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MONOGRAPH

Beyond Nutrition Knowledge and Tools—What Do Pediatric Providers Really Need?

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Abstract
Nutrition counseling continues to be a concern for pediatric providers. This study aimed to extend the understanding of the perceptions of pediatric providers regarding nutrition care. Individual semi-structured qualitative interviews were conducted using a purposive sampling technique. Interviews were conducted in-person or via telephone, recorded, and transcribed. Seven themes emerged from the data and these can be used as a "how to" for medical educators. Based on the experiences and perspectives of the pediatric providers in our study, we are moving forward with the systematic development of a curriculum to improve nutrition care and counseling in pediatrics.

Keywords Residency education · Nutrition · Counseling · Obesity

Background

American Academy of Pediatrics (AAP) guidelines consistently emphasize the need for pediatric providers to help patients make lifestyle changes to prevent and treat disease [1, 2]. The link between nutrition and health is clear, and while physicians endorse this, they spend relatively little time giving nutritional advice to patients [3]. It is unclear whether the lack of time spent on nutrition counseling is due to time constraints or perhaps knowledge deficits, as many medical schools and residency programs do not address nutrition adequately in their curricula [4]. Providers also identify many barriers to effectively counseling their patients on nutrition, such as lack of reimbursement for the time they spend, a perceived lack of effectiveness of nutrition counseling because of lack of motivation, and cultural, social, and community factors related to the patients and families they care for [2, 5–7]. They also perceive their own knowledge gaps about nutrition and nutrition guidelines and resources, as well as uncertainty about the best approach to nutrition counseling, as additional barriers [2, 3, 8–10].

With the increasing prevalence of obesity [11], there is an increased need for providers to counsel patients and their families on nutrition-related topics as part of both prevention and treatment. This means that medical schools, residency programs, and other healthcare training programs must include curriculum that effectively prepares the providers of the future to counsel about nutrition. Pediatric residents have been reported as "ill prepared" to address the concerns, needs, and questions of parents, children, and adolescents in this area [12]. As one in three children in the United States are overweight or obese, a comprehensive approach to educating and developing pediatric providers' skills in nutrition counseling for the "real world" is needed [11]. Our study will inform the development of a curriculum for pediatric residents and pediatric providers already in practice in diverse, general pediatric settings with patients of varying cultural and socioeconomic statuses. Literature to date has not examined nutrition care within this context and as the majority of overweight and obese children are seen in such clinics we chose to start with this need assessment. The goal of the study is to understand the perspectives of practicing pediatric providers about nutrition counseling and use the findings to select curricular focus, content, and educational approaches that educational theory predicts would be effective in developing skills and improving the performance of practicing pediatric providers and pediatric

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residents. We chose a qualitative approach in the grounded theory tradition in order to hear the voices of pediatricians in practice and to gain a broad and deep perspective [13]. This paper reports our findings and discusses how they could be used to guide the development of an effective curriculum.

Methods

The Colorado Multiple Institutional Review Board reviewed and approved study protocols and instruments.

Sampling Strategy

A purposeful sampling technique was used to recruit providers from the Children's Hospital Colorado outpatient pediatric clinics and other local Denver/Boulder area pediatric clinics and practices. A recruitment flyer was emailed to relevant listservs and those interested in taking part contacted the principal investigator (PI). This targeted listserv reached a diverse sample of pediatric providers (MD, DO, PA, NP) targeting a variety of practice types and clinical settings (outpatient hospital clinic, urban/rural general pediatric offices, managed care, etc.) The patient population served by the providers was diverse as well, with various forms of healthcare insurance (private insurance, covered under government programs such as MEDICAID, self-pay, etc.) and socioeconomic and cultural backgrounds. This approach enabled us to sample for maximum diversity. The recruitment flyer was vague regarding the purpose of the study, including only the basic information, "recruiting providers…to understand experiences and perspectives of the nutrition care you provide." Sampling continued until the data reached saturation (i.e., themes repeated, no new themes emerged, and the researchers had a robust understanding of the themes).

