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Research article

Patients value climate change counseling provided by their pediatrician: The experience in one Wisconsin pediatric clinic

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ABSTRACT

In 2015, the American Academy of Pediatrics (AAP) recommended that the health effects of climate change be incorporated into the existing anticipatory guidance framework. Despite this recommendation, there are only anecdotal accounts of pediatricians offering climate change counseling, and no literature evaluates such counseling effectiveness in any outpatient setting. This investigation describes patient and family responses to climate change counseling administered by one pediatrician in a Wisconsin clinic. A standardized message about the effects of climate change on children's health was delivered during 262 well-child encounters (234 unique families) over a 3 month period. Electronic surveys were administered (response rate of 59% (138/234)) to evaluate knowledge gained as a result of the counseling, intentions of respondents to change their energy use behaviors, and degree of support for clean energy initiatives. Self-described political ideology and general responses to the counseling were also collected. Large majorities of liberal, moderate and conservative families responded positively to the guidance. Although limited to the patients of one pediatrician in a single pediatric practice, our findings bolster the AAP recommendation that counseling about climate change as a child health issue in the outpatient setting is an important and potentially effective educational strategy.

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Introduction

The American Academy of Pediatrics (AAP) was the first United States medical organization to recognize the health consequences of climate change and call for its members to incorporate climate counseling into the clinical setting. In its Policy Statement on Global Climate Change and Children's Health in 2007 [1], the AAP stated "Pediatricians can incorporate considerations of the effects of climate change on health into their professional practice and personal lives in many ways, including patient education." The revised AAP statement in 2015 advises that pediatricians "Use existing anticipatory guidance as a framework for discussing climate change with families" [2].

Since 2007, the focus on climate change as a health issue has grown significantly. Research has expanded through governmental groups like the National Institute of Environmental Health Sciences, and leading international journals like the Lancet and the New England Journal of Medicine now include initiatives dedicated to climate and health. Medical schools, often driven by students, are introducing

climate educational programs at a rapid rate [3,4]. In 2016, the nation's leading medical societies joined together to form the Medical Society Consortium on Climate and Health, with the AAP as a founding member. In 2019, the AAP and over 100 other health organizations declared climate change a health emergency and endorsed the US Call to Action on Climate, Health, and Equity: A Policy Action Agenda [5]. Patient education materials have been developed on climate change risks to health, especially as they relate to children [6-9].

Despite the rising understanding of climate risks to health, and the high level of trust in physicians as sources of information, [10] physicians rarely educate families on this topic [11]. Through well child visits, pediatricians are uniquely positioned to fulfill this opportunity; however, they may feel challenged to incorporate the topic into practice. There are few published guidelines on how to incorporate the subject, though recent publications seek to fill this gap [12]. Lack of clinician education, perceived political nature of the issue, and limited understanding of practical prevention all present potential barriers.

To address this gap, we conducted an exploratory study of patient responses to climate change counseling provided at well child checks in a pediatric outpatient setting. We sought to determine baseline

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understanding of climate and health; receptiveness to counseling during the well child visit; efficacy of counseling in educating and motivating behavior change; and influence of political orientation on these outcomes.

Methods

Between December 10, 2020 and February 25, 2021, a Wisconsin-based pediatrician administered brief climate change and health counseling during 262 patient encounters for all well child visits. Well child visits were scheduled in 30 minute time slots, with about 60% of the time allocated to the pediatrician and 40% to the rooming staff. In these visits, the pediatrician was the primary collector of historical information and the only administrator of patient counseling. No additional visit time or pauses were added to the provider's daily schedule during the study period. The clinic has 10 primary care providers, 2 of whom are pediatricians. The counseling was developed per recommendations from the AAP Policy Statement [2], and it was comprised of the following three sentences:

"In the last two years, the American Academy of Pediatrics and 100 other health organizations declared climate change a health emergency. Air pollution alone caused over 64,000 premature deaths in the United States in 2016, and worsening air quality is only 1 out of 9 ways that climate change is harming people, disproportionately harming children. So just like I want your children to eat healthy foods and be in the right car seat for their health and safety, we now know that decreasing our energy use, increasing energy efficiency, and supporting clean energy initiatives are also important for improving our children's health. Any questions?"

