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Journal of Family Nursing 2011 17: 357

DOI: 10.1177/1074840711415416

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Journal of Family Nursing

17(3) 357-379

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DOI: 10.1177/1074840711415416

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Abstract

Many families of children with asthma and allergies experience support deficits and isolation. However, support interventions have not been designed to meet their needs. Consequently, parents' intervention preferences were elicited, and an online peer support group intervention was designed based on these preferences and piloted in the study described. In-depth interviews with 44 parents elicited preferences for support interventions for both children and parents. Many said they felt alone and wanted support from others in similar situations. Based on the parents' preferences for accessible online peer support groups, a pilot online intervention was designed and implemented. Parents received information and reassurance from other parents in peer support sessions. Parents appreciated the accessibility and anonymity of the online support group. This innovative online peer support

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intervention, informed by parents' preferences, could be adapted and tested in intervention trials and guide programs and practice for families affected by asthma, allergies, and other chronic conditions.

Keywords

social support, asthma, parents, peer support, intervention

Asthma and allergies continue to be major health concerns in Canada (Akinbami & Schoendorf, 2002; To et al., 2007) with uncontrolled asthma costing Can162 million dollars per annum (Seung & Mittmann, 2005). Asthma is the most common chronic illness of childhood, affecting 8% to 14% of children (Gershon, Guan, Wang, & To, 2010; Global Initiative for Asthma [GINA], 2010). The prevalence of asthma and allergies has increased in the last decade among children (Centers for Disease Control, 2011; To et al., 2007) contributing to significant negative impacts on physical health, psychosocial well-being, and quality of life for affected children and their parents (Cummings et al., 2010; Iley, 2007; GINA, 2010; McNelis, Musick, Austin, Larson, P., & Dunn, 2007). When a child is diagnosed with asthma or allergies, responsibility for management falls on the parents. Parents require significant skills and resources to ensure that children have the required prescriptions, take medications as prescribed, and are in safe environments. Increasingly, health systems expect self-care and management, but parents of children with asthma and allergies may have limited access to professional information and support because of increased wait times to see a specialist and brief medical appointments (Boulet et al., 2008; Wolff et al., 2010). Few primary care practitioners meet regularly with families to identify concerns or problems with management or to provide self-management education (Flores et al., 2005; Tsuyuki, Sin, & Sharpe, 2005). Moreover, interactions in primary care settings focus mainly on diagnosis and medical management rather than parents and children's psychosocial needs (Boulet et al., 2008; Flores et al., 2005; Kastner, Harada, & Wasserman, 2010).

Parents of children with asthma and severe allergies, including anaphylaxis, experience uncertainty, anxiety about mortality, novel and difficult decisions regarding impairment in activities, feelings of social isolation, difficulties adjusting to asthma and allergies, and maintaining relationships (Akeson, Worth, & Sheikh, 2007; Cummings et al., 2010; Iley, 2007). Recent studies report gaps in and barriers to accessing targeted education and social support for children with asthma and allergies and their parents as well as challenges to parent participation (Boulet et al., 2008; Kastner et al., 2010; Tsuyki,

Sin, & Sharpe, 2005). The support needs of parents and children are different (Akeson et al., 2007; Cummings et al., 2010; Mandell, Curtis, Gold, & Hardy, 2005). While children are concerned about activity restrictions, balancing peer pressure, and impression management, parents worry about safety, prevention, and medication adherence (Klennert & Robinson, 2008; Mangan, Wittich, & Gerald, 2007; Protujuder et al., 2009). However, formal and informal support in the community is limited and poorly integrated for parents who face the significant burden of ensuring the safety and well-being of their children (Kastner et al., 2010; Mangan et al., 2007; McNelis et al., 2007). Traditionally, families augment support lacking in health systems and the community with family support, but families coping with specific conditions may be geographically isolated (Drentea & Moren-Cross, 2005; Plantin & Daneback, 2009; Wolff et al., 2010). As a result of this identified need, interventions for parents of children with asthma and allergies have been developed (see Table 1). With one exception (Flores et al., 2009), interventions have emphasized education and information directed toward medical adherence rather than considering parents' support needs. Reported impacts in face-to-face parent and child peer support interventions include reduction of parental absenteeism from work and increased parental self-efficacy. However, attrition rates were high (40%) and participation was low (76.9% of participants participated rarely; Flores et al., 2009). Lack of time, child care, or transportation as well as inconvenient location inhibited participation among face-to-face programs (Cabana & Le, 2005; Lemaigre et al., 2005). In our own studies, parents reported barriers to in-person education or support programs including busy work schedules compounded by additional work associated with asthma and allergy management.

