Master of Science in Public Health

Association between eating habits and psychosocial well-being among university students of Rawalpindi city.

By

Sana Asif

Al-Shifa School of Public Health, PIO,
Al Shifa Trust Eye Hospital
Quaid-i-Azam University
Islamabad, Pakistan
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(Sana Asif)

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This dissertation is the result of an independent investigation. Where my work is indebted to others, I have made acknowledgments.

I declare that this work has not been accepted in substance for any other degree, nor is it currently being submitted in candidature for any other degree.

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(Dr.Ayesha Babar Kawish)   **(Sana Asif)**
                                                                                   (362853-PIO/MSPH-2021)
Date: MSPH (2023)
Al-Shifa School of Public Health,
PIO, Al Shifa Trust Eye Hospital   Date:

ABSTRACT

Background: Eating disorder and psychosocial factors are an important public health issue as it is an indirect predictors for promoting unhealthy eating patterns and multiple health issues. It can lead to many health issues and people may suffer from multiple diseases such as obesity, diabetes, cardiac issues and many other.

Objectives: current study was conducted to find the association between eating habits' and psychosocial well-being with sociodemographic features among university students of age 19-24 years in Rawalpindi city.

Methodology: A cross-sectional study was carried out at public and private universities of Rawalpindi, Pakistan. A total of 240 respondents were included in the study to find out the association. Data for eating habits and psychosocial well-being was collected

Using EAT26 and CES scales. Chi-square test of association was applied to check the association of eating habits and psychosocial well-being with socio-demographic factors. Adjusted OR ratios were calculated to find out main predictors of each type of psychocial factor affecting eating habits.

Results: Out of total 240 respondents, majority were females (n=145, 60%) and were 19-21 years of age (n=155, 64%). N=9 (3%) were married and the rest 231(96%) were unmarried. Students who were studying in public universities were N=109 (45%) and N=131(54%) were studying in a private university.

N=91 (37%) students were living in hostels whereas N=149 (62%) were day scholars.

BMI was categorized in four groups there was no participants labelled as obese, majority of the participants were with normal weight N=164(68%), N=18(7%) participants were labelled as overweight. N=58 (24%) participants were underweight.

Results showed that full model binary logistic regression containing all predictors was statistically significant (p = 0.0001) indicating that the model was able to distinguish between respondents who reported disturbed eating patterns because psychosocial factors. Chi-square test was carried out to check the association between sociodemographic variables and eating habits. Results showed that there was no significant association between any of the sociodemographic characteristics of the respondents. As the p value for all the variables was more than 0.005 which is considered not significant.

Conclusion: The current study concluded that there was significant difference between psychosocial wellbeing and eating habits among university students but had no significant association between sociodemographic and eating habits. Half of the students had unhealthy dietary habits. The unhealthy habits were irregular meals, inadequate consumption of snacks, and water intake. Students' eating habits were significantly affected by the psychological factors

Keywords: Eating disorders, Body image, eating attitudes, Body mass index, Rawalpindi, Psychological factors, sociodemographic features.

ACKNOWLEDGMENTS

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List of Abbreviations

ED   Eating Disorder

AN   Anorexia Nervosa

BN   Bulimia Nervosa

EAT   Eating Aptitude Test

NSED   Nonspecific Eating Disorder

BMI   Body Mass Index

ON   Orthorexia Nervosa

OSFED   Other Specified Feeding Or Eating Disorder

SPSS   Statistical Package For Social Sciences

WHO   World Health Organization

NES   Night Eating Disorder

PD   Purging Disorder

BED   Binge Eating Disorder

CBT   Cognitive Behavioral Therapy

MEDA   Multi Service Eating Disorders Association

NCDs   Non Communicable Diseases

BI   Body Image

CHAPTER 1: Introduction

Eating habits are defined as "conscious, collective, and repetitive behaviors, which lead people to select, consume, and use certain foods or diets, in response to social and cultural influences" (Medina, may 2020)

Normal eating habits means having a healthy relationship with food. In normal eating pattern we eat when we are hungry and stop eating when we feel full. Normal eating is when a person is aware of what to eat and what not to eat i.e. appropriate nutritional intake for the day, balance between carbs, proteins and fats. (Intiful, february 2019)

Abnormal eating habits are characterized by irregular eating habits and severe concern about body weight and shape. Poor eating habits are an important public health issue. Abnormal eating habits may include binge eating, skipping meals regularly or avoidance of specific foods is referred to as abnormal eating patterns. College students are always at a risk of making poor choices when it comes to eating which can cause them some serious health related issues. Majority of undergraduate students eat at college with limited facilities of having healthy food. (Abraham, 17 january 2018)

A major public health problem for young adults making the transition to university life is their poor eating habits. Students are exposed to stress and a lack of time throughout this period. These elements make it difficult to adopt healthy behaviors, such as bad eating habits. Although these student behaviors are thought to be transient and are part of university life, harmful habits developed at this age typically continue into later adulthood. (Silliman)

These young people are among the most nutritionally susceptible groups, with poor eating habits that don't match dietary requirements due to rapid changes in physical growth and psychosocial development. Meal skipping, dining out, snacking, and fast food intake are some frequent harmful eating habits among young adults. (Ganasegeran, 18 july 2012)

Numerous recent studies have identified a variety of bad eating practises among college populations. On a university campus, Brown et al. ran an experiment where they executed interventions on vending machine sales. They said that rather of choosing food based on its nutritional worth, many college students chose to do so based on convenience, flavor, time, and price. Many college students favored quick and delectable options, which were frequently provided by vending machines. (Abraham, 17 january 2018)

University students typically choose their own meals based on price and accessibility of fast food. They lack awareness about nutritious food options, which could have a negative impact on eating patterns and nutritional status. According to earlier surveys, university students did not consume the necessary amounts of fruits and vegetables. (Surin, 15 Jan 2021)

The eating habits modified by stress need to be reversed with the aim to produce a positive impact and better result for undergraduate students in their studies. Stresses which lead to unhealthy food habits in students, including lack of concentration makes students have much stress worrying which lead to unhealthy lifestyle. Worrying about exams because students don't know how to prepare for examination and start stressing over everything including their food intake. Students often eat too much or too less food which leads to unhealthy eating style. (Alwehaibi, 2019)

Due to time constraints and tensions, adult students making the transition from high school to university find it difficult to maintain good eating routines and instead skip meals, eat unhealthy snacks, eat out, and consume fast food. (sogari, 2018)

There is a lack of information regarding nutritious food options, which could indirectly affect dietary habits and nutrition. Because they have more medical knowledge regarding appropriate eating patterns, medical students are expected to have good eating habits and lead healthy lifestyles. As a result, kids are expected to serve as examples for their friends when it comes to applying healthy eating habits. A Chinese study revealed that unhealthy eating habits among medical students were risk factors for chronic diseases. (Alzahrani, 2020)

The prevalence of eating disorder and mental health issues is extremely common among medical students, especially first-year students. The condition is a part of a broad spectrum pattern with resulting harm to the mind, society, and body. The younger students may face unique difficulties as a result of the preclinical studies, which offer a novel, fascinating, and challenging setting with very different learning methods and call for adaption to new things like an academic model, self-discipline, and directed self-learning. (power, 2016)

Worldwide, multiple studies have been carried out to assess the eating habits and psychosocial well-being among adults. In Pakistan, literature is available but only on the patterns and eating disorders but literature regarding mental health, psychosocial status among university students or even among young adults is restricted. So, the current study is conducted to assess the association between eating habits and psychosocial well-being among university students and also to find out the the association of demographic factors of eating habits.

