Exploring Risk and Protective Factors of Obesity and Its Consequences among Adolescents: A Thematic Analysis

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The purpose of this study was to explore risk and protective factors of obesity and its consequences among adolescents. In-depth interviews were conducted from 18 adolescents with obesity (8 males and 10 females) having an age range of 13-17 years, selected through purposive sampling. The interview guide was developed to conduct semi-structured interviews. Thematic analysis of interviews revealed the significance of bio-psychosocial model in explaining risk factors, protective factors, and consequences of obesity among adolescents. Biological, psychological, social, and personal factors emerged as themes of risk and protective factors based on various categories. Bio-psychosocial factors along with weight control plans emerged as themes of the consequences of obesity. The results and implications were discussed in Pakistani context.
Keywords. Risk, protective, consequences, obesity, adolescents[1]

Obesity is defined as abnormal fat accumulation that may impair health. BMI is defined as a person's weight in kilograms divided by the square of height in meters (kg/m^2) (World Health Organization [WHO], 2016a). Obesity is an emerging epidemic in Pakistan. The prevalence of obesity is higher among females as compared to males (Tanzil & Jamali, 2016). Especially, weight concerns at the time of adolescence are more common in girls (APA, 2013). According to Pakistani Cardiologists, Pakistan is ranked 9^{th} among the obesity prevailing countries. If obesity is not prevented in the upcoming 4-5 years, 65% of Pakistan's population

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will fall under obese category (Baloch, 2016). Comparatively, obesity is less evident in Asian and developing countries than in western and developed countries (APA, 2013). Nevertheless, a study conducted globally on the prevalence of obesity has shown an increase in the rate of obesity all over the world, even in developing countries, including Pakistan (Ng et al., 2014). The prevalence rate of overweight in Pakistan (age range 5-19 years) has increased from 0.6 in 1975 to 9.7 in 2016 (WHO, 2016b).

Nowadays high prevalence of obesity is due to decreased physical activity, media role, lack of diet control by parents among children (Anwar et al., 2010) and more intake of carbohydrates and fats because of the advent of fast-food chains (Mash & Wolfe, 2016). Moreover, changing trends in society regarding increased usage of electronic devices and playing indoor games have markedly decreased physical activities which is the leading cause of being overweight (Siddiqui, 2016). A systematic review of published papers between 1990 and 2011 was carried out to explore possible risk factors of obesity among various age groups in Eastern Mediterranean Region (EMR). Possible factors determining obesity in this region included nutrition transition, inactivity, urbanization, being married, a shorter duration of breastfeeding, frequent snacking, skipping breakfast, a high intake of sugary beverages, an increase in the incidence of eating outside the home, long time spent viewing television, massive marketing promotion of high-fat foods, stunting, perceived body image, cultural elements, and food subsidy policy (Musaiger, 2011). Family-based factors like higher parental education, living in high-income neighborhoods, and fewer siblings are independent predictors of obesity among school-aged children in Pakistan (Mushtaq et al., 2011).

A study in Nepal showed that the major risk factors of obesity among adolescents are high socioeconomic status, watching television for a longer time, being male, studying in private schools, and consuming less fruit (Piryaniet al., 2016). Research evidence shows that adolescents with an age range from 14 to 18 years have a shorter duration of sleep which is associated with an increase in BMI (Mitchell et al., 2013). A study shows that there is a positive association between obesity and irregularity in menstrual cycle among young girls (Mustaqeem et al., 2015). Diagnostic and Statistical Manual – 5 (DSM 5) no longer considers obesity as a clinical disorder, because it is a precursor and outcome of multiple other disorders like mood disorders, eating disorder, substance use, etc. (American Psychiatric Association [APA], 2013). Obesity is associated with enduring patterns of diseases among adolescents and a higher crude

mortality rate in later adult life (Mayor, 2016; Twig et al., 2016a) that has made it a matter of great concern in public health (Kyrgiou et al., 2017). For instance, higher Body Mass Index (BMI) at a younger age is related to a higher risk for different types of cancer (Kyrgiou et al., 2017; Levi et al., 2019), cardiovascular mortality (Twig et al., 2016a), and diabetes mellitus mortality as well as future burden related to diabetes among adults (Twig et al., 2016b).