Given barriers to face-to-face support, telephone and online interventions can promote accessibility, yet these have rarely received attention in reported studies. The one reported telephone intervention for parents of children with allergies and asthma emphasized education and information rather than support and was delivered by professionals rather than peers (Fisher et al., 2009). A common misconception of health education programs is that making health information available is enough to promote desired health behaviors (Bodenheimer, Lorig, Holman, & Grumbach, 2002; Kreuter & Wray, 2003). To manage complex conditions, parents also require support to make sense of information relevant for their situation and enhance their ability to exercise control (Flores et al., 2005; Kastner et al., 2010). Programs that provide support and build asthma and allergy management skills are more effective than those that provide information and disease management education solely (Bodenheimer et al., 2002; Cabana & Le, 2005; Lemaigre et al., 2005). Furthermore, while web sites can reduce the time required to find information (Gustafson et al., 2008; Han & Belcher, 2001),

Table 1. Support Interventions for Parents of Children With Asthma and Allergies

Citation	Features of the intervention	Mode	Intervention agent	Satisfaction and participation
Krishna et al. (2003)	Interactive Multimedia Program self-management education program and usual asthma education delivered during clinic visits. (<i>n</i> = 228) children (0-18-year olds) and parents. Animated lessons, (different material for parents, youth, and children) averaging a minute in length. Ten present real-life scenarios and require decisions about alternative behaviors.	Computer-based program	N/A	Users found the program easy to use and navigate, interesting, and enjoyable. Teenage children found the program least enjoyable (23%). About 61% participants said that they would use the program again. Program use varied greatly. About 50% caregivers of 0- to 6-year-old children completed 40% or more of the vignettes. About 50% of the children, 7- to 17-years-old, completed 58% of the program.
Primomo, Johnston, DiBiase, Nodolf, and Noren (2006)	Home-based asthma education/home management methods to minimize home environmental asthma triggers.	Outreach worker provides home	Asthma outreach worker (AOW)	Caregivers reported high satisfaction with the AOW and 90% felt that the home environmental assessment helped improve their child's asthma. A total of 105 of 197 families who received services consented to home visits; 65/105 completed evaluations.
Wise et al. (2007)	Integrating telephone-nurse case management with the Comprehensive Health Education Support System (CHESS): Living With Asthma eHealth Program RCT (400 parents and their children) Parents are primary target, children 4-12 are secondary.	Internet and telephone education	Nurse case manager	Currently undergoing evaluation at time of article. Year 2 of 5-year research project.
Partridge et al. (2008)	Individual asthma education (<i>n</i> = 567) general practice adult patients assigned to education by nurse (<i>n</i> = 287) or a lay educator (<i>n</i> = 280). Two contacts by either a lay educator or a practice-based primary care nurse, initial consultation (45 min), followed by a second shorter face-to-face consultation.	Face-to-face education sessions	Fifteen trained lay educators	Patient satisfaction was similar in both groups. Nurse-led and lay educator-led groups had similar outcomes.

