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Socio-Cultural Factors of Overeating Among Adolescents

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The primary aim of this study was to develop a scale that effectively identifies the social and cultural factors contributing to overeating among adolescents. The research was conducted in two phases. Initially, 28 items were developed through focus groups, interviews, and a review of existing literature. Following expert evaluation using the Content Validity Index (CVI), 23 items were retained. These items were tested for factorial validity on 300 university students aged 10-19 (M = 17.98, SD = 2.17). Exploratory Factor Analysis (EFA) further refined the scale, resulting in a 13-item final version. The psychometric properties of the Socio-Cultural Factors of Overeating Scale were developed in the second phase. Convergent validity was established by correlating the scale with the Eating in the Absence of Hunger Scale (Pasquale et al., 2023), showing a significant correlation (r = .44**, p < .01). Discriminant validity was confirmed by comparing the scale with the Salzburg Emotional Eating Scale (Meule et al., 2018), revealing a significant inverse relationship (r = -.54**, p < .01). The study's findings have substantial implications, offering a robust and reliable measure for evaluating socio-cultural factors related to overeating. This tool not only benefits researchers by providing a valuable instrument for exploring these factors but also will aid clinicians in delivering personalized and effective treatment. The scale enhances diagnostic accuracy and supports the development of targeted intervention strategies, making it a valuable resource in various clinical settings.

Keywords: socio-cultural factors; adolescents; content validity index; exploratory factor analysis

Adolescence is the transitional stage before adulthood, marked by rapid physical growth and significant behavioral, emotional, and psychological changes. Dietary habits developed during this phase are crucial to adolescents' learning abilities and overall health. Research indicates that food habits formed in adolescence often persist into adulthood, with a tendency to include overeating (Malik et al., 2023). While overeating and obesity are related, they are distinct concepts. Overeating refers to consuming more food or calories than the body needs, which may occur occasionally or habitually. Obesity, on the other hand, is a medical condition characterized by excessive body fat accumulation and associated health risks. Although overeating can contribute to obesity, the latter is a chronic condition influenced by genetic, environmental, behavioral, and metabolic factors (Cui et al., 2021).

The prevalence of overeating varies across regions and is influenced by genetic and environmental factors. For example, the Centers for Disease Control and Prevention (CDC) reported that approximately 42.4% of adults in the United States are obese. Similarly, overeating rates in England, Mexico, Australia, China, and urban India reflect significant public health challenges, with varying percentages of adults classified as obese (Hazzard et al., 2020). The consequences of overeating are significant. It can lead to weight gain, obesity, and associated health risks such as type 2 diabetes, cardiovascular diseases, and certain cancers. Overeating can also cause digestive discomfort, nutritional deficiencies, and psychological distress, particularly in individuals with disordered eating patterns. Furthermore, chronic overeating can impair

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physical mobility, reduce energy levels, and decrease overall quality of life (Goldschmidt et al., 2012).

Research highlights a strong association between nutritional status and factors such as diet, lifestyle, physical activity, and family environment. Family influences play a significant role in shaping adolescents' food choices, emphasizing the importance of considering both physiological and psychological factors in understanding overeating behaviour. Effective interventions should address dietary habits and psychological mechanisms like emotional eating and impulse control (Amjad et al., 2019).

Social and cultural factors are equally important in understanding overeating behavior. The previous literature has shown that there are many studies which find the different social and cultural factors that contribute in overeating among adolescents (Higgs, 2015; Izydorczyk et al., 2018; Robinson et al., 2015). Cultural norms, traditions, and societal influences surrounding food consumption often encourage overeating. Social settings, such as family meals, parties, and gatherings, can lead to overeating due to social pressure and the availability of large quantities of food (Hernandez & Perez, 2020). Moreover, exposure to media promoting unhealthy foods and unrealistic body ideals can exacerbate overeating behaviors.