This research has also highlighted undiagnosed eating disorders for reducing the burden of these unidentified problems among university students, may they be the issues of malnutrition, stress, mental health or being overweight and obese

Objectives.

1. To assess the eating habits among university students.

2. To assess the psychosocial well-being among university students.

3. To find association between eating habits and psychosocial wellbeing with socio demographic features.

CHAPTER 2: Literature Review

Eating Habits and well-being.

Eating habits are defined as "conscious, collective, and repetitive behaviors, which lead people to select, consume, and use certain foods or diets, in response to social and cultural influences". Students in universities are going through a transitional period that makes them more prone to picking up bad eating habits. Stress, insufficient sleep, time constraints, financial constraints, and changes in one's way of life are a few things that have an impact on one's eating habits. (Velez-Argumedo, november 2018)

There is a lack of information regarding nutritious food options, which could indirectly affect dietary habits and nutrition. Because they have more medical knowledge regarding appropriate eating patterns, medical students are expected to have good eating habits and lead healthy lifestyles. As a result, students are expected to serve as examples for their friends when it comes to applying healthy eating habits. (Alzahrani, 2020)

Eating patterns refers to how people eat, what food they eat and how they eat. Other factors that may affect eating habits include the way people ingest, store, discard and utilize food. Good eating patterns plays a vital role in improving and maintaining an individual's health regardless of their gender, age, demographic location and place they work at. Ingesting inappropriate quantity of food or kind of food can make you unhealthy. Enjoying what you eat with balanced nutrients or wholesome food are the best in maintaining healthy eating habits. Appropriate timetable for eating consist of breakfast as the first meal of the day, lunch in afternoon to help regulate the body mechanisms normally, dinner at night which is a source of energy for body functioning at night but should not be very heavy.

Body weight and body image

University students in Pakistan are gaining weight, which is being caused by their unhealthy eating habits. Pakistani practitioners have adapted Western conceptual frameworks to comprehend obesogenic eating patterns. (sadia, 2021)

The World Health Organization (WHO) lists a high body mass index (BMI), inadequate intake of fruits and vegetables as three of the seven main risk factors for premature mortality in Europe. The WHO also emphasizes the importance of a balanced diet, regular exercise, cutting back on alcohol use, and quitting smoking for maintaining good health. However, studies on college students reveal that they do not adhere to nutritional recommendations and point to a link between an inadequate diet and obesity and excess weight. (berengui, 2016)

Body mass index, or BMI, is a statistical measure that estimates a person's body fat in both men and women of any age based on their height and weight. By dividing a person's weight in kilograms by their height in meters squared, or BMI = weight (in kg)/height (in m^2), one may get their BMI. The result of this equation is the person's BMI, which is the number it produces. Instead of using the conventional height vs. weight charts, the National Institutes of Health (NIH) now employs BMI to categories a person as underweight, normal weight, overweight, or obese.

The NIH and the World Health Organization (WHO**)** utilize these BMI classifications for White, Hispanic, and Black people. The cutoffs undervalue the danger of obesity in Asian and South Asian populations, so their classification has slight alterations. (CB, 2019)

Anorexia nervosa (AN), bulimia nervosa (BN), and non-specific eating disorders (NSED) are examples of eating disorders (ED), which are mental diseases that are accompanied by nutritional abnormalities, distorted eating behaviors, or particular behaviors to regulate weight. (organization, 2009)(WHO)

Eating disorders and risks

The term "eating disorders" refers to a collection of illnesses where a person either consumes too little or too much food, both of which are bad for both physical and mental health. The three eating disorders that are thought to be the most prevalent in India are anorexia nervosa, bulimia nervosa, and binge eating disorder. (gururaj, 2016)

One of the main causes of a weight gain trajectory and an elevated risk of non-communicable diseases (NCDs), such as heart disease, cancer, and diabetes(type 2), is the frequent bad eating behaviors among young adults. According to estimates, NCDs account for 71% of all fatalities worldwide, or 41 million deaths each year. The World Health Organization claims that (WHO) (Rodrigues, 2019)

All ages are affected by eating disorders, although teens and college students are the most commonly affected. Nearly 15% of women between the ages of 17 and 24 have eating disorders of some kind, according to the Multi-Service Eating Disorders Association (MEDA). Eating disorders, once believed to be a western-only issue, are now observed in teenagers from all racial and socioeconomic backgrounds, and more than 75% of these cases start in adolescence. (rohde, 2017)

These are severe psychiatric conditions with high rates of morbidity and mortality. The psychological implications of obsession with body weight, form, and diet serve as the primary representation of eating disorders. Numerous unexplored elements, such as socioeconomic position, stress, media, and others, have a significant impact on these diseases. (jones, 2017)

They can also be hazardous and even fatal when combined with other psychological conditions including depression and anxiety. (clark, 2017)

More than half of all cases of eating disorders go undiagnosed, which adds to the difficulty of the burden. Eating disorders are not well understood in India, and the diagnostic process is not clearly defined. A thorough screening program is the best course of action in this case to avoid major problems from advanced eating disorders. Although only a qualified psychiatrist can accurately diagnose eating disorders, routine screening using questionnaires and interviews and further referral to a psychiatrist can potentially help both the early diagnosis and treatment of these illnesses. Additionally, raising youths' awareness of its signs and manifestations can aid in both primary and secondary prevention. The most used screening tool for eating disorders is the Eating Attitudes Test (EAT26), which was created by Garner et al. Stress is commonplace, heightened by high-pressure situations in a field like medicine, and usually assessed using the Perceived Stress Scale. (Iyer, 2021)

A daily consumption of 400 g or more of fruits and vegetables could lower the risk of acquiring NCDs while also ensuring an appropriate intake of dietary fiber. People around the world struggle to fulfil this recommendation despite campaigns to encourage fruit and vegetable consumption. (miller, 2016)

2.1. Operation definitions

Eating habits:

The way a person eats by involving what to eat, when to eat, how much to eat and where to eat.

Psychosocial wellbeing:

Psychosocial well-being is a superordinate construct that includes emotional or psychological well-being, as well as social and collective well-being. The term "quality of life" is similar to psychosocial well-being in that it involves emotional, social and physical components.

Socio demographic factors:

Socio-demographic factors include: gender, age, and level of education, employment status, profession, and marital status, total number of persons living in the house and living arrangements. The last three variables were used as potential measures of social support

Body image:

Body image (BI) can be described as the assessment of both positive and negative emotion for one's own body parts and their characteristics by himself or herself.

Body mass index:

Body mass index (BMI) is defined as an individual's body weight divided by the square of his or her height (standard unit of measure is kg/m^2). It is used to estimate an individual's adiposity based on his/her height, assuming an average body composition.

Eating disorders:

Eating disorders are behavioral conditions characterized by severe and persistent disturbance in eating behaviors and associated distressing thoughts and emotions. They can be very serious conditions affecting physical, psychological and social function.

2.2. Eating Disorders and types

There are several different types of eating disorders (EDs), each of which has its own personality traits. There are many different aspects to eating disorders (EDs), and their aetiology may be related to particular personality traits and sociocultural factors. Cultural elements that are connected to their genesis.

According to the American Psychological Association (American Psychiatric Association [APA], EDs are marked by abnormal eating patterns, cognitive distortions regarding food and weight, a persistent course, high levels of co-morbid psychopathologies like depression and anxiety, as well as emotional disturbances that have an impact on relationships. There have been several research on EDs over many years that have touched on each of these topics and more, such as the role of emotional eating in EDs. (pedersen, 2018)

Extreme food and weight concerns are common in a category of diseases known as eating disorders, but each disorder has its own set of symptoms and diagnostic standards.

