Factors Explaining Adolescent Girls’ Eating Habits in Urban Benin: A Qualitative Study

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Abstract: Adolescence is a period between childhood and adulthood with eating habits often against the nutritional needs of adolescents. The present study used a socio-ecological approach to investigate personal and environmental factors influencing the eating habits of 15- to 19-years old Beninese urban schoolgirls. Eleven focus groups (n = 77) and seven individual interviews were conducted with adolescent girls attending school in Cotonou, Benin. Focus groups were as homogeneous as possible regarding age group and school character. Transcripts were analyzed using an inductive-deductive thematic method using the socio-ecological model. Taste preference for sweet foods, insufficient dietary knowledge and low personal income were factors explaining unhealthy food choices, while higher self-efficacy and healthy outcome expectations mainly characterized their healthy eating habits at the intrapersonal level. Family influence was beneficial for healthy eating while friends’ pressure led to an unhealthy diet at the interpersonal level. At the organizational level, adolescents reported unhealthy school food environments and urban areas increased their unhealthy eating habits. It appears that one factor alone is not enough to influence adolescent girls’ eating habits. Therefore, this study presents the need of elaborating interventions in a school context to improve eating habits in adolescents focusing on different factors in Beninese adolescent schoolgirls.

Keywords: adolescent girls; eating habits; influencing factors; qualitative; school

1. Introduction

The period of adolescence is critical for growth and thus requires higher demands of energy and nutrients [1]. Nearly 90% of adolescents are living in low- and middle-income countries (LMICs) where undernutrition, including nutritional deficiencies, is still a health issue [2]. The nutritional transition as a result of urbanization growing in LMICs has increased the problem of the double burden of malnutrition, with 21.4% of adolescents overweight/obese [3].

In recent decades, adolescents in LMICs have been increasingly exposed to negative changes in food systems such as unhealthy food environments [4], reducing their capacity to cover their nutritional needs. This is detrimental as their dietary patterns impact their current nutritional status, promote health and growth, as well as lifelong health [1,5]. In Benin, dietary changes are a concern for public health [6], and nutritional deficiencies, overweight and obesity have increased, with the prevalence of overweight at 8.1% and obesity at 1.6% among adolescents in Benin [7].
In the adolescent group, adolescent boys in Kuwait were more likely to report healthy eating than girls [8]. They consume breakfast more frequently than female adolescents and eat fewer snacks than girls in South Africa [9]. Likewise, adolescent boys usually consumed less fast food on a weekly basis and less sweetened beverages [10]. Additionally, earlier research found that adolescent girls aged 15 to 17 years old have overweight and obesity prevalence rates that are three times higher than the prevalence of male adolescents in South Africa [11]. A high prevalence of overweight and obesity, as well as a high prevalence of poor dietary practices, was found in black female adolescents in the same country [9]. Likewise, in Benin, the prevalence of overweight in children and adolescents aged 5 to 19 years in 2016 was 7% in boys and 15.5% in girls [12].

A particular focus on adolescent girls should then be taken, due to their nutritional needs, which are different and, in some ways, higher than those of boys [13]. Adolescence in girls is considered a period of pre-pregnancy, and malnutrition at this period of life is associated with maternal and child health outcomes, meaning health before pregnancy can have consequences that extend across generations [14]. The risk of overweight and obesity, iron-deficiency anemia and micronutrient deficiencies in adolescents in LMICs have been associated with unhealthy dietary habits, e.g., daily fruit and vegetable consumption insufficient to meet WHO dietary guidelines, high consumption of foods that have elevated fat, sugar and salt contents [15,16]. From 2010 to 2030, there will be an increase in the adolescent population with a significant increase in girls in Sub-Saharan Africa, where adolescent pregnancy is most common, and the use of contraceptive methods is at the lowest [17]. Adolescent girls’ inadequate diets lead to a higher prevalence of disease and undernutrition in adolescent mothers, which increases the risk of fetal growth restriction, low birthweight and preterm birth, exposing the child to childhood illness [13,18]. Given the high prevalence of unhealthy eating and overweight in adolescents girls and the related risks for the newborn child of (adolescent) mothers [19], this study focused on the eating habits of adolescent girls. Moreover, improving adolescent girls’ nutrition can contribute to any of the proposed SDGs for which stunting or the nutritional status of girls or mothers have been identified as contributing factors [20].

