

Identifying the Components of Healthy Food Choice Literacy in Adolescent Girls: A Conventional Content Analysis

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Background and Objective: Healthy food choice literacy the ability to make informed dietary decisions is vital for adolescents, yet it is often limited by complex sociocultural and media influences. This conventional content analysis explores the perceptions and experiences of adolescent girls to identify the influencing components of healthy food choice literacy.

Material and Methods: To ensure depth, we employed a qualitative content analysis approach. In Iran from August to November 2025, a purposive sample of 37 participants was selected, comprising 30 adolescent girls (aged 15–18), 4 parents, and 3 key informants. Data were collected via semi-structured individual interviews and focus group discussions, then analyzed thematically following the method of Granheim and Lundman with the assistance of MAXQDA software.

Results: This qualitative analysis resulted in one main category and four key subcategories that define the determinants of healthy food choice literacy: (1) Practical knowledge and skills, where gaps in theory and cooking ability impede healthy choices; (2) Informational supports, where collaborative guidance from family and friends bolsters intrinsic motivation; (3) School educational programs, which were frequently perceived as superficial and lacking practical application; and (4) Cyberspace and social media, which emerged as a dominant yet highly unreliable source of information.

Conclusion: Various factors, including nutrition knowledge and skills, perceived support for healthy food choices, and advertising and cyberspace, can shape healthy food choice literacy. In conclusion, these findings support integrated educational interventions that, beyond raising awareness, actively foster practical skills in healthy food choices, perceived support from family and peers, and critical evaluation of digital health information, thereby fostering sustainable.

Keywords: Health literacy, Food Habits, Adolescent, Social Support

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Introduction

Adolescence (ages 10–19) is a pivotal developmental stage where lifelong health behaviors are established (1). Characterized by rapid physiological, psychological, and social changes, this period requires adolescents, and girls in particular, to make increasingly independent food choices (3, 4). In an era of globalization and digital media, where exposure to diverse and often unhealthy food options is prevalent, the ability to recognize, interpret, and make informed decisions is critical for immediate and long-term health (5, 6). This ability is conceptualized as "healthy food choice literacy"—a subset of health literacy defined as the capacity to understand, evaluate, and apply nutritional information to make sound dietary decisions (6, 7).

While the importance of nutritional literacy has gained recognition among health policymakers and researchers in recent years, most studies have focused on quantitative and descriptive aspects of this concept. They have not provided a deep understanding of the underlying factors or the lived experiences of adolescents (8–10). Frequently, nutritional literacy is reduced to mere knowledge or awareness (11, 12), overlooking the complex social, cultural, educational, and media factors that significantly shape an individual's ability to make informed food choices (13, 14). Therefore, a qualitative approach is necessary to explore the lived experiences, contextual factors, and underlying meanings that quantitative methods cannot capture. This approach allows us to understand not just what adolescent girls know about nutrition, but how and why they make their food choices in real-life situations. This gap is particularly salient in cultural contexts such as Iran, where family values, traditional consumption patterns, and educational pressures strongly influence adolescent nutritional behaviors, suggesting that the overall pattern of food choice literacy may differ markedly from Western societies.

Adolescent girls, a group whose health shapes future generations, warrant particular attention in this context (15). Evidence indicates they face a dual paradox: a tendency to conform to cultural and aesthetic body-image ideals, alongside susceptibility to media advertising and novel food trends (15, 16). This conflict can result in confusion, unsustainable choices, and the development of unhealthy eating patterns (13, 17). Consequently, qualitative approaches capable of exploring lived experiences and interpreting the meaning behind behaviors are essential for identifying the authentic, context-specific components of healthy food choice literacy.

Accordingly, this study aims to identify the components influencing of healthy food choice literacy in adolescent girls. By integrating insights from their personal, familial, educational, and media experiences, we seek to provide a comprehensive understanding of their nutritional decision-making processes. The findings can serve as a foundation for designing targeted educational interventions and health policies to promote adolescent nutritional literacy at both national and international levels.

