants indicated that screen time was an integral and inevitable part of children and youth’s lifestyles. Given that screen-based devices are now used as educational tools, parents and paediatricians were increasingly worried about the amount of time children and youth spend in screen time.

In addition to some confusion regarding the key terms, some participants suggested that an integrated guideline, which includes behaviours that are not clear, has “the potential to lose some of the key points” (PED;M;I;E). This was specifically addressed towards the portion of MVPA given that it is such a small percentage of a 24-hour day:

The one thing that’s striking that may actually be a good thing for some people and maybe less of a help for others is that the targeted area of the moderate to

vigorous physical activity is such a small slice of the pie. On the one hand for somebody who's not very active to look at it and go 'oh I'm not doing so badly'. But it looks like it is such a tiny proportion that the importance of it appears to be diminished because it doesn't represent a big part of the guideline. (PED;F;FG;E)

The mixed perceptions over the terms MVPA, LPA, and 'recreational' screen time ultimately led to a varied understanding of which activities fall under each movement behaviour and which environments (e.g., home, school, structured sport) these occur in. Clearly communicating definitions and examples will be important in the dissemination of the 'Movement Guidelines'.

'Everyday' barriers

All stakeholder groups discussed various barriers to children and youth meeting the 'Movement Guidelines'. The major restrictions identified by participants were lack of money and access to facilities, competing priorities, and the attraction of screen time. All stakeholders believed these guidelines would not be realistic for 'those' children and families that were from lower socio-economic households:

I can think of a lot of families that would have troubles though... If they are simply not able to afford putting their kids in something more formal ... This [guideline] is good for a – I don't want to say 'perfect family' – but I'm saying this is definitely more doable to a slightly different bracket or person. (PAR;F;FG;E)

Many participants considered physical activity as structured activities that occur at a specific time and place, and incur financial costs, "outside activities – like the pool – it costs money. Skating cost money. They [community] don't necessarily have free arenas everywhere; they don't have pools everywhere. I don't know of any [physical activities] that are free, unless for toddlers"

(PAR;F;FG;F). However, some stakeholders disagreed and believed achieving these guidelines was realistic regardless of socio-economic status:

The whole idea of some people say ‘I can’t do this because I don’t have access to money or access to resources’, well those aren’t the only ways that you can do it. There are other environments and other contexts where money doesn’t necessarily come into play. You can still be active and do those things that are good for your body, both physically, mentally, and emotionally. (TEA;M;I;E)

Issues related to time constraints and not prioritizing movement behaviours were discussed primarily among youth and parent focus group participants. Specifically for youth, a lack of interest and motivation, and competing activities such as school and technology were the main barriers to meeting the proposed ‘Movement Guidelines’. Whereas for parents, their hectic work and life schedules, not prioritizing and/or modeling healthy behaviours, specifically engaging in MVPA and reducing screen time, were the main challenges. One parent described the challenge with ‘today’s’ parents, “you [parent] have to take an effort and a lot of parents just don’t have the time – they work all day and they come home and sit” (PAR;F;FG;E).

With what can only be summarized as perceptions of the ubiquitous availability and access to screens among children, youth, and adults, all stakeholders had concerns with excessive screen time although many expressed a certain resignation regarding their ability to do much about it. Adult participants found the restriction of recreational screen time to ‘no more than 2 hours’ beneficial but highly unlikely. This was particularly with reference to the increase of screen time beyond the home setting. Youth and parent participants believed the time spent engaging in screen time whether that be at home or during school time was unrealistic:

Look, if I want to sit my kid down in front of the TV to watch a movie, it's more than two hours. I'm done. You've already used up all your sedentary time. That means my kid isn't supposed to look at the TV or anything for the rest of the day? Kids will go nuts. I realize that you'd like to see two hours, but it's not realistic.

(PAR;M;FG;E)

Moreover, as a result of busy work and life schedules, some stakeholders discussed parents resorting to screen time as a 'babysitter', "sometimes it's easier for parents – if the parent is busy – to say 'go watch TV or go play with the iPad', so that they can do their stuff. I don't think they [parents] quite realize what the impact is" (TEA;F;FG;E). 'Everyday' barriers such as financial and time constraints, and competing priorities and preferences, including screen time, were perceived as significant obstacles to helping children and youth attain the 'Movement Guidelines'.