(continued)

Table 1. (continued)

Citation	Features of the intervention	Mode	Intervention agent	Satisfaction and participation
Flores et al. (2009)	Support and education; peer mentors augment asthma health team management by meeting monthly with parents as peer counselors, family advocates, and parent resources. RCT (n = 220; 112 intervention, 108 control).	Face-to-face monthly meetings	Trained peer mentors (trained experienced parents)	Satisfaction not assessed. Low participation (attended <25% of meetings and completed <50% of telephone contacts).
Fisher et al. (2009)	Coaches reinforced basic asthma education and encouraged key management behaviors. RCT (n = 191; 97 asthma coach group, 94 in control).	Home visits and phone calls	Two trained community support workers	Satisfaction not assessed. Parents indicated community health workers used nondirective supportive style (cooperative and accepting of parent's feelings and choices). 89.6% of parents had at least 1 substantive contact with the coach, with an average of 21.1 contacts per parent over the 24-month intervention. Satisfaction not assessed.
Garbutt et al. (2010)	Asthma education, telephone coaching program provided to families with a child aged 5 to 12 years with persistent asthma. (190 intervention) The asthma coaching program designed to provide education and support to parents to help them with day-to-day management of their child's asthma.	Telephone Asthma Program (TAP)	Trained coaches (telehealth nurses) provided education	About 86% completed postsession interviews

the value of online information is reduced if people have difficulty navigating between different sites and diverse interfaces or perceive that information is difficult to locate, hard to understand, or even contradictory to other information (Han et al., 2010). The Internet Telehealth for Pediatric Asthma Case Management intervention (Wise et al., 2007) offers online opportunities for parents to post messages on bulletin boards as well as monthly professional support for parents via telephone. However, the protocol has been difficult to implement because it is staff-intensive and time consuming (Wise et al., 2010).

Effective services and supports are essential for families dealing with asthma and allergies, yet little is known about parents' support needs and desired intervention strategies. There are no reported online support group interventions that offer peer support from parents in the same situation and promote interaction with peers. Moreover, interventions have typically not been informed by an assessment of the needs and wishes of the population involved (Kreuter & Wray, 2003; Partridge et al., 2008). Consequently, parents' intervention preferences were elicited, and an online peer support group intervention was designed based on these preferences and piloted in the study described.

Assessment of Parents' Support Needs and Intervention Preferences

The study was conducted in urban and rural communities with parents from six Canadian provinces: Newfoundland, New Brunswick, Saskatchewan, Ontario, Alberta, and British Columbia. English-speaking parents of children with physician diagnosed severe asthma and/or allergies were eligible for this study. Parents were recruited via clinical and community networks including pediatric asthma and allergy clinics, pharmacies, health facilities, and schools and via relevant association (e.g., Canadian Lung Association, Asthma and Allergy Information Association, Anaphylaxis Canada). Ethics approval was granted by the appropriate university committee. All potential participants were verbally informed by telephone and then advised in writing that participation was voluntary. Participants then gave verbal consent over the phone. Access to the data was limited to investigators and research staff.

Method

Sandelowski's (2000, 2010) applied health qualitative approach, qualitative description and thematic content analysis (Anderson, 2004; Hsieh & Shannon, 2005) was used to explicate parents' needs and support intervention preferences. Individual qualitative interviews with parents were used to

collect rich data to describe their preferences for support interventions for children with asthma and allergies and parents. The semistructured interview guides consisted of 17 questions, focused on demographic characteristics (5 questions), support resources and needs, access to and experience with face-to-face and online support (5 items), support intervention preferences with probes on timing, frequency, mode, content and support provider (7 items). Interview guides were pilot-tested prior to administration. Interviews were conducted over the phone by a trained graduate student who had experience in qualitative methods of data collection. Interviews with parents lasted 60 to 90 min. Interviews were taped, transcribed verbatim, and subjected to thematic content analysis (Anderson, 2004; Denzin & Lincoln, 2005; Hsieh & Shannon, 2005) in which emergent themes were used to supplement and explicate a baseline coding framework derived from the research questions. A qualitative data management software package, NVIVO 7, was employed to manage the data. Two graduate students reviewed the audiotapes and reviewed the transcripts. The data were coded using the preliminary coding framework; common themes and codes were identified across interviews and refined to be mutually exclusive, clear, and specific (Hsieh & Shannon, 2005). Rare coding disagreements were discussed until consensus was reached. Memos and an audit trail were maintained to keep detailed notes of coding and rationale for the decisions. These procedures ensured rigor.

