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Prescribing Outdoor Physical Activity to Children: Health Care Providers' Perspectives

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Abstract

Little evidence exists on health care provider (HCP) prescriptions for children's outdoor physical activity (PA). Semistructured interviews were conducted with 15 children's HCPs to explore perspectives on outdoor PA prescription programs for children and barriers to implementation. Thematic analytic techniques were used to analyze the data. Most participants reported an awareness of health benefits to children being in the outdoors. Ten themes emerged from the data related to 3 thematic categories: (1) current strategies that HCPs are using to promote PA among children, (2) barriers that HCPs see to prescribing outdoor PA, and (3) potential strategies for promoting outdoor PA among children. Assessment of the local outdoor PA environment and resource development must be done prior to a prescription program. HCPs should be skilled in conducting conversations and setting goals related to outdoor PA tailored to the patient. Developing a system for follow-up with patients on established goals should also be included.

Keywords

children, health care providers, outdoor, physical activity, prescription

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Although spending time in the outdoors has many health benefits for children such as decreased symptoms of attention-deficit/hyperactivity disorder, asthma, myopia, and life stress,[1-7] the average child spends only 4 to 7 minutes in the outdoors each day.[8,9] Spending time in the outdoors is also associated with increased physical activity (PA) at more vigorous levels of exertion among children.[10,11] Provided the distinct benefits of spending time in the outdoors and PA on children's health, promoting outdoor PA is beneficial. The National Physical Activity Plan provides specific objectives focusing on health care providers (HCPs) to promote and discuss PA with patients.[12] Driven by the American Academy of Pediatrics' recommendations for pediatricians to promote PA and identify nearby parks/open spaces for PA and by national initiatives such as the "Exercise is Medicine" campaign, physician prescriptions for PA have recently become widespread.[13-16] HCP prescriptions along with counseling has been shown to be effective in increasing patients' PA.[17,18] One innovate approach incorporating HCPs is the National ParkRx Initiative led by the National Recreation and Parks Association and the National Park Service that promotes PA in nature and public lands through encouraging physicians to "prescribe" PA in outdoor settings.[19]

Although outdoor PA prescription programs are gaining momentum among HCPs, few studies have examined whether these programs effectively increase PA.[20] Of studies that have been conducted, investigations have focused on prescription program's impact on children,[21] adults,[22] program distribution,[23] and program evaluation.[24] Few studies have investigated the challenges HCPs face incorporating prescription programs in their practice.[25] While position statements from the American Academy of Pediatrics provide information and encouragement for children's outdoor PA, few studies have informed HCPs "if and how this might be accomplished."[14,15,25]

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Table 1. Participant Characteristics.

Characteristics	N (%) or Median (Range)
Gender	
Female	8 (53.3)
Male	7 (46.6)
Professional position	
Pediatrician	12 (80.0)
Physician's assistant	2 (13.3)
Nurse practitioner	1 (6.6)
Years practicing medicine	15 (2-40)
Location of practice	
Rural	6 (40.0)
Suburban	2 (13.3)
Urban	2 (13.3)
Suburban and urban	3 (20.0)
Rural and urban	2 (13.3)
Serve primarily low socioeconomic status patients	11 (73.3)
Given patients outdoor physical activity prescriptions	
Yes	3 (20.0)
No	12 (80.0)
Most pressing health issue facing patients	
Obesity and related chronic diseases	7 (46.6)
Physical inactivity	3 (20.0)
Poverty	2 (13.3)
Mental health	2 (13.3)
Asthma	1 (6.6)

Understanding the perspective of children's HCPs is important in order to successfully conduct and evaluate outdoor PA prescription programs. This study was conducted to explore the HCPs' perspectives on prescription programs and barriers to their ability to implement an outdoor PA prescription program targeted to children.

Methods

Study Design and Sample

Semistructured qualitative interviews were conducted by telephone with children's HCPs in the United States. Initial recruitment began by randomly emailing members of the American Academy of Pediatrics. Snowball sampling was then used to identify HCPs working directly with children. To ensure a diverse sample, identifying factors used to garner study participants included (1) pediatricians, (2) nurse practitioners working with children, (3) either had/had not prescribed PA/outdoor PA, and (4) either would consider/would not consider prescribing PA/outdoor PA. The university's institutional review board approved all study procedures.