Existing scales, such as the Binge Eating Scale (BES; Timmerman et al., 1999), Eating Disorder Examination Questionnaire (EDE-Q; Luce, et al., 2008) and Yale Food Addiction Scale (YFAS) (Gearhardt et al., 2009), effectively assess binge eating, eating disorders, and food addiction, they do not comprehensively address the social and cultural factors that can drive overeating in adolescents. Adolescents are particularly vulnerable to social influences, including family dynamics, peer pressure, and cultural norms, which significantly shape their eating behaviors. While existing scales primarily focus on psychological and behavioral aspects of overeating, they lack a comprehensive assessment of the social and cultural contexts that are crucial during adolescence. For example, the Dutch Eating Behavior Questionnaire (DEBQ) (Van Strien et al., 1986) does consider emotional and external eating but does not fully explore the sociocultural nuances that are especially relevant for adolescents. Thus, there is a need to develop a new scale that specifically targets the sociocultural factors responsible for overeating among adolescents.

Method

Study I: Steps of Scale Development

Stage 1

The following steps were undertaken to conceptualize the phenomenology of socio-cultural factors influencing overeating among adolescents:

Step I. The foundational step to understand the phenomenology of socio-cultural factors influencing overeating involved review of the previous literature. The DSM-5-TR (2022) was extensively reviewed to identify the symptoms and diagnostic criteria of overeating disorders such as binge eating and bulimia nervosa. This review also included recognizing and listing general interaction and performance-related problems associated with overeating.

Items from established scales, including the Binge Eating Scale (Gormally et al., 1982), Overeating Situations Scale (OSS; Ahmad & Muazzam, 2020), Eating Attitudes Test (EAT-26; Garner & Garfinkel, 1979), and Emotional Eating Scale (EES; Arnow et al., 1995), were meticulously reviewed and analyzed.

Step II. The focus group involved (n=5) female adolescents aged 10-18 years (M=16.70, SD=1.34), who discussed various forms of overeating they experienced and observed in others.

The second focus group, comprising (n=5) male university students aged 10-17 years (M=16.83, SD=1.26), specifically explored socio-cultural factors influencing overeating. Duration of each focus group was between 50 to 60 minutes. Participants shared their experiences of overeating, focusing on social norms, family dynamics, social events, media influence, peer pressure, and income. A detailed systematic analysis of the focus group discussions provided an insightful understanding of various socio-cultural factors influencing overeating and their impacts on individuals.

Step III. In this phase, semi-structured interviews were conducted with practicing psychologists (N=3) comprising two psychologists and one obstetrician specializing in eating disorders, each having a minimum of five years of experience. These professionals were selected through purposive sampling. Open-ended questions focusing on overeating were posed to these experts, and their responses were recorded with their consent and later transcribed verbatim. Following a comprehensive analysis, which included reviewing existing scales, pertinent literature, insights from focus group discussions, and semi-structured interviews, statements representing various socio-cultural factors influencing overeating were formulated.

Stage 2: Empirical Validation through Content Validity Index (CVI)

During the second stage of scale development, content validity index (CVI) was conducted to ascertain whether the newly constructed scale effectively assesses the intended area of interest using the comprehensive list of items.

The Item-CVI

During this phase, 3 experts including psychiatrists and psychologists with extensive clinical experience of more than 5 years in treating eating disorders were requested to thoroughly assess the scale items. A 4-point Likert scale ranging from 1 = never to 4 = always was used for evaluation. Expert ratings were categorized into "highly relevant" (ratings of 3 or 4, indicating agreement) and "not relevant" (ratings of 1 or 2, indicating disagreement) to aid analysis. The content validity index (I-CVI) for each item was computed by dividing the number of agreements by the total number of experts. To determine whether to retain or remove items, Lynn's criterion (1986) was followed. This criterion stipulates that an I-CVI of 1 is essential when 3 experts provide ratings. For six or more experts, a minimum criterion of > .78 was applied, as recommended by Polit and Beck (2006). Furthermore, experts were asked to provide feedback on items that could benefit from rewording or rephrasing to improve clarity and comprehension of scale.

The Scale-CVI

The Scale-CVI, as defined by Lynn (1986), represents the proportion of total items judged to have content validity. In this study, the averaging approach, proposed by Polit and Beck (2006), was used to calculate the S-CVI. This approach involves averaging the CVIs of all items, where the total sum of item CVIs was divided by the total number of items 23/28=.82. S-CVI value of at least 0.80 is considered adequate (Davis ,1992), while a more stringent standard of 0.90 is recommended due to the liberal nature of the averaging approach (Waltz et al., 2005). The calculated S-CVI for this scale was .83, indicating excellent content validity by all standards. Five items (i.e., 6,8,20,25, and 27) obtained less agreement from the experts and were omitted. Therefore, the Socio-Cultural Factors of Overeating Scale was prearranged into 23

items and can be considered to have achieved excellent content validity, meeting recommended standards for both individual items CVI and S-CVI.

