Original Article

Factors Affecting Healthy Life Style Behaviors in Adolescents; Eating Disorders: A Systematic Review

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Abstract

This systematic review was planned and applied to determine the factors affecting healthy lifestyle behavior and eating disorders in adolescents. The papers that were accessed using the databases of PubMed, ScienceDirect, CINAHL, EBSCOhost, Medline, Google Academic and National Thesis Center on March-April 2017 were included in the review. Scanning was performed using various combinations of the key words of eating disorders, obesity, bulumia, anorexia nervosa. As a result of scanning, 1500 papers were reached and 11 papers meeting the criteria were included in the evaluation. It was concluded from the scanned papers that the formation of intervention programs is important in the treatment and care of eating disorders, one of the factors affecting healthy lifestyle behaviors, and that the professionals and the society should reach a positive consensus and behavior in this regard.

Key words: Eating disorders, Obesity, Anorexia, Bulimia

Introduction

Healthy lifestyle behaviors are defined as the protection and development of physical, mental, cognitive and social well-being of adolescents. The programs organized for this purpose aim to give positive attitudes and behaviors to adolescents and to maintain these behaviors (Semiz et al.2013). The adolescence period (10-19 years) is a period during which many differences are experienced from bio-physico-social aspects, transition from childhood period to adulthood takes place and personality differences are formed. This period is quite important in terms of determining the attitudes and behaviors related to healthy life. These health-related behaviors affect all present and future experiences of the individual (Unal et al., 2009).

There are many factors that adversely affect healthy lifestyle behaviors in adolescence. The most important of these is eating disorders. Eating disorders can be seen in many young people in the adolescence period due to their inability to adapt to the group they are in or the fear of being excluded. This situation manifests itself when the feelings and thoughts related to eating behavior and food begin to disturb the individual severely. Dieting behavior is a common stimulus that leads to the development of eating disorders. The fact that the person too obsessed with foods and his/her weight and appearance negatively affects his/her health, relationships and daily activities. Eating disorders are not only associated with food and weight. Although physical symptoms may seem to be at the forefront, they progress with serious psychiatric problems. In people with eating disorders, many psychiatric disorders such as mood disorder, anxiety disorder, substance use disorder and personality disorder are present as comorbid diagnoses (Vardar &Erzengin, 2011).

The reasons for the occurrence of eating disorders are not known exactly. It is believed in etiology that biological and psychosocial factors play a role together. The underlying reasons of eating disorders are associated with low self-

esteem, depression, feeling of loss of control, valuelessness, identity confusions, and the problems in intra-family communication (Arcelus et al., 2011, Sonmez, 2017).

People of all ages and genders may have eating disorders although they seem to affect adolescents and young women in general. According to the Academy for Eating Disorders (AED), it is estimated that 10 million women and 1 million male individuals in America have eating disorders. Eating disorders seen in men, in contrast to the predictions, have doubled over the past decade. Eating disorders are psychiatric disorders with increased morbidity and increased risk of death, besides causing significant physical health problems (Arcelus et al., 2011, Sonmez, 2017).

In the criteria issued by the American Psychiatric Association (APA) in 2013 (DSM 5), Eating Disorders were classified as the following (Vardar & Erzengin, 2011, Arcelus et al., 2011, Sonmez, 2017).

1. Anorexia Nervosa,
2. Bulimia Nervosa,
3. Binge Eating Disorder (Defined for the first time),
4. Unclassified Eating Disorders.

Anorexia Nervosa

Anorexia Nervosa can be described as impairment of an individual's body image (perception of his/her own body) and ultimately his/her self-perception of overweight, his/her refusal to eat, and thus his/her excess weight loss. The lexical meaning of anorexia is the loss of apettite. The lexical meaning of nervosa indicates emotional causes (Bulut et al., 2017).

In fact, the name of the disease is contrary to itself. Because many patients with anorexia do not lose their interest and appetite for eating. On the contrary, although they don' eat, their appetites are fine and they are continuously interested in eating such as reading recipes, preparing food meticulously for their family. However, the weight loss that develops due to the patient's insistent refusal to eat may reach a level that would threaten his/her life. It is one of the rare disorders that can result in death in mental disorders (Bulut et al., 2017).

