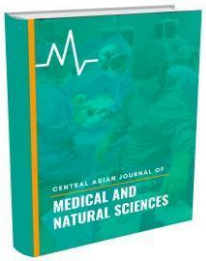

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Article

Influence of Family Health Climate on Motivators and Barriers to Health Behaviors of High School Female Students

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Abstract: This study aims to identify the influence of family health climate on the motivators and barriers to health behaviors among high school female students. A descriptive correlational design was employed, involving a simple random sample of 390 high school female students from Al-Basra City. Data were collected using a questionnaire that included sociodemographic data, body mass index (BMI), the Family Health Climate Scale, and the Motivators and Barriers to Health Behaviors scale. The results showed that more than two-fifths of the participants were aged 17-18 years (42.8%). A significant inverse correlation was found between age and healthy breakfast barriers, while a significant positive correlation was observed between the value placed on health and healthy breakfast motivators. Additionally, significant positive correlations were found between family cohesion and motivators for healthy foods and snacks, healthy drinks, physical activity, and overall health-smart behaviors. These findings indicate that greater family cohesion enhances motivators for consuming healthy foods and drinks, practicing physical activity, and adopting healthier behaviors.

Keywords: Family Health Climate, High School Students, Motivators and Barriers to Health Behaviors

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1. Introduction

Health is defined as a state of physical, mental, spiritual, and social functioning that realizes a person's potential and is experienced within a developmental context (1). Nursing literature defines health in two main schemes. The first scheme is the wellness-illness continuum which encompasses health and illness which is the positive extreme which represents the high-level wellness and the second scheme which encompasses illness, the negative extreme. High-level wellness is further conceptualized as a state of wellbeing, life satisfaction, and overall quality of life. On the other hand, movement towards the negative end of the continuum involves adapting to disease and disability through different levels of functional ability. These concepts have been discussed by various authors such as Newman (2003), Travis and Ryan (2004), and de Hond et al. (2019). Furthermore, the social determinants of health serve as the foundation for both Healthy People 2020 and the more recent 2030 Healthy People goals (US Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2020). Individuals' cognition, emotion, motivation, and volition determine their choice of the type of activity performed during leisure time (regular exercises or playing on the PC) or the type of food

consumed every day (healthy foods or 'empty calories'). (1) Bandura's Social-Cognitive Theory posits that behavior can be comprehensively analyzed by examining the dynamic relationship between personal, behavioral, and environmental influences. (2) Health behaviors of individuals are intertwined with social environments and influenced by social connections.(3,4)

The family plays a crucial role in the socialization process of its members. It serves as a foundation where values are imparted, ideas are learned and embraced. Within the family, symbolic boundaries divide its members into distinct subsystems. Each individual within these subsystems contributes to the overall functioning of the family by fulfilling their respective roles and responsibilities . (5) The Family System Theory postulates that the family is not merely a collection of individuals, but rather a cohesive unit that is greater than the sum of its parts. This theoretical framework emphasizes the significance of interactions among family members and the influence of the shared family environment. Consequently, the characteristics of the family environment are expected to have a multifaceted impact on individual behavior. One particular element of the family environment that can play a role is the family health climate. Family health climate (FHC) refers to the "shared perceptions and cognitions about a healthy lifestyle within the family". (6) Family health climate can serve as a determinant of individual' health behavior including physical activity and nutrition. As such, family health climate is supposed to be interrelated with the individual's cognitive, motivational, and behavioral factors pertinent to physical activity or nutrition within the family, and with routines in family life. (7) One of the key causes of disease within the community is lifestyle and personal behaviors. Individuals' personal health behaviors can determine their disease and its contributing factors. The community health nurses' practices focus on preventing risky lifestyle or personal behaviors that contribute to or facilitate disease development. (8) It is hypothesized that the positive evaluation of the Family Health Climate indicates the internalization of a healthy lifestyle, suggesting that both regular physical activity and healthy eating habits are regulated with a high degree of autonomy. Consequently, it is hypothesized that there will be positive associations with intrinsic and identified motivation, while a negative association is expected with amotivation in relation to the corresponding behaviors. Furthermore, individuals who positively perceive the Family Health Climate can be supported by their family members and with family meals and enroll in physical activities, too. Additionally, households need to offer healthy foods more and minimize unhealthy foods. (7)