In Urban Benin, adolescents, including girls, were found to have poor eating habits, with the consumption of low-fiber cereals/grain products (wheat bread, maize-based dough and porridges, rice and pasta) and energy-dense foods such as sweet beverages, candies, chocolate, lollipops and, more recently, fast food [21,22]. This exposed them to the risk of overweight and obesity as well as iron-deficiency anemia, with the prevalence of overweight/obesity at 17.6% in Urban Benin in 15- to 19-year-old girls [23] while their prevalence of iron-deficiency anemia was 57.4% [5].

Therefore, understanding why adolescent girls engage in unhealthy eating habits and determining which factors are most strongly related to unhealthy habits is important to promote healthy eating practices. Health behavioral theories are particularly useful to gain insight into behaviors and subsequently develop behavioral interventions [24]. A few previous studies, which did not use a theory-based approach, investigated the determinants of eating behaviors among Sub-Saharan African adolescents. Urbanization was significantly associated with adequate dietary diversity, and adolescents who lived in urban areas presented a better dietary diversity score compared to their peers from rural areas [25]. Parental education level, especially a mother’s education, was negatively associated with a disordered eating attitude; the higher the mother’s education level, the less that adolescents engaged in disordered eating attitudes [26]. Likewise, at the interpersonal level, adolescents whose father and mother had a high educational level were more likely to consume fruit daily and eat less salty snacks than those whose parents had a low educational level [27,28]. At the community level, media and advertising induce product consumption in adolescents, and fried foods, sweets and snacks were consumed most after seeing them on the television [29]. At the personal level, the taste of food was
reported as influencing adolescents’ food choices [30], and healthy food consumption was positively associated with a high knowledge score in adolescents [31].

In Benin, until recently, little has been known about factors that influence adolescent girls’ eating habits. More in-depth insight is thus needed for a wide range of changeable individual and environmental determinants of eating habits (e.g., dietary knowledge, self-efficacy, taste preferences, the influence of parents/peers/school, availability, price) to promote healthy eating among them in Benin.

To identify this wide range of determinants, the socio-ecological model [32], a tool characterized by several levels of influence and factors associated with behavior, may be appropriate. This model presents five levels of influence, from innermost to outermost: Individual/intrapersonal (e.g., beliefs, knowledge, skills), interpersonal (e.g., family, friends and colleagues), community (e.g., relationships among organizations, social norms), institutional (e.g., organizations and social institutions, services) and societal (e.g., laws and policies) [33].

Therefore, the purpose of this study was to use a socio-ecological approach to explore personal and environmental factors influencing the eating behavior of 15- to 19-year-old girls. The present paper describes the qualitative study methodology using focus group interviews and individual interviews. The results are presented based on the socio-ecological model approach and discussed in relation to the findings of previous studies.

2. Materials and Methods

2.1. Study Design and Sampling

A qualitative study (a combination of focus groups and individual interviews) was conducted from June to July 2020 in secondary schools in Cotonou, one of the largest cities in Benin, with 14.25% of the country’s total urban population [34]. Secondary schools were preferred for this study because they are an appropriate setting for adolescent nutritional interventions [35,36]. Seven secondary schools (four public and three private) were randomly selected through the school list provided by the Ministry of Secondary and Vocational Education.

Adolescent girls (15 to 19 years old) of any ethnicity attending these schools were the main target. Eligibility criteria were French proficiency and parents’ approval. Clear consent was obtained from school leaders and adolescents’ parents at the study onset.

The focus groups were held with six to eight participants per session, in groups as homogeneous as possible and with two age groups of adolescents (15 to 17 years old and 18 to 19 years old) to avoid issues related to age differences, intimidation and emotional factors. From the list of 15- to 19-year-old girls obtained from schools, in addition to the focus group interview participants, some girls were randomly selected for individual interviews to gain insight into the individual context.