Profile of Participants

In-depth interviews were conducted with 44 mothers. Participants were 24 to 57 years of age (mean age 37.89 years). Thirty-four participants lived in urban areas and 10 resided in rural areas or small towns (less than 1,000 people). Parents cared for one to four children (mean 2). The majority had high middle- or upper-class incomes.

Their children with asthma or allergies ranged in age from 4 to 16 years (Mean = 8.45 years); 28 were males and 16 were females. Forty children had asthma and allergies and 4 had life-threatening allergies without a diagnosis of asthma. Length of the children's illness ranged from 2 to 13 years (average 6.02 years). See Table 2 for profile.

Results

Support Needs

When asked what supports they would like, informal support for parents from others like themselves ($n = 36$ parents) was most frequently requested; a few

Table 2. Demographic Profile of Participants in Assessment and Intervention Phases

		Assessment (<i>n</i> = 44)	Intervention (<i>n</i> = 19)
Age		Mean (Range)	Mean
	Children's age	9.94 (4-16)	9.14 (7-11)
	Parents' age	37.89 (24-57)	41.61 (32-51)
Parents' education		Number (percentage)	Number (percentage)
	Postgraduate	4 (9.09%)	1 (5.2%)
	University	19 (43.18%)	10 (52.6%)
	College or trade	16 (36.36%)	7 (36.84%)
	High school	5 (11.36%)	1 (5.2%)
Family income		Number (percentage)	Number (percentage)
	Can\$100,000 +	21 (47.7%)	13 (68.4%)
	Can\$80-Can\$99,999	5 (11.3%)	2 (10.5%)
	Can\$60-Can\$79,999	7 (15.9%)	2 (10.5%)
	Can\$40-Can\$59,999	3 (6.8%)	0
	Can\$20-Can\$39,999	0	0
	Under Can\$20,000		1 (5.2%)
	Declined to provide	7 (15.9%)	1 (5.2%)

wanted phone support (*n* = 9 parents). Many parents believed that only other parents, someone with personal firsthand experience (i.e., peers) could relate to their experience, understand the emotions surrounding asthma and allergies management, and provide the practical advice required. Virtually all parents said they were uncertain about their child's symptoms, when to administer medication, and how much medication to administer; particularly at diagnosis, but also as their child grew and changed. Parents were most worried about the lack of school and community support. Parents wanted practical support when they approached schools and the community to ensure that their children were protected. They wanted advocacy to influence health services, school policy, and food-labeling practices.

Parents indicated there was little accessible local support. Although many parents indicated they wanted local support, few attended local meetings and others said that as soon as their child was under control they did not require the support. Some parents indicated they sought emotional support from other parents long after diagnosis because immediately after the diagnosis they tended to rely on professional advice or were too busy understanding the disease and managing the demands.

Parents wanted supports to match specific needs. Support was seen to be more or less valuable depending on the provider. For example, parents expect health care support to come from professionals and said that other parents were better sources for information on practical home management and for understanding emotional implications of asthma- and allergy-related anxiety. Because of accessibility in temporal and geographic terms, most parents had turned to Internet support to meet these needs rather than searching for local face-to-face support groups.

However, parents thought Internet support could be improved. Some parents indicated that the information on web sites was static, conflicting, and hard to find. A few complained that there was too much information and they were not sure what to trust. Without guidance they were unable to interpret how information might relate to their needs. Several parents indicated that dealing with web site information alone without access to clarification increased their fears.

Some parents said asynchronous online bulletin boards, where they posted their information or question and waited for an anonymous reply, were slow and static. They missed being able ask questions and get immediate answers and wanted to talk with other parents or health professionals.