According to a study conducted in 2015-2016, 40.7% of children who age 2-19-years in the United States were classified as being at or above the 85th percentile based on the growth charts from the Centers for Disease Control and Prevention in 2000. (9) Health-promotion research focuses mainly on identifying factors associated with health behavior. Individuals' cognition, environment, and interaction can determine their behaviors .Childhood and adolescent obesity pose a significant public health concern worldwide, displaying a rising trend in low- and middle-income nations (LMICs) and a substantial prevalence in numerous high-income countries. (10) Behaviors, which can be established during this transition period, can continue into adulthood, affecting issues, such as mental health, the development of health complaints, diet, and physical activity level. (11) A Physical inactivity has been identified as the fourth leading risk factor for global mortality (6% of deaths globally). (12) In England, nearly 39% of the elderly performed the recommended levels of physical activity, while in the United States about 23% were considered physically inactive and therefore had many health problems . (13) Sadly, an unhealthy diet (such as carbonated drinks, sugary snacks, and energy drinks) replaced a healthy diet (such as milk, vegetables, and fruit), particularly among children. The World Health Organization shows that insufficient dietary habits have become a health risk. (14) Human behavior is influenced by a variety of circumstances, and knowledge is "required to alter conduct. (15) Health promoting lifestyle behaviors(HPLBs) are activities that

include health responsibilities, physical activities, nutrition, spiritual growth, interpersonal relationships, and stress management . (16) European society of cardiology (ESC) stated that a healthy lifestyle includes eating healthy food, maintaining normal body weight, avoiding physical inactivity, and avoiding tobacco smoking . (17) The behavioral factors associated with obesity in children, including sleep duration, physical activity, screen time, and nutritional habits. Environmental factors may include family preferences regarding food type and amount, meal time, dining out, and lifestyle (whether they are sedentary or physically active) and presence of fast food and soft drink in schools could also affect children's eating behavior . (18) Obesity is a medical condition represented by extreme adipose tissue which affects physical health and causes serious problems for both males and females throughout their life. (19) Family meals may have relevance for the prevention early detection, and by treatment of disordered eating. Regular family meals provide an opportunity for the role modeling to prepare of healthy eating patterns and lead to social interactions among family members, and may thus help to reinforce healthy eating patterns and prevent disordered eating behaviors. (20) The Department of Health and Human Services advises that individuals between the ages of 6 and 17 should engage in at least 60 minutes or more of moderate-to-vigorous physical activity on a daily basis. (21) This statistic highlights the alarming reality that less than one quarter of American high school students are meeting the recommended level of physical activity (Adolescent and School Health, 2020. In Iraq, the prevalence of physical inactivity among male adolescents is 80% and such a prevalence for female adolescents is 91%. (22) A study that was conducted in Al-Basra City, revealed that 22.7% of the children were classified as overweight, while 7.7% were categorized as obese. Additionally, it was observed that 5.9% of the children were identified as underweight. A child's excessive weight can be attributed to various factors. According to research, approximately 29.9% of the weight gain can be linked to a lack of physical exercise. Additionally, spending excessive time watching TV and playing computer games accounts for 30.9% of the weight issue. Furthermore, the use of mobile devices by children contributes to around 32.7% of their weight problem. Surprisingly, the highest percentage, 51.9%, is associated with children utilizing their parents' smartphones. The current study aims to identify the influence of family health climate on motivators and barriers to health behaviors of high school female students

2. Materials and Methods

A descriptive correlational design was used to guide this study, which was conducted for the period from December 3rd, 2023, to June 30st, 2024. The study included a simple random sample of high school female students who were recruited from female high schools in Al-Basra City. The randomization procedure involved writing the names of all female high schools (N = 7) on identical pieces of paper and folding them in the same way. These papers were put into a container and stirred well. A colleague started drawing one piece and restir these pieces alternatively. The researchers selected five out of the seven schools which constitutes 71.4% of the total population. The sample size was calculated using G*Power software version 3.1.9.2 Based on a medium effect size (0.25), a power of 0.95, an alpha error probability of 0.05, and 10 groups, the total sample size would be 390. The study participants were randomly selected. The researchers wrote the name of each student in each class of the five schools on identical pieces of paper and folded them in the same way. These papers were put into a container and stirred well. A colleague started drawing one piece and restir these pieces alternatively till achieving the required sample size.