This research project was approved by the Local Ethical Committee for biomedical research in Benin.

2.2. Data Collection

Both focus group discussions and in-depth interviews were conducted using an interview guide (Appendix A) developed to identify the factors at both individual and environmental levels influencing eating habits. The interview guide included open-ended questions to give the adolescents the opportunity to openly explain themselves (Appendix A) and was pilot tested for improvement purposes. From one focus group to another, several modifications were made, as each new interview provided insight for the following one.

The focus group discussions were held by two teams of one moderator and one assistant each (DK, AB, SMC, SH), who were all trained to ensure a standardized data collection procedure. Assistants observed and took notes during the sessions while the moderators noted key information on a board to make participants comfortable and ease open discussion. Each focus group discussion lasted approximately 50 min, whereas individual interviews lasted approximately 30 min and were conducted face-to-face with one interviewer and one
interviewee. All focus group discussions and individual interviews were audio-recorded with the permission of the participants and fully transcribed afterward. Based on the data-saturation principle [37], eleven focus group interviews and seven individual interviews were needed to reach data saturation.

2.3. Data Analysis

Participants’ characteristics were analyzed with the Microsoft Excel package for the descriptive statistics. Among the socioeconomic indicators, maternal education was found to be a strong determinant of parental employment and income [38]. We also collected data on mothers as they are easy to measure and present a high response rate [39,40]. The coding and data analysis were performed with NVivo software (version 11, QSR International, Melbourne, Australia, 2015). Transcripts were analyzed by two independent researchers (SMC and DK) who organized data into categories of influencing factors to access the reliability of the data and coding system. All analyses were performed using a coding system for both group and individual interviews. An inductive-deductive thematic analysis was used to analyze both group and individual interviews. We identified a set of codes as predefined codes, and quotes from both group and individual interviews were assigned to these codes. Codes related to similar concepts were organized into categories. Categories were later organized into preliminary themes, which were reviewed by the two researchers (SMC and DK) to define a list of themes. Furthermore, inductive coding was used for the quotes that were not assigned to predefined codes. We identified new codes starting from scratch and created codes based on the qualitative data. The new codes were also organized into categories. Based on the categories, key themes emerged and were discussed between researchers (SMC and DK). Finally, the themes from the deductive and inductive analysis were included in the results and classified into the different levels of the ecological model [32]. The different levels are described by McLeroy [32], with the individual level involving personal factors and characteristics that influence behavior change while the interpersonal level includes formal (and informal) social networks and social support systems that can influence individual behaviors (e.g., via peers, parents). The organizational level is characterized by rules and regulations of organizations or social institutions affecting individual or group behaviors (e.g., via schools). The community level mainly refers to the relationships among organizations, institutions and informational networks within defined boundaries (e.g., via community, culture) while the societal level refers to the policy/enabling environment including local, state, national and global laws and policies. During the coding, inductive codes were identified. After the analysis, quotes were translated into English.

3. Results

3.1. Descriptive Findings

In this study, eleven focus groups were conducted with a total of 77 participants (56 15- to 17-year-old girls and 21 18- to 19-year-old girls), with a mean age of 16.53 ± 1.09 years. Seven individual interviews were also conducted with seven more adolescent girls with a mean age of 17 ± 1.14 years. Overall, 84 adolescents participated in this study. The characteristics of the sample are summarized in Table 1. The participants were in 5th to 7th grade in both private and public secondary schools. The diversity of the participants was a positive aspect as it provided insight into more diverse factors influencing eating habits.
Table 1. Characteristics of adolescent girls participating in focus group discussions (n = 77) and individual interviews (n = 7).