Table 1

Statements of Socio-Cultural Factors of Overeating after CVI

Sr. No	Item Old Sr. No	Item New Sr. No	Statements
1	1	1	فون پر بات کرتے ہوئے
2	2	2	ٹی وی دیکھتے ہوئے
3	3	3	جب کھا نا سستا ہو
4	4	4	دوستوں کی موجود گی میں
5	5	5	گھر کا ماحول منفی / ناخوشگوار ہو
6	7	6	جب انواع اقسام کے کھانے ہو
7	9	7	جب کسی سے لڑائی ہو جائے
8	10	8	جب بیکری کا سامان ہو(Pizza, cake, biscuit)
9	11	9	موسیقی سنتے ہوئے
10	12	10	جب ایک وقت کا کھانا نہ ملے
11	13	11	جب بوریت ہو
12	14	12	جب غصہ ہو
13	15	13	جب کا م کے اوقات میں تبدیلی آئے
14	16	14	(پائے ، نہاری ، لسی وغیرہ)جب کھا نا دیسی ہو
15	17	15	جب شادی شمُولیت ہو
16	18	16	جب کھانا میری پسند کا ہو
17	19	17	خوشی کے موقع پر
18	21	18	جو کھانا سوشل میڈیا پر مقبول ہو
19	22	19	جب تنقید کا خوف نہ ہو
20	23	20	جب تھکاوٹ زیادہ ہو جائے
21	24	21	جب پیسے کی زیادتی ہو
22	26	22	جب کام کا بوجھ بڑھ جائے
23	28	23	جب کام کا بوھ کم ہو جائے

Stage 3: Pilot Study

During this stage of scale development, a pilot study was conducted with a sample of 30 participants, including both boys (n=13) and girls (n=17), aged between 10-19 years (M=17.50, SD=1.47). Participants were informed about the study's purpose, and assurances of confidentiality were provided regarding their responses. Respondents were instructed to using a 5-point Likert scale to respond to each item carefully. After analysis, the 23-item scale with a 5-point response format was finalized for further validation.

Stage 4: Construct Validity using EFA

In this stage, exploratory factor analysis (EFA) was conducted to establish the scale's factor structure. The sample comprised 300 adolescents, with boys (n=100) and girls (n=200). Purposive sampling from both public and private sector higher education institutes was used to collect the sample. The participants, aged between 10 and 19 years (M=17.98, SD=2.16),

included students from intermediate to undergrad levels. For the EFA, principal component analysis (PCA) with orthogonal varimax rotation was performed on 23 scale items.

Two criteria were employed to extract factors: Eigenvalues and the scree plot method. The Kaiser-Meyer-Olkin (KMO) measure indicated good sampling adequacy (KMO =.77), and all items showed adequate KMO values on the anti-image correlation matrix (above .5 for all variables). Bartlett's test of sphericity (X^2 (2530.51) =, p <.001) confirmed significant correlations among items, supporting the use of principal component analysis. Furthermore, according to Kaiser's criterion, factors with Eigenvalues greater than 1 were retained, indicating substantial variance accounted for by each factor (Kaiser, 1960).

In this analysis, one component was identified, explaining 29.28 % of the total variance, which was deemed significant. Additionally, following Cattell's criterion, the scree plot was examined to identify where the curve levelled off, determining the number of factors to retain (Cattell, 1966). Based on this criterion, one factor was extracted and retained for further analysis at this stage (figure 1, Table 2).