Something else to worry about

The majority of parents expressed concern about their ability to ensure their children attained the 'Movement Guidelines' because of the nature of their busy lives. Many parents then described potential feelings of guilt and stress at having something else they may fail at as parents:

I think the danger here is that it [guideline] not be another thing to feel guilty about. We all feel guilty about so much, right? We're balancing families and time and that whole story and jobs. It has to be something that can somehow be helpful and not another thing to feel bad about. (PAR;M;FG;E)

Given difficulties discussed in an earlier section regarding being able to differentiate the terms 'recreational' screen time, LPA, and MVPA, and now also a perceived inability to monitor what

their children do throughout the day, parents also described the ‘Movement Guidelines’ as a new source of stress. Parents often described the difficulty with quantifying their children’s movement behaviours because of how much time was spent at school, day cares, or community centres, “my kid is at school where I have no control over how much activity they're doing ... They're sitting or running around? ... What does that type of activity count as? How does that break it down?”

(PAR;F;FG;E). Parents and teachers were both unaware of how much screen time, sedentary time, and MVPA occurred during and after school when they were not present. Furthermore, the majority of participants believed some movement behaviours were unrealistic to achieve (i.e. LPA and recreational screen time) given the ever-present nature of screen time, and this may further cause stress among families. As one parent mentioned:

...[the guideline] kind of makes you feel guilty. Honestly if my daughter watches a lot of TV, then this guideline is out of the window. She is also very active. When I read things like these [guidelines] I feel guilty that I am doing something that is detrimental. (PAR;F;FG;E)

Paediatricians, qualified exercise professionals, and teachers also discussed the importance of progressively achieving the ‘Movement Guideline’, especially among families who do not engage in a healthy balance of the movement behaviours, “going from not doing very much to expecting them [families] to meet the guidelines all of a sudden; it’s sometimes a very big leap for patients and families to make” (PED;F;I;E). All stakeholders emphasized the importance of not overwhelming families and health practitioners with this new information. One paediatrician commented on the stressful nature of the ‘Movement Guidelines’:

To me this is overly prescriptive and almost finger pointing like ‘this I what you should do’. I think the last thing you want to do is guilt people into ‘this is what

you should be doing day-to-day’. I think you want to try to convince people that ‘this is what you want to do’ not ‘this is what you have to do’. (PED;M;I;E)

The likelihood of the guidelines to instill guilt and stress among parents, teachers, and health practitioners may be largely dependent on the way the ‘Movement Guidelines’ will be presented and communicated. Care will be needed in communicating the ‘Movement Guidelines’ in a way that is perceived as understanding of the challenges facing parents and other stakeholders, and that is perceived as supportive and inclusive rather than prescriptive.

Dissemination of guidelines – a multiplatform approach

At the beginning of each focus group and interview, participants were given the current Sedentary Behaviour and Physical Activity Guidelines (Tremblay et al. 2011a; Tremblay et al. 2011b) and were asked about their familiarity with the guidelines. With the exception of qualified exercise professionals, awareness of the current guidelines was rare with most participants not familiar with the guidelines presented to them. One teacher commented, “I’m surprised we haven’t seen this. We’re told about it but we never actually see it” (TEA;F;I;E). A few participants vaguely remembered learning about the guidelines but for one parent she “didn’t pay attention to it” (PAR;F;FG;E). Similarly, there was concern over the credibility of the current guidelines and who developed them, “where is this coming from? Is that an organization that we can trust?” (PAR;M;FG;E).

Stakeholders discussed multiple sources from which they would like to learn or receive information about the ‘Movement Guidelines’. These sources included community centres, schools, doctors and/or paediatricians, public health institutions, and government agencies. Participants described that the ‘Movement Guidelines’ must first be distributed by credible sources (e.g., government and non-governmental agencies, university and health institutions) that

have a broader public outreach. Overall, ‘the school’ or ‘doctors’ were seen as the most common and credible sources of information about the ‘Movement Guidelines’.

Notably, there was recognition that communicating the guidelines was not the sole responsibility of any stakeholder group. For example, participants emphasized the importance of a collaborative approach between children, parents, and other stakeholders:

This is what I think is useful about this whole exercise, it creates a baseline for everybody. So teachers, educators, parents, we’re not the only target group for this. Health professionals, nurses, urban designers, cycling lane ... The point is that they would be employed across groups and that’s the useful thing.

(PAR;F;FG;E)

Given that children spend a third of their day in school, the school setting was an obvious medium for educating students about the ‘Movement Guidelines’, the value in attaining them, and equipping students with the skills to meet them both in school and then beyond. However, parents also acknowledged that they had a role in supporting their children in attaining the ‘Movement Guidelines’. Many adult participants also highlighted the need for the ‘Movement Guidelines’ to be ‘student-centred’ where children take responsibility for the movements they are engaging in throughout the day.