<table>
<thead>
<tr>
<th></th>
<th>Focus Groups (n = 77)</th>
<th>Individual Interviews (n = 7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in years (mean ± SD)</td>
<td>16.53 ± 1.1</td>
<td>17 ± 1.1</td>
</tr>
<tr>
<td>Participant education level n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 5</td>
<td>39</td>
<td>42.8</td>
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<tr>
<td>Grade 6</td>
<td>20.8</td>
<td>28.6</td>
</tr>
<tr>
<td>Grade 7</td>
<td>40.2</td>
<td>28.6</td>
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<tr>
<td>School character n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public schools</td>
<td>63.6</td>
<td>57.1</td>
</tr>
<tr>
<td>Private schools</td>
<td>36.4</td>
<td>42.9</td>
</tr>
<tr>
<td>Living with n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>75.3</td>
<td>71.4</td>
</tr>
<tr>
<td>Others (grand-parents, uncle/aunt, sister/brother)</td>
<td>24.7</td>
<td>2.6</td>
</tr>
<tr>
<td>Mothers’ educational level n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary and below</td>
<td>27.3</td>
<td>57.1</td>
</tr>
<tr>
<td>Secondary</td>
<td>22.1</td>
<td>28.6</td>
</tr>
<tr>
<td>Higher (Bachelor, Master, Doctorate)</td>
<td>5.1</td>
<td>14.3</td>
</tr>
<tr>
<td>Mothers’ main occupation n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee</td>
<td>18.2</td>
<td>28.6</td>
</tr>
<tr>
<td>Handicraft</td>
<td>16.9</td>
<td>0</td>
</tr>
<tr>
<td>Tradeswoman</td>
<td>55.8</td>
<td>57.1</td>
</tr>
<tr>
<td>Housekeeper</td>
<td>9.1</td>
<td>14.3</td>
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</table>

3.2. Factors Influencing Adolescent Girls’ Eating Habits

The five levels of the social-ecological model were all found to influence adolescent girls’ eating habits (Figure 1).
3.2.1. Individual Factors

• Taste preferences

Most participants in younger and older groups, and from both private and public schools, mentioned a preference for their usual foods such as pounded yam, peanut soup and spicy foods. Regarding snacks, many adolescents reported preferring sweet foods (sweet snacks, soft drinks) especially when they are in school as they can make their own choices, unlike at home. Snacks such as biscuits, chips, candies and sweet juice such as bissap (i.e., a type of Hibiscus juice), pineapple and lemon juice were highly consumed for the sweet taste.

Yet, few adolescents preferred consuming fresh fruits and vegetables. Whether they are cooked as a sauce, salad or not cooked, some participants disliked vegetables because their taste was perceived as inconvenient.

“We food taste and smell are important to me” (18- to 19-year, Focus group discussions 4, Public school)

“I can't stop eating sweet foods, I am fond of their taste” (18- to 19-year, Focus group discussions 11, Public school)

“I don't like vegetable taste” (18- to 19-year, Interview 3, Private school)

• Self-efficacy

Some girls were confident in their ability to adopt healthy eating habits. Self-efficacy was mentioned in both age groups and was more common in private than public schools. Participants mentioned not eating much, avoiding fatty foods and consuming different types of food to diversify their diet.

• Outcome expectations

Few participants highlighted the importance of feeling physically good when eating fruit/vegetable or sweet foods. Consuming sweet snacks, chocolate and okra during their period made some participants sick while others pointed out the importance of them consuming sweet snacks during the day to feel good. Some girls mentioned getting sick from eating Vernonia amygdalina leaves (i.e., a bitter vegetable consumed in Africa, which contains nutrients such as protein, Iron, Calcium and fiber) and beans.

Many girls, especially in the older group, revealed that they skipped breakfast to be awake during classes. In general, the desire to feel good drove the older adolescents’ food choices. Furthermore, their desire to not suffer from chronic diseases in adulthood made participants avoid sweet snacks and soft drinks.

“I don't eat fast-food like shawarma because it gives me allergies” (15- to 17-year, Interview 2, Private school)

“A day without sweets can get me feel sick” (18- to 19-year, Focus group discussions 1, Public school).

