



Parental Perceptions of the Internet and Social Media as a Source of Pediatric Health Information

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ABSTRACT

OBJECTIVE: 1) To evaluate differences in how parents use the Internet and social media for health information by child age. 2) To examine parental perceptions of health information on social media.

METHODS: We conducted a cross-sectional survey of parents of children 0 to 18 years seen in clinics and an inpatient medical unit. Survey questions focused on: patterns of Internet and social media use, for what topics, and parental ratings of the accuracy, reliability, and appeal of information from social media. Parents' responses were categorized by age of their youngest child in years (0–4, 5–11, 12–18).

RESULTS: A total of 258 parents completed the survey. The mean age was 39.8 years, 83% were female, 59% were white. The most common topics parents read about online were: sleep, mental health, and car safety. Nearly all parents (96%) used social media, with 68% using social media for health information.

There were no significant differences in the proportion of parents who reported using social media for health information by child age. Only half of parents discussed information from social media with their physician. Parents of children age ≥ 5 years rated health information on social media as significantly more accurate than parents of younger children. There were no significant differences in ratings of reliability and appeal by child age.

CONCLUSIONS: Parents of children of all ages use social media for a variety of important topics related to child health. As many parents do not discuss it with their physician, there are missed opportunities for pediatricians to provide high-quality information.

KEYWORDS: health information; parents; social media

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WHAT'S NEW

Parents of children of all ages use the Internet and social media to access information about child health and development. There are differences in parental perceptions about social media as an accurate source of information by child age.

PARENTS ARE INCREASINGLY using the Internet and social media for pediatric health information.^{1–5} Social media are websites and applications that allow users to post content and interact with other users. Previous studies have identified inconsistent quality with variable accuracy and reliability of health information across Internet sources.^{6–9} In spite of the variable quality of information, only half of parents cross checked online pediatric health information with their health care provider and few parents were familiar with child health websites run by health care professionals.^{1,3} Furthermore, regardless of its quality, health information from social media has the potential to impact parents' decisions about how they care for their children.^{10,11}

Previous studies of how parents use the Internet and social media for information related to child health have focused on parents of young children.^{12,13} As social media use increases across age groups, understanding how parents of all ages use social media to interact regarding child health is critical.¹⁴ In the 4th edition of the Bright Futures Handbook, the American Academy of Pediatrics (AAP) stresses the influence media use has on children and adolescents in our current cultural environment and the possibility for education through media.^{15,16} Parents and physicians have an interest in exploring social media as a communication tool, but little evidence exists to support best practices.^{17–20}

Several frameworks exist for evaluating the quality of online information. They commonly focus on important attributes of the information, such as accuracy and reliability, but also on the perceptions of the user.²¹ Understanding how parents perceive child health information on social media would allow physicians to better tailor their communication regarding social media with families.

The objectives of this study were 1) to evaluate differences in how parents use the Internet and social media for

child health information by child age, 2) to examine parental perceptions of the accuracy, reliability, and appeal of health information on social media, and 3) to explore parental trust in social media and how it compares with other sources of child health information. We hypothesized that parents of children of all ages use social media to read about and discuss child health. We hypothesized that parents have a high level of trust in their physician and that there are missed opportunities for physicians to engage with families about health information on social media.

METHODS

We conducted a cross-sectional study with a nonpurposive sample of parents. We recruited participants from 4 primary and subspecialty care clinics in western Washington, and the inpatient medicine unit at Seattle Children's Hospital, a free standing academic children's hospital. Participants were eligible for this study if they were the parent of a child between 0 and 18 years and spoke either English or Spanish. Participants were asked to complete a self-administered survey either on a tablet or paper, depending on their preference, before their clinic visit or during their hospital stay. For Spanish-speaking participants, consent was obtained using a certified medical interpreter. The survey was professionally translated into Spanish. Participation was voluntary and anonymous. If they elected to complete the survey, they received a \$10 incentive. This study was approved by the Seattle Children's Hospital Institutional Review Board.

SURVEY DESIGN

We conducted semistructured interviews with 5 parents of adolescents to ensure appropriate target populations prior to survey development as previous studies have focused only on parents of young children. During the interviews, we explored the parents' use of social media over time, whether or not they looked for child health information online and on social media, and how they interacted with other parents on social media. Survey questions were adapted from previously published surveys on Internet and social media use.^{5,12,13,16,22,23} To identify possible survey items, we conducted a literature search on studies of parental Internet and social media use.^{1-3,7,13} We additionally identified national surveys of parents through the Pew Research Center and the C.S. Mott National Poll on Children's Health.^{5,12} Last, we reviewed surveys of other populations seeking health information online and social media through the Health Information National Trends Survey and Pew Research Center.^{22,23} We included survey items that were relevant to our study objectives. Some items were modified to meet these goals, that is, changed to specify child health information compared to more general health information, or adapted to specify social media as the target of interest.