Adolescents with higher adult obesity risk report higher psychosocial stress as well as disordered attitude regarding eating (Quattlebaum et al., 2019). The prevalence of disordered eating, unhealthy dieting, and distorted body image were 33%, 57%, and 12%, respectively. Over one-third (36%) of the total sample had used at least one "extreme" dieting method in the past month that is, "crash" dieting, fasting, slimming tablets, diuretics, laxatives, and/or cigarettes to lose weight (Grigg et al., 1996). Self-perceived weight as underweight or overweight; dieting, vomiting or taking laxatives, taking diet pills, and fasting to lose weight were each significantly associated with lower levels of emotional self-efficacy among female adolescents (Zullig et al., 2016). A vicious cycle exists between dieting and binge eating. Weight concerns emerge during adolescence at the time of puberty, which leads to food avoidance. Since the body is neurologically driven to maintain optimal body weight, binge eating, as a result, starts to compensate for the lost nutrients and this increases the chances of being obese (Mash & Wolfe, 2016). Hence, studying risk and protective factors related to obesity and its consequences on the life of adolescents holds great significance demanding earlier prevention.

World Health Organization has recommended several ways of preventing obesity among children, which can play a key role as protective factors. These recommendations can be followed on four different levels. Firstly, on an individual level e.g. having a healthy balanced diet plan, engaging in physical activity for a minimum of 30 minutes, limiting screen time for children, maintaining a normal weight, avoiding unhealthy and junk food. Secondly, on the community-level e.g. supporting programs of breastfeeding, building safe neighborhoods for children to indulge in physical activity. Thirdly, on the private-sector level for example voluntarily reducing fat, sugar, and salt constituents in processed food, ensuring the availability and affordability of healthy food to all the customers, and to avoid the marketing of junk and unhealthy food, particularly to children. Lastly, on a governmental level e.g. spreading

awareness regarding a healthy diet, making an environment to promote physical activities, subsidizing the local production of vegetables and fruits, taxing unhealthy food (WHO, 2011).

Given the alarming increase of obesity, its negative consequences and associated complications, the present study was designed to explore the currently prevailing risk as well as protective factors related to obesity in addition to its consequences among adolescents with obesity. The strength of present study lies in its qualitative nature whereby an interview guide based on past literature was used to study obesity among adolescents across gender. Furthermore, the screening process for sample of present study included anthropometric measurement to calculate the BMI percentile as per the obesity criteria indicated by Centers for Disease Control and Prevention (CDC, 2015). Lastly, the current study has its practical implementations for planning future interventions based on an integrated approach using bio-psychosocial factors.

Method

Sample

A total number of 18 adolescents participated in the present research consisting of 8 males and 10 females. The inclusion criteria of sample was having an age less than 18 years and a BMI indicating obesity at 95 percentile or greater. The sample of study was approached from different Government and Private schools and colleges of Rawalpindi, Islamabad, and Taxila. On the basis of inclusion criteria adolescents were screened. The age range of sample was from 13 to 17 years (M = 15.11; SD = 1.41). The height was measured in feet and inches, and the mean height was 5.35 (SD = 3.5). The weight was measured in kilograms and the mean weight was 84.38 kgs (SD = 11.06). Most of adolescents had 1st birth order (38.9%). The level of education of 14 participants was under matric or matric, whereas 8 participants were from intermediate. The detailed demographics are shown in Table 1.

Interview Guide. An interview guide was developed based on previous researches. It consisted of 24 exploratory questions about risk and protective factors as well as the possible consequences of obesity among adolescents. Out of 24 questions 6 of them were broader, whereas, 18 were probing questions for example, how do your family and parents behave and react towards your eating habits? Do you get involved in physical activity/sports? Does your overweight hinder your daily life activities?