• Dietary knowledge

Although most girls reported being aware of the benefits of healthy eating, they mentioned having limited knowledge of a healthy diet. To some, healthy meals must contain fish or meat as a protein source and fruits such as orange and papaya, but not lemon because it is acidic and can cause harm. Excessive intake of fatty and sugary foods and ice-cold water was regarded as unhealthy habits. Participants reported not knowing the nutritional value of the food they consume. They pledged to choose healthy food if they have sufficient nutritional knowledge, including daily recommendations.

Besides, some girls stated that everyone should check what he/she can eat based on their blood type or zodiac sign to have a healthy diet.

“I know that overconsumption of chocolate and biscuits is unhealthy . . . ( ) . . . I’m just unaware of the recommended daily intake” (18- to 19-year, Focus group discussions 2, Public school)
“Healthy eating also depends on one’s blood type. My own doesn’t allow me to take orange” (18- to 19-year, Focus group discussions 8, Private school)

- **Personal income**

  Regarding the importance of financial resources to procure food, several adolescents stated that their financial resources determine their diet. This was more common in public schools than in private schools. Upon having enough money, adolescents sometimes choose to buy fruits, safe food and eat to satiety. Otherwise, they buy cheap and poor foods to appease their hunger, exposing less-privileged girls to unhealthy food choices.

- **Time and convenience**

  Regarding cooking, some girls preferred easy recipes such as combining bread and mayonnaise, gari or tapioca (cassava root starch), which are generally less nutritious than meals cooked from scratch using raw ingredients.

- **Food appeal**

  Few participants noted that they consume highly energy-dense foods such as snacks, fast-food and sodas because they are well-packaged and attractive. Private school adolescents are more influenced by food appeal. They are attracted by nicely packaged pizza, hamburgers, shawarma (i.e., a sandwich made with chicken, vegetables, cheese and tahini wrapped in pita bread), soda, cookies and chips.

3.2.2. Interpersonal Factors

- **Family influence**

  They acknowledge that without parental control, their food choice may be less healthy, and their mothers serve in the role of modeling and monitoring to develop a healthy diet. Their parents also become angry when they overconsume sugar-rich beverages and sweet and fatty snacks and encouraged them to choose healthy snacks and desserts. Those who noted parental influence were mostly the youngest and from private schools.

  The family influence includes family eating habits, family meals, modeling, monitoring and control. The eating habits in the participants’ families were frequently reported as a factor affecting their dietary habits. Home is the place where girls have limited choices for their meals and are highly influenced by parental food choices. As the main family meal provider, mothers usually choose what to buy and cook for their families. From adolescent girls’ perspective, their mothers serve in the role of modeling and monitoring to develop a healthy diet. Many reported that only high consumption of sweet beverages and fatty foods were prohibited to them, even though they are sometimes available in the house.

  Moreover, participants recognized that without parental control, their food choice may be different and less healthy. Their parents also become angry when they overconsume sugar-rich beverages, sweet and fatty snacks, especially during lunch and dinner at home, and were then encouraged to choose healthy snacks and desserts. Among those who noted parental control as influencing their food habits, the majority were from private schools and the younger age group.

  Furthermore, several participants mentioned that both their father and mother provide them with an education in healthy eating, and this has positive effects on their eating.

  “If mom decides to cook maize dough, that’s what we are all going to eat at home. It makes me like dough finally” (15- to 17-years, Focus group discussions 1)

  “Only when overindulging sweet food, my father yells at me to stop eating that” (18- to 19-year, Interview 6)

- **Peers/Friends**

  Considering the time spent at school and with friends, classmates’ and friends’ food preferences were reported to have an influence on many participants’ food choices, especially choices for snacking and trying new foods such as fast food. Participants affirmed
Adolescents easily imitate their friends’ eating preferences, but the reported influence was higher regarding unhealthy dietary habits. This was commonly reported in both adolescent age groups and in private and public schools.

In addition to friends’ preferences, peers/friends’ pressure on girls’ unhealthy food consumption is seen as a starting point of participants’ unhealthy eating habits whether in school or not.