Measures

The study instrument includes participants' sociodemographic data of age, fathers' level of education, mother's education, household's occupation, and family's monthly

income. It also includes body mass index (BMI) which is calculated by dividing the body weight (kilogram) by height (centimeter). Uniscale was used to measure weight. The researchers asked participants to stand upright with taking shoes off and heavy clothes, putting feet side to the digital screen and taking the weight reading.

The height was calculated by asking participants to remove hair ornaments and unbraid hair that interferes with the measurement. stand upright with legs straight, attaching the shoulder blades, scapula, buttocks and heels to the wall with eye straight ahead. Using a flat headpiece to get a right angle with the wall and lower the headpiece until it firmly touches the crown of the head. The researcher made sure that her eyes were at the same level as the headpiece, then documenting the height for each participant.

A score of less than 18.5 is considered as underweight, 18.5-24.9 is within normal, 25-29.9 is overweight, 30-34.9 is obesity class I, 35-39.9 is obesity class II, and 40 or above is obesity class III (Raymond & Morrow, 2021).

Study Instruments

a. Family's Socioeconomic Status Scale

The Family's Socioeconomic Status Scale is used to measure family socioeconomic status which is an adopted version of modified Kuppuswamy scale. (23) The Kuppuswamy scale, created in 1976, is a composite score that considers the education and occupation of the Family Head, as well as the monthly income of the family. This scale produces a score ranging from 3 to 29. The adopted version considers parents' level of education (10 points for each of father and mother), household's occupation (10 points), and family monthly income (10 points). The total score ranges between 4-40. The score that ranges between 4-5 is classified as lower socioeconomic class, 6-14 is classified as lower middle class, 15-20 is classified as middle class, 21-33 is classified as upper middle class, and 34-40 is classified as upper class.

b. Family Health Climate Scale

The Family Health Climate Scale (FHCS). (7) measures shared perceptions and cognitions concerning health and health behavior. The FHCS encompasses three factors: value "represents the importance of being physically active for the whole family" (5 items). The score ranges between 0-15. A higher score indicates that physical activity is part of family members' daily life; cohesion "represents joint physical activities and having fun together during these activities" (5 items). The score ranges between 0-15, communication "represents that nutrition is a natural content of conversations and that family members support each other concerning a balanced diet (5 items and information "represents the search, sharing, and use of information related to sports and exercise is captured by the factor (4 items). The score ranges between 0-12. All items are measured on a on a 4-point scale ranging from 0 = 'not true' to 3 = 'true'. The three factors displayed good to excellent internal consistency ranging from .74 to .90.

c. Motivators and Barriers to Health Behaviors. The Motivators of and Barriers to

Health-Smart Behaviors Inventory (MB-HSBI). (24) measures self-reported motivators of and barriers to health-promoting behaviors (called health-smart behaviors).

The MB-HPBI encompasses the Healthy Breakfast-Motivators which includes 14 items.

The Healthy Breakfast-Barriers subscale includes 8 items. The Healthy Breakfast-Barriers subscale displayed good internal consistency (Cronbach's alpha = 0.79).

The Healthy Foods and Snacks-Motivators includes 20 items that are distributed into Routine (4 items), Availability (4 items), Health Benefits (5 items), Medical Issues (4 items), and Convenience (3 items). The Healthy Foods

and Snacks-Motivators exhibited very good internal consistency (Cronbach's alpha = 0.85).

The Healthy Foods and Snacks-Barrier's subscale encompasses 15 items that are distributed into Negative Attitudes (8 items), Availability (3 items), and Self-Control (4 items). The Healthy Foods and Snacks-Barrier's subscale displayed very good internal consistency reliability (Cronbach's alpha = 0.85).