Data Collection

This qualitative study used in-depth semi-structured interviews to gather data. Investigators developed an interview guide to facilitate open-ended discussion on the topic. Interview questions addressed the role the providers feel they play in nutrition care with their patients in their practice, their experience in counseling patients on nutrition topics, the feasibility of providing nutrition care, the competencies they feel are necessary for them to provide nutrition care, and the training they may need to learn the specific competencies discussed. Probes were used to clarify participant comments and gain depth on each topic. Sociodemographic data on the providers were collected via questionnaire.

One researcher (S.C.), trained to conduct qualitative interviews by the first author (J.K.), conducted all interviews by telephone. To ensure data credibility, the interviewer engaged in two pilot interviews (both pediatricians and data were included in final analysis) to ensure familiarity with the interview guide and utilization of appropriate probing techniques. The interviewer and first author debriefed after these two interviews and made minor adjustments to the interview guide and process. Interviews were anticipated to take 45–60 min. To ensure trustworthiness of the data, the interviewer summarized participants' statements at the end of the interview to clarify their understanding of the interview and then summarized their notes post-interview. In accordance with qualitative research best practices, the first author (J.K.) conducted an initial analysis of the interview data to determine when saturation had been reached; data collection then ended. Sample size for this qualitative study was decided based on the concept of "saturation," defined as the number of observations needed to reach the time when no new information emerges [14].

Analysis

All interviews were transcribed verbatim. The initial interviews were independently coded by two researchers. Both researchers completed training in qualitative research, including how to code transcripts, conducted by the first author (J.K.). Researchers were deemed qualified to independently code upon completion of the training and appropriately coding an example transcript. A thematic analysis approach was used [15]. The research questions, interview topics, and emergent categories of comments from the initial interviews formed the basis of the coding scheme. Two research assistants coded all transcripts; the two research assistants and the first author identified and reconciled disagreements through discussion. The coded interviews were uploaded to QSR NVivo10 software to condense and organize the study findings. Reports were produced from QSR NVivo 10, with all data organized by the codes. An independent reviewer (SJ) read all of the data in each code, wrote summaries of the content of each code, and identified illustrative quotes. Three investigators (JK, JH, and SJ) then discussed the relationships between the different codes, organized the codes into themes, and refined the summaries of the codes to create succinct summaries of each theme.

Results

Participants

A total of 23 interviews were completed (Table 1) and ranged in length from 17 to 91 min (mean of 45 min). Participants were 91% non-Hispanic white and 39% were male. Providers (21 physicians, 1 physician assistant, and 1 nurse practitioner) reported a mean of 14 (2–35) years of

Table 1 Socio-demographic characteristics of our sample

Demographic variables	
Number of participants (*n*)	23
Age (mean years, range)	44 (28–68)
Gender (% male)	39
Race (% Caucasian)	91
Ethnicity (% non-Hispanic)	100
Provider type (*n*)	20 MD
	1 DO
	1 Physician assistant
	1 Nurse practitioner
Practice setting (*n*)	9 Academic
	14 non-Academic
Graduation year (range)	1975–2011
Had nutrition course in medical training program (%)	59
Number of years practicing medicine (mean, range)	14 (2–35)
Time (minutes) spent on nutrition topics (range)	
Well child care visit	2–8
Sick visit	0–5
Follow-up visit	0–15

practice. Over half (59%) of providers reported not being offered a nutrition course during their medical education. The time providers reported they spent on nutrition topics during visits varied by provider for each visit type; well visits ranged from 2 to 8 min, sick visit 0–5 min, and follow-up 0–15 min. Averaged out, this meant that 2–5 min was spent discussing nutrition per visit.

Themes

Seven themes emerged from the data: 1) providers' roles and perspectives, 2) changing nutrition behavior, 3) support and resources, 4) parent/patient factors, 5) education, 6) health care system, and 7) societal barriers. These are summarized below.

Providers' Role and Perspectives

Providers identified their role as being able to effectively address nutritional concerns of patients and families, as well as addressing the provider's own concerns, and to educate families and patients about nutrition. One provider stated that "…making sure age appropriate nutrition or nutrients are being consumed by the kid" and "…just educating parents about appropriate nutrition for children at different stages of their life" were main components of a provider's role. Identifying normal versus at-risk children and how to address their nutritional needs was also identified as an important role as providers aim to "uniformly screen all patients to identify both kids who are at-risk and those who are doing well, to address nutrition with every child…to understand how to counsel and refer and monitor their ongoing nutritional status."