Figure 1

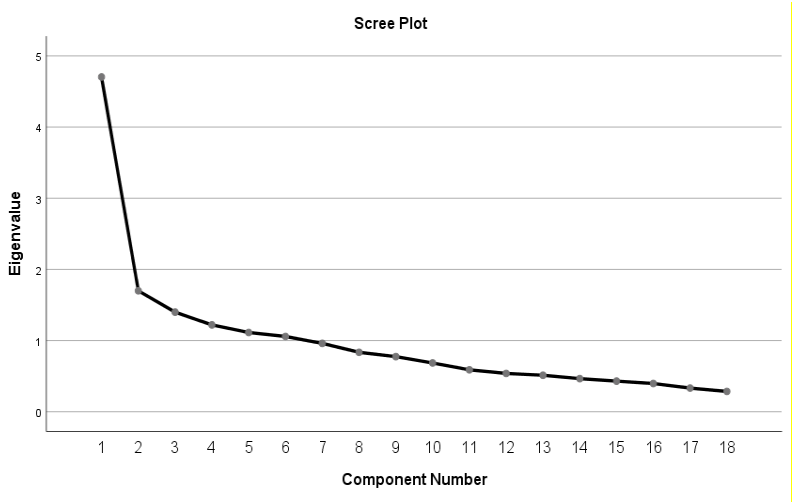

Table 2

Eigen Values and Variance of Socio-cultural Factors of Overeating among Adolescents (N=300)

Factors	Eigen Values	Percentage of Variance	Cumulative Percentage
1	3.66	13.19	29.23

After determining the appropriate factor solution, the analysis adhered to Stevens' criterion, which recommends factor loadings exceeding .35 for meaningful interpretation (Stevens, 2002). Variables failing to meet this criterion were excluded from further examination.

Table 3

Factor Loadings of Items Socio-Cultural Factors of Overeating among Adolescents with Varimax Rotation (N=300)

Sr #	Old Serial number	F1
.1	SCF1	**.471**
.2	SCF2	**.365**
.3	SCF3	**.601**

.4	SCF4	**.547**
.5	SCF5	.249
.6	SCF7	**.374**
.7	SCF9	**.358**
.8	SCF10	.251
.9	SCF11	.121
.10	SCF12	.271
.11	SCF13	.297
.12	SCF14	.016
.13	SCF15	**.479**
.14	SCF16	.110
.15	SCF17	**.493**
.16	SCF18	**.384**
.17	SCF19	.231
.18	SCF21	**.565**
.19	SCF22	.263
.20	SCF23	**.620**
.21	SCF24	**.559**
.22	SCF26	.203
.23	SCF28	**.522**

Note. FI=factor 1, Items with loading of 0.35 and above are boldface.

At this stage, 10 items were excluded because of their low factor loading. Resultantly, 13 items were retained in the scale. This table shows the cluster of items on particular factors.

Final Scale: Socio-Cultural Factors of Overeating

The final scale comprised 13 items. This Factor 1 includes items that reflect sociocultural factors that affect an individual's eating. Factors related to overeating include influences from family, peer pressure, social norms, shared beliefs and traditions around eating habits, and the types of food consumed.

Stage 5: Reliability Analysis

Reliability analysis was conducted to find out the internal consistency of scale. This involved examining the correlations between the overall scale as well as the correlations of each item.

Table 4

Item Total Correlation for Socio-Cultural Factors of Overeating Items of Scale (N =300)

Sr.no	Item no	Correlation with total (*r*)
1	SCF1	.34
2	SCF2	.36
3	SCF3	.49
4	SCF4	.53
5	SCF5	.55
6	SCF6	.33
7	SCF7	.30

8	SCF8	.37
9	SCF9	.38
10	SCF10	.32
11	SCF11	.32
12	SCF12	.78
13	SCF13	.52
14	SCF14	.51
15	SCF15	.53
16	SCF16	.58
17	SCF17	.60
18	SCF18	.34

Table 4 indicates that the correlation of each item with the overall scale is equal to or greater than 0.3 (Nunnally & Bernstein, 1994).

Table 5

Descriptive statistics and Reliability Coefficient of study measures (N=300)

Measures	*K*	*Mean*	*St.Dev*	*α*	Potential Min-Max	Actual Min-Max
Socio-Cultural Factors of Overeating	13	.81	30.59	.80	11-75	0-72
Eating in the Absence of Hunger	14	.84	22.27	.84	2-54	1-70
Emotional Eating Scale	20	.82	51.84	.82	2-86	1-100

Note. k= number of items

Study II: Validation of Socio-Cultural Factors of Overeating

The purpose of this segment is the validation of the Socio-Cultural Factors of Overeating Scale by assessing its discriminant and convergent validity. According to Campbell and Fiske (1959), convergent and divergent validations are essential to justify a measure.