Materials and Methods

Study Design

This qualitative study employed a conventional content analysis approach. It was conducted in Mashhad, a city in eastern Iran, from August to November 2025. The aim was to gain an in-depth understanding of the factors influencing healthy food choice literacy among adolescent girls aged 15 to 18. Participants also included key informants relevant to adolescent nutrition. The total sample comprised 37 participants: 30 adolescent girls, 4 mothers, and 3 teachers. Data were collected through semi-structured individual interviews and focus group discussions (FGDs) to obtain complementary perspectives. This methodological triangulation enhanced the validity of the findings. Data analysis followed the conventional content analysis framework described by Graneheim and Landman (19). The study's design, implementation, and reporting adhered to the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines (18).

Study Setting and Participants

Semi-structured individual interviews were conducted with 15 adolescent girls (aged 15–18) selected from schools across various geographical areas of Mashhad. To capture

complementary perspectives, we also held three focus group discussions (FGDs), each comprising five different adolescent girls, resulting in a total of 15 FGD participants. For logistical convenience and coherence, interviews with the mothers of participants were conducted at the same schools. Interviews with school teachers were held at their workplaces following prior coordination. This methodological combination of individual and group discussions enabled the examination of data from multiple vantage points, thereby enriching the conceptual depth of the findings.

Sampling strategy

Purposive sampling with maximum variation was used to ensure diversity in age, socioeconomic background, and academic field. All sessions were conducted in person. Prior to each interview or focus group, the study's purpose and procedures were explained clearly. Written informed consent was obtained from all participants, with additional parental consent secured for minors. The interview and focus group guides were developed based on a comprehensive literature review of adolescent nutrition and were pre-tested for content validity and clarity. Participants met the following inclusion criteria: female, aged 15–18 years, in good physical and mental health, and willing to provide informed consent. Exclusion criteria comprised withdrawal of consent, a diagnosed physical or mental health condition that could compromise data validity, or incomplete participation in the sessions.

Interview Guide and Data Collection

The semi-structured interview guide was developed based on the study aims and a systematic literature review. The main questions asked of all participants included: (1) "What factors influence your food choices? (e.g., influential individuals, food characteristics, time, location)?" (2) "What barriers do you encounter when trying to select healthy food options? Please explain why." and (3) "What factors facilitate your selection of healthy food options? Please explain why." To elicit deeper and more detailed responses, probing questions such as "Can you give me an example?" and "Could you explain more about that?" were used throughout the interviews.

The first author, who is trained in qualitative methods, conducted all semi-structured interviews. These included 15 adolescent girls, four mothers, and three teachers, and lasted 30–50 minutes each. All interviews were audio-recorded (with participants' permission) and

transcribed verbatim to ensure accurate analysis. Participants were guided to discuss their experiences with factors influencing healthy food choices. To ensure data accuracy and credibility, when any ambiguity or lack of clarity emerged during the initial analysis, the first author contacted the relevant participant by phone to clarify the responses. This follow-up process allowed participants to confirm, correct, or elaborate on their original statements, thereby enhancing the trustworthiness of the data. Interview data collection continued until theoretical saturation was achieved.

To complement the interviews and explore social influences on eating behavior, three focus group discussions (FGDs) were held. Each comprised five adolescent girls from different schools and lasted approximately 50 minutes. All focus group discussions were audio-recorded (with participants' permission) and transcribed verbatim to ensure accurate analysis. To ensure group homogeneity and rich interaction, participants were selected for similarity in age, academic field, sociocultural background, and stated interest in health and nutrition. Discussions were moderated by the first author and a trained assistant to maintain procedural consistency. Participants were assured of confidentiality and that their data would not be shared with parents or school officials. The topic guides for both interviews and FGDs were developed from a systematic literature review and validated by the research team. Overall data collection continued until conceptual saturation was reached.