Diagnostic criteria for anorexia nervosa

- Refusal to have a normal weight for age and height or a body weight above it
- To be afraid of gaining weight or being a fat person despite having a body weight lower than expected
- The presence of disorder in the way the person perceives his/her body weight or shape, the presence of an insignificant effect of the body weight or shape in self-evaluation or denying the importance of low body weight during that time.
- The lack of amenorrhea, in other words, at least three consecutive menstrual cycles after menstruation in women.
- In anorexia, the weight of the person is 85% below the weight which is regarded normal by his/her age and gender. Weight loss usually occurs by diet. However, it also possible to try methods such as self-induced vomiting, laxatives (cathartics), diuretics, intense exercise and playing sports. The lack of at least three menstrual cycles is important in patients with anorexia.
- The last criterion that needs to be taken into account is the disorder in the perceptions of body weights, shapes and appearance of the patients with anorexia. These patients may insist that they are overweight even when they are extremely thin, or they may have complaints about the appearance of their certain body regions (such as complaints of thick bellies, legs and hip).
- DSM divides Anorexia Nervosa into two sub-types. In the restricted type, the first type, the person imposes restrictions to his/her eating patterns. In the binge eating/vomiting type, the second type, the person exhibits periodic eating behaviors such as binge eating and then vomiting or using laxatives. It was observed that the sub-type of binge eating/vomiting type could reach more pathological dimensions. For instance, personality disorders, impulse control problems, theft, alcohol and drug addiction, social withdrawal and suicide attempts can be seen more often in the patients who comply with this sub-type.
- It is known that the frequency of major depression is higher in the family members of the patients with anorexia nervosa compared to the general population. Some findings show that there are close but problematic relationships in the families of patients. It is known that the most important

factor in the emergence of Anorexia is the importance given by society to the physical appearance. Withdrawal from family along with the efforts to become independent and socialized observed in adolescents cause some of them to be deeply involved in their body.

- Anorexia Nervosa and Depression should be distinguished from each other as some of their symptoms are common. Loss of appetite can be seen in depression, but the patients with anorexia do not lose their appetite, they strongly make efforts to control hungry even though they feel it. Many symptoms of anorexia can also be overlapped with Somatization Disorder (such as weight loss, vomiting). However, weight loss is not excessive in Somatization Disorder and the patient has no anxiety for gaining weight. The eating avoidance behaviors of the patients with anorexia are also seen in Social Phobia, but the fear of eating of social phobics is limited only to social environments and conditions (Uzun, 2014, Bulut et al., 2017).

Differential diagnosis

- Severe weight loss may occur in depression, obsessive-compulsive disorder or other diseases. However, there are no fear of gaining weight and voluntarily refusal to eat behaviors in these diseases (Uzun, 2014, Bulut et al., 2017).

Causes of Occurrence (Psychosocial)

- Anorexia usually emerges during the first or middle adolescence period, mostly following a diet period and after intense stress (divorce of mother-father, etc.). It is accepted that the average age of onset is 17 and that anorexia is not seen after the age of 40. In anorexia, the female-male ratio is 20/1. Its prevalence is reported as 1%.
- Such people have conflicts such as having a childlike structure, excessive fear of sexual intercourse and pregnancy, growth, separation from the mother, extreme fear for individualization.
- The child has a family pathology that prevents the child's individual development.
- It is common in sectors that are highly valued for social weakness.

It is more common in those with significant family problems such as death and separation, mental illness, alcohol and gambling (Uzun, 2014, Bulut et al., 2017, Aksoydan & Cakir, 2011).

Bulimia Nervosa

Bulimia Nervosa is an eating disorder in which excessive eating and diet periods are intertwined. Bulimia is used for the idiom "to feel hungry like a cow" in the Greek language. This disease also includes conscious elimination methods following the periods of unusual amounts of food consumption. These methods, which are used to prevent weight gain, usually consist of vomiting, fasting, excessive exercise or use of laxatives (Bahar et al., 2008, Bulut et al., 2017).