The survey first focused on how participants use the Internet for information about child health and development including how frequently they look for information

online, what devices they use, and what topics they read about. The survey then asked questions about parents' social media use: what social media platforms they use in general, which platforms they use for information about child health and development, and how they used it (reading health information, asking questions about child health, giving health advice).

Additional questions focused on the participants' views on the accuracy, reliability, and appeal of social media health information. The domains of accuracy, reliability, and appeal were selected from information quality frameworks specifically designed to evaluate internet information.²¹ There were 3 questions each related to accuracy and appeal, and 2 questions related to reliability of information. Responses were averaged across each domain to generate a composite score for each domain. We asked participants to rate their preferred social media site on these domains using a Likert scale from 1 to 5, from "Strongly Disagree" to "Strongly Agree."

The survey then asked participants if they had discussed information about child health from social media with their health care provider (yes/no) and how interested the provider was in discussing online information with them (5-point Likert scale from "Not at all" to "A lot"). Participants were provided an open text box for them to describe their experience talking with their health care professional about online information. Last, questions asked participants to rate their trust in social media as a source of health information compared to other sources, including health care providers, family, and friends on a 5-point Likert Scale from "Not at all" to "A lot." They were provided with a second open text box to describe how they use social media to learn about child health and development information.

The survey was determined to have face validity by 2 senior pediatricians with experience in social media research (MM and AC). The survey was pilot tested with a sample of 10 parents for clarity and usability. Demographic variables were collected from the participants at the end of the survey including: age, education level, sex, race/ethnicity and for parent participants only, marital status, and income level. See [Appendix 1](#) for full survey questions.

ANALYSIS

We conducted a mixed methods analysis of survey results. We evaluated the quantitative survey data using descriptive and bivariate analyses. Parents' responses were categorized by age of their youngest child in years (0-4, 5-11, 12-18). These age categories correspond to school age categories (preschool, elementary, and middle/high). We conducted a chi-squared test of proportions to examine differences in parental demographic variables and recruitment location by child age category and online and social media use between parents by child age category. The Kruskal-Wallis test was used to compare median scores of accuracy, reliability, and appeal for social media sources of information, given the non-normal distribution of responses. Because "3" on the

Likert scale equated to a neutral score, we used top box scoring to compare responses of “agree/strongly agree” to those of “disagree/strongly disagree.” We generated multivariable logistic regression models to compare the odds of responding positively (“agree/strongly agree”) versus negatively (“disagree/strongly disagree”) for ratings of accuracy, reliability, and appeal of social media. Models were adjusted for sex, race/ethnicity, marital status, income, and parent education. Models were not adjusted for parent age as parent age was collinear with child age category. The Sign Test was used to compare the medians of parental rankings of trust by source of health information. For the sign tests, *P* values calculated were compared to a Bonferroni-corrected *P* value of .001 to correct for multiple comparisons.

There were 2 opportunities for participants to add free-text comments during the survey. The first comment box was after questions related to their experience discussing health information found online with their health care provider. The second was at the end of the survey with the prompt to “Please feel free add any comments about how you use social media to learn about child health and development.” Qualitative content analysis was done to assess responses to the free-text comment boxes. Two members of the study team (MB and CM) reviewed all responses and used an inductive approach to identify relevant concepts. A codebook was developed and iteratively revised. All comments were double-coded by each investigator, and any differences in coding were resolved collaboratively. Codes were organized into categories to identify emergent themes.

RESULTS

Two hundred and fifty-eight parents completed the survey. Parents completing the survey had a mean age of 39.8 years (Standard deviation [SD] 9.7), most identified as female (83%), and 59% were white (Table 1). Three percent of our sample ($n = 9$) was Spanish-speaking, thus these subjects were included in the main analysis and not examined separately. Our survey response rate was 67%. Among participants who completed the survey, there were differences in mean age, gender, marital status, income, and parent education level by child age category.