Doctors, paediatricians, and nurses were also discussed as important messengers for communicating the ‘Movement Guidelines’. These health care practitioners were regarded as trustworthy and respected sources, however they may not have the time to interact and explain the ‘Movement Guidelines’ to all families. One paediatrician explained the main challenge of her practice:

We’re not going to be seeing – at least I think – the healthy kids. We’re not going

to be targeting the ‘healthy’ children ... a community paediatrician might have a very different take on it. But somebody who works exclusively in a hospital is going to see a very small subset. (PED;F;FG;E)

It was noted by paediatricians that primary care providers would be more effective as a main source for disseminating the ‘Movement Guidelines’. Although stakeholders described a wide range of sources of information about the guidelines, a collaborative, multi-sectoral approach was recognized as essential.

Participants suggested many methods for disseminating the ‘Movement Guidelines’ and these could be best synthesized as indicating a need for a multiplatform approach to maximize reach. Participants discussed various formats to present the guidelines such as through social media (e.g., Twitter, Facebook), mobile applications, and online parenting websites or blogs. Social media was particularly recommended by youth. Traditional forms of media were also discussed such as pamphlets and/or posters, guest speakers at information sessions, TV and/or radio advertisements, childhood TV shows, press releases, and newspaper articles. However, pamphlets and/or posters and online media were the most commonly discussed forms of dissemination. Moreover, developing applications or tracking modules were highly valued by all participants as they would be ‘tech-savvy’, creative ways to reach and engage children and youth. Additionally, teachers, qualified exercise professionals, and paediatricians advocated for educational resources such as workshops and guidebooks to elaborate on how to adopt and implement the ‘Movement Guidelines’.

Discussion

This study explored stakeholder (parents, teachers, qualified exercise professionals, paediatricians, and youth) perceptions of the Canadian 24-Hour Movement Guidelines for

Children and Youth. Eventual uptake of a new initiative, such as these new ‘Movement Guidelines’ will likely be influenced by perceptions of relevance and acceptability to stakeholders. Accordingly, knowledge translation models emphasize the importance of engaging ‘end-users’ in formulating interventions (Graham et al. 2006) or developing guidelines (Fervers et al. 2011).

There was positive endorsement of the concept of providing ‘24-hour’ guidelines that incorporated sleep, sedentary behaviour, LPA, and MVPA. Excluding youth, this was consistent across the adult stakeholder groups, English and French-speaking participants, mothers and fathers, and irrespective of parental education. The ‘holistic’ nature of the ‘Movement Guidelines’ in taking a whole day approach made sense to participants, and the inclusion of sleep in the context of ‘movement’ behaviours was very well received. Overall, the positive reception to the ‘Movement Guidelines’ is an important foundation for the future dissemination of the guidelines. Stakeholders are receptive and see value in the new guidelines. In theory, at least, this should assist with awareness and future uptake (Graham et al. 2006).

Should we be concerned given the lack of interest among youth toward the ‘Movement Guidelines’? Given the limited number of adolescents we engaged with ($n = 14$), and the limited age range (15-17 years) in relation to the age range of the guidelines (5-17 years), care is needed in not overstating this finding. However, it does point to an interesting question regarding who are the guidelines actually for? The guidelines are targeting adults, such as parents, teachers, or qualified exercise professionals, as intermediaries or ‘gatekeepers’ of behaviour change. Yet this ignores the potential agency of children and youth in either conforming to, or *resisting*, well-intentioned yet paternalistic attempts to shape their behaviour. More focused future examination is needed in exploring children and youth perceptions of the ‘Movement Guidelines’ and how

children and youth might be engaged in shaping guideline communications to ensure they are more salient to their developmental stage.

Despite general receptivity to the 'Movement Guideline' there was also a range of prominent barriers that would make it difficult for stakeholders to implement the guidelines or that presented significant challenges for children and youth in attaining them. These barriers were not dissimilar to those reported in other studies examining parental perceptions of guidelines. For example, Faulkner et al. (2014) qualitatively examined parental perceptions and reality regarding physical activity levels of their children. A common challenge reported by parents was their inability to distinguish light, moderate, or vigorous physical activity. Coupled with an inability to monitor their children throughout the day, parents often assumed MVPA goals were met through structured sport or physical education. These issues were raised throughout the current study and highlight the difficulties some stakeholders may have in 'operationalizing' the 'Movement Guidelines' without further guidance and support. Providing definitions with examples, as well as strategies for accurately assessing levels of engagement in each behaviour, will be needed.

