International Journal of Nutrition and Food Sciences
2025, Vol. 14, No. 5, pp. 328-341
https://doi.org/10.11648/j.ijnfs.20251405.16

Research Article

Food Literacy and Caregivers' Perceptions Related to Healthy Eating and Salt/Sodium Reduction in Children and Adolescents: A Qualitative Study in Costa Rica

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Abstract

Background: In the home environment, the dietary caregiver, usually the mother, is responsible for food planning, purchasing, and preparation processes and, therefore, has a significant influence on the family diet. The guardians' food literacy has been recognized as a set of interrelated food skills and knowledge to support healthy dietary outcomes, but few studies have deepened into parental perceptions of these household processes. *Objective:* To identify parental perceptions and food literacy regarding food planning, purchasing, and preparation at home that promote and/or hinder healthy consumption and salt/sodium reduction in children and adolescents. *Method:* A qualitative focus group study was conducted with the parents of children and adolescents who reported being primarily responsible for food planning, purchasing, and preparation at home. Forty mothers and four fathers with at least one son or daughter aged 7 to 15 years were asked to participate in at least two of eight focus groups held in classrooms at primary schools (2) and high schools (2) in Costa Rica. Discussion guides were developed with topics and subtopics within the framework of decision/action domains related to the planning, purchasing, and preparation of healthy foods and perceived barriers for implementing eating behaviors that lead to a healthy, low-salt/low-sodium diet. The focus groups were audio-recorded and transcribed. Thematic analysis was used to analyze the transcripts, and descriptive statistics were applied to systematize the sociodemographic characteristics of the participating parents. *Results:* Two main categories of parenting strategies were identified: "Creativity to Save Money" (which includes taking advantage of bargains, budget planning, food recycling, and proper storage) and "Creativity to eat healthy" (which includes using household appliances, selecting simple recipes, participatory meal planning, and encouraging children's collaboration in the kitchen). However, several barriers to the adoption of healthy eating habits were recognized, such as time constraints, difficulty meeting the diverse dietary needs of household members, exposure to unhealthy foods, and the high cost of foods considered healthy. *Conclusions:* Household eating practices are the result of a complex interaction between economic, temporal, cultural, and social factors. Qualitative findings indicated that mothers need strategies for time management, meeting multiple family needs, managing the market exposure of food on offer, and managing food resources, rather than solely receiving education (food literacy). These findings can support future behavior-based interventions to improve family diet quality, with an emphasis on salt/sodium reduction.

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Received: 21 May 2025; **Accepted:** 12 June 2025; **Published:** 23 September 2025

Keywords

Focus Groups, Eating Behaviors, Healthy Diet, Salt/Sodium, Dietary Agents, Food Literacy, Qualitative Research

1. Introduction

The World Health Organization (WHO) and the Pan American Health Organization (PAHO) provide technical assistance and cooperation to Member States in healthy nutrition, promoting strategies such as breastfeeding, complementary feeding, front-of-package food labeling, obesity prevention, salt reduction, and elimination of trans fatty acids [1, 2]. These initiatives are based on scientific evidence demonstrating the relationship between diet quality and the risk of chronic noncommunicable diseases [3].

Despite guidelines issued by PAHO, poor dietary quality has been documented in Costa Rica among adults, adolescents, and children. This phenomenon is characterized by insufficient consumption of foods rich in essential nutrients, such as fruits, vegetables, and whole grains, along with excessive intake of ultra-processed foods high in sodium, sugars, and saturated fats [4]. Improving dietary quality is critical for preventing chronic diseases, and the home food environment plays a key role in changing dietary habits [5].

From a socioecological perspective, it is recognized that environments play a determining role in shaping individual eating behavior [6]. In this sense, the home constitutes an important space for the development of dietary preferences and the establishment of healthy eating habits, especially in children and adolescents. In most households, the figure of the "diet guardian" is identified, who assumes the responsibility of planning, acquiring and preparing food for the family, significantly influencing the perception and selection of foods considered healthy [7].

Historically, women have played this role as caregivers of the diet. However, with the increase in female participation in the labor market, men have begun to become involved in planning and preparing meals at home [8]. Despite this transition, mothers continue to be the primary responsible for family nutrition, and their influence on healthy food consumption has been widely documented [9]. However, several barriers have been identified that affect food planning, acquisition, and preparation, impacting the quality of the family diet [10].

Identifying these barriers is critical for designing effective intervention strategies. Furthermore, it is essential to understand the role of food literacy as a resource that enables dietary caregivers to overcome these challenges [11]. Food literacy has emerged as a key concept in the field of public health, describing the set of knowledge, skills, and abilities necessary to comply with nutritional recommendations and promote healthy eating [12].