Diagnostic Criteria of Bulimia Nervosa

- The presence of repeated binge eating episodes.
- Eating, in a certain time period, much more food than most people can eat without any doubt at the same time period and under similar conditions (for example, within any 2 hour period)
- Disappearance eating control during this episode (for example, the feeling of being unable to stop eating or what to eat or how much to eat)
- In order to avoid gaining weight, repeated improper balancing behaviors such as vomiting, misuse of laxatives, diuretics, enemas or other medicines, no eating or excessive exercise led by the person
- Both binge eating and improper balancing behaviors averagely appear at least twice a week for 3 months.
- The person is affected by the form and weight of his/her body in a senseless way while evaluating himself/herself.
- This disorder occurs only during anorexia nervosa episodes.
- Pleasure eating typically takes place in secrecy, a stress factor is usually a trigger and activates negative emotions; such as looneliness, worry about eating in a social environments or gaining weight. This situation continues up to a degree that will disturb the person. During this time, the person loses control over eating behavior and the amount of the food consumed. The foods that are preferred in this process are usually fast-eaten and calorie foods such as ice cream, chocolate and cake (Bahar et al., 2008, Bulut et al., 2017).

DSM divides Bulimia Nervosa into two sub-types:

- With elimination
- Without elimination

The behaviors accompanying the type without elimination are fasting, doing excessive exercises or using laxatives. It is more frequent than the type with elimination. In addition, it is observed that such patients less often experience binge eating periods and that the severity of the disease is milder (Bahar et al., 2008, Bulut et al., 2017).

Bulimia Nervosa begins in the adolescence and early adulthood periods. 90% of bulimia patients consist of women. It is known that the frequency between women is between 1 and 2%. When the histories of bulimia patients are examined, it is seen that many of them were previously overweight and that the symptoms of the disease began with a diet period. Since bulimia patients have exaggerated eating periods, they should not be expected to become thin when the patient is admitted to clinic, they can sometimes be normal weight and even overweight, whereas the patients with anorexia always refer to the clinic in an extremely weakened state (Acar, 2015, Ozdemir, 2017).

Bulimia patients do not refuse help as in Anorexia. They eagerly seek help although they feel guilty after the episodes of overeating and vomiting and they are in an effort to conceal these behaviors. Long term follow-ups show that more than half of the patients treated with Bulimia's diagnosis have recovered their health in five years. However, the course of the disease is also associated with the severity of the symptoms that result from vomiting. In long-lasting cases, impairment in relationships, problems in business life and a decrease in self-esteem can be seen, and it is known that it would be useful to address such factors from clinical aspects (Aksoydan & Cakir, 2011, Kurtuncu, 2015, Karadag & Ozcebe, 2011).

Differential diagnosis

The bulimic type of anorexia nervosa may also have overeating and weight gain seizures, but the basic pathology is in the direction of vomiting and stoppage. In bulimia nervosa, the basic pathology is inability to stop eating aspects (Aksoydan & Cakir, 2011, Kurtuncu, 2015, Karadag & Ozcebe, 2011).

Causes of occurrence

- It is seen that they were overweight before the disease and that the symptoms of the disease began with a diet period.
- Depression, obsessive-compulsive disorder, phobic disorder, panic disorder can be often seen in these people. These disorders are more common in their families.
- To have suffered sexual abuse in childhood and excessive intra-family problems are noteworthy.

People define their mother and father as "distant and rejectionist". It is thought that the eating seizures represent the integration with the mother, but then the separation from the mother and the individualization effort are manifested as the elimination and vomiting behaviors aspects (Aksoydan & Cakir, 2011, Kurtuncu, 2015, Karadag & Ozcebe, 2011).

Not Otherwise Specified (NOS) Eating Disorder

Obesity

Obesity is a serious, complex, and chronic disease that cannot be explained by lack of willpower, which has genetic and environmental interactions. It develops because of excess amount of adipose tissues in the body, depends on many factors and requires medical treatment (Acar, 2015, Ozdemir, 2017,Karadag & Ozcebe, 2011).

Psychogenic Vomiting

They are chronic and episodic vomiting frequently seen after eating without an organic cause and a feeling of nausea. Bulimia is different in that it takes place by forcing and does not take place after binge. It is more common in women. It is usually seen in the early and middle stages of adulthood (Karadag & Ozcebe, 2011, Acar, 2015, Ozdemir, 2017).

