

Paediatricians' awareness of, agreement with and use of the new Canadian Physical Activity and Sedentary Behaviour Guidelines for children and youth zero to 17 years of age

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OBJECTIVE: To examine the awareness of, agreement with and use of the new Canadian Physical Activity and Sedentary Behaviour Guidelines for children and youth zero to 17 years of age in a sample of Canadian paediatricians.

METHODS: The findings are based on responses from 331 paediatricians across Canada who completed an online survey in February 2013. Frequencies were calculated for each question.

RESULTS: Few paediatricians reported being very familiar with the physical activity (6% for the early years, and 9% for children and youth) or sedentary behaviour guidelines (5% for the early years, children and youth). When made aware of the guidelines, a large percentage strongly agreed or agreed with the physical activity (99% for the early years, and 96% for children and youth) and sedentary behaviour recommendations (96% for the early years, and 94% for children and youth). Of paediatricians who performed well-child visits, 16% and 27% reported almost always making physical activity and sedentary behaviour recommendations, respectively, to parents or caregivers of children in the early years, compared with 37% for both behaviours among children and youth. Thirty-nine per cent (for the early years) and 46% (for children and youth) of paediatricians reported it would be highly feasible to briefly explain the guidelines at a well-child visit. The most common barriers reported for recommending the guidelines were insufficient motivation or support from parents, caregivers or youth, and lack of time.

CONCLUSION: To increase the use of these new evidence-informed guidelines, strategies are needed to increase paediatricians' awareness and reduce perceived barriers.

Key Words: Children; Guidelines; Paediatricians; Physical activity; Sedentary behaviour; Youth

The prevalence of obesity among Canadian children and youth has steadily increased over the past few decades (1). Currently, >30% of Canadian children and youth ≥ 2 years of age are overweight or obese (2,3). Childhood obesity has been identified as a major public health issue in Canada (4) and around the world (5) because of the well-known short- and long-term health consequences (6). Participating in regular physical activity is an effective preventive measure for obesity, and provides several other physiological and psychosocial benefits for children and youth (7,8). Furthermore, there is mounting evidence indicating that limiting

La sensibilisation des pédiatres aux nouvelles Directives canadiennes en matière d'activité physique et de comportement sédentaire chez les jeunes de zéro à 17 ans, leur acceptation et leur utilisation de ces directives

OBJECTIF : Examiner la sensibilisation des pédiatres aux nouvelles Directives canadiennes en matière d'activité physique et de comportement sédentaire chez les jeunes de zéro à 17 ans, leur acceptation et leur utilisation de ces directives dans un échantillon de pédiatres canadiens.

MÉTHODOLOGIE : Les résultats se fondent sur les réponses de 331 pédiatres du Canada qui ont rempli un sondage virtuel en février 2013. La fréquence a été calculée à l'égard de chaque question.

RÉSULTATS : Peu de pédiatres ont déclaré bien connaître les directives en matière d'activité physique (6 % pour les jeunes enfants et 9 % pour les enfants et les adolescents) ou de comportement sédentaire (5 % pour les jeunes enfants, les enfants et les adolescents). Lorsqu'ils étaient informés des lignes directrices, un fort pourcentage était fortement d'accord ou d'accord avec les recommandations en matière d'activité physique (99 % pour les jeunes enfants, et 96 % pour les enfants et les adolescents) et de comportement sédentaire (96 % pour les jeunes enfants, et 94 % pour les enfants et les adolescents). Chez les pédiatres qui effectuaient des bilans de santé, 16 % et 27 % affirmaient faire presque toujours des recommandations en matière d'activité physique et de comportement sédentaire, respectivement, aux parents ou aux personnes qui s'occupaient de jeunes enfants, par rapport à 37 % à l'égard des deux types de comportements chez les enfants et les adolescents. De plus, 39 % (pour la petite enfance) et 46 % (pour les enfants et les adolescents) des pédiatres affirmaient qu'il serait très faisable d'expliquer brièvement les directives lors des bilans de santé. Les principaux obstacles relevés pour recommander les directives étaient la motivation et le soutien insuffisants de la part des parents, des adolescents ou des personnes qui s'occupent des enfants, ainsi que le manque de temps.

CONCLUSION : Pour accroître l'utilisation de ces nouvelles directives fondées sur des données probantes, il faut adopter des stratégies pour les faire mieux connaître des pédiatres et réduire les obstacles perçus.

sedentary behaviour, especially screen-based sedentary behaviour (eg, television viewing), has beneficial effects on weight status and other health indicators independent of physical activity (9,10).