Anorexia nervosa

Anorexia nervosa is a well-known eating disorder. It typically appears throughout adolescence or early adulthood, and more women than males are typically affected. Despite being extremely underweight, anorexics frequently perceive themselves as overweight. They frequently track their weight, stay away from particular meals, and drastically limit their calorie consumption. (Nagl, 2016)

It's crucial to remember that diagnosing someone with anorexia shouldn't be primarily based on weight. Body mass index is no longer a reliable diagnostic tool because dangers can apply to both "normal" and "overweight" individuals. For atypical, despite severe weight loss, a person with atypical anorexia may fit the criteria for anorexia yet not be underweight. (MD, 2022)

Bulimia Nervosa

Bulimia nervosa is another well-known eating disorder. Similar to anorexia, bulimia typically manifests in youth and the early stages of life and seems to affect men and women differently. Bulimics commonly consume unusually large amounts of food in a short length of time. (Jacobi, 2016)

Currently, cognitive behavioral therapy (CBT) and enhanced CBT (CBT-E) are the recommended gold-standard treatments for binge eating disorder and bulimia nervosa, respectively (Linardon, 2017)

Binge eating disorder

The most common type of eating problem and one of the most prevalent chronic conditions among teenagers is binge eating disorder. Although it can develop later, it often starts around adolescence and the early stages of adulthood. The signs of this disorder are comparable to those of bulimia or the anorexic binge eating subtype. People with binge eating disorders do not control calories or engage in purging activities to make up for their binges, such as vomiting or excessive exercise. (Marzilli, A narrative review of binge eating disorder in adolescence: prevalence, impact, and psychological treatment strategies, 2018)

Purging disorder.

The hallmark of purging disorder (PD) is recurring purging without objectively significant binge-eating episodes. The clinical importance of "purging" by compulsive or driven activity has gotten minimal consideration in the context of Parkinson's disease (PD), and uncertainties still linger regarding it (i.e., as extreme compensatory or weight-control behavior). (Janet A. Lydecker PhD, 2017)

Night eating syndrome.

The symptoms of NES, which included morning anorexia, evening hyperphagia, and sleeplessness, were relatively basic. Unlike some other EDs, such Anorexia Nervosa, NES is not influenced by a person's BMI (BMI). NES can occur in persons whose weight is within the normal range for their age and height, however it is most frequently observed and studied in obese adults. This is crucial because NES has been linked to increased rates of depression and decreased self-esteem, as well as a risk factor for obesity that manifests earlier in life. (Kaur, 2022)

Night eating syndrome is currently classified as another specified feeding or eating disorder (OSFED) under the diagnostic statistical manual 5 (DSM 5)

Other specified feeding or eating disorder (OSFED).

This classification includes any other illnesses that resemble eating disorders but do not fall under any of the aforementioned disorders, even if they are not covered by the DSM-5.Orthorexia is one condition that might currently be covered by OSFED. Despite the fact that orthorexia is being discussed more and more in the media and in academic studies, the DSM has not yet classified it as a distinct eating disorder. (comb, 2019)

Avoidant/restrictive food intake disorder (AFRID)

A disturbed eating pattern, as shown by a persistent inability to meet the appropriate nutritional and/or energy needs associated with one or more of the following: a seeming lack of interest in eating or food; avoidance based on the sensory qualities of food; concern about unpleasant consequences of eating. severe nutritional deficiency, reliance on enteral feeding or oral nutritional supplements, failure to attain predicted growth and/or weight increase in children, considerable weight loss, and significant interference with psychosocial functioning. There is no better explanation for the disturbance than a related cultural practice or a lack of food availability. The eating disorder cannot be explained by another mental problem or by a coexisting medical disease. If the eating disorder coexists with another ailment or disorder, its severity may be greater than that which is typically associated with that condition or disorder. (hornberger l. , 2021)

Table 1: Diagnostic Features of Eating Disorders Commonly Seen in Children and Adolescents

	Diagnostic Features
Anorexia nervosa (AN)	
	Subtypes: restricting type (weight loss is achieved primarily through dieting, fasting, and/or excessive exercise. In the previous 3 mo, there have been no repeated episodes of binge eating or purging); binge-eating/purging type (in the previous 3 mo, there have been repeated episodes of binge eating or purging; ie, self-induced vomiting or misuse of laxatives, diuretics, or enemas)
Bulimia nervosa (BN)	
	Repeated episodes of binge eating. Binge eating is characterized by both of the following: within a distinct period of time (eg, 2 h), eating an amount of food that is clearly larger than what most individuals would eat during a similar period of time under similar circumstances and a sense that one cannot limit or control their overeating during the episode

	Diagnostic Features
	Repeated use of inappropriate compensatory behaviors for the prevention of weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, or other medications; fasting; or excessive exercise
	On average, the binge eating and compensatory behaviors both occur at least once a week for 3 mo
	Self-value is overly influenced by body shape and weight
	The binge eating and compensatory behaviors do not occur exclusively during episodes of AN
Binge-eating disorder (BED)	
	An episode of binge eating is characterized by both of the following: within a distinct period of time (eg, 2 h), eating an amount of food that is clearly larger than what most individuals would eat during a similar period of time under similar circumstances and sense that one cannot limit or control their overeating during the episode
	On average, the binge eating occurs at least once a week for 3 months.

	Diagnostic Features
	The binge eating is not associated with the use of inappropriate compensatory behavior as in BN and does not occur only in the context of BN or AN.
Avoidant/restrictive food intake disorder (ARFID)	
	The eating disturbance cannot be attributed to a coexisting medical condition nor better explained by another mental disorder. If the eating disturbance occurs in the context of another condition or disorder, the severity of the eating disturbance exceeds that routinely associated with the condition or disorder
	A disrupted eating pattern (eg, seeming lack of interest in eating or food; avoidance based on the sensory qualities of food; concern about unpleasant consequences of eating) as evidenced by persistent failure to meet appropriate nutritional and/or energy needs associated with 1 (or more) of the following: significant weight loss or, in children, failure to achieve expected growth and/or weight gain, marked nutritional deficiency, reliance on enteral feeding or oral nutritional supplements, significant interference with psychosocial functioning

	Diagnostic Features
	The disturbance cannot be better explained by lack of available food or by an associated culturally sanctioned practice
Other specified feeding or eating disorders, examples	
	Atypical AN: all of the criteria for AN are met yet the individual's weight is within or above the normal range despite significant weight loss
	BN (of low frequency and/or limited duration): All of the criteria for BN are met, but, on average, the binge eating and compensatory behaviors occur less than once a week and/or for <3 mo
	BED (of low frequency and/or limited duration): All of the criteria for BED are met, but, on average, the binge eating occurs less than once a week and/or for <3 mo
Purging disorder.	
	Purging disorder: recurrent purging behavior (eg, self-induced vomiting; misuse of laxatives, diuretics, or other medications) in the absence of binge eating with the intent to influence weight or body shape

(Adapted from the *DSM-5*, American Psychiatric Association, 2013.)

2.3. Prevalence rates of eating disorders.

In the general population, prevalence rates for clinically identified EDs are reported to be 0.5% for Anorexia Nervosa, 1-3% for Bulimia Nervosa, and 2-5% for Eating Disorders that are not further characterized. The prevalence rates rise to 31-65% when inclusion criteria for Eating Disorders are widened to include those coping with persistent, ingrained behaviors that are otherwise sub-clinical. (Pederson, 2018)

Additionally, the release of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (American Psychiatric Association [APA], 2013), which includes classificatory changes to EDs from the Previous Edition, will undoubtedly have an impact on reported prevalence rates in the years to come, with notable increases likely (George A. Keepers, 2020)

The disparity between high prevalence rates for those with weight, food, and body-fixation problems and low prevalence rates for clinically diagnosable EDs has prompted more study to be done to find risk factors that might mitigate the link between ED and body dissatisfaction. (Crenn, 2013)

Numerous ED prevention initiatives have been developed or researched. Not every programme has had great success. One meta-findings analyses showed that impact sizes for decreased risk variables and ED symptoms at follow-up were minor and might not be clinically meaningful across all 46 ED prevention programmes investigated. (pedersen, 2018).