Providers' concerns focused on healthy weights, "…if they are overweight or underweight or you know [they] are trending one way or the other, I would bring that up." Several providers identified asking the patients and families what their daily diet habits are, with one provider stating, "[I] always ask about what the child is eating, what constitutes their regular diet on any given day." Sugar beverages, juice, and processed food are often discussed, with the provider giving suggestions on how to reduce those items in the family's diet. Obesity is frequently mentioned by providers as a concern, more than any other identified concern. As with parental concerns, provider concerns depend on the child's age, socioeconomic status, and culture, with providers remarking, "…it changes a lot with age," and "… depends on the backgrounds…sometimes it is cultural." Healthy lifestyle overall is addressed, including activity level, sleep habits, and dietary habits as providers state they "always ask about diet" and other "behavior(s)" including "sleep." These comments illustrate providers' concerns about healthy lifestyle habits and their routine discussions with their patients/families.

Respondents stressed the importance of providing resources and guidance to patients and their families, "encouraging and supporting healthy choices," as well as "…being experts in nutrition, giving guidance, having to stay up to date on the science and then having to translate that into [the] kid's developmental age as well as the parent's ability… It is all about communicating it. How we communicate it."

Experience was cited as a factor in promoting nutrition, as well provider confidence, which increased along with increased provider experience. Specifically, "as you grow as a clinician it becomes very obvious how to keep people healthy" and "…the more you do it, the better you get at it." Experience mentioned was personal (the provider's own parenting experience), as well as professional. Another contributing factor was the individual interests of the provider, such as breastfeeding or obesity. For example, some providers reported they are "interested in pediatric obesity so I probably spend more of my visit on weight and diet and exercise and healthy living than the average provider."

Changing Nutrition Behavior

Providers used aspects of motivational interviewing techniques to engage families/patients in healthy behavior changes and to help set realistic goals. Providers reported using motivational interviewing skills to, "…get a sense of where they're at and a sense with motivational interviewing…trying to help them think about what changes could they make…setting

goals." Building a relationship with the patient and family, as well as establishing trust, is named as a key factor in motivating families in moving towards a healthier lifestyle as "…it is about that foundational relationship that I think over time can influence folks." Open-ended questions are used to involve families in meaningful conversations to elicit useful information about the patient's nutritional habits; "…I usually ask questions about where there might be a space for change. Or is that something they perceive as a problem? Or have they tried anything differently? Would they like to ty anything different?" Other comments highlight the importance of getting buy-in from the patient and their family stating, "…I usually focus on trying to get kids involved," and "…putting the power in the patient's hands." Some providers noted the importance of the patient and family realizing that it is "…not something that we are doing to them, but it is something that we are all doing together." Finally, building a relationship with the families and establishing trust is important to successful nutritional counseling, with a respondent articulating, "I think the families who I've known for longer, it makes it a little bit easier if they trust me and know me already…they already have a good relationship with me, that way and they will be more receptive."

Providers used multiple tools to aid in nutritional counseling, frequently identifying growth charts as the most common tool used, as they provide a visual that illustrates the growth curve and help providers in addressing nutritional concerns. "I think for a lot of parents, being able to visually see the growth chart makes more of an impression than just talking about it." The Body Mass Index (BMI) was often named as a useful tool, with a respondent stating, "I usually start with the growth chart and BMI and then segue into diet and see if I can address their concerns based on the BMI data." Other tools mentioned were electronic medical records, motivational interviewing techniques, magazines such as *Chop Shop*, printed handouts, and visit summaries. Guidelines such as *5210*, *My Plate*, and web-based programs such as *Heart Smart* are often used by providers to promote healthy nutrition. Professional associations are cited as another important tool, which give providers access to journals, websites, and conferences.

For some providers, there is a lack of confidence that the information and resources that they share with patients and families will inspire change in habits, causing "a level of discomfort even in providing information, if they are not sure it is going to work." Providers also do not want to be perceived by their patients as "seemingly overbearing or judgmental," especially in regard to different cultures. Providers identify feeling unsure of how insistent they should be when addressing unhealthy eating behaviors, stating, "…maybe I should be more aggressive about treating obesity, or sort of more aggressive in counselling those kids, but it sometimes just doesn't feel right to me." Another provider questions "…am I blunt enough? Should I be more blunt?"