Support Intervention Preferences

Parents wanted a parental support network to be accessible, comprehensive, and reliable. Online support and varied face-to-face formats were suggested such as parent meetings (either locally or on the Internet) and a centrally located weekend workshop, or a yearly provincial conference. While most participants initially said they wanted face-to-face support from other parents, when probed regarding who might attend, what content would attract parents, who the intervention agent/helpers should be, and when sessions should be scheduled, significant challenges pertaining to parental participation in face-to-face groups revealed subtle barriers to participation. The biggest hurdle was time. Parents reported being busy and the challenge of managing asthma and allergies imposed further time constraints. In addition, they weren't aware of a local support group, were too busy to attend, they or their children were busy at the time support was offered, they wanted to attend only when content would be specifically relevant to them, or they were reluctant to leave their affected children with anyone else.

I think there's an anaphylactic support group . . . I just haven't phoned because it's in [name of city], which is an hour away and I just haven't

had the time. (Rural parent of 9-year-old boy with allergies and asthma)

There's a support group, but even if I could, like who's going to look after my kids while I'm at this? (Mother of a 6-year-old son with asthma and allergies and a 2-two-year old son)

A few parents would not attend local support sessions because local groups can come and go when they depend on volunteers for organization. Some participants indicated that other parents were unconcerned, even *laissez-faire* about asthma/allergy management, while others thought other parents were overprotective and did not want to be aligned with these parents.

Some parents are so fanatical about their kids' allergies. I'm nervous about really getting too heavily involved, because sometimes I don't share the same ideas as other people, on their allergies. So sometimes support groups are great, but sometimes they, get you thinking about things that maybe I don't necessarily want to get too involved with. (Mother of two children, aged 8 and 5, with asthma and allergies)

The majority of these parents thought online support would facilitate participation, but they also wanted to engage in a conversation with other parents in their situation.

I do like the online information, because it's convenient and it doesn't obligate you to be at a certain place at a certain time, but at the same time I think it would be really nice to be able to talk with other people and get ideas and possibly solutions. (Mother of three daughters, one, aged 7, with asthma and allergies)

They would have a web site, maybe with a chat group or something where you can talk. And possibly with email, so that you can contact people that might have similar, have gone through something similar. People, like that are within the same city, would be useful too. So meeting in person as well. (Mother of a 7-year-old daughter with allergies and asthma)

Parents wanted to talk with other parents, but the majority preferred that the support group be facilitated by a knowledgeable professional or skilled facilitator

(39/45). Only a few (14/45) participants indicated they wanted parents as primary intervention agents. When peers were recommended as primary supporters, they should be parents with older children, or parents of children with asthma/allergies who are experienced health professionals.

I think I would rather see something that has some medical professional backing behind it. I think some peer group support too, that you could either access online, or there would be actual physical places you could go to—meet with your peers. (Mother of 8-year-old daughter with allergies)

Parents wanted discussion content to match specific needs. They wanted specific information on the seriousness of asthma and anaphylaxis, avoidance of allergens, instructions on how and when to use EpiPen® or asthma medications, home management strategies, safe restaurants and travel. Several parents believed health professionals representing diverse disciplines would be helpful including dietitians, psychologists, or social workers. Moreover, they wanted interventions to help them understand information and interpret relevance for their situation.

Well if I had to picture it in my mind I guess it would be sort of a room with people in it, and a facilitator of some sort, maybe presenting topics that we could discuss, or asking questions, or giving us an opportunity to ask questions and answer them for us, or help us to find ways to answer them. (Mother of a 6-year-old son with allergies and asthma)

Parents wanted online support to include a comprehensive constellation of support including informational, emotional, and affirmational support as well as support to advocate for improved programs and policies.