From an integrative perspective, food literacy not only involves nutritional knowledge but also the development of skills and strategies that enable informed decision-making within the context of available resources. This approach has been conceptualized as a framework that empowers individuals, households, and communities to protect dietary quality over time, promoting dietary resilience [13]. Within this framework, this research aims to identify parental perceptions and food literacy regarding food planning, selection, acquisition, and preparation at home that promote and/or hinder healthy consumption and salt/sodium reduction in children and adolescents.

2. Materials and Methods

The study sample consisted of 44 mothers and four fathers, each of whom had at least one son or daughter between the ages of 7 and 15. Parents were invited to participate in at least two of eight focus groups held in classrooms at four educational centers in Costa Rica, which included two primary schools and two high schools. This sample design allows a diverse representation of parents' experiences in different educational contexts, which enhances the validity of the findings [14].

This qualitative study was conducted through focus groups to explore the perceptions and dietary practices of adult parents of children and adolescents. These parents were selected for their essential role as responsible for planning, purchasing, and preparing food in the home, which places them in a key position to influence their children's eating habits.

To facilitate focus group debates, discussion guides were developed that focused on the perceptions of the so-called "diet caregivers" and their level of food literacy. These guides addressed fundamental aspects related to food planning, purchasing, and preparation that promote healthy eating at home. In addition, questions were included that explored the barriers these caregivers perceived in adopting a low-salt and low-sodium diet. This methodological approach is aligned with the recommendations of Barbour (2018) [15], who emphasizes the importance of structuring discussion guides to maximize the collection of rich and relevant information in the context of qualitative research.

The sessions were held in an environment that favors dialogue, which fostered meaningful interaction among participants. Focus group sessions were audio-recorded and subsequently transcribed for analysis. A thematic analysis approach, as proposed by Braun and Clarke (2006) [16], was used, which allowed for the identification and extraction of relevant patterns and themes that emerged from the discussions. This

method is widely recognized in qualitative research for its ability to generate a deep understanding of participants lived experiences. This analysis was complemented with descriptive statistics that systematized the sociodemographic characteristics of the parents, providing additional context for the findings. This methodological approach permitted a thorough exploration of parents' perceptions and dietary practices, thus offering a comprehensive view of the factors that influence their children's nutrition and highlighting the importance of dietary education in the family environment [17].

All procedures were conducted in accordance with the ethical standards outlined in the Declaration of Helsinki of 1975 and its subsequent amendments (2013). Written informed consent was obtained from the parents or legal guardians of the children and adolescents. The study received ethical approval from the Scientific Ethics Committee of INCIENSA (regular session No. 27, held on October 19, 2010; reference code IC-2010-05).

3. Results

3.1. Characteristics of the Study Population

Demographic analysis of the 44 parents (diet caregivers) reveals that they are predominantly “mestizos” (mixed race) (90.1%), with an average age of 37.8 ± 6.7 years. Most participants identified themselves as Hispanic or Latin (100%), Costa Rican nationality (66%), and catholic religion (59.1%). The most frequent marital status is married (54.6%). Regarding employment, 43.2% of the caregivers work full-time, and the most common monthly household income is between $750 and $1,999 (36.4%). The nuclear family structure predominates (45.5%), with an average of 5.8 ± 3.7 people per household. Children had an average age of 11.5 ± 2.6 years (Table 1).

Table 1. *Sociodemographic characteristics of parents participating in the study (n=44).*

Characteristic	n (%)
Age (complete years)	
Mean ± SD	37.8 ± 6.7
Range	24.0 - 49.0
Origin	
Asian	2 (4.5)
African	2 (4.5)
Mixed Race (mestizo)	40 (90.1)
Ethnicity	
Hispanic or Latin	44 (100)
Marital status	
Married	24 (54.6)
Free union	14 (31.8)
Divorced	6 (13.6)
Religion	
Catholic	26 (59.1)
Evangelical	12 (27.3)
Mormon	2 (4.5)
None	4 (9.1)
Nationality	
Costa Rican	29 (66.0)
Nicaraguan	6 (13.6)
Colombian	3 (6.8)
Honduran	2 (4.5)

Characteristic	n (%)
Salvadoran	2 (4.5)
Italian	2 (4.5)
Complete university	13 (29.5%)
Technical level or incomplete university	17 (38.7%)
Complete highschool	8 (18.2%)
Incomplete highschool	4 (9.1%)
Complete school	2 (4.5%)
Employment	
Full time	19 (43.2)
Half time	15 (34.1)
Less than half time	9 (20.4)
None or sporadic	1 (2.3)
Monthly income (family) ($) *	
≥ 4000	6 (13.6)
3999 - 2000	8 (18.2)
1999 - 750	16 (36.4)
749 - 500	10 (22.7)
< 500	4 (9.1)
Type of family structure	
Nuclear	20 (45.5)
Nuclear with stepfather	10 (22.7)
Extended	8 (18.2)
Matriarchal (matrifocal)	6 (13.6)
Number of people living in the household	
Mean ± SD	5.8 ± 3.7
Age of son/daughter (years)	
Mean ± SD	11.5 ± 2.6
Range	7 - 15