Data Collection

Interviews lasting between 30 and 60 minutes were conducted from 2015 to 2016 with 15 HCPs. Interviews were audio-recorded and transcribed verbatim. After informed consent was obtained, interviews were conducted using an interview guide developed by the authors to ensure that all participants were asked the same set of basic questions.[26,27] The questions were developed to elicit information regarding what HCPs think about prescribing outdoor PA for children, the barriers they might have in implementing a prescription program, and suggestions they have in relation to prescribing outdoor PA.

Data Analysis

Transcripts were analyzed thematically with the initial codes being descriptive moving to more conceptual analytical coding. To ensure trustworthiness of the analysis, developing code definitions and coding procedures[28] and peer debriefing[29] were conducted. During codebook development, initially 2 authors independently coded the same 2 transcripts, then met and developed a codebook. Then all 3 authors coded a third transcript using the first codebook. Although agreement between authors was ample, some revisions and additions were made creating a second codebook. For coding and peer debriefing, the authors met as a team to code all the transcripts, further refining the codes and developing themes. Once coding was completed, the authors as a group compared across interviews developing themes to interpret and elicit possible meanings. Transcripts were continuously analyzed by 2 authors during data collection to assess saturation, the point at which little to no new information was being gleaned.[26] Saturation was reached at 11 interviews, and then 4 additional interviews were conducted to confirm saturation.

Results

Participants were 12 pediatricians, 2 nurse practitioners, and 1 physician assistant. Participants had been practicing medicine for 2 to 40 years in a mixture of rural, suburban, and urban areas. A majority of participants served primarily low-income patients. Participant characteristics are shown in Table 1. The themes that emerged from the data are shown in Table 2.

Table 2. Themes From Data Analysis.

Thematic Category	Theme
Current provider strategies to promote physical activity	1. Child- and family-tailored discussion
	2. Set goals and then follow-up
	3. Provider as role model
	4. Physical activity/play/park prescription program
Barriers to prescribing physical activity	5. Perceived patient barriers to physical activity
	6. Health care provider's time
	7. Provider awareness of benefits of parks/outdoors
	8. Effectiveness of prescription programs
Potential strategies for promoting outdoor physical activity	9. Tailoring to each child and family
	10. Holistic focus on children's health

Current Provider Strategies to Promote PA

Most of the strategies to promote PA incorporated a tailored discussion with parents and patients based on child's ability, health condition, interest, and motivation as well as family schedule, access to safe spaces for PA/play, and the resources available. When tailoring conversations, HCPs assessed the need for discussion based on the child's health (ie, healthy children did not receive the message while children who needed it the most were most likely get it). As part of tailoring, most HCPs adjusted messaging to be age-appropriate and to access to safe places to play. Some participants would encourage PA in the outdoors, particularly if the patient had access. To assess how to tailor the discussion, the HCP would ask the child/parents about their current PA. Many participants also provided resources or handouts (informational sheets about PA opportunities in the area, nutrition or phone apps to help locate parks) to families. One participant said,

> I try to figure out where they live and what's around them, do they have places outside near their house where they can go be outside and they just don't use them and its more just "I don't like going outside, but I have places to go" or is it a "hey we struggle with trying to find places that are good and safe places to play outside near our house." Then I start to try and help them think about other places maybe that they could go to. So that's usually where I try to get insight in terms of what their geographic social limitations and locations are.

While child-/parent-centered strategies were typically used to tailor discussion, other strategies focused on helping the family increase a child's PA. Some participants had procedures for following up on their patients. As a part of the initial PA discussion, specific goals would be set that HCPs would write on the patient chart and then assess at the next visit. One participant explained,

> I write down on their after-visit summary and set that as a goal and then we bring them back typically somewhere between 1 and 3 months to follow-up on that goal and see how the family has done with that.

Many study participants discussed being an active role model for families by sharing their own PA activities and insights into how to accomplish PA with a busy family life. One participant explained,

> If I am going to preach it then I need to do it and so if kids say they don't like it, I say "look, every time I go to run I don't want to go. I mean the first mile I hate it. I don't want to be out there but it is definitely worth it." And so I do think that the fact that I have taken the time and effort to live it out has motivated some kids.

Three participants had taken part in PA, play, or park prescription programs through their office. These prescription programs were used as a mechanism to reinforce PA or goals discussed during a patient's visit. These programs centered on tailoring their patient/parent discussion based on the needs of the child and utilizing resources to help the patient be successful.