Data Analysis

Data were analyzed using the conventional qualitative content analysis method described by Graneheim and Lundman (19). This analysis followed five key steps: (1) transcription of interviews and repeated listening to gain a sense of the whole; (2) dividing the text into meaning units; (3) condensing the meaning units while preserving core content; (4) abstracting condensed meaning units into codes; and (5) sorting codes into subcategories and categories based on similarities and differences. All interviews and focus group discussions were transcribed verbatim immediately following each session. Transcripts were reviewed multiple times to ensure accuracy and to immerse the research team in the data. Two researchers independently performed manual open coding to identify semantic units and extract primary codes. Any discrepancies in coding were resolved through discussion and, when necessary, consultation with a third senior researcher to reach consensus. The resulting

codes were subsequently organized into meaningful subcategories and categories based on their conceptual similarities and differences, culminating in the identification of overarching themes. MAXQDA software (version 2020) was utilized for systematic data management, while Microsoft Word was employed for documentation. To enhance the credibility and trustworthiness of the findings, a methodological triangulation approach was employed through the integration and comparison of data obtained from individual interviews and focused group discussions. Furthermore, to strengthen the rigor and accuracy of the study, several strategies were adopted, including the preparation of detailed and transparent reports, prolonged engagement with the data, member checking, and peer debriefing.

Results

The mean age of the adolescent participants was 16.33 ± 1.0 years (range: 15–18). Among other participants, mothers had a mean age of 49.75 years (range: 45–56) and teachers a mean age of 43.75 years (range: 33–53) (**Table 1**). A total of 458 initial codes were generated from the data. Analysis of these codes yielded one main category and four principal subcategories, as detailed in **Table 2**.

Main category; influencers of healthy food choice literacy

1. Knowledge and skills

The findings indicate that many adolescent girls possess limited nutritional awareness, with their information about healthy foods and selection strategies often being incomplete or incorrect. This deficiency in scientific and practical knowledge results in confusion and suboptimal decision-making, especially when confronted with a wide array of food products. Notably, adolescents under significant academic or emotional stress tended to disregard the long-term health consequences of poor dietary choices. For them, the theoretical understanding of the diet-health link failed to translate into daily practice. In contrast, girls with practical food preparation skills (e.g., basic cooking) demonstrated a greater capacity to select healthier foods. This highlights the pivotal role of "practical nutritional literacy"—the ability to convert knowledge into action. Consequently, integrating cooking skill development into nutritional literacy programs could be an effective strategy for empowering adolescents to make healthier choices.

"I don't have specific information about healthy foods... (laughs)" (Adolescent 2, 15 years)

"I think healthy food means traditional and old foods..." (Adolescent 9, 16 years)

Table 1. Demographic characteristics of the participants

Participants	Variable	Category	Frequency	Percentage
Adolescents (N=30)	Age	15 years old	9	30
		16 years old	11	36
		17 years old	8	27
		18 years old	3	10
	Birth Order	1	13	40
		2	11	37
		3	4	13
		4	2	10
	Type of School	Public	21	70
		Private	9	30
	Interview Location	School	20	67
		Park	6	20
		Cultural Center	4	13
	Economic Status of Family	Poor (Income < 12 million)	10	33
		Moderate (Income 12 - 25 million)	14	47
		Good (Income > 25 million)	6	20
Parents and Teachers (N=7)	Age	Under 50 years old	4	13
		Over 50 years old	3	10
	Gender	Female	6	20
		Male	1	3
	Occupation	Homemaker	2	7
		Employee	1	3
		School Principal	1	3
		School Health Monitor	1	3
		Teacher	2	7

2. Informational supports

Data analysis revealed that adolescents in family and social environments with richer informational resources exhibited higher levels of healthy food choice literacy. Parents, particularly mothers, played a prominent role in transmitting nutritional knowledge and shaping positive attitudes. The style of parental support was crucial: while authoritarian approaches often had a negative effect, participatory and encouraging methods enhanced adolescents' intrinsic motivation and awareness. Peer influence emerged as a key factor, with girls' attitudes and behaviors being indirectly shaped by observing and modeling their friends' nutritional practices. This suggests that social interaction structures can serve as an effective platform for the implicit transmission of nutritional literacy.

"I never ate fruit ... However, when I saw how much fruit my friend ate, I was encouraged to eat fruit." (Adolescent 10, 15 years)

"Because my mom has so much information, I usually agree with whatever she says..." (Adolescent 13, 16 years)

3. Education for healthy nutrition in school

Most participants reported that current school-based nutrition education lacks appeal and credibility in both content and delivery, often being perceived as a marginal component of the curriculum. Key challenges cited included a shortage of healthcare providers and the use of non-standardized educational content. Adolescents proposed that programs designed by qualified nutritionists and employing interactive, practical methods would be more effective. They also indicated that school policies regulating student nutrition—such as guidelines on snacks—could support healthier behavioral patterns. These findings underscore the necessity of strengthening both the educational infrastructure and human resources dedicated to nutrition within schools.