* 500 Costa Rican colones are equivalent to one US dollar; SD: standard deviation; $: US dollars; n = number of participants

3.2. Parents' Perceptions and Food Literacy Related to Food Planning, Purchasing, and Preparation That Facilitate Healthy Eating at Home

Two broad categories were identified: "Creativity to save money" and "Time and creativity to eat healthy," each subdivided into specific strategies supported by representative quotes from participants. Below are the topics and subtopics derived from the strategies implemented by parents, mediated by their food literacy, regarding food planning, purchasing, and preparation, aimed at optimizing resources and promoting healthy family eating, primarily aimed at children and adolescents in the home. Table 2 presents the quotes and analyses related to the subtopics derived from the "Creativity to save money" category, and Table 3 presents the quotes and analyses related to the subtopics in the "Time and creativity to eat healthy" category.

Table 2. *Representative quotes related to the "creativity to save money" category from diet caregivers.*

Subtopic	Representative quotes
1. Marketing/Deals Parents report taking advantage of discounts or deals on basic products such as meat and dairy products. Purchasing in large quantities for freezing is a common practice, although it is limited for perishable products such as fruits and vegetables. The importance of evaluating the quality of products purchased in informal markets is mentioned.	"If, for example, thighs, breasts, or chicken are on sale, we buy them, and so with the steak. Everything is meat, although pork is cheaper, but it's not as good. So? What if there's no sale on meat? Then we also buy pork or ground beef meat. When I get home, I wash the chicken, marinate the thighs, or cut them into pieces and freeze them in bags." "I don't buy in big quantities, but sometimes you must buy more to take advantage of sales. I do freeze it and store it, then when I need it, I already have it. That's the case with meat because not every food is suitable for freezing, it goes bad. Let's say fruit, or sometimes lettuce too. So, we only eat it fresh, and when there are sales, yes, but not too much because it spoils." "Yes, fruit, as she says, no, no, why not… you should eat it quickly, and if it's gone, then wait for the market, but at the market they don't always have good, good, not good, and sometimes the cheese has flies. Another thing, frozen fruit, they only sell it in ice cream, and I make it with milk… so you also must look for milk in packs of three on sale. We only have milk in our morning coffee because it's also expensive."
2. Budget Participants emphasize weekly menu planning based on deals or promotions and available funds. They emphasize the need to maintain strict budget control, avoid impulsive purchases, and ensure the best use of purchased products.	"I plan what we're going to eat during the week... So, I start with the flyers, the advertisements, let's say, that they give out in supermarkets... And if there's something on sale, then I immediately add it to the list for some of the meals of the week, and sometimes even for longer." "...We always try to adhere to the budget, because it's limited, that's the way it is. For example, if I bought something for dinner tonight, it doesn't necessarily have to be for that exact night, but it does have to be for this week, because I'm not going to buy something different because I bought it for this week." "...I'm almost the same because we've already set aside money for such and such food; but I might leave it for next week, because it's reused, but, more likely, this way we save, but we don't buy anything new; until we finish what we had; but if there's any leftover, we use it."
3. New recipes with the same foods To avoid food monotony and maximize the use of available ingredients, parents employ variations in food preparation. Strategies such as reusing leftovers to create new recipes and diversifying cooking methods are mentioned.	"At my house, they're picky eaters. They don't like to repeat, if it's the same dish. So, I stir in the leftover shredded chicken and add corn and rice, and now they can eat that rice with chicken." "At my house, it's almost always the same foods, but in different forms. First, let's say steak or salami, or beans; then I'll take rice and mix it with finely chopped salami, or I'll have salami sandwiches or pâté or beans, but pre-ground, not whole." "At my house, we all eat pretty much the same. But there are days when we want warmer things, like soup, but if not, we always eat rice, fried plantains, and not so much salad, as well as with lots of other things—like tomatoes, or tiny tomatoes with cabbage and something fresh, and that's it."
4. Freezer storage Using the freezer is a key strategy for preserving foods purchased on sale and prepared in large quantities. The importance of having sufficient space to store frozen products without compromising their quality is highlighted.	"At home, we have two refrigerators: ours and my sister-in-law's. We use both, half and half, and the freezers too. It's better to have frozen food and defrost and prepare it quickly. Everything is close at hand." "The freezer is a lifesaver. The refrigerator has fresh food, or something similar, but everything that can be frozen goes on top, so it doesn't spoil." "I'm stocking up on those breaded chicken pieces that are almost always on sale; I freeze them, along with the meat or a sauce, meat broth, and even soup."
5. Make an inventory/list and sort out the children's demands Inventory control is a strategy used to avoid unnecessary purchases and ensure efficient consumption of available food. The use of shopping lists and negotiation with children to limit the purchase of unnecessary products or products influenced by children's marketing has been reported.	"I check out everything in the refrigerator, the drawers, the shelves,..., and I see if I have this, I don't have that, or I'm almost out. Then, with that, I make a list of what needs to be bought, but not necessarily everything, just what I need." "We do the same; we buy what's out of stock and what we'll need during the two weeks. Definitely cookies for the kids', snacks and other everyday items, but only if I need them, because I can't buy everything." "We keep a list on the refrigerator; it's all scratched up, but it works. They (referring to their children at school and college) also put things they want us to buy for them, but I tell them, let's see, because we can't buy everything. They put some little packages they haven't even tried, and then they don't like it, and it goes to waste. Just because they saw a friend with it, they want to try it, but no, I don't give them everything."