Support and Resources

Nurses and nutritionists/dieticians are cited most often as offering providers support in nutrition counseling, commenting, "…I rely on nutritionists a lot" and that "…the nurses will often go in and do a careful and more educated review in sort of what patients are eating and drinking. How much they are exercising. How much screen time they have? Those types of things." Collaboration with colleagues and specialists was also identified as important in promoting nutrition care, with comments such as "we lean on specialists." A nurse practitioner noted, "I always ask my physicians I work with. My physician colleagues in the office. I'll always ask them…the group I collaborate most with is probably my physician colleagues." Providers frequently refer patients to multidisciplinary clinics and weight management programs, such as the Lifestyle Medicine Clinic at Children's Hospital Colorado. Also, community resources such as the YMCA, neighborhood recreation centers, and The Woman, Infant, and Children (WIC) program are commonly suggested, although not as frequently. Finally, the creation of a supportive environment in the clinic helps promote nutrition care.

Parent/Patient Factors

Our study participants describe that nutrition concerns brought up by parents/patients depend on factors such as age, culture, and socioeconomic status. Questions from parents of newborns are likely to be specific to breastfeeding, formulas, and when to introduce solid foods. Picky eaters are a common concern for parents of toddlers. Adolescents tend to bring up concerns about being overweight. Parents "almost invariably, if there is a concern about growth or dietary habits, parents will bring it up." Overall, most parental concerns are weight- and growth-related, wanting to make sure their child is developing normally. "They are not eating enough. They are not growing enough. They are not big enough. They are too skinny." Parents ask, "is his weight too heavy," although only occasionally. Parents are more often concerned that their child is not eating enough. Parents also seek advice on vitamins, supplements, and food allergies, and ask for clarification on nutritional topics that they are exposed to through the media.

Motivation is identified by both parents and providers as a significant contributor to healthy nutrition. One provider notes, "I have a few patients I have had some success with and I mean it really has to do with their motivation levels." Parental influence is identified as key to implementing or impeding a healthy lifestyle. Interested and engaged parents, paired with the knowledge and desire to make changes, are recognized by providers as necessary to establish healthy nutrition habits, while the reverse (unmotivated parents who often deny there is a problem) is cited as a

challenge that providers face when counseling patients and families on nutrition. Family obesity and nutrition habits are identified as the most common challenge; "when a child is overweight, the whole family is overweight" and "…sometimes families just don't see that as a problem." Or "parents just aren't willing to acknowledge or accept that their kids are overweight, or that their diet could be contributing to it. I think parents themselves aren't willing to give up a lot of their habits."

Socioeconomic status and cultural practices were also recognized by providers as obstacles to a family establishing healthy eating and nutrition habits, with one provider commenting, "…a lot of the patients I take care of are so poor. It is just easier to go to McDonald's or whatever. It's just too hard to eat well" and "you are probably never going to fix that – the eating behaviors – until you fix some of the deeper social issues." There is also a cultural component. As one provider notes, "…we have a huge number of refugees and so trying to understand and also how to help them. Like some of the suggestions that we have about diet are very sort of Western based."

Education

A lack of formal education in nutrition through medical training is identified, with some providers citing little or no training during medical school and residency. Comments include, "…[I]t was so limited and so brief and not something I necessarily took away a lot from" and "close to zero…actual structured, you know, kind of curriculum or anything like that, no." If training in medical school had happened, it was insufficient, often comprised of a module nested within another topic, such as biochemistry, and focused on adult nutrition. Providers articulate not having the knowledge to treat obesity co-morbidities in children, such as hyperlipidemia and prediabetes. Training during residency had been informal, given during inpatient rounds, in clinic and grand rounds. In current training, they describe preceptors who are often not on the "same page," so "...students and residents can sometimes get mixed messages." Practitioners describe a gap in knowledge of trending nutritional topics, such as obesity, vitamins and supplements, alternative diets, what tests to order and how to follow up, and motivational interviewing techniques. A few providers have identified areas of interest in nutrition and created workshops or provided lectures in an effort to educate other providers; however, most providers are in the position of having to educate themselves. For example, speaking on self-directed learning, "…a lot of the motivational interviewing stuff I learned myself." Several providers express feeling inadequate in their knowledge of specific topics, which leads to self-directed learning as well.