ONLINE HEALTH INFORMATION

Nearly all parents (93%) had looked for information online about health or medical issues related to their child. There were no differences in the percentage of parents who used the Internet to access information about child health by child age category. A higher percentage of parents of children <5 years old reported using the Internet daily and accessing health information online using their smartphone. Parents endorsed reading and discussing a variety of topics online in their survey responses. The most common topics across child age categories were sleep, mental health, car safety, and vaccines (Table 2).

SOCIAL MEDIA FOR HEALTH INFORMATION

Nearly all (96%) of parents used at least 1 social media platform within the past 30 days prior to the

survey. Sixty-eight percent had used social media to read or talk about child health and development. There was no difference in the percentage of parents who used social media for information about child health and development by child age category (Table 1). Parents of children <5 years reported using social media more frequently to read child health information (daily, or multiple times a week) compared to parents of older children. There were no differences in the proportions of parents who used social media to ask for or give advice by child age category (Figure). The most common platforms for accessing child health information on social media were: Facebook (27%), Wikis (18%), and Blogs (18%).

There were differences in the median parental ratings of their perceptions of the accuracy of health information on social media by child age category. Parents with children 5 to 11 years and those with children ≥ 12 years rated social media sources of information as more accurate compared to parents of children <5 years. There were no significant differences in the median parental ratings of reliability and appeal of social media for child health information by child age category (Table 3). There were no differences in parental ratings of accuracy, reliability, and appeal by recruitment site (Supplemental Table 1). There was a significantly higher adjusted odds of parents of children in older age categories (5–11 years, ≥ 12 years) rating the accuracy of social media positively (agree/strongly agree) compared to parents of children <5 years. There were no differences in the adjusted odds of rating reliability and appeal positively by child age category (Table 4).

Of parents who used social media to read about child health, only 50% ($n = 87$) cross checked health information from social media with their doctor. Of parents who did, only a third ($n = 30$) rated their provider as more than “somewhat interested” in health information they had obtained online. Parents in all child age categories rated trust in providers higher than trust in family/friends and trust in social media, and rated trust in family/friends greater than trust in social media ($P < .001$).

QUALITATIVE ANALYSIS

We analyzed a total of 123 comments. We identified several major themes from the content analysis of the comments that parents made in open text boxes in the survey. Parents endorsed differences in their perceptions of physician reactions to discussing information from the Internet and social media, with some parents reporting positive experiences and others reporting negative experiences. In spite of this, parents made several comments identifying health information online and on social media as a useful resource. Many parents used social media for support related to shared experiences with other parents, particularly for children with rare conditions and special needs. Parents expressed concerns about health information found online and on social media and reported cross checking health

Table 1. Demographics and Patterns of Internet and Social Media Use by Child Age Category

	All Parents n = 258 n (%)	Parents of Children <5 years n = 108 n (%)	Parents of Children 5–11 years n = 70 n (%)	Parents of Children ≥12 years n = 68 n (%)
Demographic characteristics				
Age in years (SD)**	39.8 (9.7)	32.4 (6.2)	42.1 (5.8)	49.0 (7.6)
Average age of all children in years (SD)**	9.4 (6.0)	4.1 (3.3)	10.7 (2.5)	16.7 (2.5)
Sex**				
Female (%)	210 (83)	89 (82)	52 (74)	62 (91)
Race/ethnicity*				
White	151 (59)	57 (53)	40 (57)	53 (78)
Black/African-American	17 (7)	10 (9)	5 (7)	1 (1)
Hispanic	37 (14)	15 (14)	10 (14)	7 (10)
Asian	27 (10)	14 (13)	10 (14)	2 (3)
Other	16 (6)	9 (8)	3 (4)	4 (6)
Missing	10 (4)	3 (3)	2 (3)	1 (1)
Marital status***				
Single	33 (13)	23 (21)	1 (1)	8 (12)
Married	186 (72)	78 (72)	56 (80)	47 (69)
Divorced/separated	29 (11)	3 (3)	13 (19)	12 (18)
Missing	10 (4)	4 (4)	0 (0)	1 (1)
Income**				
<\$30,000	45 (17)	24 (22)	9 (13)	7 (10)
\$30,000–\$74,999	69 (27)	31 (29)	19 (27)	18 (26)
>\$75,000	117 (45)	41 (38)	37 (53)	39 (57)
Missing	27 (10)	12 (11)	5 (7)	4 (6)
Parent education***				
High school or less	107 (41)	51 (47)	24 (34)	26 (38)
Associate's or bachelor's degree	96 (37)	38 (35)	28 (40)	29 (43)
Graduate degree	48 (19)	17 (16)	18 (26)	13 (19)
Missing	7 (3)	2 (2)	0 (0)	0 (0)
Recruitment setting***				
Outpatient clinic	98 (34)	22 (23)	34 (36)	38 (40)
Inpatient hospital	160 (54)	86 (57)	36 (24)	30 (20)
Internet use				
Use of online health information	239 (93)	101 (94)	65 (93)	64 (96)
Frequency of use of online health information***				
Daily	40 (16)	27 (25)	7 (10)	5 (7)
Weekly	54 (21)	26 (24)	12 (17)	10 (15)
Less than once a week	138 (53)	44 (41)	45 (64)	46 (68)
Don't know/missing	26 (10)	11 (10)	6 (9)	7 (10)
Type of device used most frequently***				
Desktop	33 (13)	8 (7)	11 (16)	13 (19)
Laptop	56 (22)	16 (15)	18 (26)	21 (31)
Smartphone	146 (57)	77 (71)	33 (47)	28 (41)
Tablet	14 (5)	4 (4)	4 (6)	5 (7)
Social media use				
Any use of social media in the past 30 days	247 (96)	106 (98)	66 (94)	64 (94)
Use of social media to read or talk about child health/ development	175 (68)	80 (74)	46 (66)	42 (62)