Previous literature shows that more than 90% of individuals with eating disorders are younger than 25years of age. Demographic Characteristics and features of students of Amasya university,Turkey shows Eating Attitudes Of the students aged 20.24±2.06,

71.5% were female, 96.6% were single, 41.3% resided at the state dormitory, 68.7% had a moderate level of income, 66% did not receive a scholarship, 59.9% ate 3-4 meals a day, 75.8% did not exercise regularly and 97.2% did not have food intolerance (Eylem Topbaş, 2019)

According to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, epidemiological studies that looked at the prevalence of BED in adolescent samples revealed a prevalence ranging from 1% to 4%. Only a few research from more recent times have looked at the prevalence of BED using the criteria from the Diagnostic and Statistical Manual of Disorders, Fifth Edition, and they found that the prevalence ranged from 1% to 5%. Studies on the potential effects of BED on physical, psychological, and social functioning have shown that adolescents with BED are more likely to experience a variety of negative outcomes, such as obesity, social issues, substance abuse, suicidality, and other psychological issues, particularly those involving internalising. Despite the data to date, studies of potential and successful psychological treatments for BED in young people have not been widely available. (Marzilli, A narrative review of binge eating disorder in adolescence: prevalence, impact, and psychological treatment strategies, 2018)

Andrea k. Graham carried out a descriptive analysis in the year 2018 to find out the prevalence, per 1,000 cases, of detecting each eating disorder diagnosis and detecting individuals at high risk using the screening instrument, with a mutually exclusive assignment of a diagnosis/risk status with a trumping order as follows: Anorexia Nervosa > Bulimia Nervosa > Binge Eating Disorder > Other Specified Feeding or Eating Disorder (OSFED) (Subthreshold Bulimia Nervosa) > OSFED (Purging Disorder) > OSFED (Subthreshold Binge Eating Disorder) > High Risk (Graham, 2018)

Several studies have suggested higher BED prevalence rates of 2% to 4%, with a more equal distribution between girls and boys, making it perhaps the most common eating disorder among adolescents (Marzilli, a narrative review of binge eating disorder in adolecents. prevalence,impact and psychological treatment strategies, 2018)

2.4. Risk factors associated with eating disorders.

Lal mala did her first qualitative descriptive analysis on eating disorders by comparing Indian and Australian eating disorder patients and found a few risk factors that could contribute to the development of ED. Psychosocial pressures pertaining to family or achievement, such as feelings of failure in relation to parental expectations, appear to be a common risk factor for the development of an ED in Indians. Patients from India believed that their diet and exercise had a greater impact on their immediate medical wellbeing. This could indicate that Indian women explain their ED behaviours and feelings in terms of medicine and physical health and are more accepting of the physical rather than psychological effects of their ED on their health or that they externalize their problems and are shielded from the psychological effects by their families. (mala, 2015)

2.5. Medical Complications in Patients with Eating Disorders

Every organ system can be impacted by eating disorders, and major medical issues could arise as a result of starvation, weight shifts, or purging. With weight stabilization and/or a cessation of purging, the majority of medical issues disappear. Obesity-related complications can occur as a result of BED. (E.S, 2016)

Psychological and Neurologic Effects

Psychological symptoms may be a result of malnutrition, a concomitant psychiatric disease, or the eating problem itself. With re feeding, initial depressive and anxious feelings could disappear. A hallmark of AN is obsessive-compulsive disorder, but less obsessive thoughts about eating are had as famine ends. (Fürtjes, 2018)

The range of eating disorders includes issues with emotion management, but individuals who binge eat or purge experience it to a greater degree. (Weinbach, 2018) .In acutely unwell adolescents and young adults with AN, global cortical thinning was found to normalize over the course of about three months with weight restoration, according to a longitudinal research. (FabioBernardoni, 2016)

Dermatologic Effects

Underweight patients frequently experience lanugo, hair thinning, dry skin with scales, and yellow colouring from carotenemia. Additionally, angular cheilitis and brittle nails may be seen. Patients who are underweight may get acrocyanosis, which may be a defence mechanism against heat loss. Cuts and calluses over the knuckles can result from using the incisors to induce emesis while cutting the skin. (hornberg, 2021)

Cardiovascular Effects

Restrictive eating disorders are the main focus of reports of cardiac problems in eating disorders. Low heart rate (HR), orthostasis, and inadequate peripheral perfusion are typical cardiovascular symptoms. If eating disorder behaviors are not revealed or recognized, orthostatic intolerance symptoms (such as dizziness) and vital sign findings may match those of postural orthostatic tachycardia syndrome, which may delay referral to proper care

(gibson, 2018). Decreased left ventricular (LV) mass, LV end diastolic and end systolic volumes, functional mitral valve prolapse, pericardial effusion, and myocardial fibrosis are some of the anatomical abnormalities to the heart (noted in adults) (Spaulding-Barclay, 2016)

Gastrointestinal Tract Effects

Common digestive problems might occasionally come before an eating disorder diagnosis. Postprandial bloating, nausea, and postprandial fullness are frequently attributed to delayed stomach emptying and sluggish intestinal transit time. (Norris, 2016)

It could be a symptom of restricting eating. Patients frequently develop constipation, which has a complex origin. (Bern, 2016)

Severe weight loss can lead to the development of superior mesenteric artery syndrome. Malnutrition can cause an increase in hepatic transaminase levels and coagulation times, which normally return to normal with proper nutrition. (norris, 2016)

Renal and Electrolyte Effects

Purging or cachexia may lead to problems in fluid and electrolyte balance. Any patient with an eating issue may exhibit dehydration. Osmotic control problems can take many different forms (central and renal diabetes insipidus, syndrome of inappropriate antidiuretic hormone) (Sachs, 2016)

Due to persistent dehydration, loss of gastric hydrochloric acid, and the concomitant rise in aldosterone, which encourages sodium reabsorption in place of potassium and acid at the distal tubule level, patients who vomit may develop a hypokalemic, hypochloremic metabolic alkalosis. Abusing laxatives can cause a variety of electrolyte and acid-base

imbalances in patients. Patients who purposefully drink more water than necessary to make themselves feel full or to inflate their weight during clinic appointments may get dilutional hyponatremia. Abruptly stopping the use of laxatives may cause peripheral edoema and encourage continued laxative or diuretic abuse. (mehler, 2016)

Endocrine Effects

Endocrine dysfunction is frequently brought on by restrictive eating habits. The most typical thyroid abnormality is euthyroid sick syndrome, which is characterised by low triiodothyronine, increased reverse triiodothyronine, normal or low thyroxine, and low thyroid-stimulating hormone. When this pattern is seen, supplementary thyroid hormone is not advised since it acts as an adaptive response to famine. In AN, hypercortisolemia may be present. Weight loss, excessive physical exercise, or stress may be responsible for hypothalamic-pituitary-gonadal axis suppression. Amenorrhea may occur in females with AN, and low testosterone levels and reduced testicular volumes may occur in males with AN. (misra, 2016)

Prepubescent and peripubertal children and adolescents with eating disorders may exhibit growth retardation, small stature, and pubertal delay. Low levels of insulin-like growth factor-1 and growth hormone resistance are linked to AN. The literature has reported inconsistently on catch-up growth; younger patients may have more significant and long-lasting effects on growth. Because boys typically enter puberty later than girls and experience their peak growth at a later stage of sexual maturity, adolescent boys may be even more at risk for height deficits than girls. If an eating disorder appears in the middle of adolescence, these boys are less likely to have finished growing. Male and female patients with eating disorders are at risk for low BMD, which is a common side effect. Low

BMD is concerning since it may damage adult bone health in an irreversible way as well as increasing the risk of fractures in the short term. (solmi, 2016)

TABLE 2 Selected Medical Complications Resulting From Eating Disorders.