“I have a friend who always feels snacking to stay awake in class. I don’t know how but now I’m tempted to snack not to sleep” (18- to 19-year, Focus group discussions 11, Public school)

“On a friends’ birthday in a restaurant, I have been presented hamburger as the main menu and I couldn’t refuse. Since that day, I start consuming that.” (15- to 17-years, Focus group discussions 10, Private school)

3.2.3. Institutional or Organizational Factors

- Food access and availability

The availability of unhealthy foods in school canteens contributes to adolescents’ unhealthy eating habits. Food available in canteens was generally energy-dense (cereals, sweet snacks, soft drinks, fried and fatty foods). Adolescents’ frequent exposure and easy access to these foods in school where they spend most of their days caused them to regularly consume biscuits, sweet beverages, doughnuts, candies and fried foods. Adolescents reported not being allowed to go out during break hours to buy any other food, especially in private schools.

“There are no fruits to buy in the canteen. During the break we eat biscuits, chips, candies or toffies.” (18- to 19-year, Interview 3, Public school)

- Food safety

Participants mentioned the inappropriate environment of the canteen, such as the fact that foods are not well covered and that vendors are not tidily dressed. There were no school policies toward food safety in schools, and the school-feeding environment is not rigorously checked. Of the participants, only three reported having school officials reprimand school vendors about food safety rules. These safety rules included washing every fork and spoon used by students. Both younger and older adolescents complained about the safety of school meals and, therefore, eat snacks at school because only these snacks and tap water seem safe to them.

3.2.4. Community Factors

- Health services

Very few participants received nutrition counseling support from a medical doctor during an illness episode. The doctor’s recommendation concerned the daily consumption of five fruits and vegetables or at least the consumption of an orange every day considering its availability on the market compared to other fruits. They have also been counseled to reduce sweet food intake and improve water drinking. Participants revealed that they follow doctors’ orders, even though it is sometimes difficult to comply.

3.2.5. Societal Influences

- Urban environment

Girls recognized that living in an urban area influences their eating habits mostly negatively, and the majority expressed that living in a village favors the consumption of fresh and healthy food. Urban environments with the availability of industrialized food, genetically modified organisms, and expensive food does not make it easy to maintain healthy dietary habits. Girls preferred eating in rural areas to urban areas where they currently live, not only because of the availability of healthy foods such as organic products, but also
the low cost of fresh foods. Unlike public school adolescents, private school adolescents preferred the urban food environment because of the variety of shops and restaurants.

- Media and advertisement

Watching TV and surfing the Internet as part of their daily activities exposed some participants to the influence of advertisements and motivated them to consume fast food, snacks or try new foods such as pancakes. They agreed that media can play both a positive and negative role: Positive when it is regarding counseling on healthy nutrition habits and negative when advertisements encourage them to consume unhealthy foods.

“Advertisement about any kind of food motivates me to eat it.” (15- to 17-years, Interview2, Private school)

“I tried the food called pancake after seeing it on TV. It was good” (18- to 19-year, Focus group discussions 8, Private school).

4. Discussion

This study, using qualitative methods, explored the factors explaining the eating habits of secondary school adolescent girls. As one factor alone is unable to explain the behavior as a whole, important results from this study highlighted that understanding adolescent eating behavior requires the consideration of a range of factors, including taste preference, dietary knowledge, family influence, peer influence, the school food environment and urbanization. Our study discovered that taste preference for sweet foods is one of the influencing factors for adolescents’ eating habits. This is in line with previous studies in Morocco [41], where Moroccan adolescents presented a preference for palatable sugar-rich foods, such as soft drinks and cookies, and adolescents’ taste preference for highly energy-dense food has been reported in Botswana and Indonesia [42,43]. The preference for sweet and highly energy-dense foods in adolescents is increasing their unhealthy eating habits. Considering that exposure contributes to developing a taste preference [44,45], it is likely that reducing adolescent schoolgirls’ exposure to highly energy-dense and sweet foods in future interventions can reduce their consumption.