This 45 second script was delivered during the social history section of the visit, after presenting the majority of anticipatory guidance topics, and it preceded the physical exam. Subsequently, families were surveyed to assess their response to the counseling. The survey protocol was evaluated by the University of Wisconsin Health Sciences institutional review board and was certified as "not human subjects research."

To assess participant responses to the counseling, parents/caregivers and/or patients were asked to complete an anonymous seven question survey (see supplemental materials). The questions measured respondents' self assessed: (a) prior knowledge about climate and health, (b) knowledge gained from the counseling, (c) intentions to change their energy use behaviors as a result of the counseling, and (d) support of clean energy initiatives in response to the counseling. Additional information collected included: (a) who answered the survey questions (i.e., parent, caregiver, patient, or multiple people), (b) that person's political ideology (very conservative to very liberal), and (c) their thoughts - in their own words - about the climate and health counseling they received during the clinic visit.

The survey was administered electronically through Survey Monkey in one of two different ways. For virtual well child encounters, a link was sent in a secure patient message at the conclusion of the visit. For in-person visits, the family was encouraged to complete the

Table 1
Knowledge about the health harms of climate change.

Prior awareness of health harms from climate change:	Percent responding "yes"
All participants (n=133)	82%
Liberal participants (n=69)	90%
Moderate participants (n=46)	78%
Conservative participants (n=14)	57%
Learned more about health harms from climate change during clinic visit:	
All participants (n=131)	89%
Liberal participants (n=69)	88%
Moderate participants (n=45)	89%
Conservative participants (n=14)	86%

survey on their own mobile device or a secure device provided by the pediatrician. In both instances, the survey was made available the day of the visit, and there was no expiration date for the survey link. Prior to starting the survey, all families were verbally notified by the pediatrician that the results were confidential and that the responses would not impact the care provided to the family or the standing of the pediatrician within the medical organization. All survey questions were optional. Some families were seen more than once during the survey administration period; however, to prevent redundant data, each family filled out the survey only once unless a patient was 18 years of age or older. If so, those patients were asked to fill out their own surveys, even if another family member was previously seen.

Findings

Of the 262 families that received counseling, 28 were redundant encounters, and 138 responded to the survey, yielding a 58.5% (138/234) participation rate. A large majority of respondents were parents (79%) or caregivers (6%), but a number were patients (11%) or multiple respondents answering as a family (4%). Participants were most likely to characterize themselves politically as moderates or middle of the road (36%), or somewhat liberal (33%), while fewer characterized themselves as very liberal (21%), somewhat conservative (7%) or very conservative (3%).

A large majority of participants said they were aware of at least some health harms from climate change prior to the clinic visit, with liberals and moderates being somewhat more likely than conservatives to be aware of such health harms (Table 1). A very large majority of participants said they learned more about climate change-related health harms during the clinic visit, with little variation in self-reported learning among the responses of liberals, moderates, and conservatives (Table 1).

A large majority of participants said they were likely or very likely to engage in energy-saving behaviors such as switching to LED lighting as a result of the counseling during the clinic visit. Liberal and moderate participants were most likely to say they would change their behavior, although a large majority of conservative participants said so as well (Table 2).

Table 2
Likelihood of changing energy use behaviors.

	Very unlikely	Unlikely	Neither likely nor unlikely	Likely	Very likely
All participants (n=138)	0%	0%	11%	33%	56%
Liberal participants (n=72)	0%	0%	7%	31%	62%
Moderate participants (n=48)	0%	0%	14%	34%	52%
Conservative participants (n=14)	0%	0%	21%	50%	29%

Table 3
Likelihood of supporting clean energy initiatives.