Pica

It means that children eat substances such as clay, soil, crayon, coal, yarn, paper and ash. It is a presentation which is frequently encountered at the ages of 2-3 and disappears at the ages of 3-5. The substances eaten by children may lead to poisoning by accumulating in the blood over time. They may have dietary deficiency, calcium-potassium iron deficiencies. In children who eat hair, the mass created by the hair gives the symptoms of complete obstruction in the

intestines (Acar, 2015, Ozdemir, 2017, Karadag & Ozcebe, 2011).

Methods

A systematic review design was used in this study.

Study Design

The purpose of this systematic review was to examine studies on eating disorders in adolescents and to determine the things to do to improve positive behavior.

In the review, answers to the following questions were sought (The questions were prepared according to the PICO format).

1. What are the general characteristics of studies on eating disorders in adolescents?
2. What are the factors that affect healthy lifestyle behaviors in adolescents?

Limitations of the Research: The time limitation are among the limitations of the research.

In the selection of the papers, attention was paid to the criteria that the studies were carried out with adolescents without making any restriction in terms of the years covered and had full-text.

The method employed in the research: In the research, PubMed, ScienceDire- ct, CINAHL, EBSCOhost, Medline, Google Academic and National Thesis Center indexes were examined for internationally published studies to serve the purpose. While performing the scanning, various combinations of the key words of "eating disorders, obesity, bulumia, anorexia nervosa" were used for national databases. It was aimed to reach all studies related to selected keywords during scanning. The resource lists of the papers that were scanned to include in the study were also reviewed once again. The way of selecting the article is summarized in the PRISMA 2009 Flow Diagram (Figure 1).

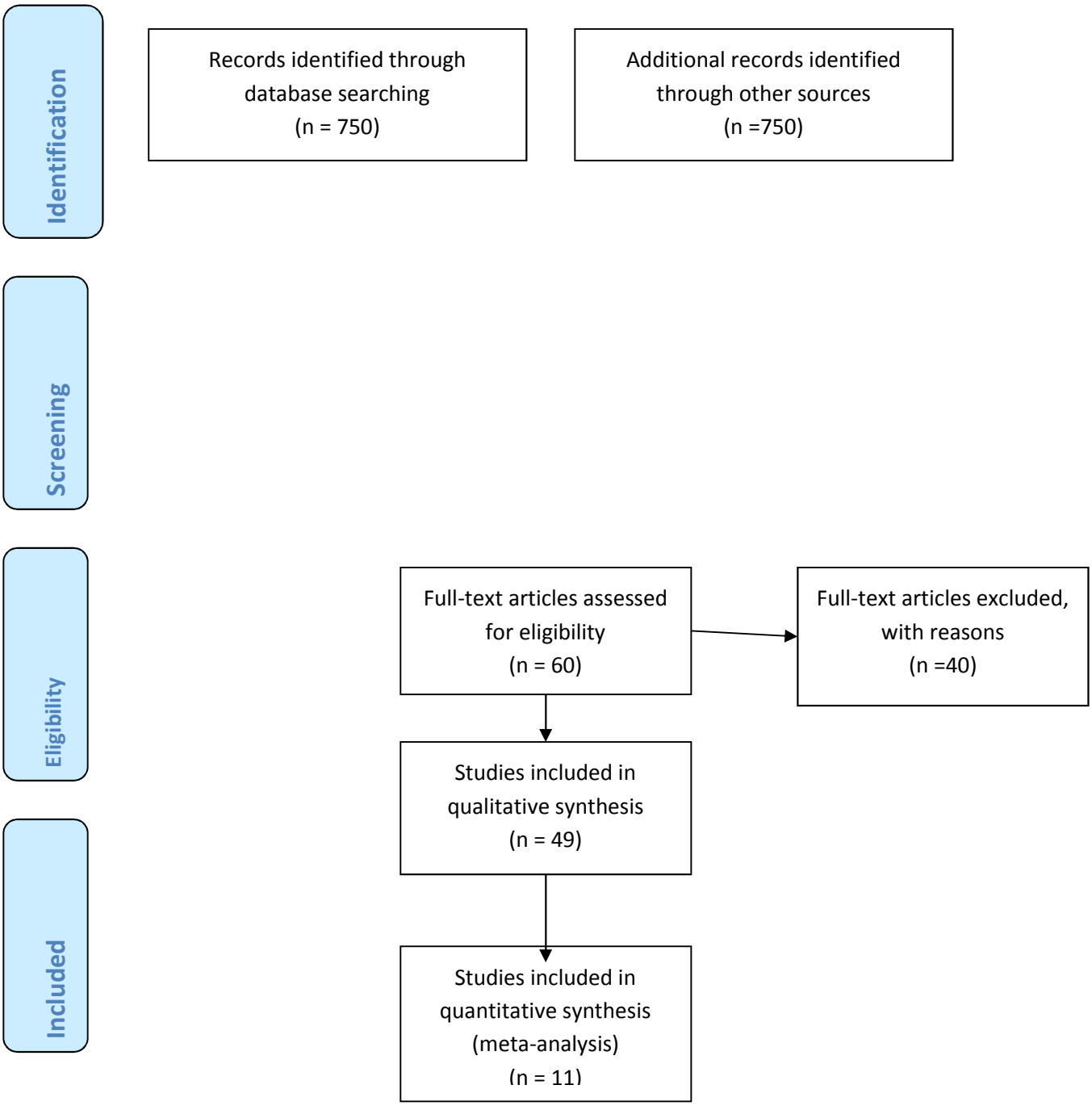
The titles and abstracts of the papers identified as a result of the literature search were evaluated by the researchers at different time intervals and independently of each other, taking into account the inclusion criteria. If the title or abstract of the papers were not completely clear, the full text of the research was examined. The evaluation results of the researchers were compared by being written on data summary form, and those compatible with the subject were taken.