The Healthy Drinks-Motivators subscale consists of 16 items that are distributed into Preference (9 items), Medical and health issues (4 items) and Awareness (3 items)

The Healthy Drinks–Barrier's subscale includes (13 items) that are distributed into social influences (4 items), Knowledge (5 items), and Availability (4 items) The Physical Activity–Motivator's subscale includes (22) items that are distributed into General Commitment (6 items), Priorities (5 items), Goals/ benefits (4items), Personal preference(3 items) and Medical and health issues (4 items)

The Physical Activity–Barrier's subscale includes (19 items) that are distributed into that are distributed into Preferred alternative (9 items), Medical and health issues (4 items), Environmental support (3 items) and Self-Consciousness (3items).

These items are measured on a 4-point Likert scale of 1 for (Strongly disagree), 2 for (Disagree), 3 for (Agree), and 4 for (Strongly agree). The score The Healthy Breakfast subscale displayed an excellent internal consistency reliability (Cronbach's alpha = 0.91).

The statistical package for social science, IBM, version 27 was used to analyze data. The normality test displayed that the data were not normally distributed. So, the researchers used non-parametric statistical measures. The Spearman rho correlation was used to identify the correlations among study variables. Kruskal-Wallis test was used to measure the difference in the mean when the independent variable consists of three or more groups.

Ethical Considerations

The current study was approved by the ethics committee at the College of Nursing, University of Baghdad. The researchers assured participants that their participation in the current study is voluntary, and they can withdraw at any time they want to, the data obtained from this study will be securely maintained and safeguarded throughout study phases, publication, and after publication. Informed Consent was obtained from the participants.

3. Results

Table 1. Participants' sociodemographic characteristics (N = 390)

Variable	Frequency	Percent
Age (Years): Mean (SD): 17.09 ± 1.42		
15-16	154	39.5
17-18	167	42.8
19-20	69	17.9
Grade		*
Fourth	130	33.3
Fifth	130	33.3
Sixth	130	33.3
Fathers' level of education		
Unable to read and write	20	5.1
Read and write	25	6.4
Elementary school	104	26.7

Middle school	106	27.2
High school	43	11.0
Diploma	50	12.8
Bachelor's degree	33	8.5
Postgraduate diploma	1	.3
Master's degree	8	2.1
Mother's Education		
Unable to read and write	40	10.3
Read and write	19	4.9
Elementary school	190	48.7
Middle school	85	21.8
High school	32	8.2
Diploma	15	3.8
Bachelor's degree	9	2.3

Table 1. (Continued)

Variable	Frequency	Percent
Household's Occupation		
Does not work	68	17.4
Unskilled worker	47	12.1
Semi-skilled worker	49	12.6
Skilled worker	55	14.1
Clerical	33	8.5
Semi-professional	78	20.0
Professional	60	15.4
Family's Monthly Income (Iraqi Dinar)		
< 300.000	126	32.3
300.000-600.000	95	24.4
601.000-900.000	58	14.9
901.000-1.200.000	43	11.0
1.201.000-1.500.000	42	10.8
1.501.000 or more	26	6.7
Socioeconomic Class		
Lower Middle Class	190	48.7
Middle Class	169	43.3
Upper Middle Class	31	7.9

The mean age is 17.09 ± 1.42; more than two-fifths age 17-18-years (n = 167; 42.8%).

Concerning socioeconomic class, less than a half are of lower middle class (n = 190; 48.7%), followed by those who are of middle class (n = 169; 43.3%), and those who are of upper middle class (n = 31; 7.9%).

Most are of within normal weight-to-height proportion (n = 255; 65.4%), followed by those who are overweight (n = 71; 18.2%), those who are underweight (n = 61; 15.6%), and those who have obesity class I (n = 3; 0.8%).