Barriers to Prescribing PA

Understanding the needs and priorities of the family was an important element that participants identified. A majority saw that PA prescriptions would not be effective if the patient and the family had too many barriers to PA to overcome. As one participant said, "I think that number one is the patient or family readiness." Participants expressed the need for HCPs to help families develop strategies for overcoming these barriers in addition to writing a prescription. As one participant said, "It's just a matter of finding what the priority is and finding ways to troubleshoot the schedules." The study participants indicated that children's health was a barrier to PA with obesity, asthma, and mental health most often indicated. Several participants mentioned that time constraints of the child's daily school schedule and the parent's work schedule create constant struggles for parents to provide opportunities for PA. Participants also indicated that even if the parents are good role models, the socioeconomic status (SES) of the family plays a large part in a child's ability to get PA. The

SES-related barriers to children's PA listed included unsafe neighborhoods, lack of access to natural areas, and lack of funds for sports participation or equipment. One participant explained,

> I think it just depends on where people live and then do they have access to good places, parks and walking trails to be outdoors and to be active that way, so I think it just depends on, you know, location.

And another participant said,

> The ability to have access to have a safe outdoor environment close to their house and then having the ability to motivate parents to be active and outside. Another one is being totally consumed by trying to support their family.

However, participants also saw that the time demands placed on them as children's HCPs prohibits them from working with families in an individualized way. For participants, time was directly linked with insurance reimbursement. In order to take time to properly discuss PA with parents and patients (eg, child), participants identified the need for adequate reimbursement to justify this time. HCPs have limited time with patients; thus, their time is often spent on the immediate needs of the patient. Some participants suggested that they would talk more about PA and healthy eating if they had more time with their patients. One participant said,

> And right now, the way we are reimbursed it doesn't allow for taking time out for that.

Another said,

> (Insurance companies) are expecting more and more out of me and yet the reimbursements aren't going out.

Although when discussed most participants understood the benefits of the outdoors and PA on children's health and the supporting research, some mentioned concerns with the overall lack of awareness among HCPs of the health benefits of children spending time in the outdoors. Participants alluded to the need for HCPs to advocate for promoting the outdoors and PA to colleagues. Participants also described a need for sufficient scientific evidence of the effectiveness of PA and outdoor PA prescription programs to increase children's PA levels as a tool for getting other HCPs to take these programs seriously. Considering that time was identified as an important barrier to discussing PA with patients, one participant discussed how they can talk with colleagues and convince them to "do their work the same way they always do but just by tweaking it a little bit." In fact, it was discussed that HCPs are fully aware of the benefits of PA but they are not always knowledgeable about how to further discuss PA with patients.

Potential Strategies for Promoting Outdoor PA

Participants discussed several potential strategies to promote outdoor PA among patients as HCPs: using technology (eg, smartphone apps, text messaging), discussing a variety of PA that occurs outdoors, encouraging PA as a family, establishing holistic views and the relationship of nutrition and PA, seeking facility space to send patients, providing resources to patients about PA, and prescribing PA. All of these centered on the need to individualize to each family in order to maximize the potential impact and to focus on the overall child's health and not just concentrate on PA or spending time outdoors or both.

Participants expressed that a significant factor to any strategy should be the idea that each patient is different and the needs of the patient and their situation is critical. In this way, HCPs can inform families on how to be active and where to be active. One participant said,

> I thinks it's just really working with families in understanding what their barriers are and then helping them figure out how they can address them.

Due to the generally low SES of patients that are served by the participants interviewed, many expressed that HCPs needed to know of the low- to no-cost opportunities for outdoor PA in the local community in relation to where patients live. Providing resources either in the form of maps or through smartphone apps were the most often described means of supporting HCPs in conducting these conversations with patients and families.