	Very unlikely	Unlikely	Neither likely nor unlikely	Likely	Very likely
All participants (n=138)	0%	0%	9%	31%	60%
Liberal participants (n=72)	0%	0%	5%	17%	78%
Moderate participants (n=48)	0%	0%	13%	45%	42%
Conservative participants (n=14)	0%	0%	28.5%	43%	28.5%

Table 4
Participant responses to climate change counseling.

Theme	Participant Responses
Trust of the health professional	<p>“Appreciate creating awareness, and [I] trust [my doctor’s] guidance on all topics”</p> <p>“Happy [our doctor] is looking out for the health and safety of my family”</p>
Interest in a deeper understanding of issues and a call for additional material to address gaps in care	<p>“My counseling was informative in the fact that I was given some facts, however I did not feel that the counseling truly led me to understanding what the problems were or how I could solve/affect them. I feel like this threat could have been explained more deeply to help me understand and take the necessary actions”</p> <p>“Very informative, and I enjoy the fact that the doctor gives us refreshers to continue to remember the importance of things.”</p>
Counseling effectiveness	<p>“Appreciate it. We have made changes since having our 1st child due to information provided.”</p> <p>“We’ve always tried to do our part, but [the pediatrician] listed a few new ways we can implement.”</p> <p>“I feel like there is a lot of improvement we can make in energy conservation to help our health.”</p> <p>“We didn’t previously realize how its importance stacked up against other child-related safety concerns. It is good to better understand the gravity.”</p>
Conservatives express positive response to counseling	<p>“It was very informative. We already use LED lights in our house. We are getting new windows installed in the next couple of months. We don’t drive around very often because I stay home with my daughter and my husband works 1 mile from our house. We have a smart thermostat so we can save on our energy costs that way.”</p> <p>“It’s good to know, change things in our home to make it healthier for our children”</p> <p>“I think it’s important”</p> <p>“The climate information was information I was already aware of as I hear about climate change numerous times throughout the day.”</p> <p>“It was good to hear about it.”</p>

Similarly, a large majority of participants said they were likely or very likely to support clean energy initiatives as a result of the counseling during the clinic visit. Liberals were more likely than moderates, who were more likely than conservatives to say they were very likely to support clean energy initiatives, but strong majorities of all three groups said they were likely or very likely to do so (Table 3).

Respondents' thoughts about the counseling showed support for the content provided and its inclusion into the well child physical. Four themes were identified from the responses (Table 4). All responses have been included in the supplemental materials.

Personal demographics of respondents are not available; however, data of the pediatrician’s patient panel were compiled (Table 5) showing a panel size of 1,525 patients who were 2 weeks to 23 years of age. A majority of patients were male (64%) compared to female (36%). The panel is racially uniform with 66% of patients identifying as caucasian/white, 7% as African American/Black, and 5% as Asian with all other racial identities each accounting for <1%. There was significant economic uniformity as well with 88% of patients covered by private/employer provided insurance and 12% of patients covered by government sponsored insurance. Patients were assigned to this pediatrician who assumed care of a previous pediatrician’s patient panel 5 years prior to this study, and patients also have the ability to change whom they identify as their primary care provider. There is no information publicized by the pediatrician’s healthcare organization in regard to this provider’s interest in climate change and children’s health.

Reflections/Discussion.

This study exposed more than 250 families in a pediatric clinic to climate and health counseling and surveyed their baseline

understanding of climate health harms, their receptivity to this counseling, and how this counseling influenced their intention to engage in climate change mitigation actions. The survey also assessed if the self-reported political identity of the respondent influenced these responses. Notably, the content of the counseling was not tailored to a specific health problem being addressed but was a generalized message framed on child health protection.

Table 5
Patient panel metrics.