Table 3. *Representative quotes related to the "time and creativity to eat healthy" category from diet caregivers.*

Subtopic	Representative quotes
1. Household appliances The use of devices such as air fryers, slow cookers, and pressure cookers is reported as a strategy to reduce fat use in cooking, minimize preparation time, and improve food preservation.	"We don't want fat, let's say, because of our figure and our heart, right? We use the air fryer to make fried foods, but what about flour? Empanadas for coffee, and also tacos, tortilla wraps with cheese or meat. We also use large pots to cook a lot of beans and store them for the whole week, and sometimes for the month." "Yes, it's better to cook once or twice a week, with plenty of beans, the rice that's a must, and meat, if possible, for soup or ground for cakes. I look for Teflon-coated pots, so the food doesn't stick because they use less butter." "It can also be a pressure cooker, which is super-fast, or a slow cooker, which can last for hours, but doesn't stick, and uses very little oil."
2. Home delivery While some parents use home delivery services for non-perishable items, there is concern about the quality of fresh products purchased this way. Occasional fast-food consumption is reported as a practical, but expensive, option.	"I come home from work and stop by the supermarket, but what's the matter? I can't carry everything. If someone buys more than 25 or 30 thousand colones, then, ma'am, they tell me, if you want, call and we'll bring it to your house. Yes, sometimes I order, I call them to bring it to my house and that way, well, I don't get so tired, but I have to make the bill go up to 30 thousand colones." "Home delivery is limited to groceries and detergents and all that. Sometimes we do buy pizza, Chinese food, mostly pizza, on Sundays when we're almost all there, and some on Fridays too. Of course, it's great that way, having food delivered to your house and all that, but it does cost more." "I'm happy to have it delivered at the door, but it's not the same if I choose. Sometimes I get corn without kernels, or potatoes with brown bits, so the salad is left over for when I go to the supermarket, or if my in-laws come by the market, they buy me some, but it's still not the same as choosing one."
3. Simple and quick recipes Parents prefer recipes with few ingredients and quick preparation due to time constraints. They mention a preference for basic foods and simple combinations that allow for quick meal preparation.	"Like she said, the ones with three ingredients and things like that. It's because it's a simple recipe and, above all, quick to make." "Sometimes we have foods in the refrigerator that we always eat or that go with it, for example, potatoes or macaroni with margarine, rice is always there, and grated cheese to add to macaroni or other foods, so we can put together a quick dish, since we don't have much time." "Okay, so sometimes I choose one or two new recipes to try, but usually, they're very similar to the quick recipes, because that way, I just buy the basics, and I'm pretty good at putting together and making meals quickly..."
4. Meal Selection/Planning Some participants involve children in planning the weekly menu to reduce waste and encourage their participation in family meals. The importance of considering children's preferences when selecting foods is mentioned.	"With the children, we discuss the week's schedule, not just snacks, but also meals, and so they also help to make the menu." "Look, sometimes it depends on the children, what they want to eat today, what they want in the morning." "I'd rather ask, what do you want to eat so there's no waste and just buy what it is needed." "When I go shopping, I ask the kids if there's any particular food they'd like, and then I check the refrigerator to see what I have, what I need, and then I go and buy it."
5. Meal preparation Children's participation in the kitchen is cited as a strategy to foster their interest in healthy eating. Age-appropriate tasks are reported, ranging from washing ingredients to the supervised use of appliances.	"I think the kids are there to help prepare some of the meals; they're motivated to try new things, curious to see how they turned out." "My youngest son, who's eight, likes to join me in the kitchen. If I'm making something with potatoes, he likes to wash them, for example. I don't let him cut them or cook or anything, but I do let him help." "My seven-year-old daughter is just starting to learn how to use the microwave because she's learning numbers, the clock, and then I tell her, 'Make the rice cook for 5 more minutes.'"