Given the importance of young people engaging in a healthy active lifestyle, new evidence-informed physical activity and sedentary behaviour guidelines were recently developed and released for the early years (zero to four years of age [11,12]), children (five to 11 years of age [13,14]) and youth (12 to 17 years of age [13,14]), all of which have been endorsed by the Canadian Paediatric Society (CPS) (15). These guidelines are outlined in Table 1.

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TABLE 1
Canadian Physical Activity and Sedentary Behaviour Guidelines (11-14)

Age group	Physical activity	Sedentary behaviour
Early years (zero to four years of age)	<p>For healthy growth and development:</p> <ul style="list-style-type: none"> • Infants (<1 year of age) should be physically active several times daily – particularly through interactive floor-based play. • Toddlers (one to two years of age) and preschoolers (three to four years of age) should accumulate at least 180 min of physical activity at any intensity spread throughout the day, including: <ul style="list-style-type: none"> ◦ A variety of activities in different environments. ◦ Activities that develop motor skills. ◦ Progression toward at least 60 min of energetic play by five years of age. <p>More daily physical activity provides greater benefits.</p>	<p>For healthy growth and development:</p> <ul style="list-style-type: none"> • Caregivers should minimize the time infants (<1 year), toddlers (one to two years of age) and preschoolers (three to four years of age) spend being sedentary during waking hours, including prolonged sitting or being restrained (eg, in a stroller, high chair) for >1 h at a time. • For children <2 years of age, screen time (eg, TV, computer, electronic games) is not recommended <p>For children two to four years of age, screen time should be limited to <1 h/day; less is better.</p>
Children and youth (five to 17 years of age)	<p>For health benefits:</p> <ul style="list-style-type: none"> • Children (five to 11 years of age) and youth (12 to 17 years of age) should accumulate at least 60 min of moderate- to vigorous-intensity physical activity daily, including: <ul style="list-style-type: none"> ◦ Vigorous-intensity activities at least 3 days/week. ◦ Activities that strengthen muscle and bone at least 3 days/week. <p>More daily physical activity provides greater health benefits.</p>	<p>For health benefits:</p> <ul style="list-style-type: none"> • Children (five to 11 years) and youth (12 to 17 years) should minimize the time they spend being sedentary each day by: <ul style="list-style-type: none"> ◦ Limiting recreational screen time to no more than 2 h/day - lower levels are associated with additional health benefits. ◦ Limiting sedentary (motorized) transport, extended sitting time and time spent indoors throughout the day.

National surveillance data, collected before the release of the new guidelines, indicated that only 15% of Canadian children three to four years of age met both the physical activity and sedentary behaviour guidelines (16). Similarly, only 7% of children five to 11 years of age and 4% of youth 12 to 17 years of age met physical activity guidelines (16), and only 19% of youth met sedentary behaviour guidelines (17). Therefore, efforts to increase physical activity and decrease sedentary behaviour among Canadian young people are needed.

The assessment, counselling and promotion of the new physical activity and sedentary behaviour guidelines by paediatricians and other health professionals is encouraged by the CPS (15) as one strategy to increase physical activity, decrease sedentary behaviour and improve the health of young people (18). However, it is unknown whether Canadian paediatricians are aware of these new guidelines, agree with the recommendations or use them in practice. Therefore, the objective of the present study was to examine the awareness of, agreement with and use of the new Canadian Physical Activity and Sedentary Behaviour Guidelines for children and youth zero to 17 years of age among a sample of Canadian paediatricians.

METHODS

Participants

The sample consisted of 2036 practicing Canadian paediatricians and members of the CPS, who were e-mailed a brief online survey in February 2013. A reminder e-mail was sent one week after the original e-mail. The majority of paediatricians in Canada are members of the CPS, although the precise proportion is difficult to determine. Most of the survey questions were based on a previous study involving physicians in the United States on the American Academy of Pediatrics (AAP) Guidelines for Children's Media Use (19). Ethics approval was obtained from the Children's Hospital of Eastern Ontario Research Ethics Board (Ottawa, Ontario). Informed consent was obtained from participating paediatricians.

Survey instrument

Awareness: Paediatricians were asked how familiar they were with the Canadian Physical Activity and Sedentary Behaviour Guidelines. There were four response options ranging from 'not at all familiar' to 'very familiar'.

Agreement: After reading the new guidelines, paediatricians were asked whether they agreed with the physical activity and sedentary behaviour recommendations. There were four response options ranging from 'strongly agree' to 'strongly disagree'.