Discussion

Overall, the HCPs in this study were aware of the distinct health benefits of children spending time in the outdoors, of PA, and the connection between the two. Furthermore, the participants were familiar with the research evidence to support these benefits. Consistent with other research, HCPs saw themselves as role models for outdoor PA for their patients and families and understood that they are in a unique position of authority to promote outdoor PA.[30]

One of the most consistent themes discussed by HCPs was the importance of tailoring the discussion of outdoor PA to each individual child and family. This means that the conversation with patients and parents must first focus on their barriers to getting outdoor PA followed by

provider suggestions of techniques to overcome these barriers. This was a strategy that most participants were already using, but also saw as necessary to implementing a prescription program. As a way to tailor their discussions, HCPs were also currently using a strategy of setting goals related to PA with patients and families and then following up with them at the next office visit. As it is unlikely that HCPs have had any training to conduct these conversations, giving HCPs training and resources for them to have conversations with patients and parents will be important for outdoor PA prescription programs. Follow-up with patients and families may also be conducted by office staff or park and recreation staff to take some of the burden off of HCPs.

The participants' perceptions of family's barriers to outdoor PA were viewed as a primary reason why HCPs may not be willing to write a prescription. It is important to note that HCPs are hesitant to write a prescription for something they do not think that a patient has the ability to comply with and therefore is viewed by HCPs as irresponsible or a waste of the patient's and HCP's time. Perceived influential factors to family's outdoor PA that were reported included elements at each level of the ecological model, from the health of the child (individual level) to the parents as role models for PA (interpersonal level) to the lack of community resources for PA (community level) to policies at the national level such as those related to the National Physical Activity Plan[12] and the Exercise is Medicine campaign[13,16] (societal level).[31] It will be essential for prescription programs for PA and outdoor PA to first evaluate the patient population of the HCP to examine the environmental barriers of outdoor PA that exist in order to offer effective approaches for HCPs to discuss with families to overcome these barriers. Developing guidelines for when it may be appropriate to give a prescription based on the child's health and barriers to outdoor PA that families identify will also be critical.

Another important issue that participants identified was the time constraint they are under during patient office visits. This was explained as mostly due to restrictions placed on HCPs by insurance companies as part of reimbursement schedules, which has also been reported elswhere.[30] For those HCPs that serve mostly low-income areas where most patients are on Medicaid, this is even more problematic. Within a patient visit, HCPs must address any immediate health concerns, answer any parent questions, and conduct a physical exam.[32] Only after these are addressed can a conversation about PA be conducted. While advocating for insurance companies to reimburse for HCPs' time to discuss PA with patients and write a prescription should be the ultimate goal, for the present time prescription programs will need to work within these time limitations. Therefore, it is vital that HCPs are provided and proficient in conversational strategies and resources to make efficient use of this time.[33]

While participants in this study were aware of the benefits of the outdoors and PA on children's health and the potential for outdoor PA prescription programs, they thought that other HCPs may not share this line of thinking. To overcome this issue, participants in this study saw that there was a need for HCPs to advocate for outdoor PA and prescriptions to colleagues. Informational resources targeted toward HCPs on the scientific evidence of the health benefits of the outdoors and PA is imperative to facilitate this form of advocacy.[33] However, a major hindrance to this advocacy is that little research has been conducted on the effectiveness of outdoor PA prescriptions on PA behavior with consistent results.[25] Therefore, future research should conduct rigorous studies on the effectiveness of PA and outdoor PA prescription programs.

Limitations

Although every effort was made to ensure the study obtained a broad spectrum of perspectives on outdoor PA prescriptions, it is possible that the participants did not represent the viewpoint against prescriptions. During sampling, participants were asked for the names of other potential HCPs that specifically might disagree with outdoor PA prescriptions. However, it is possible that colleagues in the medical community gravitate toward others with similar views, thus limiting the potential pool of HCPs to draw from. That being said, this was the first study that the authors knew of that examined outdoor PA prescriptions from the HCP's perspective.

Conclusion

The study results provide several important implications for the development of outdoor PA prescription programs. First, prior to beginning a prescription program there must be adequate assessment of the supports and barriers of the local outdoor PA environment. Second, HCPs should receive training on how to have a conversation with patients and families about outdoor PA and developing goals related to outdoor PA as well as resources for facilitating this conversation. Prescription programs should also develop a system for follow-up with families either through the HCP's office, the park and recreation staff, or other. Last, informational resources and further research is needed to aid HCPs in advocating for prescribing outdoor PA among colleagues.

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Author Contributions

RWC: Contributed to conception and design; contributed to analysis; drafted the manuscript; critically revised the manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.
JJJ: Contributed to conception and design; contributed to analysis; drafted the manuscript; critically revised the manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.
RAB: Contributed to conception and design; contributed to analysis; critically revised the manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.

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