Percentages may not add up to 100% due to rounding and missing data.

* $P < .05$.

** $P < .01$.

*** $P < .001$.

information on the Internet and social media with their physicians (Table 5).

DISCUSSION

In this study of parents of children of all ages, the majority of parents used the Internet and social media to access health information for a variety of important topics related to child health and development. Parents of young

children <5 years read child health information on social media more frequently than parents of older children. After adjusting for other parent demographic characteristics, parents of older children had higher odds of rating the accuracy of health information on social media positively compared to parents of younger children. Only half of parents who used the Internet and social media to learn about child health cross checked that information with their pediatrician, and parents reported mixed experiences

Table 2. Most Commonly Searched Online Topics Related to Child Health and Development

All Parents (n, %) n = 258	Parents of Children <5 years (n, %) n = 108	Parents of Children 5–11 years (n, %) n = 70	Parents of Children ≥12 years (n, %) n = 68
Sleep (130, 50)	Car safety (68, 63)	Vaccines (36, 51)	Mental health (38, 56)
Mental health (125, 48)	Pregnancy (67, 62)	Car safety (36, 51)	Sleep (30, 44)
Car safety (124, 48)	Vaccines (62, 57)	Mental health (35, 50)	Screen time (25, 37)
Vaccine (118, 46)	Sleep (61, 56)	Screen time (35, 50)	Skincare (25, 37)
Skincare (113, 44)	Skincare (49, 45)	Sleep (34, 49)	Pets (24, 35)
Screen time (98, 38)	Mental health (48, 44)	Skincare (34, 49)	Bullying (22, 32)
Pregnancy (96, 37)	Birth control (41, 38)	Bullying (31, 44)	Vaccines (16, 24)
Bullying (85, 33)	Sexual health (35, 32)	Pets (27, 39)	Car safety (15, 22)
Pets (85, 33)	Screen time (35, 32)	Driving safety (21, 30)	Sexual health (15, 22)
Sexual health (70, 27)	Injury prevention (34, 31)	Sexual health (20, 29)	Marijuana (13, 19)