Sleep was considered important for health and there was recognition of how sleep possibly interacts with the other movement behaviours. Yet, the issue that most dominated discussions was 'screen time' while other sedentary behaviours received little attention despite prompting. A specific point of debate for participants was distinguishing 'recreational' from other forms of screen time. In the present study, participants, particularly parents, recognized that their children were engaged in too much screen time and this was a concern to them as parents. They also reported feeling helpless in being able to do much about it. In their qualitative examination of parental perceptions of the Canadian Sedentary Behaviour Guidelines for the Early Years, Carson and colleagues (2014) also reported that most parents considered the guidelines to be

“unfeasible in their totality” (p. 4). This was due to the perceived need to use screens as an ‘electronic babysitter’ and the prominent and omnipresence of screens in the home but also increasingly in the school. Future dissemination of the ‘Movement Guidelines’ will need to clearly define the concept of ‘recreational’ screen time, broaden the conversation to other sedentary behaviours, and shift from discussing the benefits of reducing screen time (as parents are already aware of these) to providing practical resources and strategies for reducing screen time. This process likely needs to start sooner (i.e. before 5 years of age) rather than later.

The possibility of physical activity and/or sedentary behaviour guidelines becoming a source of stress and pressure is not new. Bentley and colleagues (2015) in their study of mothers’ perceptions of the UK early years guidelines reported that parents described feelings of guilt at not being able to put in the extra effort to help their children attain the guidelines due to lack of energy or time constraints. Similarly, some Canadian parents described that guilty feelings about their children not meeting the guidelines may make them ‘turn off’ considering the guidelines (Carson et al. 2014). Of concern, these feelings of guilt may be particularly pronounced among parents whose children are not meeting the guidelines (Mistry and Latimer-Cheung 2014). As Carson et al. (2014) and Bentley et al. (2015) both suggest regarding future dissemination of the early year guidelines, messaging about the ‘Movement Guidelines’ should be gain-framed, pragmatic, and focused on what parents and other stakeholders can do and feel able to achieve.

Participants identified a range of recommended methods and messengers of future dissemination of the ‘Movement Guidelines’. The paradox in considering the future dissemination of ‘new’ guidelines given that participants were mostly unaware of the ‘old’ guidelines was not lost on the authors. Developing a structured, multi-sectoral plan for dissemination and implementation will be vital. School and medical settings were the most

commonly recommended settings through which dissemination efforts should be delivered. Although Canadian paediatrician awareness of current physical activity and sedentary behaviour guidelines is low (Carson et al. 2013), the majority of paediatricians in that study reported it would be feasible to explain the guidelines at well-child visits. Other health professionals such as family physicians and other health care professionals will also have a role to play given their credibility to parents. The school setting was also considered an obvious setting given the access it gives to delivering health messaging to the majority of Canadian children and youth. However, an important finding was the recognition of the need for a range of stakeholders to be involved in communicating the 'Movement Guidelines'. Multi-sectoral collaboration among various stakeholders will be needed for increasing awareness and uptake. There was little clear direction on specific methods of dissemination other than the need to adopt as many approaches as possible through the channels appropriate to specific target audiences. As found in other knowledge mobilization studies, targeted end-users of dissemination efforts will likely be receptive to different messages, from different channels, at different times (Letts et al. 2011). A sustained, multi-phase, integrated social marketing campaign is ideally needed (Brawley and Latimer 2007). Considerations for coordinated, multi-sectoral dissemination and implementation of the guidelines are discussed by Latimer-Cheung et al. (2016) in this issue.

This study provides important initial insights into the acceptability of the 'Movement Guidelines'. Strengths of this study include its relatively large size that captured a diversity of participants representing a range of stakeholders. Attempts were also made to broaden the sample in terms of location (Ontario and British Columbia), educational attainment (high school versus higher), and language spoken at home (English or French). However, there are undoubtedly voices that have not been heard both in terms of stakeholder designation (e.g., family physicians)

and personal background. For example, our sample was mostly Caucasian and from urban settings. Nevertheless, an additional on-line stakeholder consultation was also performed with additional feedback on the draft 'Movement Guidelines' from approximately 600 individuals from across Canada and a variety of backgrounds, and the stakeholder survey findings were consistent with those found from the focus groups (Tremblay et al. 2016). Due to logistic challenges, some focus groups were smaller than ideal for encouraging group interaction in discussing points of interest. This was particularly the case in engaging paediatricians and teachers.

In summary, participants representing a range of stakeholder groups were receptive to the new 'Movement Guidelines' and endorsed their value. This is an important finding in moving forward with developing dissemination plans. In complementing the 'Movement Guidelines', messaging and resources will need to be developed that address common concerns participants had regarding their dissemination and implementation. This study provides some direction for those efforts.

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