Eating Disorder Behaviors	Medical Complications
Related to dietary restriction or weight loss	
Fluids and electrolytes	Dehydration; electrolyte abnormalities: hypokalemia, hyponatremia
Psychiatric	Depressed mood or mood dysregulation; obsessive-compulsive symptoms; anxiety
Neurologic	Cerebral cortical atrophy; cognitive deficits; seizures
Cardiac	Decreased cardiac muscle mass, right axis deviation, low cardiac voltage; cardiac dysrhythmias, cardiac conduction delays; mitral valve prolapse; pericardial effusion; congestive heart failure; edema
Gastrointestinal	Delayed gastric emptying, slowed gastrointestinal motility, constipation; superior mesenteric artery syndrome; pancreatitis; elevated transaminases; hypercholesterolemia
Endocrinologic	Growth retardation; hypogonadotropic hypogonadism: amenorrhea, testicular atrophy, decreased libido; sick euthyroid syndrome; hypoglycemia/hyperglycemia, impaired glucose tolerance; hypercholesterolemia; decreased BMD

Eating Disorder Behaviors	Medical Complications
Hematologic	Leukopenia, anemia, thrombocytopenia, elevated ferritin; depressed erythrocyte sedimentation rate
Related to vomiting	
Fluid and electrolytes	Electrolyte disturbance: hypokalemia, hypochloremia, metabolic alkalosis
Dental	Dental erosions
Gastrointestinal	Gastroesophageal reflux, esophagitis; Mallory-Weiss tears; esophageal or gastric rupture
Related to laxative use	
Fluids and electrolytes	Hyperchloremic metabolic acidosis; hypocalcemia
Gastrointestinal	Laxative dependence
Related to binge eating	Obesity with accompanying complications
Related to refeeding	Night sweats; polyuria, nocturia; refeeding syndrome: electrolyte abnormalities, edema, seizures, congestive heart failure (rare)
Seen among all eating disorder behaviors	Suicide

(Adapted from Rosen; American Academy of Pediatrics).

2.6. Conceptual framework.

Based on the previous literature, a conceptual framework of the present study was

developed that highlight the main risk factors of the eating disorders along with some

Personal Factors
1. Age
2. Gender
3. Education level
4. Marital status
5. Type of living
6. institution

Body image
1. Height
2. Weight
3. BMI

Eating disorder

Management of eating Disorders
1. Health promotion approach.
2. Positive body image
3. Focusing on building self-esteem.
4. Balanced approach to nutrition and physical activity.
5. Promoting healthy food options.
6. Nutritional education and psychotherapy,

Outcome Health and well balanced diets.

Good outcome
Balanced diet, healthy activities.

Inadequate outcome.
Low self-esteem, poor dietary pattern

Risk Factors
1. Lowered self-esteem.
2. Body dissatisfaction
3. Acculturation
4. Exposure to gender specific norms.

Figure 1: Conceptual Framework of Eating disorders risk factors and management.

2.7. Designed Treatment Principles across the Eating Disorder Spectrum

The ultimate goals of treatment for eating disorders are to restore children and adolescents to their normal weight and growth trajectory, normalize their eating patterns and behaviors, and help them develop positive relationships with food, their body image, and their weight, size, and form. The focus of treatment, regardless of a precise DSM diagnosis, is on nutritional replacement and counselling. In certain situations, psychotropic medications can be a helpful addition. With the help of outpatient nutritionists and mental health specialists with expertise in eating disorders, children and adolescents with minor nutritional, medical, and psychological dysfunction may be handled in the pediatrician's office. In cases where it is possible, prompt referral to a specialized multidisciplinary team is desirable because an early response to treatment may be associated with better outcomes. Pediatricians may have to collaborate with medical professionals from further afield to provide care if the area lacks the necessary resources. More extensive programming (such as day-treatment programs or residential settings) may be necessary for people who do not progress quickly after receiving outpatient care. (hornberger L. , 2021)

TABLE 3 Indications Supporting Hospitalization in an Adolescent with an Eating Disorder

One or More of the Following Justify Hospitalization
1. ≤75% median BMI for age and sex (percent median BMI calculated as patient BMI/50th percentile BMI for age and sex in reference population × 100)
2. Dehydration
3. Electrolyte disturbance (hypokalemia, hyponatremia, hypophosphatemia)
4. ECG abnormalities (eg, prolonged QTc or severe bradycardia)

5. Physiologic instability:
  a. Severe bradycardia (HR <50 beats per min daytime; <45 beats per min at night);
 	
  b. Hypotension (90/45 mm Hg);
 	
  c. Hypothermia (body temperature <96°F, 35.6°C);
 	
  d. Orthostatic increase in pulse (>20 beats per min) or decrease in BP (>20 mm Hg systolic or >10 mm Hg diastolic)

6. Arrested growth and development
7. Failure of outpatient treatment
8. Acute food refusal
9. Uncontrollable binge eating and purging
10. Acute medical complications of malnutrition (eg, syncope, seizures, cardiac failure, pancreatitis and so forth)
11. Comorbid psychiatric or medical condition that prohibits or limits appropriate outpatient treatment (eg, severe depression, suicidal ideation, obsessive-compulsive disorder, type 1 diabetes mellitus)

Chapter 3: Methodology

3.1. Research design

A quantitative research approach using cross-sectional study design was carried out to find association between eating habits and psycho social well-being among university students of Rawalpindi city.

3.2. Research duration

Study period for the current research was six months after the approval.

3.3. Study setting

The study was conducted at public and private universities of Rawalpindi city. The universities were selected through stratified random sampling.

3.4. Research participants.

Study participants were students of universities, studying at public and private institutes of Rawalpindi city. Students were asked to participate voluntarily. They were informed that all of their responses were recorded anonymously. Response to all questions was mandatory and were allowed to ask any query regarding questionnaire. The aims and objectives were explained to all the participants.

Samples were selected on the basis of inclusion and exclusion criteria's

3.4.1.Inclusion criteria

1. Students of both gender males and females.

2. Students of age between 18 to 24 years.

3. Students of the public and private universities of Rawalpindi city.

4. Students who were not taking any medications i.e for mental health illness, for metabolic disorders.

3.4.2 Exclusion criteria

1. Students who are above and below the age of 18 and 25 years respectively.

2. Students who are already diagnosed with mental health issue.

3. Students who are diagnosed with metabolic disorders and are on medications.

3.5. Sample size calculation

Sample size was calculated using proportion formula in Open Epi menu,version 3 software.

By taking previous prevalence of eating habits among university students as 10% and 95% confidence level and 5% margin of error, the sample size was 240.