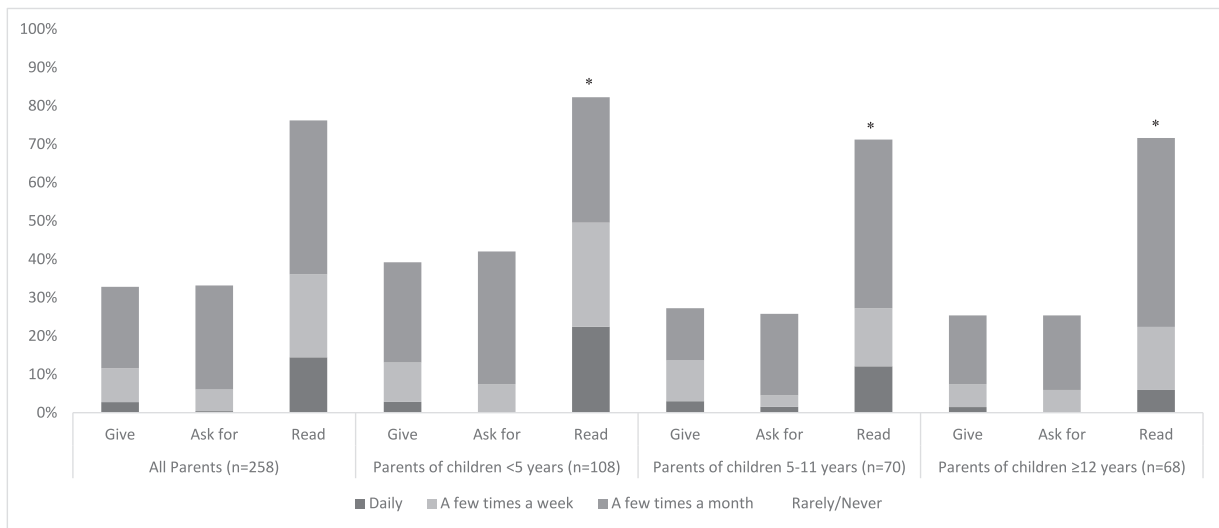


Figure. Frequency that parents give, ask for and read advice about child health on social media. *P < .01.

when discussing health information from online sources including social media with their doctor.

In spite of parents frequently using online sources to read and discuss child health and development, the proportion of parents who discuss health information from the Internet and social media with their physician was only 50%, which is consistent with the frequency parents cross check other health information found online.³ Additionally similar to a previous study, parents who discussed child health information found online and on social media with their physicians expressed receiving mixed reactions from their physicians.^{24,25} These results highlight that there are missed opportunities for physicians to discuss child health information that parents are reading online and on social media because parents have negative perceptions of what doctors think about their use of the Internet and social media for health information. Pediatricians should be open to discussing health information from the Internet and social media with all families. Given the high rating of trust in physicians, discussing health information from social media is an opportunity to correct misinformation and point families toward high-quality resources.

Parents of young children were more frequently exposed to child health information on social media. For

all age categories, a higher percentage of parents passively read information on social media, whereas a smaller number of parents were generating content by giving and asking for advice. In qualitative analysis of the free-text comments, we identified that parents use social media for social support and that they view health information on social media as a resource, similar to other patient groups.^{12,26,27} Future work should focus on how social support from social media sources impacts parents both positively and negatively compared to other offline social supports. While many parents may not explicitly be seeking medical advice on social media, there is evidence to suggest that exposure to health information on social media can influence medical decision-making.^{10,11} Understanding how and why parents choose to engage with other parents on social media and what their preferences are can help physicians tailor their messages about social media use and help physicians promote high-quality sources of health information on social media.

In the Bright Futures Handbook, the AAP identifies that pediatricians can be an important resource for families as educators about social media use and can help vet social media sources of child health information.¹⁶ Additionally, there has been a major focus on educating pediatricians

Table 3. Differences in Median Ratings of Self-Reported Parental Perceptions of Social Media as a Source of Health Information by Child Age Categories

	All Parents n = 258	Parents of Children age <5 n = 108	Parents of Children age 5–11 n = 70	Parents of Children age ≥12 n = 68	P Value
Accuracy median on scale 1–5 (IQR)	3.0 (2.7, 3.3)	3.0 (2.7, 3.3)	3.3 (3, 3.7)	3.3 (2.7, 3.3)	.009
Reliability median on scale 1–5 (IQR)	3.5 (3.0, 4.0)	3.5 (3.0, 4.0)	3.5 (3.0, 4.0)	3.5 (3.0, 4.0)	.05
Appeal median on scale 1–5 (IQR)	3.0 (2.5, 3.5)	3.0 (2.5, 3.5)	3.0 (3.0, 3.5)	3.0 (2.5, 3.0)	.07

IQR indicates interquartile range (25th–75th percentile of responses).

Table 4. Odds Ratios Comparing Parental Ratings of Accuracy, Reliability, and Appeal by Child Age Category

Outcome	Child Age Category	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Accuracy	<5 years	Ref	Ref
	5–11 years	4.9 (2.1, 11.6)	4.9 (1.7, 13.9)
	≥12 years	2.1 (1.0, 4.3)	2.5 (1.1, 5.8)
Reliability	<5 years	Ref	Ref
	5–11 years	3.4 (0.9, 12.6)	2.4 (0.6, 9.9)
	≥12 years	3.5 (1.0, 13.1)	2.8 (0.7, 11.9)
Appeal	<5 years	Ref	Ref
	5–11 years	1.7 (0.8, 3.7)	2.1 (0.8, 5.2)
	≥12 years	0.6 (0.3, 1.3)	0.8 (0.3, 1.9)

OR indicates odds ratio; CI, confidence interval; and Ref, reference.