Procedure

For data collection, a formal permission letter was obtained from the Director of Psychology Department, Quaid-i-Azam University, Islamabad. For the conduction of interviews from participants, formal permission was obtained from respective principal of the school/college of Rawalpindi Islamabad, and Taxila. Anthropometric measurement was taken to screen the participants for research. The inclusion criterion of sample was having an age less than 18 years and a BMI percentile of 95 or greater indicating obesity (CDC, 2015). Consent was obtained from parents of screened participants, as they were below 18 years of age. In addition to parental consent, adolescents' assent was also obtained for participation in research. Rapport was built before taking in-depth interviews. Participants were briefed regarding the topic, aims, objectives, and significance of this study with the assurance that their information will be kept confidential and used for the study. A semi-structured interview was conducted with adolescents till the saturation point was reached. After taking interviews all the participants were thanked for doing their participation. All ethical aspects were taken into consideration during research. The responses of participants were written by using paper and pencil during interview, thereafter thematic analysis was done.

Results

In present research, interviews were transcribed. Thematic analysis was carried out. First of all, codes were generated based on transcribed verbatim of each participant, and categories were assigned to similar codes. Thereafter, categories were merged into broader themes. In total, 79 codes were generated under different categories and themes based on qualitative data. The six steps thematic analysis procedure of Braun and Clark (2006) was followed, as given below:

Step 1 Familiarizing oneself with data. This step was comprised of transcription of data, reading, and re-reading, note down initial codes.

Step 2 Generating initial codes. In this step codes were generated in a systematic feature across the data set, gather relevant data to each code.

Step 3 Searching for themes. In this step codes were gathered into potential themes, collating all data relevant to each potential theme.

Step 4 Reviewing the themes. In order to review the themes because these were relevant to the extracted codes and complete data set to make a thematic map.

Step 5 Defining and renaming themes. In this step each theme was refined to give clear names to them.

Step 6 Producing the report. In order to finalize the selected appropriate extracts; results were discussed and relate with research questions in the light of previous literature to generate the report.

Inter-rater Reliability

Two raters, M.Phil (Psychology) degree holders, were requested for inter-rater reliability to evaluate the codes generated under categories and respective themes. This helped in establishing inter-rater reliability. Cohen's kappa was calculated to measure the level of agreement between two raters by using SPSS-22. The coefficient of Cohen's kappa of present coding ($\kappa = .74$) indicates good agreement between both raters according to the criteria given by Landis and Koch (1977).

The participants were assigned codes and numbers to maintain anonymity like FP for Female participants and MP for Male participants. As result for each theme, verbatim is quoted for clarity, and findings were discussed later in the light of existing literature and cultural context. Verbatim was translated to make the text reader-friendly. Text in parentheses is added to complete the argument or provide context for argument.

Risk Factors

The present research has made important contributions to our understanding of risk factors associated with obesity. Four themes emerged for risk factors of obesity among adolescents: (i) Biological factors, (ii) psychological factors, (iii) social factors, and (iv) personal factors (see Table 2).

Biological factors. The theme "biological factors" are based on emerging categories of risk factors as reported by the participants including obesity runs in family, hormonal factor, irregular menstruation, menarche not attained, and weight gain before and at the time of puberty. For example, FP1 reported, "*I have menses throughout the month, I can offer prayers for just one or two days*". She also reported, "*All members of my family are overweight*". This indicates that genetics and hormonal problems may be implicated in obesity for the participants.

Psychological factors. The psychological factor is another theme indicating the risk factors of obesity among adolescents and its categories include poor body image, lack of insight to reduce weight, and lack of self-control. FP18 reported, "*I don't think I am fat*". Similarly, MP7 reported, "*I like myself* (as I am)". MP8 reported that "*I have neither control over myself, nor do I try*". The results indicate that the participant's lack of self-

control and insight is playing a contributing role to the increase in body weight among participants.

Social factors. This emerged as a third theme under risk factor. Its categories are family and peers about unhealthy parental and peer behavior. For example, lack of familial involvement in eating, unhealthy eating patterns in the family, frequent hoteling with family, and peer pressure. For instance, MP7 narrated that "*Mother feels happy that I'm healthy*", he also reported, "*I get thirty rupees a day. Mother brings packets of biscuit, chocolate, etc. and gives me for school daily*". MP8 reported, "*We all friends get together and eat pizza or pastries, etc. from the bakery*". The results indicate that social factors in the form of negative influence of family and peers affect eating patterns of adolescents.