Convergent Validity

The Socio-Cultural Factors of Overeating Scale was compared with the Eating in the Absence of Hunger Scale (Pasquale et al., 2023) to establish convergent validity. Both scales assess abnormal eating patterns, indicating that they measure a similar construct. It was anticipated that the scales would show a positive correlation. Convergent validity is a criterion commonly used in sociology, psychology, and other behavioral sciences, referring to the extent to which "two measures of theoretically related constructs are related" (Domino & Domino, 2006).

Discriminant Validity

Discriminant validity refers to the degree to which one variable is distinct from other variables, ensuring that constructs believed to be unrelated are indeed unrelated (Ab-Hamid et al., 2017). To establish the discriminant validity of the Socio-Cultural Factors of Overeating Scale, the Salzburg Emotional Eating Scale (SEES) (Meule et al., 2018) was used. Since SEES

measures a different construct related to obesity, it was expected that the two scales would be negatively correlated.

Assessment Measures

Eating in the Absence of Hunger Questionnaire (EAH-C; Pasquale et al., 2023). The Eating in the Absence of Hunger Questionnaire (EAH) is a 14-item self-report assessment designed to evaluate how often individuals eat when not hungry, influenced by both internal and external factors. Respondents use a five-point Likert scale (1 = Never to 5 = Always) to indicate their frequency of eating behaviors. Originally, the questionnaire yielded a total score and three subscale scores: EAH-NAE (Negative Affect Eating), EAH-EE (External Eating), and EAH-FBE (Fatigue/Boredom Eating). Subscale scores are derived by averaging relevant items, while the total score represents the average of all 14 items, where higher scores indicate more frequent eating in the absence of hunger.

Convergent and discriminant validity were consistently high, ranging from 92.3% to 100%. Internal reliability of the scale was assessed using ωH (omega hierarchical), with values ≥ 0.65 indicating strong dimensional structure.

Salzburg Emotional Eating Scale (SEES; Meule et al., 2018). The Salzburg Emotional Eating Scale (SEES) consists of 20 items designed to evaluate emotional eating behaviors across different emotions and levels of food consumption in response to these emotions. The scale includes four subscales, each comprising 5 items. Respondents rate their responses on a scale ranging from "I eat much less than usual" to "I eat much more than usual," scored from 1 to 5.

Higher scores indicate greater eating in response to stress, while lower scores suggest less eating in response to stress. Internal consistency was reported as $\alpha = 0.899$, indicating strong reliability of the scale.

Procedure

After obtaining permission from the relevant university authorities, participants were individually contacted and invited to take part in the study. The assessment included the Eating in the Absence of Hunger Scale (Pasquale et al., 2023), the Salzburg Emotional Eating Scale (SEES; Meule et al., 2018), and the Socio-Cultural Factors of Overeating Scale. A total of 150 participants (N=150) completed the survey. Participants were assured that their responses would be kept confidential and were informed that completing the survey would take approximately 10-15 minutes. They were instructed to select the most accurate responses for each item and were advised not to skip any statements to ensure the completeness of the data. At the conclusion of the survey, participants were thanked for their time, interest, and cooperation. The collected data was then analyzed to calculate correlations of scales, which was essential for establishing both convergent and discriminant validity of the newly developed Socio-Cultural Factors of Overeating Scale. This process ensures that the new scale accurately measures the intended constructs and differentiates them from unrelated constructs.

Convergent and Discriminant Validity of Socio-Cultural Factors of Overeating Scale (N=300)

Validation studies revealed high-level correlations between scores of Socio-Cultural Factors of Overeating and EAH-C. It was hypothesized that a positive correlation exists between the indigenous Socio-Cultural Factors of Overeating and the previously developed scale for the similar construct EAH-C. Hence, the value of correlation (r =.45**, p<.01) shows hypothesis approved.

The result of the present study also supports the discriminant validity. It was further hypothesized that a negative correlation exists between the Indigenous Socio-Cultural Factors of Overeating and the Emotional Eating Scale. Hence, it is clear from the value of correlation (r = -.30**, p<.01) that hypothesis approved.

Discussion

The Socio-Cultural Factors of Overeating Scale (SCF) in the Urdu language, to assess socio-cultural impacts on overeating among Pakistani adolescents. The current study is the first-ever empirical evidence on the development of social-cultural factors of overeating and establishing its psychometric properties.