3.3. Barriers Perceived by Diet Caregivers and Their Food Literacy Related to Food Planning, Purchasing, and Preparation to Implement Eating Behaviors Associated with Food Planning, Purchasing, and Preparation That Lead to a Healthy Low-salt/Low-sodium Diet at Home

Three broad categories were identified as barriers: “Limited time,” “Cooking for multiple needs, tastes, preferences, and cultural influences,” and “Exposure to food, deals during shopping, and budget,” each with specific subtopics supported by representative quotes (Table 4).

Table 4. *Representative quotes related to barriers perceived by diet caregivers related to planning, purchasing and preparing healthy foods.*

Issue. Limited time	
Subtopic	**Representative quotes**
Preparing complicated or long recipes Parents point out that the preparation time for some recipes is an obstacle, leading them to choose quicker and easier meals. They also find the post-preparation cleanup process to be another significant obstacle.	“I think it's time. Sometimes you find a meal that looks good, like on YouTube or in a cookbook, and then you see the preparation time and think, 'I don't have that much time to sit down and prepare it.'” “The cleaning part too... sometimes, that will be an impediment to even doing something because I'll be thinking about how long it will take me to clean, so let's do something quick and easy...” “For me, the most important thing is… I'd say, time, because we're busy. We're running around trying to find time to do everything, and in between all of that, we also must find time to quickly prepare meals and even eat.”
Children's activities Children's extracurricular activity schedules limit their time to prepare meals. This encourages the consumption of leftovers or fast food that can be easily transported.	“My kids' schedules. I mean, if they have karate or soccer. It depends on their schedules... so, okay, we get there, and now there are the leftovers in the refrigerator, and we eat that with something else, and that's it.” “There are few nights when we're fully booked at home, especially Tuesdays, Thursdays, and weekends... so I try to always have something for them to get ready quickly and also take with them during the week, because they don't have time either.” “The more activities children have, that’s where your time goes.”
Work schedule Long work hours reduce the time available for cooking. Some parents mention that they buy prepared meals when they get home late or when they've had a particularly busy day.	"I get off work late, so that's a hindrance. Lately, we've only been eating out." “The biggest problem I have is... because I leave at 7:00 pm. So, by the time I walk in the door, it's almost 8:00 pm. And I don't like the fact that we're eating so late, but I have no choice.” “Sometimes it just comes down to how my day went. If I had a lot of meetings or decisions to make, it's pizza night. We'll watch TV and everyone will be happy. But if everything's going well, I can take some time to try a new recipe or make those things.”
Issue. Cooking for multiple needs, tastes, preferences, and cultural influences	
Subtopic	Representative quotes
Children's demands Children's dietary selectivity represents a significant barrier. Some parents try to persuade their children to eat healthier foods, while others give in to their preferences by offering fast food and ultra-processed foods.	"Sometimes I call home and tell them, 'Get some chicken or ground beef or something like that.' Then they start, 'Is that what we're going to eat? Here, there, and chicken again, and so on?' Then I tell the oldest, who's 14, 'Hey, wasn't it that you wanted to eat protein for your muscles?' And that's how I convince them because he lifts weights.” “My son, who's in fourth grade, is very demanding, and my husband worries a lot. Honestly, sometimes he doesn't eat; and it's true that he doesn't eat anything, absolutely nothing. Then my husband comes home with junk food, or pizza, hamburgers and fries, and so on, and of course, it's not just him; we all eat just as badly.” “In my case, if I make another recipe, I deviate a little from what we eat, from the routine, let's say, sometimes I regret it because they are very demanding and I think, what if they don't eat it and I waste time making the recipe, only for no one to eat it?”
Preferences (of adults, other family members, and cultural influences) Differences in eating habits among family members, such as vegetarianism or preferences for certain types of food, make it	“I'm a vegetarian. My husband isn't. I have two kids, but I feel like I'm planning meals for three different people... It feels like I'm planning three different diets, three meals a day, every day, with all the different ingredients, and it takes so much time.” “Being able to make a meal that satisfies at least half the family.”