The ORs represent the odds of responding positively, “agree/strongly agree” versus negatively “disagree/strongly disagree.”

Models were adjusted for sex, race/ethnicity, marital status, income, and parent education.

Bold values represent statistical significance at the level of $P < 0.05$.

Table 5. Major Themes Identified From Parent Comments to Open-Ended Survey Questions

Theme	Representative Quote
<i>Perceived physician reaction to parent bringing up information from the Internet and social media</i>	
Positive reaction	“I have found healthcare professionals to kind of listen in an empathetic way” (Female, 33)
	“My son has a rare genetic condition that most doctors are not familiar with. The info I bring to the table from the Facebook support group is generally well-received.” (Female, 34)
Negative reaction	“I don’t usually tell my doctor because I know it is looked down on.” (Female, 38)
	“The internet puts a lot of info in patients’ hands. Doctors are not always skilled at handling patients that come in with info from the internet” (Female, 45)
Reaction varied	“Sometimes doctors in office disagree with information on social media. Other times they give advice to elaborate more on information” (30, female)
	“Usually when speaking to the kids doctors it was to get clarification whether the information online was accurate or not. Sometimes the doctors were responsive and other times they were not.” (Female, 39)
<i>Parents have a positive view of health information on the Internet and social media as a resource</i>	
	“I find researching online very useful. Although not all information online is accurate, at least I know a little more information than not knowing anything at all.” (Female, 33)
	“I think it’s a really great source to have. It always has the information that you are wanting to look up.” (Female, 48)
	“I use media to get ideas/suggestions about what’s going on.” (Female, 23)
<i>Parents used the Internet and social media for support related to shared experiences</i>	
	“I have found that voicing our problems and questions on my own Facebook status helps create a social focus group on most topics and can be very helpful- and helps us all not feel so crazy” (Male, 50)
	“I mainly use it as a way to “compare notes” with other parents and to share experiences.” (Female, 40)
	“I discuss health issues with parents who have precisely dealt with the same issues. (Female, 22)
	“I like to read about other’s experiences in case it lines up with ours. I would never take medical advice off of social media site or blog.” (Female, 36)
Rare conditions/special needs	“My child has a rare genetic syndrome. Medical doctors do not know any information on it. I use the Facebook page to discuss our child with other parents. It is the only way we have any information on his syndrome.” (Female, 37)
	“My son’s condition is very rare, so often talking with other families with the same/similar issues on Facebook is more informative than talking to doctors who’ve only met one or two with condition.” (Female, 31)
	“I read about a lot in preemie parent groups. I take what applies to use and do further research. If I feel it is pertinent I then speak with our medical team” (Male, 27)

(Continued)

Table 5. (Continued)

Theme	Representative Quote
<i>Parents express concerns about health information found online and on social media</i>	
	"Social media is a hard platform to gain accurate information because most information is personal experience and not research based information" (Male, 27)
	"A credited site that you can trust would be great. While I read about health issues online, it is very hard to truly trust these sites." (Female, 30)
	"Info from social media can be wildly inconsistent - and sometimes it's challenging to know what's based on research vs opinions or conjecture. Knowing one's source is important" (Male, 45)
	"If I am looking for reliable information I try to stick with verifiable and reliable sources. Facebook is more for commiseration and how to cope" (Male, 35)
<i>Parents cross-check Internet and social media information</i>	
	"I take what applies to use and do further research. If I feel it is pertinent, I then speak with our medical team." (Male, 27)
	"I use what I learn online as a starting point and make sure to get clarification from the medical professionals." (Female, 39)
	"I use Google/WebMD cause it triggers questions to ask doctor that he might not know or could help in healing child." (Female, 39)
	"Typically my PCP know about the topics I bring up and they're able to sift the hype from the research" (Male, 45)

Question Stem 1: In the past 12 months, when you talked with a health care professional, how interested were they in hearing about the information you found online? Any comments you have about your experience?