Patient Panel Metrics	
Panel Size:	1,525 patients
Panel Age Range:	2 weeks to 23 years
Gender:	
Female	553 (36%)
Male	973 (64%)
Race:	
American Indian/Alaska Native	6 (<1%)
American Indian/Alaska Native, Asian	1 (<1%)
Asian	74 (5%)
Asian, White	9 (<1%)
Black	101 (7%)
Black, American Indian/Alaska Native, White, Hawaiian/Pacific Islander	1 (<1%)
Black, White	11 (<1%)
Hawaiian/Pacific Islander	1 (<1%)
Hawaiian/Pacific Islander, White	1 (<1%)
White	1004 (66%)
White, declines to answer	1 (<1%)
Declines to Answer	193 (13%)
No Response	122 (8%)
Insurance Status	
Private/Employer Provided	1,349 (88%)
Government Sponsored	176 (12%)

None of the families expressed dissatisfaction with the counseling. The majority were appreciative, showed signs of knowledge gain (89% said it was effective), and demonstrated an increased likelihood to support clean energy (91%) or to decrease their carbon footprint (89%). Responses across liberal, moderate, and conservative political identities were generally similar.

These findings contribute to a gap in research on patient responses to climate and health counseling, and they underscore the importance of presenting climate change as a children's health issue by health providers - who are highly trusted messengers. While some experts have suggested tailoring clinical climate and health counseling to patient's specific health concerns [13], this study supports the idea that families are also receptive to brief generalized climate and child health counseling. Further, although relatively few participants in our study self-identified as conservative, more than half of those who did said they had some knowledge of climate health effects - which is consistent with the growing proportion of U.S. adults who have some awareness of these risks [14]. Further, while we did not collect age data on respondents, given that it is a pediatric clinic, results likely reflect the opinions and receptivity of younger adults (50s and younger), and, thus, may represent a generational shift.

The limitations of this study include the fact that it was a single site survey conducted over a relatively short time period, approximately 12 months into the global COVID-19 pandemic. This study may not be generalizable to other U.S. populations. The patient panel of the provider offering the counseling is majority white and privately insured, and we did not collect the survey respondents' demographic data. Additionally, all counseling content was delivered by a white, male pediatrician so no comparisons of effectiveness across different demographics or professional identity of the messenger were possible. Furthermore, though the pediatrician's employer does not advertise this provider's interest in environmental health issues, the patients' ability to select their primary care provider may introduce an element of selection bias if the patient was made aware of this pediatrician's interests by way of other websites or referral sources. Social desirability bias may also be present given that the survey was administered after the counseling was delivered. The anonymous and online format of the survey may have helped to limit this bias. Additionally, the verbal introduction to the survey explaining that responses would not impact the standing of the pediatrician within the medical organization may also help to reduce this bias. Lastly, this study was exploratory and did not measure data needed to address other concerns that may be voiced by primary care providers as it pertains to climate change and health counseling. Therefore, potential areas for future research include: (a) determining total time added to visits as a result of the counseling; (b) measuring behavior change in response to the counseling (energy use and/or support for clean energy); (c) assessing responses to similar counseling in adult medicine; (d) assessing responses to similar counseling in regions where respondents are more politically, personally, and/or socioeconomically diverse than or different from this study population; (e) assessing impact of such counseling on other anticipatory guidance topics and environmental health counseling; and (f) evaluating any of the above in problem-focused visits that relate to climate change and health impacts.

Healthcare providers are afforded high levels of trust in the U.S., [14-16] and counseling from physicians can play an important role in driving behavior change [17]. We consider the findings from this case

study to suggest that climate change and child health counseling is effective at raising awareness about climate change as a health issue. It also appears to have motivated some families to take action. Importantly, the counseling was not interpreted as political or offensive - but, instead, confirmed, and possibly further reinforced, families' trust in their primary care clinician. Feedback included a call for more and effective education of patients on this topic of climate change and child health. These findings bolster the suggestion that counseling about climate change as a child health issue is an effective educational strategy.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.joclim.2021.100053.

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