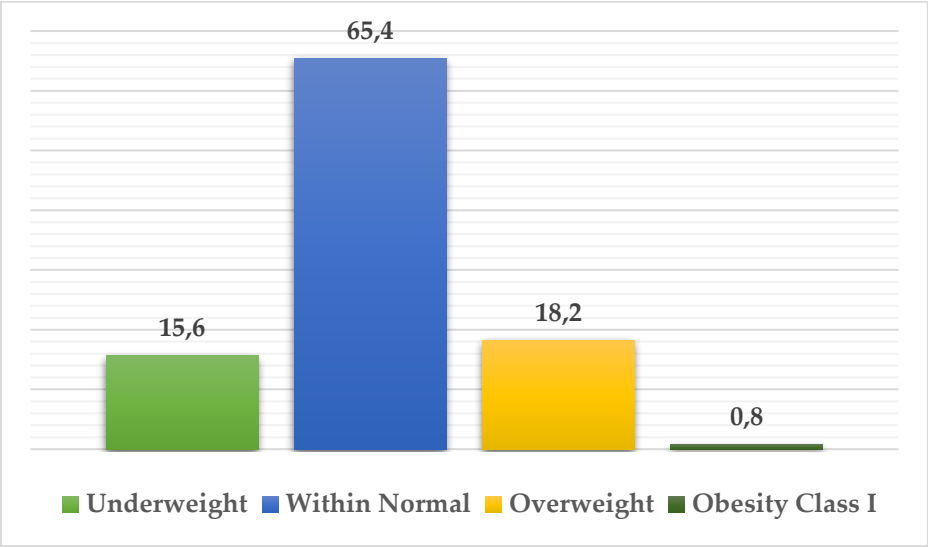

Figure 1. Participants' distribution according to their body mass index

Most are of within normal weight-to-height proportion (n = 255; 65.4%), followed by those who are overweight (n = 71; 18.2%), those who are underweight (n = 61; 15.6%), and those who have obesity class I (n = 3; 0.8%).

Table 2. Correlations among study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Age	-																
2. SES	-.080	-															
3. BMI	.103*	.038	-														
4. Value	.311**	-.124*	.050	-													
5. Cohesion	.044	.061	.009	.403**	-												
6. Information	.117*	-.024	.105*	.318**	.376**	-											
7. Family Health Climate	.103*	-.018	.059	.711**	.819**	.723**	-										
8. Healthy Breakfast-Motivators	.018	.018	.088	.344**	.347**	.330**	.457**	.507**	-								
9. Healthy Breakfast Barriers	-.118*	.021	.040	-.031	.038	.064	.045	-.021	.015	-							
10. Healthy Foods and Snacks motivators	-.006	-.002	.005	.369**	.274**	.378**	.451**	.495**	.491**	.075	-						
11. Healthy Foods and Snacks Barriers	-.055	-.026	-.020	-.066	-.035	-.020	-.043	-.071	-.073	.462**	.043	-					
12. Healthy Drinks Motivators	.053	-.041	.051	.358**	.194**	.325**	.378**	.484**	.402**	.020	.608**	-.018	-				
13. Healthy Drinks Barriers	-.019	-.089	.024	-.018	-.004	.139**	.050	.038	.063	.296**	.176**	.504**	.101*	-			
14. Physical Activity Motivators	-.048	-.086	.078	.212**	.201**	.298**	.325**	.377**	.364**	.141**	.533**	.061	.496**	.265**	-		
15. Physical Activity Barriers	-.050	-.059	.050	-.041	-.012	.115*	.033	-.038	.025	.322**	.162**	.512**	.001	.573**	.239**		

16. Health-Smart Behaviors	-.045	-.065	.067	.234**	.205**	.348**	.355**	.370**	.463**	.428**	.666**	.524**	.554**	.642**	.694**	.657**	-

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The study results display that there is a significant inverse correlation between age and healthy breakfast barriers (r = -.118 at p = 0.05).

There is a statistically significant positive correlation between value and healthy breakfast-motivators (r = .344 at p = 0.01).

There are statistically significant positive correlations between cohesion and each of healthy foods and snacks motivators, healthy drinks motivators, physical activity motivators, and health-smart behaviors (r = .274 at p = 0.01; r = .194 at p = 0.01; r = .212 at p = 0.01; r = .234 at p = 0.01) respectively (Supplementary File).