Issue. Limited time	
Subtopic	**Representative quotes**
difficult to plan balanced menus.	"I cook every day. I must make three different meals each time because I'm vegan, and then my husband is Japanese, so he likes his food a little spicy. And the kids—one of them is very picky, just like their dad."
	"There is a preference for pasta in the family and, it's because we already know what's bad for us, but we don't pay attention, for example we check a little jar of what it could be, for example, a sauce of what, it could be with meat or mushrooms, there we know that it has salt, but worse in all the condiments, and that sometimes they don't have a label but I do know and we know that it has sodium and salt, so it's better not to buy them, even if we like pasta... we have to pay attention, not eat what's bad for us."
Multiple trips to the store/grocery Due to the diverse dietary needs within the household, some parents must make multiple trips to different stores to obtain the specific products that each member prefers or needs.	"So, the first time I go, I usually get the necessary items, like meat, cheese, eggs, bread, juice. And then, when I get back home, and I remember I need sugar or baked goods or whatever. I usually get complaints from family members, 'I don't have any snacks,' 'I didn't want that kind of cereal.' So, I'll go back and make up for it."
	"I know one store is good with fresh produce... The other store that's good is the one with the meat, the farmers market. It's frustrating.
	"Sometimes they don't have what you want, which is annoying because then I require another trip to another location."
Issue. Exposure to food, deals during shopping, and budget	
Subtopic	Representative quotes
New foods and nibble foods Parents are influenced by exposure to new products in supermarkets and promotional tastings, which can divert their budget toward unplanned products.	"I walk through the aisles and boom, I see the salts and I'm starting to realize that since they're from the sea, they're better… the crystals feel different and penetrate the meat more easily, making it softer and helping with digestion. And there are carts offering samples and great deals."
	"These salts come from pure nature, the colours are just like that, natural, just as they are taken from nature… if that's the case, they're more natural and therefore, healthier, without chemicals."
	"You know that meats and even tortillas taste better, so you eat more, and the presentation and the aromas that come out are more appetizing… the large crystals of salt melt little by little with the fire, the heat, and they sort of marinate the meat more until it's ready and tender."
	"No, we haven't used them (referring to salts other than regular or common salt). At my house, we only use plain salt. We haven't been curious enough to buy any other salt. I know a neighbour uses pink salt because she invited us, and the meat did taste good, but nothing special like people say."
	"But sometimes I go over my budget; it's usually worse when I take my kids to the store with me because they just pick up all the new, unopened, and snack-sized packages and throw them in the cart. It's easier if I go to the store alone. I'm more likely to avoid the junk food aisles or try not to stay in them."
Interpretation of nutritional information and the influence of brands on food purchasing decisions Some parents find nutritional information difficult to interpret due to the size of the font on labels. Others rely on well-known brands as a guarantee of nutritional quality.	"That's impossible for me. The print is very small (referring to the labels), and the truth is that almost everything has sodium or salt or both, right? So, I'd be eating very little."
	"We do check, not always, but yes, we take the time to check, and we tell them (referring to the children) to look at the filth they're putting in their mouths! And their tongues look all ugly and dry out sometimes, like when you go out to sea a lot, from all the salt in all that filth they like to eat."
	"I honestly go more for brands, more, how do you say, more recognized, because they are quality and yes, sometimes, I look and they are better in all the nutrition facts than other brands in general, and in everything, not just in salt, but in everything that is harmful, like cholesterol and all that, do you understand?"
Unused food Parents report food waste due to a lack of planning or purchasing ingredients that cannot be incorporated into other recipes.	"Even if you buy a certain amount of red onions or cilantro that you need for a recipe, but now you can't find recipes that use them anymore,... I feel like I'm wasting a lot because it's not being used."
	"If I'm cooking cauliflower or something like that, the family often gets tired of it by day four

Issue. Limited time	
Subtopic	**Representative quotes**
	and they're not eating them anymore. It's a shame."
	"I'm always good at taking it out of the freezer, letting it thaw, and then not all of it's used. It goes back into the freezer and thaws again, and then it doesn't smell right and ends up in the trash, and the worst part is, I do it again."
Spent on food perceived as healthy The cost of healthy foods is perceived as a significant barrier to their consumption. Dietary caregivers mention that healthier foods are often more expensive and rarely on sale, limiting their access to them. Consequently, some choose to purchase products based on their financial availability, prioritizing what is in season.	"But it's expensive to eat healthy. It's difficult with chicken; it's unhealthy and fatty, like the whole thighs and breasts that cost around two thousand colones; but at the same time, you see the tender fillets, which have five times less [fat], but they cost around six thousand. So, it's difficult." "Some of the things I buy are never on sale. It's interesting because it seems like organic and healthier things are never on sale. So, if you're on a budget... you must buy what's in season and then make meals based on that." "More money. That would be helpful because you can eat healthier. You're just limited by the amount of money you must buy things."