3.6 Sampling strategy.

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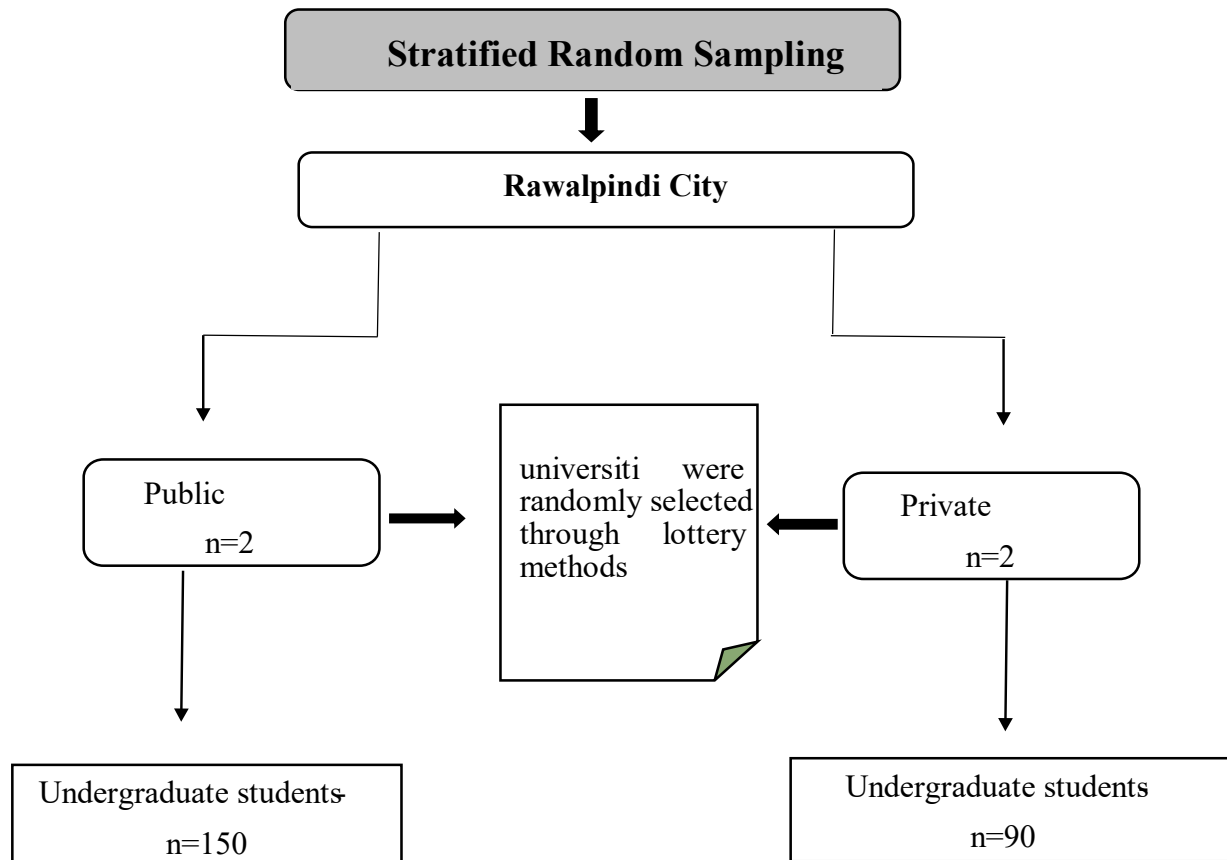
Figure 2. **Flowchart of sampling strategy.**

3.7. Data collection instrument

3.7.1. Questionnaire Design:

Data was collected by using self–administered questionnaire from the respondents. A Performa was developed to collect data regarding sociodemographic characters of the respondents and general physical examination. . Questionnaire was developed using an adapted tool from two validated tools eating attitude test 26 which is a refinement of the original EAT 40 that was first published in 1979 and used in one of the first studies to examine socio-cultural factors in the development and maintenance of eating disorders. (Garner, et al. 1982) and compulsive eating scale for psychosocial assessment among respondents. (Psychiatry., 2016)

3.7.2. Content of the Questionnaire:

The questionnaire contains three major sections:

1. First part included questions related to sociodemographic information that included 6 questions on age, gender, marital status, type of living, institute and body mass index (BMI).

2. Second part included EAT 26 questionnaire which included eating habits and type of meals also exercise included 24 questions.

3. Psychosocial factors that influence the dietary eating habits of respondents were assessed using 8 item scale. Validated compulsive eating scale was used to measure uncontrolled eating patterns among university students.

3.7.3. Study Variables:

3.7.3.1 Outcome Variable:

The major construct of the questionnaire was to associate eating habits and psycho social well-being among university students. The outcome variable was eating habits of the university students which were measured by using the adapted tool eating attitude test 26 and psychosocial well being by validated compulsive tool.

EATING ATTITUDE TEST 26 with a short form EAT26 (Garner et.al.1989) and VALIDATED COMPULSIVE TOOL with a short form CES (S.Mostafvi et al)

Four point likert scale from 0 = sometimes, rarely and never, 1= often, 2= usually & 3= always was used to find the eating habits among university students whereas only 2 point likert scale with 1=yes and 2= no was used to find the compulsive traits.

3.7.3.2 Independent Variable:

Data on independent variables was collected through a self-administered questionnaire that is constructed after international and national literature review. The Performa included sociodemographic variables such as gender, age, institute, marital status and type of living. In addition to these, it also included some variables related to the general physical examination such as height, weight and BMI

3.8 Data collection process

3.8.1. Pilot Testing:

Pilot testing was performed before starting the formal data collection procedure by including 10% of the actual sample size. Performa was tested for any future changes; no

major changes were done after pilot testing. Reliability was assessed at Cronbach's alpha was 0.834 checked. Data from pilot testing was not included in final analysis.

Reliability statistics:

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.834	.834	32

Figure 3. Reliability statistics (Cronbach's alpha)

3.8.2. Formal Data Collection:

Data was collected by self-administered questionnaire and no data collectors were hired. University students of the above mentioned ages were approached. Consent was taken orally from all participants and only those were selected who agreed to take part in the research process. After taking the consent, the participants were given self-administered questionnaire and their responses were recorded by the researcher. Data collection was completed in approximately two months. All filled questionnaires were kept protected in plastic files and no one had access to it other than researcher.

3.9. Data Analysis Procedure:

Code book was developed and data was entered in Statistical Package for Social Sciences (SPSS) version 17.BMI was calculated as weight in kilograms divided by height in meter square.

BMI Formula: weight (kg) / [height (m)]^2

Students BMI was divided into four groups < 18.5 kg/m2 was

categorized as underweight, 18.5 - 24.9 kg/m2 was categorized as healthy weight, 25 -

29.9 kg/m2 was categorized as overweight, and > 30 kg/m2 was categorized as obese.

After careful data entry, data was checked for any error before proceeding to the further

analysis. After data cleaning, data transformation was carried out for certain variables.

Data analysis was done in two phases; descriptive analysis and inferential analysis.
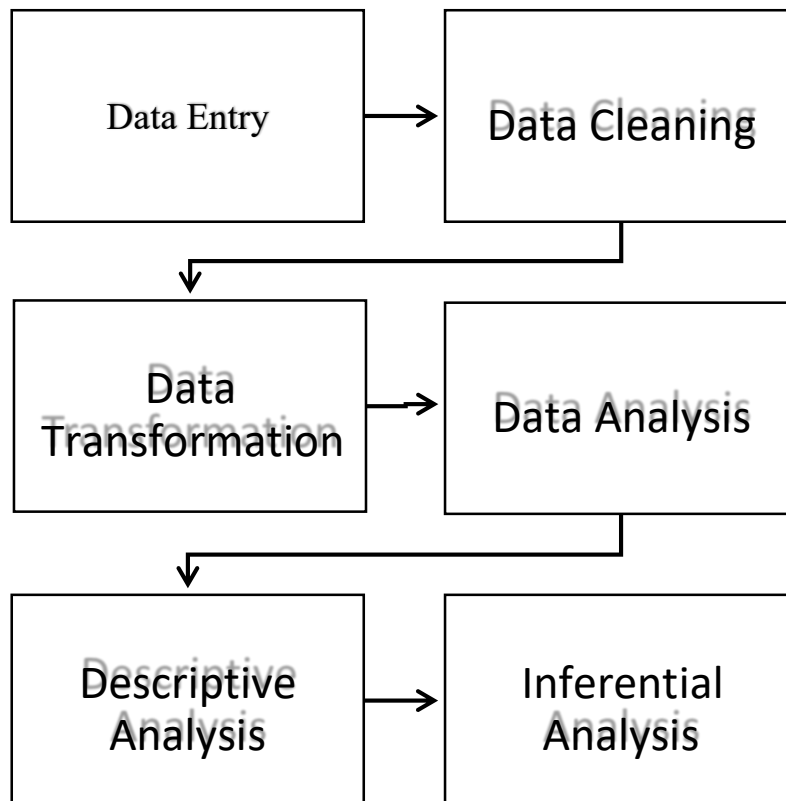
Figure 4. Data Analysis Plan on SPSS Version 17