"In our school, they don't teach anything, there are just these papers that are stuck on the bulletin board, which we don't pay much attention to..." (Adolescent 1, 16 years)

"For example, if someone brings cold sandwiches and things like that, the school health officer would warn them, ...as if it were a law and we knew we shouldn't bring them." (Adolescent 4, 15 years old, FG 1)

4. Nutrition messages and teachings in social media

The data indicate that cyberspace and social media are the primary sources of nutritional information for adolescents. However, most participants lacked the critical evaluation skills necessary to assess this content, often accepting its validity without verifying scientific accuracy. This deficit in nutritional media literacy fosters the adoption of misinformation and unhealthy dietary patterns.

"...For example, I go to cyberspace, then I open the page, then I say, wow, how attractive this food is, then I say, well, why don't I try it once, I'll go and make such a food" (Adolescent 3, 16 years old, FG 2)

"... Cyberspace like Instagram has destroyed families' food culture." (Mother 4, 53 years)

Table 2. Categories, subcategories, codes and quotations obtained from the interviews

Category	Sub-Category	Code	Semantic Units
influencers of healthy food choice literacy	1. Knowledge and skills	Sufficient information, limited information, incorrect information, having cooking skills, interest in cooking, cooking favorite food.	"I don't know exactly what healthy food is... I think it's wholesome and healthy food that doesn't have a lot of oil...."
	2. Informational supports	Trust in mother's information, level of parental information, method of educating parents, parental guidance, encouragement from friends, repetitiveness of parental advice	"...My parents don't teach me, they talk a little, but it's not very useful..."
	3. Education for healthy nutrition in School	The need to provide new training the poor effectiveness of school training inadequate training in schools The lack of school health care providers.	"We need to move towards new educational methods and move away from traditional education...."
	4. Nutrition messages and teachings in social media	Modeling from cyberspace, acting on cyberspace recommendations, tendency to consume recommended foods, incorrect training from food bloggers, incorrect cyberspace information	"For example, I see on Instagram that a food is good for a disease, I quickly tell my mom so that she knows..." "These food bloggers go to restaurants and introduce them...it makes you crave and want to buy foreign food"

Discussion

The findings of this study reveal that healthy food choice literacy among adolescent girls is a multidimensional phenomenon, shaped by a complex interplay of individual, familial, educational, and media-related factors. Key challenges include deficits in nutritional knowledge and practical skills, a lack of reliable informational supports, the ineffectiveness of formal educational programs, and the uncritical consumption of media content. By examining these components within Iran's specific sociocultural context, this research provides deeper insight into the persistent gap between nutritional knowledge and actual behavior in this population.

A central finding was the lack of nutritional knowledge and prevalent misconceptions about healthy eating among participants. This aligns with prior research indicating that adolescents often possess only a superficial understanding of nutrition and are heavily influenced by cultural norms and advertising (20–22). Many participants in this study equated healthy eating solely with traditional or home-cooked foods, demonstrating limited awareness of the scientific principles of nutrition. Such knowledge gaps can result in food choices based on habit, aesthetics, or convenience rather than nutritional value.

Importantly, this study highlighted the critical role of practical cooking skills in bridging this gap. Girls with food preparation abilities were more likely to make healthier choices. This supports the concept of “functional nutritional literacy,” which posits that practical competency is essential for translating knowledge into behavior. Consequently, integrating basic cooking instruction into school curricula or family-oriented programs could enhance nutritional self-efficacy and decrease reliance on processed foods.

The family, particularly mothers, was confirmed as a primary conduit for transmitting nutritional knowledge. The style of parental interaction and education significantly shaped girls’ attitudes toward food. Mirroring other findings (23, 25), participatory and encouraging approaches enhanced selective literacy and intrinsic motivation, whereas authoritarian instruction often provoked behavioral resistance. This aligns with Bandura’s social learning theory, whereby adolescents form food-related beliefs more profoundly through observation and interaction with parents than through formal education.