4. Discussion

This project studied diet caregivers' perceptions of the barriers they face in promoting healthy, low-salt/low-sodium eating, as well as the strategies they implement to overcome them. The findings suggest that parents face various challenges in trying to provide a balanced diet for their families. Factors such as economic constraints, lack of time, and the need to satisfy the preferences of all household members influence their dietary choices [18-20]. Despite these difficulties, participants demonstrated remarkable adaptability and creativity in overcoming them.

By integrating their food literacy skills, such as meal planning, nutritional information searching, and recipe development, diet caregivers can make more informed decisions and efficiently manage available resources. Food literacy is defined as the ability to understand, evaluate, and apply nutritional information to make healthy food choices [21]. These findings have significant implications for promoting healthy eating at home. The strategies identified in this study, such as bargain hunting, household appliance use, and cooking creativity, can serve as a basis for developing intervention programs that empower diet caregivers to make healthy choices [22, 23]. Furthermore, the research highlights the need to address the economic and time barriers that families face in accessing healthy food.

The findings of this study suggest that diet caregivers face several obstacles when trying to provide healthy food for their families. Lack of time, the need to meet the preferences of all family members, the influence of the shopping environment, and budget constraints are factors that influence dietary decisions [24-26]. It is critical to develop intervention programs that address the identified barriers, such as lack of time, difficulty cooking for multiple needs, and the influence of the shopping environment. These programs should provide information, resources, and tools that empower parents to make healthy choices and manage available resources efficiently.

This study reveals the complexity of household food planning, acquisition, and preparation, especially in the context of promoting healthy eating habits and reducing salt/sodium intake in children and adolescents. The interaction of economic, temporal, and sociocultural factors significantly influences families' dietary choices. Recent studies have shown that maternal perceptions of dietary practices are influenced by socioeconomic and educational status, as well as by characteristics of the family environment [27-29]. Food literacy plays a crucial role in making informed food decisions, especially in contexts where families face multiple challenges [30].

The relationship between social environment and childhood sodium intake has been widely documented, highlighting the need for personalized interventions to reduce excessive sodium intake [31, 32]. However, the implementation of effective policies in this area faces significant challenges, primarily due to resistance from the food industry and the lack of more strict regulations on the labeling of high-sodium products.

Family nutrition planning is influenced by the optimization of financial resources and efficient time management, factors that emerge as fundamental pillars in this process. Strategies such as taking advantage of deals, proper food storage, and structured shopping and menu planning have become common practices among parents. These tactics not only seek economic efficiency but also ensure the availability of nutritious options at home. However, despite these efforts, previous studies have shown that challenges persist in implementing low-sodium diets due to the prevalence of processed and ultra-processed foods on the market. These foods, often more affordable, contain high levels of sodium, which makes it difficult to adopt healthy eating habits [1, 33, 34].

In this context, parental nutritional education plays a fundamental role in the selection of healthy foods. The need for strategies that improve knowledge and perception of the nutritional quality of foods, with the aim of promoting the choice of healthier options, is evident [27-29]. Food literacy is presented as an essential tool for parents to identify and choose healthy foods, especially in an environment where the availability of processed and ultra-processed options is high [30].

Involving children in food decision-making is presented as a fundamental strategy for instilling responsible and sustainable consumption habits. Involving children in activities such as food selection during shopping or meal preparation can promote greater acceptance of healthy foods and a deeper understanding of balanced nutrition. This practice has been supported by research suggesting that early food education contributes to the formation of healthy dietary patterns throughout life [34-36]. Food literacy in childhood, which includes understanding food groups, reading labels, and participating in meal preparation, is crucial for developing healthy and sustainable habits [37].

Studies have shown that involving young people in meal planning and preparation can contribute to establishing lifelong healthy habits and a better understanding of their nutritional needs. This practice facilitates a reduction in the consumption of high-sodium products and the incorporation of fresh, natural foods into their daily diets [2, 38, 39]. Parental supervision and support are crucial for this strategy to have a positive impact. However, parents face several barriers that hinder the adoption of healthy eating practices. Time constraints, resulting from long workdays and multiple responsibilities, often lead to a preference for quick and easy-to-prepare foods, which are often high in sodium and low in nutritional value.

Furthermore, the diversity of dietary needs within the household, such as different dietary preferences or restrictions, complicates the development of menus that satisfy all members and are simultaneously low in salt. These difficulties are exacerbated by aggressive marketing strategies promoting unhealthy products, especially those aimed at children, which influence children's preferences and demands [34-36].

Repeated exposure to advertising for ultra-processed foods from childhood has been shown to increase preference for these products, making it difficult to adopt a healthier diet [27-29]. It is essential that parents and educators promote food literacy in children so that they can identify and reject marketing strategies that promote unhealthy foods [40].