Personal factors. The fourth theme includes categories such as food preferences, sedentary lifestyle, eating pattern, and lack of knowledge about healthy food. For example, MP1 reported, *"when I am hungry I eat two or three loaves or sometimes eat the half loaf and eat snacks from outside*". MP2 reported *"Whenever I look at things such as pizza, burgers or chips, I just wish to eat".* This indicates that unhealthy eating patterns and junk food preferences as risk factors in obesity among participants.

Protective Factors

Emerging protective factors to avoid or overcome obesity in participants were (i) psychological factors, (ii) social factors, and (iii) personal factors (see Table 3).

Psychological factors. This includes intrinsic and extrinsic motivation based on social comparison to change or control weight as categories. MP2 reported that "*I intend to become like Fahad Mustafa and not be fat*". Likewise, female adolescents are intrinsically motivated to maintain and reduce their weight as participant FP6 reported that "*I think I am fat, as compared to other girls*". Gender differences are also identified as male participants are more externally motivated than girls. As MP2 has idealized a Pakistani film and television actor known as "*Fahad Mustafa*" and wished to become like him in future due to his fitness.

Social factors. This includes both parental and peer influence such as less frequent visits to restaurants with family, maternal involvement, advice by parents, and peer's healthy eating habits. For example, a female participant FP16 reported that "*Mother says weight is*

increasing. Reduce food or play or do exercise", whereas, male participant MP4 reported that "*Friends say that* (let's) *join a gym after matric exams*". The present study reveals that peer and parental influence is different for gender. For girls, parental influence is more prominent than boys.

Personal factors. Knowledge about healthy food emerged as an important protective factor in this domain. FP4 reported that "*vegetable or fruits are healthy*". The present study indicates that if adolescents have knowledge and awareness about healthy food and also access these as their food component then it may prevent them from obesity.

Consequences

Like risk and protective factors consequences of obesity faced by participants also include categories (i) biological factors, (ii) psycho-social factors, and (iii) weight control plans (see Table 4).

Biological consequences. These include physical and hormonal problems such as shortness of breath during physical activity, pain in legs, feeling tired during physical activities, feeling weakness by skipping meals, and laziness. For example, MP10 reported that "*Due to obesity I do not like to play, during play I face problem in running or pain in feet*" he also reported, "*I do not walk, because of shortness of breath*". In present study, result shows that hormonal imbalance might occur due to obesity especially in girls such as increase in facial hairs and other hormonal imbalances as participant FP17 reported that "*sometimes I have menses before date or don't have or too late* (because of obesity)".

Psycho-social consequences. Categories under this theme include externalizing and internalizing problems such as fights with peers, social withdrawal, avoiding social gatherings, body image dissatisfaction, anger, helplessness, feeling bad or hurtful, and feeling shame. For example, MP8 reported that "*Everyone laughs at me during play. That's why I fight with them*", and internalizing problems (such as avoiding social gatherings, feeling bad or hurtful) e.g., FP11 reported that "*I try that I do not go to party or function*". MP8 also reported, "*I feel sometimes bad about myself when someone teases me or sometimes feel bad while running*". The present study reveals that social world of participants tends to be hostile, rejecting, and negative, especially in the context of relationship with peers.

Weight control plans. Weight control plans also emerge as a theme as a result of obesity among participants. Its categories include

eating and physical activity. As participant FP4 reported that "*I have started to drink green tea and warm water and now I try to take food in a small portion at a time*". The present study indicates that participants try to follow diet plans and take healthy food. They practice these to reduce their body weight.