4. Discussion

This descriptive predictive study aimed mainly to identify the influence of family health climate on motivators and barriers to health behaviors of high school female students.

The study results displayed that there was a significant inverse correlation between age and healthy breakfast barriers. This finding implies that the younger the age, the greater the barriers to healthy breakfast. This finding could be explained as younger individuals could acquire less information about the value of healthy breakfast and the methods by which can overcome barriers to consuming healthy breakfast. People who perceive more barriers to healthy eating are more likely to report consuming less nutritious diets, making perceived barriers to healthy eating an important individual-level issue. (25)

There was a statistically significant positive correlation between value and healthy breakfast-motivators. This finding implies that the greater the value of healthy breakfast, the greater the motivators to consume it.

There was a statistically significant positive correlation between cohesion and healthy foods and snacks motivators. This finding implies that the greater the cohesion, the greater the motivators to consume healthy foods and snacks. This finding could be explained as common family meals and the value of eating together with other family members create a favorable environment that joins family members and motivate them to have healthy foods and snacks. (7)

There was a statistically significant positive correlation between cohesion and healthy drinks motivators. This finding implies that the greater the cohesion, the greater the motivators to healthy drinks. This finding reflects that common family meals and the importance of eating together with other family members create a favorable environment that joins family members and motivate them to have healthy drinks. (7) There was a statistically significant positive correlation between cohesion and physical activity motivators. This finding implies that the greater the cohesion, the greater the motivators to practice physical activity. This finding could be explained as when family members joint together, this can create a favorable environment for their members to practice physical activity. This finding is supported by that of Bigman et al. (2015). (26) who concluded that there was a significant association between family cohesion and adequate moderate-to-vigorous physical activity.

There was a statistically significant positive correlation between cohesion and health-smart behaviors. This finding implies that the greater the family cohesion, the healthier the health-smart behavior. This finding is concurred with that of Rattay et al. (2018). (27) who concluded that family cohesion significantly mediated health behavior.

The roles the mother assumes within the family have a direct tie to the health of tl1e family, particularly that of young children (Goodwin et al., 2005). (28) Some studies admit that mother's level of education is a key determinant of determining family's nutrition and health [e.g., Behrman and Wolfe (1984), Heller and Drake (1979), Wolfe and Behrman (1982)]. (29,30,31), and in this context, the World Bank (1980) and other experts have suggested that boosting the education of women could serve as a vital tool for enhancing nutrition and health conditions in developing regions. Behrman and Wolfe (1987). (32) concluded that mothers' level of education is linked to substantial positive influences on health and nutrition.

5. Conclusion

The younger the age, the greater the barriers to a healthy breakfast. The greater the value of a healthy breakfast, the greater the motivators to consume it. The greater the cohesion, the greater the motivators to consume healthy foods and snacks. The greater the cohesion, the greater the motivators to healthy drinks. The greater the cohesion, the greater the motivators to practice physical activity. The greater the family cohesion, the healthier the health-smart behavior. Twelfth graders expressed greater value of healthy lifestyle. Students whose mothers who hold bachelor's degree have greater value, information and overall family health climate and enjoy healthier lifestyle in terms of healthy drinks. Students whose fathers hold master's degree enjoy healthier behavior in terms of healthy drinks.

6. Recommendations

The current study involves some implications including the need for community health nurses to initiate health education activities for younger students with the goal of overcoming the barriers to a healthy breakfast they encounter, consolidating family cohesion which in turn boosts the motivators to consume healthy foods and snacks, healthy drinks, practice physical activity, and healthier overall health behavior.

7. Limitation of Study

The study includes some limitation including data that were subjectively collected. Additionally, the researcher believes that there are some factors that can influence students' healthy lifestyle and health behaviors that are not considered in the current study including parents' healthy lifestyle and health behavior, the school climate, and the neighborhood environment.

8. Conflict of Interest:

The authors declare that there is no any conflict of interest.

9. Funding

The authors declare that the current study did not receive any funding.

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