Discussion boards for parents and kids to post questions and advice, provides links to other asthma/allergy related sites, provides food recalls due to “undeclared traces of,” has a “what’s going on in your town/city” events calendar, has info that is broken down into age groups (printouts for parents to give out to those who may not understand asthma/allergies, .contests for kids . . . coloring for younger and writing contests for older children. up to date info regarding major businesses that are making it easier for families with allergies/asthma. (Mother of two young children with asthma and allergies)

Most parents believed that web content could provide more personalized support. Improvements recommended to existing web sites included (a) easier methods of finding content appropriate to their needs at their level of understanding (e.g., information and support pulled together on one web site with personalized search and save features), (b) more interactive vehicles than message boards to connect with other parents, (c) expert advice offered as webcasts or, “talk to a specialist,” (d) information on, safe food, travel, and restaurants, (e) strategies for parents to connect with other local parents, and (f) advocacy support. Some parents suggested a comprehensive government-funded online and face-to-face support network.

Government funded, non-profit organization, similar to the support associations, that provide financial backing to have a volunteer, part time worker, operate websites, call lines, just like there’s the Youth Emergency Shelter call lines, interactive computer programming and also, social networking, to organize safe events for social networking. (Mother of three boys two with asthma and allergies, aged 6 and 8)

Parents believed they would benefit from support to advocate for safe and sensitive school policies and guidance on how to deal with schools.

Pilot Online Peer Support Group Intervention

Based on the parents’ intervention preferences regarding accessible online peer support groups offering opportunities to interact via computer and voice with other parents of children with asthma and allergies, a pilot online intervention was designed and implemented.

The first sessions were small group sessions, held immediately after their children’s support group on the GoToMeeting® secure online meeting platform. One of several Internet virtual meeting spaces, this meeting space was selected because up to 15 participants can easily speak to one another with microphone and speakers, share applications on their computer (including photos, PowerPoints, drawings), and use drawing tools and a secure chat (to send instant text messages to a peer or to the group). Unlimited meetings and real-time support were available for participants and program staff. In pilot testing, this interface was easy to set up, user friendly, and reliable in groups of up to 15 participants. The initial small group meetings were cofacilitated by a counseling psychologist and peer mentor who led the children’s online support groups. For the second session, parents attended one of two larger group sessions facilitated by the counseling psychologist.

Method

Individual qualitative interviews with parents were used to collect data to understand the effects of the pilot intervention on parents, the technology, and their preferences for support interventions based on this experience. The semistructured interview guides consisted of six questions including “What do you think of the two on-line parent sessions?” “Would you like to participate in a parents’ online support group?” “What would you recommend we do differently?” The postpilot intervention interviews lasted 30 min to 60 min. Interviews were taped, transcribed verbatim, and subjected to thematic content analysis. Similar to the assessment phase, interpretive description (Sandelowski 2000, 2010) and thematic content analysis (Anderson, 2004; Hsieh & Shannon, 2005) were used to analyze the data.

Profile of Participants

Twenty-three parents of children, aged 7 to 11, participating in an online support program were invited to participate in pilot support sessions. Four parents sent regrets via email, saying they were too busy, had prior commitments, or were educated about asthma and or allergies. Nineteen parents participated in two online support group sessions; 18 of 19 (94.8%) parents participated in the first session and 15 of 19 (78.9%) in the second session. Participants were 32 to 51 years of age (mean age 41.61 years). Their children with asthma or allergies ranged in age from 7 to 11 years (Mean = 9.14 years); 10 were males and 14 were females (two parents had 2 children participating). Parents were well educated; more than 90% had completed college or university. The majority of families reported incomes of over Can\$100,000. Ethnic origins of participants were White, Black, and Chinese. See Table 2 for demographic profile of participants in pilot intervention.

Results

Parents’ Appraisal of Online Peer Support Group Sessions

Parents said there were significant benefits to this type of online support. The majority of the parents who participated in the support intervention enjoyed talking with other parents. Many said they felt alone and wanted support from others in similar situations. They maintained it was hard for family and friends to understand their fears and needs. Some said they received information from other parents in support groups and benefited from the assurance from

other parents that their needs and strategies for handling their child's condition was similar to others. They compared their situation with others, learning that other parents were also concerned about similar issues.