Discussion

The mechanism of obesity is not fully understood and it is believed to be a problem with multiple causes (Sahoo et al., 2015). Earlier it was taken to be an eating problem, later it was considered as a precursor and outcome of many mental health problems hence needing much attention in a clinical context (APA, 2013) to design prevention programs. Due to the rapid growth of obesity, researchers are now shedding light on the complex and interrelated biological and psychosocial underpinnings of appetite regulation and eating behavior. In the present study, findings highlight the significance of bio-psychosocial model of health proposed by Engel (see Wade & Halligan, 2017) in explaining risk factors, protective factors, and consequences of obesity among adolescents. This model shows that obesity is interlinked with the biological, psychological, and social factors with its negative consequences.

The present study identified several risk factors for obesity. There is increasing evidence indicating that an individual's genetic background, hormonal factor, and onset of puberty are the most important risk factors of obesity. Some studies have found that BMI is 25–40% heritable (Anderson & Butcher, 2006). More than 30 hormones and neurotransmitters are now known to affect appetite (Lean & Malkova, 2016). Younger age at the time of obesity onset is a predicting factor for a higher BMI in later years (Wrzosek et al., 2018).A study shows that there is a positive association between obesity and irregularity in menstrual cycle among young girls (Mustaqeem et al., 2015). Participants related menstrual irregularity as a risk factor and consequence of obesity. Past literature shows that girls may indulge in bulimia to control menarche. At the same time, eating problems affect body fluids which may lead to menstrual irregularity. An increase in carbs and fat intake is another reason (Mash & Wolfe, 2016). In Pakistan, increased use of chicken (through fast food intake) as a major source of protein is suspected to be associated with hormonal fluctuations in girls which are leading to increased weight and hair growth in girls.

Lack of insight about one being overweight and lack of motivation to reduce weight also increase obesity (see Gupta, 2014). The findings of study also suggest that inadequate body image perception, inadequate risk perception, and the unwillingness to lose weight are interrelated factors that increase obesity and overweight (Okop et al., 2016). Anosognosia is a psychological condition in which a person is in the denial phase or lack insight into their problem. Such a psychological state leads to more relapse, less intrinsic motivation to pursue treatment or take action, and poor outcome (APA, 2013). Therefore, such adolescents need interventions to recognize this as a real health problem so that they should be ready to take action. It was observed that in developing countries psychological factors were more likely to link with obesity (Rosengren et al., 2015).

Previous studies also reflect upon family characteristics, parenting style, socio- economic status of family and lifestyle playing a role in increasing the risk of obesity, meanwhile, types of food available in house and food preferences of family members can influence foods that children eat (Sahoo et al., 2015). Patrick and Nicklas, (2005) observed that children learn by modeling parents' and peers' food preferences, intake, and willingness to try new foods. Previous findings also reveal that parents play a vital role inside and outside the home, their monitoring and supervision is helpful to control and maintain their healthy body weight (Lindsay et al., 2006). Parents' role is so important that weight reduction programs or dieting plans for adolescents with obesity include parental training and involvement of parents for successful implementation of plan (Mash & Wolfe, 2016). In Pakistan family-based factors like parenting styles are independent predictors of obesity (Mushtaq et al., 2011).Weight control is influenced by body sizes and weight-control behaviors of schoolmates, comparisons with similar others appear to have strongest association with trying to lose weight (Mueller et al., 2010).

Social comparison and self-control protect adolescents from obesity and overweight. Internal motivation to lose weight or self-motivation have been identified as protective factors of successful weight control in previous review articles too (Elfhag & Rössner, 2005; Teixeira et al., 2005). Whereas, weight-focused social comparisons is considered as one of the important mechanism by which social networks impact weight control thoughts and behaviors (Rancourt et al., 2015). Previous studies observed that externalizing behaviors such as hyperactivity, aggression, or delinquency has also been associated with increased weight status in children (Pauli-Pott et al., 2014). In present study, participants reported

aggression and anger as psycho-social consequences of obesity. This emerges when peers and significant others taunt, call bad names and reject them. Such emotional reactions may result in reaction formation and act as a disabling factor in controlling obesity.