Budget constraints represent a significant barrier to food choice. The high cost of fresh, healthy produce, compared to cheaper processed options, limits families' ability to maintain a balanced, low-sodium diet. This reality has been documented in studies showing that, in resource-limited settings, families prioritize quantity over nutritional quality, negatively impacting children's health and increasing the risk of chronic diseases in adulthood [1, 33, 34].

Food literacy is essential for empowering families and enabling them to make informed decisions about their diet, even in resource-limited settings [41]. Food literacy can help families understand the nutritional value of foods and identify more affordable healthy options, even on a limited budget [42]. However, the perception of healthy eating is influenced by multiple factors, including socioeconomic and educational status, as well as family environmental characteristics [27-29]. Therefore, it is essential to consider these categories when designing interventions and public policies aimed at promoting healthy eating habits in children.

To address these problems, it is imperative to develop multifaceted strategies that consider the economic and temporal realities of families. The implementation of educational programs that provide practical tools for preparing healthy, quick, and affordable meals can be beneficial. Likewise, public policies aimed at regulating food advertising aimed at children and subsidizing the cost of health products could facilitate positive changes in family eating habits. Collaboration between government sectors, educational institutions, and the food industry is essential to create an environment that promotes and facilitates healthy food choices, thus contributing to the reduction of salt/sodium intake and the prevention of associated diseases from childhood [34, 40, 41].

Therefore, it should be noted that although parents implement various strategies to promote healthy eating in their children, they face multiple challenges that hinder the effective reduction of salt/sodium intake. Addressing these barriers requires comprehensive interventions that consider the economic, temporal, and sociocultural factors that influence family dietary decisions. Food literacy can help parents overcome these challenges by providing them with the tools to make healthy choices even in context of economic or time constraints [30].

Limitations

This study presents several limitations inherent to the qualitative approach, particularly regarding the use of focus groups as the primary data collection technique. Firstly, although this methodology enabled a rich and contextualized exploration of parents' perceptions and knowledge regarding salt/sodium consumption, the findings are not generalizable to the broader population due to the purposive and non-probabilistic nature of the sample.

Moreover, the group dynamics may have influenced the spontaneity and authenticity of certain responses. Some participants may have felt inhibited from expressing divergent opinions or sharing personal experiences, especially those related to dietary practices perceived as "incorrect" or unhealthy. This limitation is particularly relevant given the social sensitivity that often surrounds food-related decisions within the family environment.

Finally, another potential limitation was the variability in participation among focus group members. In some instances, certain participants dominated the discussion, which may have restricted the representativeness of other perspectives,

especially those from less assertive individuals. Additionally, although confidentiality was assured, it cannot be fully guaranteed in a group setting, which may have affected participants' willingness to disclose more personal experiences.

5. Conclusions

The results of this research provide significant insight into diet caregivers' perceptions of barriers to healthy, reduced-salt/reduced-sodium eating, as well as the strategies they employ to overcome them. The findings suggest that parents face various challenges in trying to provide a balanced diet for their families. Factors such as economic constraints, lack of time, and the need to meet the preferences of all household members influence their dietary choices.

The findings reveal a multifactorial approach to food planning and preparation, in which optimizing financial resources and efficient use of time play a central role. Strategies such as taking advantage of deals, proper food storage, implementing versatile recipes, and structured planning of family shopping and menus are highlighted. Furthermore, there is an interest in encouraging children's participation in food decision-making, promoting responsible and sustainable consumption habits.

The barriers perceived by parents reflect a complex interaction between time constraints, household dietary demands, marketing strategies, and budget restrictions. Lack of time and a preference for quick and affordable foods influence meal choices, while diverse dietary needs within the family and the high cost of health products complicate planning a low-salt/low-sodium diet. These findings suggest the need for strategies that promote affordable and easy-to-prepare healthy options within the family context.

Finally, this research highlights the complexity of family nutrition in the context of health and reducing salt/sodium intake. It reveals the need for interventions that address the economic, temporal, and sociocultural barriers faced by diet caregivers, promoting healthy, practical, and accessible options for all family members.

Abbreviations

WHO	World Health Organization
PAHO	Pan American Health Organization
SD	Standard Deviation

Acknowledgments

The authors thank Dr. Natalia Campos for her expertise and contributions in writing and discussing this manuscript.

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Funding

This work was supported by the Costa Rican Institute for Nutrition and Health Research and Teaching (INCIENSA; IC-2010-05), the University of Costa Rica (UCR; 430-B1-343), and the State University of Costa Rica (UNED; V-INVES/2010-012). No external funding was received from any agency, commercial sector, or non-governmental organization.

Data Availability Statement

The data is available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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Biography

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Adriana Blanco-Metzler: Nutrition, salt reduction, CVD disease prevention, food sciences, health research, processed food, food composition, nutritional labelling.