Question Stem 2: Please feel free to add any comments about how you use social media to learn about child health and development information.

on how to most effectively use social media to disseminate high-quality child health information, and how to discuss with families best practices about their child's social media use.^{15,28} In a pilot of the AAP's social media toolkit among 16 pediatrician practices, participating pediatricians demonstrated their ability to engage with and educate parents on social media.²⁹ Given the level of trust parents have in pediatricians and the ubiquity in parental exposure to child health information on social media, it is essential that pediatricians create an environment to discuss child health information from social media in a way that is perceived positively by parents. The AAP has issued clear recommendations for how pediatricians can talk to parents about their children's digital media use, including social media.^{16,30} For young children (infants and toddlers), recommendations on "Promoting the Healthy and Safe Use of Social Media" in the Bright Futures Handbook include teaching parents how to be critical consumers of online health information and that providing parents with high-quality online resources is key.¹⁶ Based on the results of our study, we propose that this conversation be ongoing with parents of children of all ages as their needs and perceptions may change as their children age.

LIMITATIONS

There are several limitations to our study. First, this was a convenience sample and the majority of our study population was female, white, and married. This demographic distribution is similar to previous parent-based survey studies and may not be reflective of the population sampled.³¹⁻³³ More work needs to be done in diverse populations, as social media shows promise at reaching traditionally hard to reach populations and patterns of social media use may be different in diverse populations.^{13,34} Additionally, we conducted this study in health care settings (clinics and

hospitals), thus our sample may overestimate parental use of the Internet and social media to read about and discuss child health. However, we enrolled in these care settings as we were seeking parents with experience in the health system who may be more likely to engage in seeking health information generally, and who may be more likely to engage with their health care provider regarding health information obtained online.

Second, we lacked a previously validated survey tool. To mitigate this, we adapted questions from previously published studies and national surveys, and conducted initial validity testing prior to survey launch. Many parents responded with neutral ratings to questions about the accuracy, reliability, and appeal of information on social media. Neutral ratings to survey responses were difficult to interpret.^{35,36} We used top box scoring to compare positive "agree/strongly agree" versus negative "disagree/strongly disagree." More work should be done to evaluate how parental perceptions of health information on social media influence behavior. Last, we did not cross validate parent reported social media use with actual Internet and social media usage data, nor did we approach physicians to compare their experiences discussing health information from social media with the parents who completed the survey.

CONCLUSIONS

As the majority of parents who use social media for health information do not discuss it with their health care provider, there are missed opportunities for pediatricians to discuss social media with families and potentially influence care. Understanding parent preferences regarding child health and development information online and on social media can help physicians recommend high-quality

sources of health information on social media tailored toward parents and families.

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SUPPLEMENTARY DATA

Supplementary data related to this article can be found online at <https://doi.org/10.1016/j.acap.2019.09.009>.