It's always good to hear the perspectives of another family and what they are going through, so it did impact me in that way . . . I think all of us need support and assurance in this area. (Mother of a 10-year-old girl with severe allergies and asthma)

Interesting to talk to parents and get other perspectives. You get a feeling of how people deal with it and make the lives of the children normal. I think we really need to hear other people's experiences and talk to other parents. (Mother of 8-year-old girl with severe asthma and allergies)

Most parents appreciated the convenience of the online support group delivery mode and some parents liked the anonymity, noting that the GoToMeeting® platform was secure and easy to use. The majority of participants believed that online support was easier to manage than in-person support. They didn't have to worry about finding a babysitter, leaving their children, or traveling to a meeting.

I think it's a great idea to have it online, online it's just the support group, you don't have to worry about the travel time and kids schedules. That's a convenience factor for sure (Mother of an 8-year-old girl with allergies)

One mother contended that a significant benefit of this intervention was that they were able to converse with other parents in real time. She explained that people who participate in asynchronous Internet communication like blogging, wikis, and/or bulletin boards do not have direct interaction with others. Several parents indicated that talking to other parents clarified their understanding and sometimes introduced them to new issues and ideas. Moreover, immediate response to inquiries was perceived to be a significant advantage. Many parents who attended face-to-face groups noted that this online pilot support intervention had many of the same advantages. Parents were able to discuss issues that were relevant to them and benefit from real-time support from interpersonal interactions. Several parents said that local support groups became static because the same people were in attendance. They found that this online mode was stimulating because they could talk

with people in other provinces, who see different allergists or deal with different school systems.

We didn't have to go somewhere every week. It is better than a bulletin board because I got the feedback right away and it was more personable. It was like you were sitting down and actually talking to the group. You get all kinds of perspectives. I haven't participated in a bulletin board, but this I liked. (Mother of an 8-year-old girl with allergies)

Blogging, wikis, and bulletin boards are not real time. It's hard to get back and see the response. I think people would fade out of that. This way your answer is there right away, in real time. Sometimes you don't realize that things are bothering you. You start to talk and to other parents and you realize that yeah that is bubbling up. So it is interesting to have the input. (Mother of 8-year-old girl with allergies and asthma)

A few said they found the technology difficult or cumbersome; several said they missed other people's facial expressions and body language that are present in face-to-face conversations. One parent explained that because she had previously been accused of being "overreactive" about asthma and allergies or "overprotective" of her children, she felt particularly vulnerable without body language cues. Two other parents mentioned that they were reluctant to disclose personal anecdotes or information in case there was conflicting opinions about the seriousness of allergies and appropriate management.

Parents with significant experience did not think they required support or a support group on a regular basis. They said they would attend support sessions if new information was presented, or if information was personally relevant. They suggested that a series of six to eight support sessions, similar to these two pilot sessions would be ideal for parents of newly diagnosed children or at specific stages; when children started day care, began or changed schools, or transitioned to the teen years. A few parents said they would like online peer support group sessions periodically.

It would have been good to start out. Someone new [newly diagnosed with asthma and allergies], because when I started out, I was really worried, but it's been 8 years now, so we've done our adapting. (Mother of an 8-year-old daughter with allergies)

I would say when [son's name] was in the younger grades like I would say grades one to four. But issues relating to school in the younger

grades, I could really have used some support at that time so I don't really feel a need for that right now but I definitely felt very isolated and a lone woman and needing support a number of years ago. (Mother of a 9-year-old boy with allergies)

Many parents regarded a support network as the route to advocating for policies that would keep their children safe in schools and the community. One noted that her experience could benefit inexperienced parents as a peer supporter.