Similarly, internalizing problems such as anxiety, depression, or impulsivity also have a strong link with obesity (Pervanidou et al., 2015). Obesity has a strong link between social withdrawal and mood disorders (APA, 2013). It is well established in literature that negative physical characteristics, such as being overweight, are common reasons for teasing among children and adolescents (Salvy & Bowker, 2014). Because of obesity, being rejected or victimized, and loneliness is worrisome for any child or adolescent because such negative peer relationships are uniquely related to internalizing and externalizing difficulties (Pedersen et al., 2007). A similar result was observed by previous research which revealed that obesity and overweight are associated with many physical problems such as shortness of breath and chronic back pain (Djalalinia et al., 2015). It was identified that obesity in teenage girls has led to hormonal imbalance; this leads the irregular menstrual cycle, acne, or facial hair growth (Farley, 2004) that are also reported in present study. Across gender, it was found that girls experience more parental pressure to control their weight while boys are influenced by peers. Social comparison is prevalent in both genders, whereas boys are more driven by celebrity influences.

A previous study found that unhealthy lifestyle patterns in diet, exercise, and coping were highly prevalent among obese and overweight population (Kushner & Choi, 2010). In obese people, passive lifestyle, less physical activity, and unhealthy diets pattern are more common than in non-obese people (Brook et al., 2013), these were reportedly a personal risk factor for obesity in present study. Pakistan has traditionally been related to under nourishment, but due to recent changes in patterns such as urbanization and sedentary lifestyles (Tanzil & Jamali, 2016), one in four adults has now been found to be regarded as overweight or obese (Jafar et al., 2013). According to an intervention study, lack of nutritional awareness is one of the important obstacles to improve the eating habits (Müller et al., 2001); which in turn leads to obesity as evident in the present study.

Awareness of healthy food improves healthy attitudes towards eating habits (Müller et al., 2001). Hence, the level of nutritional

knowledge of children was strongly negatively associated with obesity (Triches & Giugliani, 2005). That is why in present study knowledge about healthy food is associated with a desire to control obesity and lack of knowledge is considered to be a risk factor for obesity among adolescents. In Pakistan, it is observed that adolescents with obesity were unaware about factors related to obesity like healthy food and stress because there is lack of awareness campaign regarding causes and consequence of obesity.

Conclusion

The present study helped to conclude that unhealthy dietary habits and sedentary lifestyle explored as risk factors, are associated with the development of an alarming rate of obesity among adolescents that added to the existing body of literature. It provides a contribution to knowledge that several bio-psychosocial and personal factors are linked with obesity which in turn leads to negative psycho-social consequences. The contributing role of hormonal imbalances in female adolescents, lack of insight, low self-control, lack of awareness about healthy food, peer, and parental influence to increase in body weight among adolescents with obesity emerged as risk factors. On the other hand, these factors such as parents, peers, and media also act as protective factors by influencing the adolescent to overcome body weight by adopting a healthy lifestyle.

Limitations and Suggestions

The present research was just an exploration of risk and protective factors as well as consequences of obesity among adolescents. Another limitation of present study is that data was only collected from adolescents with obesity. It is suggested that future researches might use comparative study by taking data from adolescents having normal weight, overweight, and obesity. In future, cross-sectional research could be carried out on a larger sample from different cities of Pakistan to increase its generalizability. The data was collected only from adolescents therefore, it is recommended that future researches will use multi-informant data such as parents, peer, and siblings. All these sources may provide rich, valuable and more reliable information.

Implications

The findings of present study had advantage of examining a breadth of risk and protective factors of obesity and its negative psycho-social consequences. This research will be helpful for school practitioners to develop comprehensive instructional initiatives in schools to decrease sedentary habits, increase physical activity and facilitate the adoption of

healthier dietary practices and choices such as healthy meal, drink, and snack consumption. The present study may help clinicians to plan effective strategies based on an integrative approach of a bio-psychosocial model to prevent obesity among adolescents. The measurement tools can be developed on the basis of findings of present research to assess risk and protective factors of obesity and its negative psycho-social consequences to collect data from a larger population to increase the external validity of findings. The results of present research have also explored the risk factors of obesity which can be reduced through media campaigns and involvement of parents and peers which were identified as factors protecting adolescents from negative psycho-social consequences. It also provides knowledge to parents to give awareness to their children about these risk factors and to educate them about a healthy lifestyle.