REFERENCES

- Ettel G 3rd, Nathanson I, Ettel D, et al. How do adolescents access health information? And do they ask their physicians? *Perm J*. 2012;16:35–38.
- Wainstein BK, Sterling-Levis K, Baker SA, et al. Use of the Internet by parents of paediatric patients. *J Paediatr Child Health*. 2006;42:528–532.
- Pehora C, Gajaria N, Stoute M, et al. Are parents getting it right? A survey of parents' internet use for children's health care information. *Interact J Med Res*. 2015;4:e12.
- Plantin L, Daneback K. Parenthood, information and support on the internet. A literature review of research on parents and professionals online. *BMC Fam Pract*. 2009;10:34.
- Duggan M, Lenhart A, Lampe C, et al. Parents and Social Media. Washington, DC: Pew Research Center; 2015.
- Haddow G, Watts R. Caring for a febrile child: the quality of internet information. *Collegian*. 2003;10:7–12.
- Scullard P, Peacock C, Davies P. Googling children's health: reliability of medical advice on the internet. *Arch Dis Child*. 2010;95:580–582.
- Grajales FJ 3rd, Sheps S, Ho K, et al. Social media: a review and tutorial of applications in medicine and health care. *J Med Internet Res*. 2014;16:e13.
- Moorhead SA, Hazlett DE, Harrison L, et al. A new dimension of health care: systematic review of the uses, benefits, and limitations of social media for health communication. *J Med Internet Res*. 2013;15:e85.
- Nan X, Madden K. HPV vaccine information in the blogosphere: how positive and negative blogs influence vaccine-related risk perceptions, attitudes, and behavioral intentions. *Health Commun*. 2012;27:829–836.
- Glanz JM, Wagner NM, Narwaney KJ, et al. Web-based social media intervention to increase vaccine acceptance: a randomized controlled trial. *Pediatrics*. 2017;140:e20171117. <https://doi.org/10.1542/peds.2017-1117>.
- Clark SJ, Kauffman AD, Singer DC, Matos-Moreno A, Davis MM. Parents on social media: Likes and dislikes of sharenting. C.S. Mott Children's Hospital National Poll on Children's Health, University of Michigan; 2015;23. Available at: <http://mottpoll.org/reports-surveys/parents-social-media-likes-and-dislikes-sharenting>.
- Demartini TL, Beck AF, Klein MD, et al. Access to digital technology among families coming to urban pediatric primary care clinics. *Pediatrics*. 2013;132:e142–e148.
- Social Media Fact Sheet. Pew Research Center Internet & Technology. 2017; <http://www.pewinternet.org/fact-sheet/social-media/>.
- O'Keefe GS, Clarke-Pearson K. Council on Communication and Media. The impact of social media on children, adolescents, and families. *Pediatrics*. 2011;127:800–804.
- Hagan JF, Shaw JS, Duncan PM. Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents. 4th ed Elk Grove Village, Ill: Bright Futures/American Academy of Pediatrics; 2017.
- Duggan ME, Lampe N, Lenhart C, et al. M. Social Media Update 2014. Washington DC: Pew Research Center; 2015. January 9, 2015; <http://www.pewinternet.org/2015/2001/2009/social-media-update-2014/>.
- Chretien KC, Kind T. Social media and clinical care: ethical, professional, and social implications. *Circulation*. 2013;127:1413–1421.
- Lonzer J, Lonzer D, Medina M, et al. Social media in pediatrics: a call for guidelines. *J Pediatr*. 2015;166:511–512.
- DeLago C, Dickens B, Phipps E, et al. Qualitative evaluation of individual and group well-child care. *Acad Pediatr*. 2018;18:516–524.
- Knight S-A, Burn J. Developing a framework for assessing information quality on the World Wide Web. *Informing Sci*. 2005;8:159–172.
- Health Information National Trends Survey. <https://hints.cancer.gov/view-questions-topics/default.aspx>. Accessed 03/15/2019.
- Social Networking Usage: 2005–2015. Pew Research Center; 2016. <http://www.pewinternet.org/2015/10/08/2015/Social-Networking-Usage-2005-2015/>. Accessed 03/15/2019.
- Nicholl H, Tracey C, Begley T, et al. Internet use by parents of children with rare conditions: findings from a study on parents' web information needs. *J Med Internet Res*. 2017;19:e51.
- Benetoli A, Chen TF, Aslani P. How patients' use of social media impacts their interactions with healthcare professionals. *Patient Educ Couns*. 2018;101:439–444.
- Smailhodzic E, Hooijsma W, Boonstra A, et al. Social media use in healthcare: a systematic review of effects on patients and on their relationship with healthcare professionals. *BMC Health Serv Res*. 2016;16:442.
- Wang X, Zhao K, Street N. Analyzing and predicting user participations in online health communities: a social support perspective. *J Med Internet Res*. 2017;19:e130.
- Social Media Toolkit. <https://www.aap.org/en-us/about-the-aap/aap-press-room/social-media-toolkit/Pages/default.aspx>. Accessed 03/25/2019.
- 2018 Social Media Toolkit Pilot. 2018; <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/2018-Social-Media-Toolkit-Pilot.aspx>. Accessed 03/25/2019.
- Shifrin D, Brown A, Hill D, et al. Growing up digital: media research symposium. 2015; https://www.aap.org/en-us/Documents/digital_media_symposium_proceedings.pdf. Accessed 08/27/2019.
- Lee B, Hollenbeck-Pringle D, Goldman V, et al. Are caregivers who respond to the Child HCAHPS Survey reflective of all hospitalized pediatric patients? *Hosp Pediatr*. 2019;9:162–169.
- Kontos E, Blake KD, Chou WY, et al. Predictors of eHealth usage: insights on the digital divide from the Health Information National Trends Survey 2012. *J Med Internet Res*. 2014;16:e172.
- Kontos EZ, Emmons KM, Puleo E, et al. Communication inequalities and public health implications of adult social networking site use in the United States. *J Health Commun*. 2010;15(Suppl 3):216–235.
- Schickedanz A, Huang D, Lopez A, et al. Access, interest, and attitudes toward electronic communication for health care among patients in the medical safety net. *J Gen Intern Med*. 2013;28:914–920.
- Cooper ID, Johnson TP. How to use survey results. *J Med Libr Assoc*. 2016;104:174–177.
- Weijters B, Cabooter E, Schillewaert N. The effect of rating scale format on response styles: the number of response categories and response category labels. *Int J Res Mark*. 2010;27:236–247.