Use: Paediatricians were asked how frequently they make physical activity and sedentary behaviour recommendations to parents, caregivers or youth during a well-child visit. There were five response options ranging from 'almost always' to 'never'. All questions were asked separately for physical activity and sedentary behaviour. Apart from awareness, all physical activity questions were asked separately for the early years (<1 year of age and one to four years of age), and children and youth (five to 17 years of age), and all sedentary behaviour questions were asked separately for the early years (<2 years of age and two to four years of age), and children and youth (five to 17 years of age).

Paediatricians were also asked how realistic the recommendations were according to age group and behaviour. There were four response options ranging from 'very realistic' to 'unrealistic'. Additionally, paediatricians were asked separately for the early years and children or youth how feasible it would be to review the physical activity and sedentary behaviour guidelines with parents, caregivers and youth during a well-child visit. There were four response options ranging from 'very feasible' to 'not at all feasible'. Paediatricians were also asked about the presence of barriers to recommending these guidelines to parents, caregivers or youth at a well-child visit. There were five response options ranging from 'never' to 'always'. Finally, paediatricians were asked their age, sex, years of practice and type of practice.

Statistical analysis

Analyses were completed using SAS version 9.2 (SAS Institute Inc, USA). Frequencies were calculated for each question. Averages were calculated for the different early year age groups (ie, <1 year and one to four years, or <2 years and two to four years) because percentages were similar. Additional analyses were conducted using χ^2 tests to examine whether awareness (very familiar/somewhat familiar and a little familiar/not at all familiar), agreement (strongly agree/agree and strongly disagree/disagree) and use (almost always/often, sometimes and rarely/never) differed according to sex, age (18 to 40 years of age, 41 to 60 years of age and ≥ 61 years of age) and type of practice. The

TABLE 2
Participant characteristics

Characteristic	Total (n=331)
Sex	
Male	31.1
Female	68.9
Age, years	
18–30	0.9
31–40	26.0
41–50	29.9
51–60	23.9
61–70	17.2
>70	2.1
Years in practice	
0–5	20.9
6–10	12.7
11–15	17.2
16–20	8.1
21–25	15.1
>25	26.0
Type of practice	
Community only	21.8
Hospital only	15.7
Subspecialist only	31.7
Combination/other	30.8

Data presented as %

TABLE 3
Paediatricians' awareness of, agreement with and assessment of how realistic the Canadian Physical Activity and Sedentary Behaviour Guidelines are

	Guideline			
	Physical activity		Sedentary behaviour	
	Children Early years* and youth†	Children Early years and youth†	Children Early years and youth†	Children Early years and youth†
Awareness of the Guidelines				
Very familiar	6.3	9.1	5.1	5.2
Somewhat familiar	41.1	46.8	27.2	32.0
A little familiar	37.8	32.9	35.1	32.9
Not at all familiar	14.8	11.2	32.6	29.9
Agreement with the Guidelines				
Strongly agree	57.7	63.8	68.9	68.6
Agree	40.8	32.6	27.5	25.7
Disagree	0.9	2.7	2.4	4.5
Strongly disagree	0.6	0.9	1.2	1.2
Assessment of how realistic the Guidelines are				
Very realistic	57.4	35.1	50.9	30.8
Somewhat realistic	34.6	48.6	40.1	46.5
Somewhat unrealistic	7.3	14.2	7.9	18.1
Very unrealistic	0.7	2.1	1.1	4.6

Data presented as %. *Early years: zero to four years of age; †Children and youth: five to 17 years of age

response categories were combined for the χ^2 tests because of small numbers for some responses.

RESULTS

Of 2036 paediatricians who were sent an e-mail, 473 (23%) agreed to participate. A total of 142 participants were excluded due to a missing response on one of the questions of interest, leaving a final sample of 331 participants. There were no differences in age, sex, years of practice or type of practice between included and excluded participants ($P>0.05$). Participant characteristics are presented in Table 2.

TABLE 4
Frequency of providing physical activity and sedentary behaviour recommendations at a well-child visit among paediatricians who perform well-child visits

Frequency	Guideline			
	Physical activity		Sedentary behaviour	
	Children Early years* and youth†	Children Early years* and youth†	Children Early years* and youth†	Children Early years* and youth†
Almost always	15.9	36.8	26.7	36.7
Often	32.7	42.5	34.2	47.1
Sometimes	23.5	15.1	21.8	12.4
Rarely	19.5	4.7	12.9	2.8
Never	8.4	0.9	4.4	1.0

Data presented as %. Approximately 37% of participants were excluded from this table because they responded, "N/A – do not perform well-child visits".