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Table 1

Demographic Characteristics of Sample (N = 18)

Demographics	*f (%)*	Demographics	*f (%)*
Gender		Birth Order	
Female	10 (55.6)	1st	7 (38.9)
Male	8 (44.4)	2nd	3 (16.7)
Grade		3rd	4 (22.2)
Under matric or Matric	14 (77.8)	4th	2 (11.1)
Intermediate	4 (22.2)	6th	1 (5.6)
Schools/Colleges		10th	1 (5.6)
Government	11 (61.1)	Family System	
Private	7 (38.9)	Joint	2 (11.1)
Father's Education		Nuclear	16 (88.9)
No formal Education	2 (11.1)	Father's Occupation	
Matric	9 (50.0)	Government Employee	9 (50.0)
Intermediate	2 (11.1)	Private Employee	4 (22.2)
Bachelors	3 (16.7)	Self-Employed	5 (27.8)
Masters	2 (11.1)	Mother's Occupation	
Mother's Education		Housewife	18 (100)
No formal Education	4 (22.2)		
Matric	7 (38.9)		
Intermediate	5 (27.8)		
Bachelors	2 (11.1)		

Table 2

Risk Factors for Obesity (N = 18)

Themes	**Categories**	**Codes**
Biological Factors	Genetic factor	Runs in family
	Hormonal factor	Irregular menstruation
		Menarche not attained
	Age of onset	Gain weight before and at the time of puberty
Psychological Factors	Cognition	Poor body image
		Lack of insight to reduce weight
		Lack of self-control to follow a diet plan
Social Factors	Family	Lack of familial involvement
		Unhealthy eating patterns in a family
		Frequent hoteling with family
		Less restricted mother for taking unhealthy food
		Gendered biases towards body weight
	Peers	Peer pressure
Personal Factors	Food preferences	Fast food
		Rice
		Sweets and chocolates
		Junk food
		Beverages
	Sedentary lifestyle	Lack of participation in extracurricular activities
		Lack of physical activities with peers
		Spent more time on information communication technology gadget at home
		Watching TV
	Eating Patterns	Skip breakfast
		Unhealthy dieting practices
		Take a large portion of meals
		Eat sibling's meals
		Less preference for homemade food
		Spent pocket money to buy junk food
		Home delivery of food
		Cook food by him/herself
		Eat alone to take a large amount of food
		Binge eating
	Knowledge about healthy food	Lack of awareness of healthy food

Table 3

Protective Factors for Obesity (N = 18)

Themes	**Categories**	**Codes**
Psychological Factors	Motivation to change	Social comparison
		Self-control
Social Factors	Familial factor	Less frequent visits to restaurants with family
		Maternal involvement
		Advice by others
	Peers	Peer's healthy eating habits
Personal Factors	Knowledge	Awareness of healthy food

Table 4

Consequences of Obesity (N = 18)

Themes	**Categories**	**Codes**
Biological Factors	Physical problems	Shortness of breath during physical activity
		Pain in legs
		Felt tired during physical activities
		Feel weakness by skipping meals
		Laziness
Psychological Factors	Internalizing problems	Worried
		Body image dissatisfaction
		Anger
		Helplessness
		Feel bad
		Hurtful feeling
		Over concerned about weight
		Feel shame

		Use of social media to get information about weight reduction
Social Factors	Externalizing problems	Social withdrawal
		Restrict and avoid social gatherings
		Fight with peers
	Peer problems	Calling bad names by others
		Calling bad names by mother
		Bully by siblings
		Bully by peers
		Social exclusion
		Social pressure
		Idealize celebrities
		Over concerned about social appraisal
Personal problems	Physical appearance	Not easily get the size of attire
		Avoid wearing tight clothes
		Poor body image
	Hormonal problems	Facial hairs
Weight control plans	Eating	Use honey in water
		Use green tea
	Physical activity	Skipping
		Walking
		Reduce the quantity of food intake