3.9.1. Descriptive Analysis:

Descriptive statistics were generated for sociodemographic characteristics. For categorical variables, data was summarized in the form of frequencies and percentages and presented in table form. Continuous variables were summarized by mean and standard deviation as the data was normally distributed.

3.9.3. Inferential Analysis:

Chi-square test was carried out for the association between sociodemographic features and eating habits among university students and also for the association between psychosocial well being with eating habits among university students.

Binary logistic regression was carried out to find out the association between psychosocial well being and eating habits and was adjusted for sociodemographic features.

3.10. Ethical Considerations:

Before starting formal data collection, approval from Institutional Review Board (IRB) of Al-Shifa School of Public Health Rawalpindi, Pakistan has been taken. Permission letter from the Head of Department of Al-Shifa School of Public Health was obtained regarding access to public and private universities of Rawalpindi city. Permission was taken from the public and private universities of Rawalpindi city and also from the students regarding conducting research. Students were explained the purpose of the research and oral consent was taken from each participant. Participants were assured for the confidentiality of their data. Data collected from the respondents was kept anonymous and was not shared with anyone. Data was entered in SPSS anonymously. After data entry, hard copies of collected data were kept at a safe place.

Chapter 4: Results

For the current study, data of 240 students, in public and private universities was collected. A summary of descriptive and inferential analysis is given below.

Socio-demographic characteristics:

Of 240 students who participated in the study, 155(64%) participants were between the age group of 19 to 21 years and 85(35%) of the participants were 22 to 24 years of age.

N=95(39%) were males and 145(60%) were females.

Out of 240 respondents only N=9 (3%) were married and the rest 231(96%) were unmarried. Students who were studying in public universities were N=109 (45%) and N=131(54%) were studying in a private university.

N=91 (37%) students were living in hostels whereas N=149 (62%) were day scholars.

BMI was categorized in four groups there was no participants labelled as obese, majority of the participants were with normal weight N=164(68%), N=18(7%) participants were labelled as overweight. N=58 (24%) participants were underweight. (Table 4.1)

4.1. Descriptive results of socio demographic variables.

Descriptive results of sociodemographic variables			
Demographic variables	Categories	n	%
Age	19-21	155	64
	22-24	85	35
Gender	Males	95	39
	Female	145	60
Institute	Public	109	45
	Private	131	54
Marital status	Married	9	13
	Unmarried	231	96
Type of living	Hostlite	91	37
	Dayscholar	149	62
Body mass index (BMI)	Normal	164	68
	Underweight	58	24
	Overweight	18	7
	Obese	0	0

Note. Personal characteristics of sociodemographic variables.

psychosocial factors affecting eating habits.

Surprisingly only 28(12%) respondents ate because of feeling lonely, 99(41%) felt out of control with regards to food, 79(33%) ate until they felt their stomach hurts. 74(31%) ate because their mood affected their eating behavior, 117(49%) ate with friends for purpose of overstuffing with food, 84 (35%) ate a lot of food that they never knew how the food tasted and how much food they have eaten. While 134 (56%) respondents lost weight previously and only 42 (16%) took laxatives, diet pills and diuretics to control their weight. (Table 4.2)

4.2 Descriptive results of psychosocial factors affecting eating habits.

Psychosocial factors affecting eating habits.			
Variables	**Category**	**Total**	**%**
Eat because feeling lonely	yes	28	12
	no	212	88
Feel out of control when comes to food	yes	99	41
	no	141	59
Eat so much that stomach hurts	yes	79	33
	no	161	67
Eat too much because you are upset	yes	74	31
	no	166	69
Eat with friends for overstuffing	yes	117	49
	no	123	51
Eat fast that you don't know how much ate	yes	84	35
	no	156	65
Lost weight previously	yes	134	56
	no	106	44
Used laxatives, diet pills to control weight	yes	42	16
	no	198	83

Type of living of study population
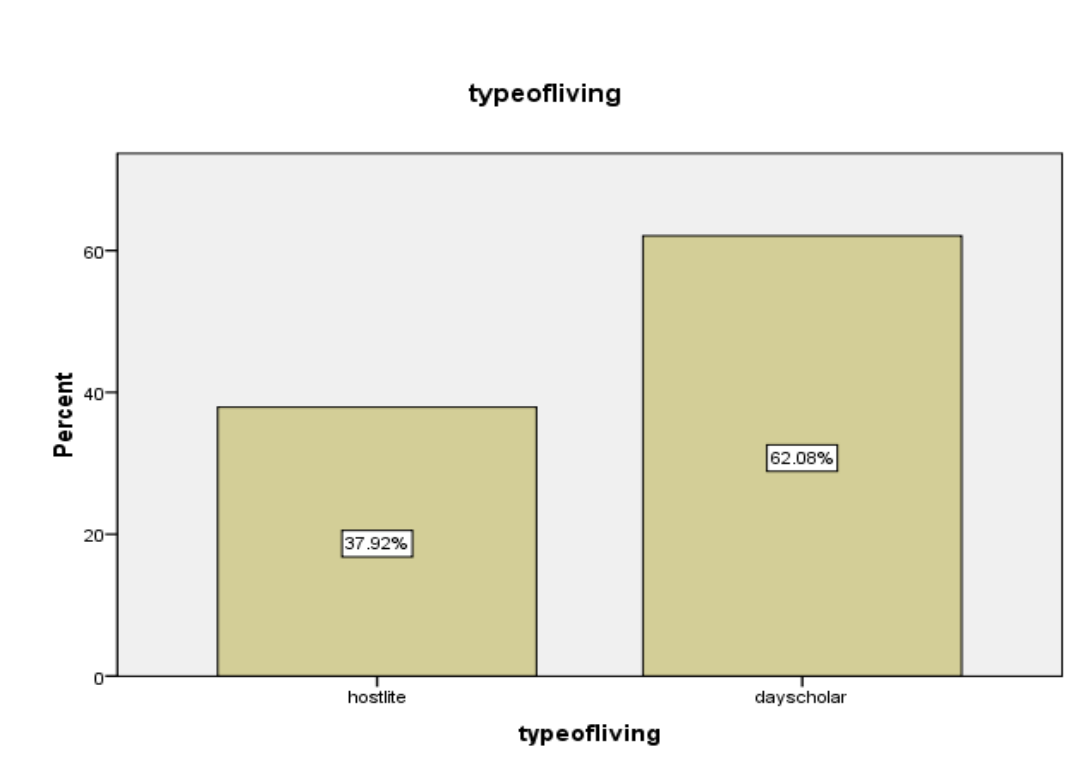
typeofliving

Figure 5. Shows the type of living of study population

Bar chart shows that out of 240 respondents 38% were hostlites and 62% were day scholars.