*Early years: zero to four years of age; †Children and youth: five to 17 years of age

As shown in Table 3, few paediatricians reported being very familiar with the physical activity and sedentary behaviour guidelines (range 5% to 9%). A larger percentage (range 27% to 47%) reported being somewhat familiar with the guidelines. χ^2 tests revealed a larger percentage of females (range 37% to 60%) and hospital-only paediatricians (range 54% to 69%) were very familiar/somewhat familiar with all four guidelines compared with males (range 21% to 46%) and other types of practices (range 20% to 64%). In addition, a smaller percentage of the oldest (≥ 61 years of age) paediatricians (17%) were very familiar/somewhat familiar with the early-year sedentary behaviour guidelines compared with other age groups (18 to 60 years of age) of paediatricians (range 35% to 37%).

When made aware of the guidelines, more than one-half of the sample reported that they strongly agreed with the physical activity (range 58% to 64%) and sedentary behaviour (69%) recommendations. A large percentage (range 26% to 41%) also reported agreeing with the recommendations. Therefore, >90% of the sample reported that they strongly agreed or agreed with the recommendations (range 94% to 99%; Table 3). χ^2 tests revealed that a slightly larger percentage of females (99%) strongly agreed/agreed with the early-years (one to four years of age) physical activity recommendation compared with males (96%). There were no other age, sex or practice differences. However, compared with agreement, a smaller percentage of the overall sample reported that the recommendations were very realistic for all guidelines (range 35% to 57%; Table 3).

Of the paediatricians who performed well-child visits, 16% and 27% reported almost always making physical activity and sedentary behaviour recommendations, respectively, to parents or caregivers of children in the early years, compared with 37% for both behaviours in children and youth (Table 4). For all the guidelines, a larger percentage reported making recommendations often (range 32% to 47%). χ^2 tests revealed that a larger percentage (range 13% to 56%) of younger paediatricians (18 to 40 years of age) never/rarely make physical activity and sedentary behaviour recommendations to children of the early years or children and youth compared with older (>41 years of age) paediatricians (range 2% to 33%). The only exception was for recommendations related to sedentary behaviour of children and youth where there were no age differences.

Of paediatricians who perform well-child visits, 39% and 46% reported it would be very feasible to briefly explain the physical activity and sedentary behaviour guidelines for the early years and children and youth, respectively (Table 5). The most common barriers reported for recommending these guidelines to parents, caregivers or youth at a well-child visit were insufficient motivation or

TABLE 5
Feasibility of explaining the physical activity and sedentary behaviour guidelines during a well-child visit for paediatricians who perform well-child visits

Feasibility	Early years (0–4 years of age)	Children and youth (5–17 years of age)
Very feasible	38.3	45.6
Somewhat feasible	41.8	42.2
A little feasible	17.0	10.7
Not at all feasible	2.9	1.5

Data presented as %. Approximately 37% of participants were excluded from this table because they responded, "N/A – do not perform well-child visits"

support from parents, caregivers or youth (37%), and lack of time (24%; Table 6).

DISCUSSION

The present study examined the awareness of, agreement with and use of the new Canadian Physical Activity and Sedentary Behaviour Guidelines for children and youth zero to 17 years of age in a sample of Canadian paediatricians. While a small percentage of paediatricians (<10%) were very familiar with the guidelines, when made aware of the guidelines, a large percentage (>90%) strongly agreed or agreed with the recommendations. Depending on the age group of patients, 16% to 37% of paediatricians who performed well-child visits almost always made physical activity and sedentary behaviour recommendations to parents, caregivers or youth. A larger percentage (range 38% to 46%) reported it would be very feasible to explain the guidelines at a well-child visit.

The present study was the first to examine whether Canadian paediatricians are aware of the new national guidelines, agree with the recommendations and use them in practice. However, previous studies have been conducted with paediatricians in the United States. For instance, when Gentile et al (19) examined the awareness and use of the AAP Guidelines for Children's Media Use in a sample of paediatricians from Minnesota, a higher percentage reported being very familiar (range 43% to 52%) with the recommendations compared with the present study (<10%). Recent efforts by the AAP to increase awareness of these guidelines may explain the differences between studies (19). Interestingly, similar to the present study, female paediatricians were more likely to be familiar with the AAP guidelines (19). It is unclear why female paediatricians would be more aware; therefore, future research should explore these sex differences. The present study also observed differences in awareness according to type of practice and age. Furthermore, differences were observed in awareness in the overall sample between physical activity and sedentary behaviour guidelines, with paediatricians being more familiar with the physical activity guidelines regardless of age group. While paediatricians may be familiar with the concept of screen time, they may not be familiar with the notion of sedentary behaviour as a distinct health risk factor, given that this is a relatively new concept (20). Collectively, these findings indicate that promotion of the Canadian guidelines (especially for sedentary behaviour) is needed for paediatricians, and additional efforts may be required for certain subgroups. Paediatricians in the present study identified Internet-based continuing medical education as the most favoured means of knowledge translation. Future research is needed to evaluate the effectiveness of this strategy at increasing paediatricians' awareness and subsequent use of the guidelines.