Self-efficacy is defined as a person’s particular set of beliefs that determine how well one can execute a plan of action in prospective situations [46]. To put it in more simple terms, self-efficacy is a person’s belief in their ability to succeed in a particular situation. In this study, self-efficacy is defined as an adolescent’s belief in their ability to follow a healthy diet in their current school environment. Self-efficacy for healthy eating has been confirmed by previous studies showing that high self-efficacy is a strong predictor of healthy food intake among adolescents in Ireland and Denmark [42,43]. Given that diet self-efficacy is important to improve healthy eating habits in adolescents, self-efficacy should be considered in healthy diet intervention development. As in previous studies, which used school-based nutrition education interventions to improve adolescent girls’ dietary habits [47] and cooking programs for diet quality, cooking self-efficacy and positive cooking attitude improvement [48], self-efficacy can be increased using a multi-component intervention.

From participants’ perspectives, they will make healthier food choices if they have sufficient nutritional knowledge. Previous studies also showed that the higher the nutritional knowledge, the healthier the dietary intake in Moroccan and Peruvian adolescents [49,50]. In contrast, studies in Indonesia and South Africa demonstrated that dietary knowledge alone did not promote healthy eating among adolescents. This is understandable as knowledge alone is not enough to change behaviors, but is an important first step, creating a precondition for behavioral change [51,52]. Therefore, nutrition education can be used in future interventions to prepare adolescents for healthy eating habits.
Our findings also revealed that family control supports healthy eating habits, and adolescents who receive family support are more likely to have a healthy diet. Likewise, in Morocco and Botswana, family members mainly influence adolescents’ healthy diet [49,53]. Parents see themselves as playing an important role in helping their adolescents make healthy choices [54]. In this regard, it is preferable to also target parents in any adolescent behavioral-change intervention.

While families support healthy eating, friends have negative effects on adolescents’ food intake, especially in school, as it is a way for them to be accepted by their friends. This is consistent across studies in Morocco, Botswana, Peru and Ghana, where adolescents were influenced by their peers to make unhealthy food choices [49,50,53,55]. The transfer of eating habits from friends to adolescents may occur when they are sharing food and discussing the type and the amount of food consumed [56,57]. Given these findings, friend pressure should not be underestimated during adolescence. Although this study did not identify whether influential peers are of the same or opposite sex, a previous study showed that in late adolescence, girls’ drive for thinness is associated with perceived same-sex peer dieting [58]. Targeting adolescents’ friends and peers including those of the same gender in any behavioral-change intervention can encourage healthy food choices in adolescents [59,60].

As the main on-site food source, the availability of unhealthy snacks and sweet beverages in school canteens increased their consumption of these foods, while healthy snacks such as fruit are unavailable. The availability of different low-nutrient and high-energy-dense foods in school canteens had also been shown among adolescents in Peru and Malaysia [50,61]. In addition to availability, the high accessibility of low-nutrient and energy-dense foods encourages their consumption. Our results are consistent with the findings from previous studies showing that the ease of accessing unhealthy food in school canteens contributes to their consumption by school adolescents in Morocco, Indonesia and South Africa [49,62,63]. Likewise, the high exposure to these unhealthy foods tends to increase their appeal in adolescents [61]. Therefore, increasing adolescents’ exposure to healthy food in school canteens by increasing their availability and accessibility can improve adolescents’ healthy dietary habits [64].

Urbanization exposes adolescent girls to a wide range of foods, including industrialized food, and enables the consumption of unhealthy food. This was similar in urban Moroccan adolescents [49]. After the school and home environment, the large context of the urban environment should be considered in adolescent nutrition interventions, especially toward accurate policy guidelines to reduce unhealthy food availability in cities for the good of all.