I felt like I could offer some advice because I had older children. I could help other people without as much experience. I think really it is for parents with new found allergies or asthma. It was much scarier when the kids were first diagnosed. (Mother of two girls, a 9-year-old and 16-year-old with asthma and allergies)

Discussion

The pilot intervention delivered to parents was feasible, safe, convenient, and accessible to any parent with a minimum of a computer, microphone, and Internet connection. Through the online discussion group, parents enjoyed the opportunity to give and receive support in real time with peers across Canada. Reported interventions typically focus on education only and consequently fail to address parents' psychosocial needs and the caregiving skills required to integrate asthma and allergy management into their daily lives (Braido et al., 2011).

Online peer support groups for parents of children with other chronic health conditions such as cancer have helped bridge the gap between information and knowledge (Gustafson et al, 2008). Parents appear to receive the same therapeutic benefits from Internet support as from face-to-face support. Many parents believe the quality of information increases if verified by parents of children with the condition (Drentea & Moren-Cross, 2005; Plantin & Daneback, 2009). Online education and support interventions can introduce parents to relationship-focused discussion groups that increase the person's chances to receive and reciprocate support (Han et al., 2010; Plantin & Daneback, 2009).

In our study, online support assured parents they were not alone. Researchers find that mothers are increasingly isolated from traditional support networks and speculate online peer support could reduce isolation (Drentea & Moren-Cross, 2005; Han & Belcher, 2001; Plantin & Daneback, 2009). Internet-based

interactive support can be used for a variety of chronic health conditions to augment formal health system support. However, prior to our pilot no online interactive peer support group designed to meet the needs of parents of children with asthma and allergies have been reported.

Most parents enjoyed the convenience of staying home and talking with a large group of parents. Parents indicated that they needed support at diagnosis and then ongoing support that they could access at different ages and stages of their child's life as required. Parents can find some information by searching various web sites, but this doesn't satisfy their ongoing support needs. Wikis or bulletin boards are not necessarily credible nor do they provide the support that relationships with other parents might provide (Han et al., 2010; Meric et al, 2002; Plantin & Daneback, 2009).

It is unlikely that a single intervention or one web application can meet all the educational and support needs of parents and children with asthma and allergies. Real life problems are seldom simple enough to be solved in a single medical visit, education session, or Internet support session (Cabana & Le, 2005; Wise et al., 2007). Asthma education has been criticized for being too short, not taking into account the seasonal nature of asthma and allergies, individual's unique and changing needs, or the need for people to establish and sustain supportive relationships (Boulet et al, 2008; Cabana & Le, 2005; Kastner et al., 2010; Klinnert & Robinson, 2008; LeMaigre et al., 2005). The response has been to intervene for longer periods (Cabana & Le, 2005; Flores et al., 2009; Krishna et al., 2003; LeMaigre et al., 2005; Wise et al., 2007). Longer interventions, however, may not improve participation or outcomes. The parents in the pilot intervention suggested that bursts of support at diagnosis or at times of transition may be more timely and effective.

Conclusion

Parents require guidance to interpret available information and translate it into knowledge relevant to their situation. Peer support relationships (Bryant-Stevens, Kurian, Guo, & Zhao, 2009) and programs delivered with Internet/computer technology (Vargas, Robles, Harris, & Radford, 2010) can positively influence asthma outcomes in disadvantaged populations. Strategies for parents to connect with other parents and information about local resources are urgently needed; however, it may not be necessary to create sophisticated disease-specific web sites. Although they said they wanted to talk to professionals, parents in this pilot study enjoyed talking to other parents using generic secure online meeting technology. People who access disease specific web sites typically spend more time interacting with peers on bulletin boards instead

of requesting professional support or information (Han et al., 2010). An online peer support group coled by a trained experienced parent and health professional, with duration and frequency guided by parents' preferences, could reduce parents' isolation and help them cope with caregiving for children with asthma and allergies.

This innovative online pilot intervention, informed by parents' preferences for accessible peer support groups, could be adapted and tested to guide programs and practice for families of children affected by asthma, allergies. Moreover, the unique support needs and intervention preferences of vulnerable parents (i.e., low-income, aboriginal parents) are being assessed to inform the design of accessible interventions using appropriate technology.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Funding for this project was generously provided by AllerGen NCE.

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