The influence of peers was also prominent (25, 26). Many participants modeled their friends' dietary behaviors, a phenomenon that presents both an opportunity and a risk. In groups where healthy choices are normative, this social modeling fosters positive nutritional literacy; conversely, in environments where unhealthy consumption is common, peer pressure can reinforce detrimental habits. Consequently, group-based educational interventions and participatory activities within schools—where adolescents can develop nutritional literacy through guided social interaction—represent a promising strategy for leveraging these powerful social dynamics.

The findings indicate that school-based nutrition education is frequently superficial, unstructured, and fails to engage students. This is a significant missed opportunity, given that schools represent one of the most sustainable and effective platforms for adolescent health literacy. Consistent with prior research (27–29), the absence of practical programming and meaningful student-teacher interaction impedes the translation of knowledge into attitudes and behavior. Furthermore, existing curricular content does little to enhance food choice literacy (30, 31). Alarming systemic barriers identified include a shortage of healthcare providers and nutritionists in schools, alongside a lack of coherent policies for managing student nutrition.

To address these gaps, involving nutrition experts in curriculum design and employing interactive methods—such as food projects, hands-on workshops, and group competitions—could significantly boost student motivation and facilitate meaningful learning. Concurrently, implementing concrete school policies, such as regulating fast-food sales in cafeterias or promoting fruit consumption, would help institutionalize healthy eating behaviors within the school environment.

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Conclusion

This study suggests that healthy food literacy among adolescent girls is influenced by multiple factors and requires a comprehensive and multifaceted approach to promote it among adolescent girls. A key strength of this study is its in-depth, qualitative exploration of the lived experiences of adolescent girls, mothers, and teachers, which provides rich, context-specific insights that quantitative studies cannot capture. The use of both interviews and focus group discussions, continued until saturation, further strengthens the credibility and depth of the findings. Effective promotion requires the integration of reinforced nutritional knowledge with practical skills, supportive family environments, modified school programs, and targeted nutrition literacy training. Ultimately, healthy food literacy goes beyond knowledge and includes the informed application of information in everyday decision-making. It also includes informational supports and healthy food education programs in schools, and food advertising and social media teachings. However, several limitations should be acknowledged. This study was conducted in a specific cultural and urban context (Iran), which may limit the transferability of findings to rural areas or other countries. Additionally, as with all qualitative research, the possibility of social desirability bias cannot be ruled out, and the cross-sectional design does not allow for examining changes in food choice literacy over time. To empower adolescents to make healthy food choices, at the policy level, we recommend that ministries of education and public health institutions collaborate to develop integrated adolescent nutrition literacy programs. These programs should include parent education initiatives, science-based curriculum, and efforts to monitor and critique food-related media messages.

Furthermore, participatory interventions – such as establishing "teen teaching kitchens" or "healthy food clubs" in schools – can effectively foster practical experience, motivation, and a positive nutrition culture among girls. Future quantitative or mixed-methods studies are recommended to validate and measure the prevalence of the themes identified here in larger and more diverse populations. Longitudinal and cross-cultural comparative research is also needed to explore how healthy food literacy evolves during adolescence and how it differs across sociocultural contexts.

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Availability of Data and Materials: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of interest: No conflict of interest.

Consent for publication: The authors consent for publications.

Ethical Approval and consent to participate: The study was conducted in full compliance with the ethical principles outlined in the Declaration of Helsinki. Ethical clearance was obtained from the Ethics Committee of Mashhad University of Medical Sciences (Approval Code: IR.MUMS.FHMPM.REC.1402.042). Prior to data collection, all participants received detailed information about the study objectives, procedures, and confidentiality assurances. Written informed consent was obtained from every participant, as well as from parents of those under the age of 18. All transcripts were anonymized, and no identifying details were retained in the dataset. Participants were assured that their responses would remain strictly confidential and would have no effect on their academic standing or relationships with parents or school staff.

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Authors' Contributions: HA led the study conceptualization, managed data curation, and prepared the initial manuscript draft. MM participated in conceptualization, contributed to software coordination, and supervised the research process. MGA was involved in conceptualization, data management, formal analysis, investigation, and methodology development. SRS contributed to the study conceptualization and assisted with original draft writing. JJ was responsible for project administration and also participated in manuscript preparation. All authors reviewed, revised, and approved the final version of the manuscript.

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