The date of the research, by whom it was carried out, The type of researcher, the number of samples of the researcher, and the level of evidence obtained were included in the data summary form (Table 2). There was no disagreement among the researchers during the evaluation of the data.

Table 1. Distribution of Publications by Features

	Issue (%)
Author's profession	
Psychiatrist	10
Nurse	40
Multidisciplinary	30
Physician	10
Sociologist	10
Published source	
Peer-reviewed journal	80
SSCI journal	15
Report	5
Subject of Publication	
Eating disorders	45
Obesity	15
Anorexia nervosa	15
Blumia	10
Binge eating disorder	15

Figure 1: PRISMA 2009 Flow Diagram


Identification
Records identified through database searching (n = 750)
Additional records identified through other sources (n =750)
Screening
Eligibility
Full-text articles assessed for eligibility (n = 60)
Full-text articles excluded, with reasons (n =40)
Included
Studies included in qualitative synthesis (n = 49)
Studies included in quantitative synthesis (meta-analysis) (n = 11)

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	systematic review	
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	

Results and Discussion

According to the results of scanning, it was determined that 40% of the authors who prepared the publications were nurses, 65% of them were published in peer-reviewed journals, research paper was the publication type, and the publication subject of 45% of them was eating disorders (Table 1).

In researches, it is emphasized that the body mass indexes of young people undergo changes during adolescence period, this change in their physical appearance is important for young people, and the behavioral changes that develop during this period are negatively reflected on eating habits. Fast food consumption and fast eating habits have become a habit especially in adolescents due to the hassle and tempo of daily life. In particular, this situation leads to the emergence of obesity problems. According to studies, gender, health perception, alcohol-substance use, cigarette consumption, family type and parental education affect the adolescents' diet. If it is considered that eating habits are the behaviors acquired during childhood, it can be concluded that the eating disorder behavior of adolescents are not just a behavior that is gained in the family but a disorder that develops during school years in the childhood.

The fact that adolescents exhibit the behaviors of positive eating habits allows them to become healthy adults not just for the present but also for the future. According to the result of this systematic review, it was revealed that females, those whose parents have a low educational level and are unemployed, those with poor income status, those with extended family, those with bad social relationships, those without social security, those with poor general health perceptions, those with insufficient physical activity and those with alcohol-drug addiction during the adolescence period are in the risk group, and that these young people should be taken to intensive training programs.

For this reason, to take into consideration the influencing factors and risk groups in the planning of healthy lifestyle behavior development programs, to take necessary precautions if eating disorder, introversion and depression are available in the adolescent, to provide trainings related to subject to be able to gain healthy eating habits, to regulate the diet to get the necessary calorie, to observe the nutritional status by spending time together for at least 30 minutes during feeding times, to continue observation after feeding time, to perform daily weight control, to pay attention to oral and skin care and to plan physical activity exercise programs are highly important factors that need to be taken into account in fighting against eating disorders and increasing quality of life.

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