Almost 100% of paediatricians in the present study strongly agreed or agreed with the physical activity and sedentary behaviour recommendations when made aware of them. Apart from small and likely not clinically relevant sex differences with regard to physical activity recommendations for the early years, strong

TABLE 6
Barriers to recommending the physical activity or sedentary guidelines at a well-child visit

Barrier	Never	Rarely	Sometimes	Often	Always
Lack of time	8.2	19.0	46.7	24.1	2.0
Insufficient motivation/ support from parents/ caregivers/youth	5.3	19.9	35.5	36.9	2.4
Lack of knowledge/training	24.2	44.3	26.1	5.4	0
Lack of awareness of activities/facilities	23.6	38.7	28.4	9.3	0
Not as important as other health/safety issues	57.3	24.8	15.5	1.4	1.0

Data presented as %. Approximately 37% of participants were excluded from this table because they responded, "N/A – do not perform well-child visits"

agreement was observed across age, sex and type of practice groups. Gentile et al (19) also found that a large proportion (>70%) of American paediatricians agreed with the AAP Guidelines for Children's Media Use. However, there was a difference in the present study between agreement and perceptions of how realistic these recommendations might be. This may be related to the low percentage of young people in Canada currently meeting these recommendations (16,17). In addition, a larger percentage of paediatricians reported that the early years guidelines were very realistic, compared with the children and youth guidelines. This is not reflected in recent surveillance work, which indicates substantial improvement is needed in all age groups to meet both physical activity and sedentary behaviour guidelines (16,17).

The strong agreement for the guidelines is not reflected in the frequency of paediatricians making physical activity and sedentary behaviour recommendations to parents, caregivers and youth. It is important to note that the survey questions did not specifically assess the frequency of using the guidelines, only the frequency of making any physical activity or sedentary behaviour recommendations. Given that few paediatricians were very familiar with the guidelines, lower percentages for use would likely have been observed if the questions focused specifically on the guidelines. Paediatricians reported making recommendations more frequently for children and youth compared with children of the early years. Fostering healthy living habits in children at a young age can lay the foundation for a healthy active lifestyle throughout childhood (17). Therefore, frequent recommendations regarding physical activity and sedentary behaviours to parents and caregivers of young children have important short- and long-term implications (17,21).

It is encouraging that several paediatricians reported that it would be very feasible to briefly explain the guidelines at a well-child visit for all age groups. Barriers may explain the discrepancy between agreement and feasibility. Similar to American paediatricians, insufficient motivation or support from parents, caregivers or youth, and lack of time are the most significant barriers to recommending the guidelines (19). Younger paediatricians (18 to 40 years of age) in the present study were more aware of the guidelines but made physical activity and sedentary behaviour recommendations less frequently compared with older paediatricians. Therefore, strategies to reduce barriers may be particularly important for this group. Paediatricians in the present study identified Internet-based information sharing for parents, caregivers and youth; printed information, such as posters and pamphlets, for their offices; and healthy active living pads as favoured resources to facilitate counselling of the guidelines. Future research is needed to evaluate the effectiveness of these resources for increasing the frequency of paediatricians' use of the guidelines. Furthermore, many children in Canada see a

family physician, not a paediatrician, for primary care. Therefore, future research is also needed to examine the awareness, agreement and use of the guidelines by family physicians and other health care professionals to determine whether similar strategies to increase awareness and use are needed.

The present study had limitations that should be addressed. While the present study surveyed a national sample of paediatricians, the response rate was low (23%). A low response rate is not uncommon when recruiting busy paediatricians (19) and our rate is similar to another recent study in paediatricians (22). Nevertheless, caution should be exercised when generalizing the findings to all Canadian paediatricians. Furthermore, the study is based on a self-report survey, which is more prone to information bias, such as social desirability bias (23). However, while the percentage of agreement for the guidelines was high, awareness and use was not, suggesting socially desirable responses may have been limited.

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CONCLUSION

Canadian children and youth exhibit low levels of physical activity and high levels of sedentary behaviour. Paediatricians are in a unique position to assess, counsel and promote the new physical activity and sedentary behaviour guidelines to parents, caregivers and youth (18). The present study found that many of the paediatricians who participated agreed with the guidelines and believed that they could feasibly use them to counsel patients. To increase paediatricians' use of these new evidence-informed guidelines, effective strategies are needed to increase paediatricians' awareness and reduce perceived barriers.

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