The current study reported the following research carried out on overeating in Pakistan, such as Malik et al. (2019), Munir and Dawood (2021), Sadia et al. (2021), Aslam et al. (2021), and Amjad et al. (2022). Overeating research in Pakistan focuses on weight stigma, social media, peer pressure, cultural and environmental influences, and their effects on eating habits and food choices among adolescents, emphasizing the prevalence of disordered eating patterns.

The existing research aided in the development of a scale indicating that social and cultural factors strongly contribute to adolescent overeating. Adolescents' eating habits and attitudes are significantly influenced by their social environment, which includes family dynamics, peer interactions, school settings, and media exposure (Sina et al., 2022). Cella et al. (2021) emphasize that societal norms and cultural pressures can lead to unhealthy eating patterns. The study aims to investigate how these social determinants contribute to adolescent overeating.

The current study identified various social and cultural elements that influence teenage eating habits. Overeating is strongly influenced by social and cultural variables. Social elements include societal norms, social environments (e.g., parties), family dynamics, social support, media influence, emotional support, and social pressure. Cultural variables include dietary norms and customs, celebratory eating, food availability, body image perceptions, and health and diet attitudes. These factors influence food choices, portion sizes, and eating patterns, all of which lead to overeating. Understanding these aspects is critical for designing concentrated recommendations.

The primary purpose of this study was to create a culturally relevant scale with excellent psychometric features, which was accomplished during the initial phases. The study also sought to investigate the links between socio-cultural factors, eating in the absence of hunger, and emotional eating. The Socio-Cultural Factors of Overeating Scale was developed through a detailed multi-phase process. Initially, the scale was created in Urdu to ensure cultural relevance, incorporating insights from literature reviews, focus groups, and expert feedback. A pilot study confirmed its face validity, leading to a final version with 23 items.

Content validity was strong, with an S-CVI of .83, indicating that the scale effectively measures socio-cultural factors related to overeating. Exploratory Factor Analysis (EFA) identified 13 items which were consolidated into a single socio-cultural factor due to their strong relevance.

The scale demonstrated good internal consistency, with item-total correlations supporting its overall reliability. The second study consists of 300 students of different universities including boys (n=86) and girls (n=214) (M=20.98, SD=2.16). At last convergent and divergent validity were assessed to justify a measure and results showed constructs were theoretically

related. These findings show that all scales are accurate and provide consistent assessments for assessing socio-cultural effects, emotional eating, and eating habits in the study. The study offers a tool to detect socio-cultural influences on overeating, addressing gaps in the literature. It helps identify at-risk students, develop targeted interventions, and shape educational programs. Health professionals can apply it for personalized treatment, while awareness efforts can promote healthier eating behaviors. Widespread use can enhance adolescent eating habits and overall health outcomes.

Conclusion

The study developed and validated the Urdu version of the Socio-Cultural Factors of Overeating Scale for Pakistani adolescents, showing strong psychometric properties. Significant correlations between Socio-Cultural Factors of Overeating Scale, Eating in Absence of Hunger, and Salzburg Emotional Eating Scale emphasize the role of societal norms, peer pressure, media, and family dynamics in adolescent overeating. These findings align with earlier research, confirming the influence of socio-cultural factors on disordered eating behaviors.

Limitations

The current study has also limitations like any other study. The sample includes only university students. This limits the generalizability to adolescents from diverse socio-economic and educational backgrounds. Consideration of rural populations or out-of-school adolescents could broaden the study's impact. The study's cross-sectional design captures socio-cultural impacts at a specific time. This hinders the capacity to identify causal relationships or track changes in eating habits and socio-cultural factors over time. The study only considered socio-cultural factors and did not consider biological or psychological factors that may contribute to overeating, such as genetics or mental health.

Implications

The measure in the current study provides a useful foundation for future research into how socio-cultural factors influence disorder eating. It enables researchers to investigate specific influences and design focused strategies to address them. The findings have implications for educational institutions such as schools and universities in identifying students who may be at risk of engaging in unhealthy eating practices as a result of sociocultural pressures. This can help to shape the creation of personalized educational programs and support services targeted at encouraging healthier eating habits. Community-level interventions and policy should also be develop to address this issue.

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