Also mentioned as a barrier is the ability to decipher conflicting research evidence and stay up to date on nutritional topics, with one provider stating "Some of the…recommendations…change pretty frequently…I think just more didactics would be helpful." While most providers have a "superficial understanding" of nutritional topics, there is a need for more in-depth, practical training specific to pediatric nutritional needs.

Health Care System

Respondents identify lack of adequate time and competing priorities that need to be addressed during the patient visit as the largest system barrier to nutritional counseling. Respondents comment, "…sometimes there is just other things that are more pressing…" and "…I am pulled in 20 different directions…" There are "…always competing interests…nutrition just being one among many." There is frustration with the referral and follow-up processes which are also cited as system barriers, "Because most of everything we refer to, has really long wait lists..." and "…it is difficult to get any kind of follow up. You have to go and search it out…there wasn't good communication…" Lack of resources to give to patients and families is also identified as a problem, with one provider responding, "…[it's] pretty limited in terms of what we have to offer…." This includes the lack of a dedicated nutritionist in the practices. Insufficient collaboration and communication between professionals is also mentioned ("…collaboration is somewhat minimal"), as well as a lack of continuity ("…there aren't a lot of kids that I see on a regular basis that I can really follow through when we make some goals and plans and try to determine how well they are doing.").

Societal Barriers

The influence of the food industry and their special interest groups on policy are often obstacles to promoting a healthy lifestyle and good nutrition habits. Media and advertising aimed at children is an obstacle that providers encounter. "…[T]hey get bombarded within the media…that can provide conflicting information about what the child should eat." It is "me against the world of billboards and T.V adds" as "…there is a lot of misinformation about nutrition …we have less impact, [be]cause they've already made up their mind." They face "[t]he whole wall of industry that is out there." Providers are distressed by schools that are "serving garbage or the store right next to my office [that] is shelling out bad food, …it is cheaper and more accessible and all that, within the community…this is what we're up against." Providers feel helpless in combatting "[t]he power of advertising in the junk food industry and what is next to the checkout counter in every store."

Discussion

Our qualitative study that aimed to understand nutrition counseling in outpatient clinical settings observed seven common themes among the perspectives of pediatric providers. These included; 1) providers' roles and perspectives, 2) changing nutrition behavior, 3) support and resources, 4) parent/patient factors, 5) education, 6) health care system, and 7) societal barriers. As the American family is becoming more diverse, the providers in our study recognize the importance of maintaining a patient-centered approach and providing quality care that considers the socio-cultural background of their patients. This further supports the well-recognized and ongoing efforts to train pediatric residents in providing culturally appropriate care [16, 17].

We found, as have others, that our study participants believe in the importance of nutrition counseling in their clinics, with some feeling more or less confident in their ability to identify nutrition-related problems [5, 6, 18, 19]. Our findings relate to barriers to providing nutrition counseling, which align with those from these older studies. However, the tone of the narrative from our group of pediatricians was more positive and hopeful than that reported in a qualitative study by Leverence et al. in 2007, who studied primary care clinicians in several disciplines (family medicine, pediatrics, and internal medicine) who were either physicians, physicians assistants or nurse practitioners [20]. As in our study, they identified resources, patient motivation, cultural, community, and family context as important. However, these practitioners generally viewed their efforts related to nutrition as ineffective and sometimes wondered why they bothered to spend time on counseling. The authors also discussed the lack of fit between the recommendations of national obesity guidelines and the experiences of primary care clinicians and observed that the US national guidelines in 2007 appear to be impractical and not applicable to the clinicians in their study.

Eleven years later, guidelines often mention motivating patients and recommend using developmental approaches and resources that consider culture and socioeconomic factors when approaching counseling, but still give no practical information about how to acquire the ability to do these tasks and translate that into performance. Screening, identification, and giving patients and parents specific nutrition related knowledge and guidance is emphasized, but suggestions about how to accomplish these tasks in the context of today's practice environments are not [21].

Our study participants speak of some successes in nutrition counseling, the value of experience and relationships with patients, and uncertainty about communication style. Their comments about education show a willingness to learn and an inclination towards self-directed learning and peer education. However, they also describe barriers and factors beyond their control that make addressing nutrition and lifestyle changes in clinical practice challenging.