In addition to the identified factors in this study, few previous studies mentioned parental disagreement as contributing to eating disorders in adolescents. A previous systemic review showed that adolescents, especially females, who presented with eating disorders are from highly conflictual families [65]. Likewise, in the United States, a study showed that parents’ marital conflict around children in kindergarten has a direct effect on their disordered eating habits in adolescence [66]. In the same country, adolescents presented high fast-food consumption and unhealthy weight control behaviors when their parents have conflicts [67]. In the same line of parents’ influence on adolescents’ eating, adolescents whose parents, including their father, reported higher education present more healthy eating habits than those without higher education in Ghana [68]. Likewise, no parental education and low household income in Bangladesh were reported to have a negative influence on adolescent girls’ eating habits [69]. In the Ivory Coast, adolescents from households with economic difficulties reported unhealthy dietary practices [70]. Although these factors may have important effects on adolescents’ diets, they were not mentioned by the adolescents in the present study. As an important strength, this study is the first to use theory-based qualitative methods to explore factors influencing adolescents’ eating habits among adolescent schoolgirls in Benin. The qualitative method was a combination of focus group interviews and individual interviews in order to gain in-depth informa-
tion. Additionally, adolescents were separated by age group and school type to facilitate open discussions.

5. Conclusions

The findings of this study highlighted different factors that might affect adolescent girls’ dietary habits. This can contribute to the development of interventions addressing barriers to healthy habits and promoting healthy eating among female adolescents in urban schools.

Important factors were identified by adolescent schoolgirls as relevant to their food choices. Healthy eating habits are characterized by the influence of family and healthy food access and availability in school canteens. Moreover, taste preferences for sweet foods, insufficient dietary knowledge, friends’ pressure and living in an urban environment were factors explaining unhealthy food choices in adolescent schoolgirls, but sufficient nutrition knowledge might contribute to healthy eating in adolescents. Peers are important as their influence increases in adolescence and is high in the school environment, but family might counteract their negative influence. Environmental changes seem key here both at school and in the community.

The limitations of this study should be considered. The study was only conducted in Cotonou, which has certain different characteristics compared to other cities in the country. Thus, some participants’ responses may be Cotonou-specific. In addition, the data collected on household socio-economic status did not include fathers’ occupations and educational levels, home incomes and family conflicts. Regarding peer influence, the study did not explore sex differences between peers, which creates an additional limitation. The results presented the need for interventions that focus on a range of factors and their elaboration on the most applicable method in Benin. Future studies should investigate eating habits in the school environment to develop interventions to reduce unhealthy eating habits among urban adolescent schoolgirls. School-based nutrition promotion interventions such as nutrition education, changes in the school policy regarding safety and changes in the food availability at school are all necessary intervention strategies to improve adolescents’ nutrition and health. Studies aiming to implement school-based nutrition promotion interventions should also consider different cities across the country to include a wide range of factors according to the different study areas. It will also be worthwhile to use quantitative methods to determine the most important factors among those identified.

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Appendix A

Table A1. Discussion Guide.

<table>
<thead>
<tr>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
</tr>
<tr>
<td>Please introduce yourself</td>
</tr>
<tr>
<td>Describe a bit what you ate yesterday</td>
</tr>
<tr>
<td><strong>Key questions</strong></td>
</tr>
<tr>
<td>What factors influence the type of food you usually consume? For each</td>
</tr>
<tr>
<td>factor, probe the participants with stimulating questions such as “could</td>
</tr>
<tr>
<td>you tell us more? Please give an example; Please describe what you mean;</td>
</tr>
<tr>
<td>” Is there anything else? What are the most important factors influencing</td>
</tr>
<tr>
<td>your eating behaviours?</td>
</tr>
<tr>
<td><strong>Ending question</strong></td>
</tr>
<tr>
<td>Is there anything else you would like to add? Or forgot to mention?</td>
</tr>
<tr>
<td><strong>Closing session</strong></td>
</tr>
<tr>
<td>All your answers will help us understand what explains your eating</td>
</tr>
<tr>
<td>behaviours. Your answers and discussions have been very helpful and</td>
</tr>
<tr>
<td>informative. We thank you for the information you provided us. Do you</td>
</tr>
<tr>
<td>have any questions or suggestions?</td>
</tr>
</tbody>
</table>

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