Explicitly addressing these challenges and supporting the development of nutrition counseling "resiliency"—an ongoing commitment to address nutrition adequately at every visit despite the challenges—appears to be an essential component to include in a curriculum for pediatric residents who will practice in this environment. One of the major motivational theories in education, Self-Determination Theory (SDT) [21], offers a relevant and important perspective for curriculum development [22, 23]. SDT describes three innate human needs: autonomy, competence, and relatedness. These needs must be met in order for an individual to be intrinsically motivated to engage, perform, or behave in a certain way. *Autonomy* refers to having choices about how to spend time and effort, which means being able to focus on what is relevant, important, and useful for the individual. *Competence* refers to the individual's perception of confidence and effectiveness—which is different from and beyond the perception of their skill or ability. *Relatedness* is a psychological construct of acceptance and value by other individuals, groups or communities. Therefore, if we build a curriculum around these three needs it must be as follows: 1. Tailored to the individual practitioner's nutritional counseling needs and his/her context (autonomy); 2. Focused on reframing what success looks like beyond building nutritional counseling skills and abilities and specifically address barriers individual practitioners' experience in practice (competence); and 3. Structured to develop support networks to help maintain a positive orientation to nutritional counseling by partnering with like-minded colleagues, health practice administrators, health systems, patients, communities, and society (relatedness).

As we develop a curriculum for pediatric residents who will learn and work in the environment described by the providers in our study, we plan to use an educational approach that will include three key elements. First, we will use a practice-based/work-based learning model that we have used successfully in other contexts [22]. This model is grounded in deliberate practice, an approach that uses reflection, direct observation and coaching, and supports both autonomy and competence [23]. Second, materials that provide nutrition counseling knowledge/content, practical approaches, strategies, and tools will be assembled in an easy-to-access, mobile ready, electronic platform that we have already developed for our departmental education needs. This technology supports customizable and just-in-time learning which supports autonomy and competence. Finally, learning over time in mixed groups of residents, practicing clinicians, and nutrition experts using our ECHO (Extension for Community Healthcare Outcomes) program technology will support the third element of SDT, relatedness.

Autonomy, competence, and relatedness, the three needs that are part of SDT, are also directly addressed and used in motivational interviewing (MI).[26] Many of our study participants mentioned MI as a tool they use with patients when they do nutritional counseling and the curriculum will highlight the parallels between the autonomy, competence and relatedness their patients need to make changes and the autonomy, competence and relatedness they need as providers to support change in their patients and families.

We plan to provide the opportunity to share stories about success and failure in nutrition counseling which, combined with our other strategies based in SDT, should build a community of providers committed to nutrition counseling and support the development and maintenance of both nutrition counseling skills and nutrition counseling resiliency.

Study Limitations

We recruited providers from multiple locations in the city and county of Denver, and although we believe that the providers served a diverse group of patient representative of the population as a whole, we did not collect data to confirm that. Our sample of pediatric providers was predominately Caucasian and female, which may have limited the perspectives we heard. We also had participants who were trained at various points over more than a 40-year timespan; however, they were all currently in practice and experiencing the same healthcare environment. We therefore think that this may be a strength of our study, as despite the large educational timespan, we had a collation of themes that likely are transferable to a wide array of general pediatric providers.

We did not sample for practice type, so it is possible that providers' responses are influenced by their practice environment related to time available to see patients and the amount of support available when seeing patients. Data regarding the time providers spent on nutrition topics during the clinical visits was based on self-report and is essentially their perception of how much time they spend. No direct observation was conducted to verify their accuracy, which is a limitation in our study.

Conclusion

Current nutrition guidelines appear not to match what actually occurs in practice regarding the nutrition counseling communicated to patients in pediatric, outpatient clinical settings. While optimistic about their potential contribution, pediatric providers in our sample reported being easily frustrated with providing nutrition care and may devote less time to counseling because of the barriers they perceive to eliciting a favorable change in nutrition-related behaviors. Future educational efforts should address these issues explicitly. Using an SDT framework will enable the focus of educational efforts to include individual provider needs by building relevant skills and relationships with nutrition experts. Based on the experiences and perspectives of the pediatric providers in our study, we plan to move forward with the systematic development of a curriculum to improve nutrition care and counseling in pediatrics. The concept of developing nutrition counseling "resiliency" by addressing the barriers and challenges that our study participants describe, as well as providing core knowledge content, should improve performance and commitment to nutrition care in pediatric practice.

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References

1. Klein JD, Sesselberg TS, Johnson MS, O'Connor KG, Cook S, Coon M, et al. Adoption of body mass index guidelines for screening and counseling in pediatric practice. Pediatrics. 2010;125(2): 265–72.
2. Spivack JG, Swietlik M, Alessandrini E, Faith MS. Primary care providers' knowledge, practices, and perceived barriers to the treatment and prevention of childhood obesity. Obesity. 2010;18(7): 1341–7.
3. Eaton CB, Goodwin MA, Stange KC. Direct observation of nutrition counseling in community family practice. Am J Prev Med. 2002;23(3):174–9.
4. Kelly CJ. Invigorating the context and content of nutrition in medical education. Acad Med. 2011;86(11):1340.
5. Ball L. Nutrition care in general practice - are we waiting for patients to ask? Aust Fam Physician. 2011;40(7):463.
6. Ball LE, Hughes RM, Leveritt MD. Nutrition in general practice: role and workforce preparation expectations of medical educators. Aust J Prim Health. 2010;16(4):304–10.
7. Pearson TA, Stone EJ, Grundy SM, McBride PE, Van Horn L, Tobin BW. Translation of nutritional sciences into medical education: the nutrition academic award program. Am J Clin Nutr. 2001;74(2):164–70.
8. Jaen CR, Stange KC, Nutting PA. Competing demands of primary care: a model for the delivery of clinical preventive services. J Fam Pract. 1994;38(2):166–71.
9. Kris-Etherton PM, Pratt CA, Saltzman E, Van Horn L. Introduction to nutrition education in training medical and other health care professionals. Am J Clin Nutr. 2014;99(5 Suppl):1151s–2s.
10. Stange KC. One size doesn't fit all. Multimethod research yields new insights into interventions to increase prevention in family practice. J Fam Pract. 1996;43(4):358–60.
11. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011-2012. JAMA. 2014;311(8):806–14.

12. Lenders CM, Deen DD, Bistrian B, Edwards MS, Seidner DL, McMahon MM, et al. Residency and specialties training in nutrition: a call for action. Am J Clin Nutr. 2014;99(5 Suppl):1174s–83s.
13. Corbin J, Strauss A. Basics of qualitative research: techniqes and procedures for developing grounded theory. 4th ed. Los Angeles: Sage. 2015.
14. Guest G, Bunce A, Johnson L. How many interviews are enough?: an experiment with data saturation and variability. Field Methods. 2006;18(1):59–82.
15. V B, V C. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77–101.
16. Cardinal LJ, Maldonado M, Fried ED. A national survey to evaluate graduate medical education in disparities and limited English proficiency: a report from the AAIM Diversity and Inclusion Committee. Am J Med. 2016;129(1):117–25.
17. Seeleman C, Hermans J, Lamkaddem M, Suurmond J, Stronks K, Essink-Bot ML. A students' survey of cultural competence as a basis for identifying gaps in the medical curriculum. BMC Med Educ. 2014;14:216.
18. Adams KM, Kohlmeier M, Powell M, Zeisel SH. Nutrition in medicine: nutrition education for medical students and residents. Nutr Clin Pract. 2010;25(5):471–80.
19. Castillo M, Feinstein R, Tsang J, Fisher M. Basic nutrition knowledge of recent medical graduates entering a pediatric residency program. Int J Adolesc Med Health. 2016;28(4):357–61.
20. Leverence RR, Williams RL, Sussman A, Crabtree BF. Obesity counseling and guidelines in primary care: a qualitative study. Am J Prev Med. 2007;32(4):334–9.
21. Daniels SR, Hassink SG. The role of the pediatrician in primary prevention of obesity. Pediatrics. 2015;136(1):e275–92.
22. Lane JL, Soep JB, Hanson JL. Narrative derived from medical student reflection in action: lessons learned and implications for assessment. Acad Pediatr. 2018;18(3):354–6.
23. Ericsson KA. Acquisition and maintenance of medical expertise: a perspective from the expert-performance approach with deliberate practice. Acad Med. 2015;90(11):1471–86.