Marital status of study population
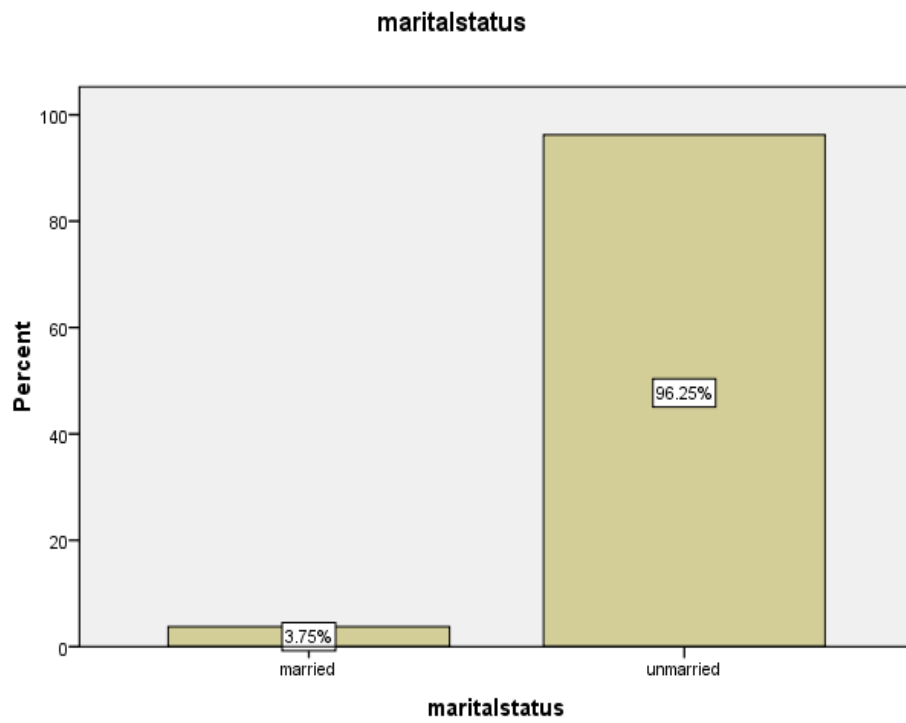
Figure 6. Shows the marital status of the study population.

Body mass index
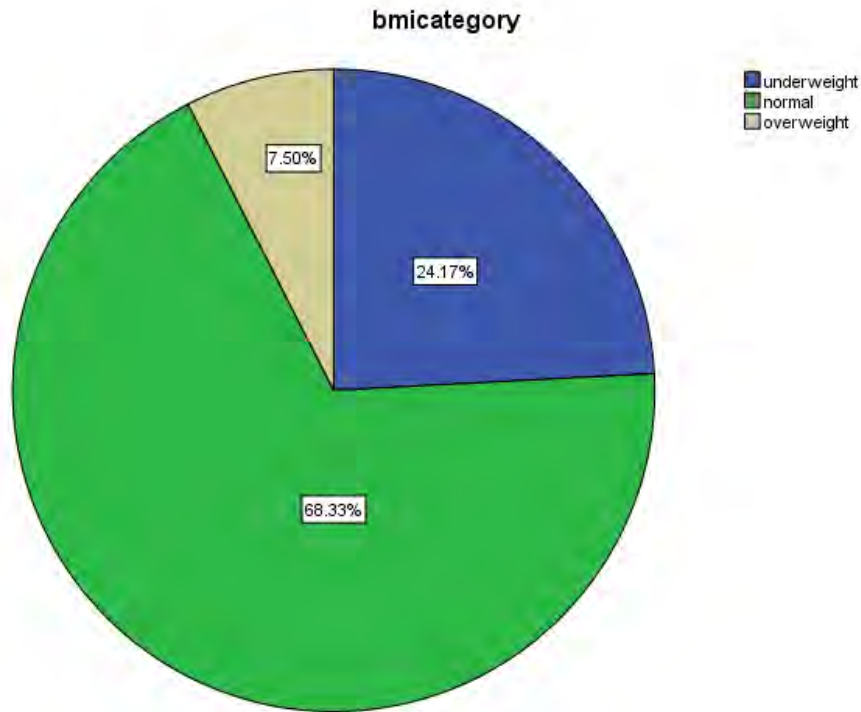
bmicategory

Figure7. Pie chart for BMI categories

The BMI was calculated as weight in kilograms divided by height in square meters (kg/m2). Students' BMI were divided into 4 groups: < 18.5 kg/m^2 was categorized as underweight, 18.5–24.9 kg/m^2 was categorized as healthy weight, 25–29.9 kg/m^2 was categorized as overweight, and >30 kg/m^2 was categorized as obese.

4.3 Descriptive results of Outcome variable

Sr. No	Variables	Range	Mean ±St.d
1.	Eating habits	62	19.80±12.42

Eating habits of university students was assessed using questionnaire adapted from the previous studies. (EAT26)

Outcome variable was eating habit of university students. The mean score of outcome variable was (19.80±12.42).
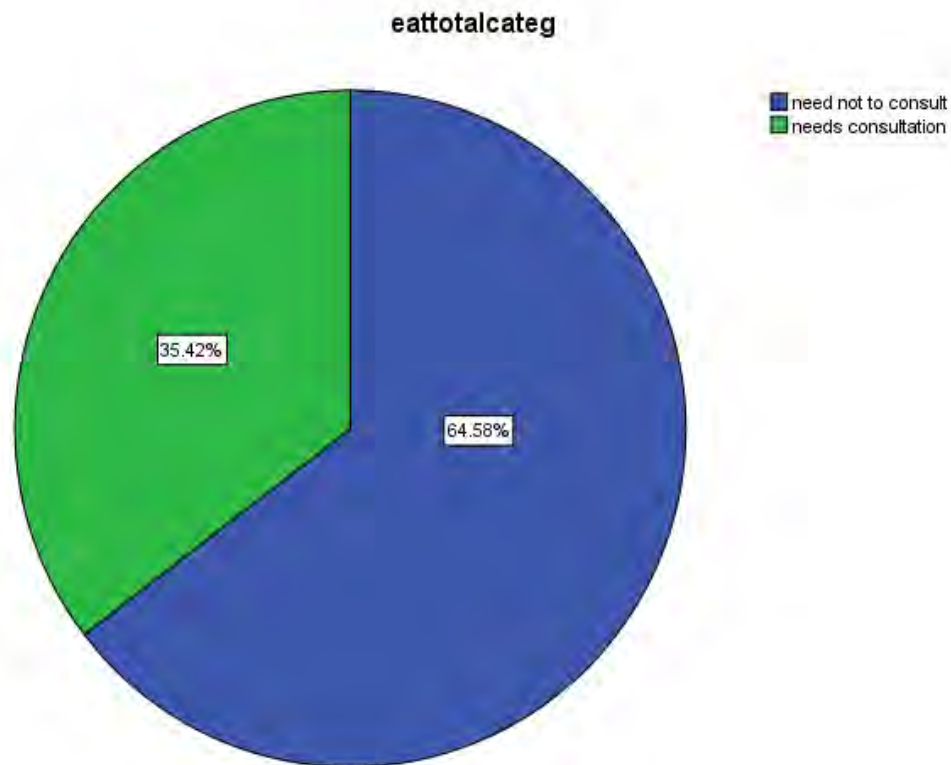
Figure 8. Pie chart shows total of 35% participant needs consultation whereas 64% needs not to consult.

Eat analysis shows that out of 240 respondents 35% respondents needs consultation for their eating disorders as their EAT score recorded was more than 20. While 64% needs no consultation for their eating patterns as their EAT score was within the normal limits (0-20)

GENDER OF THE STUDY POPULATION
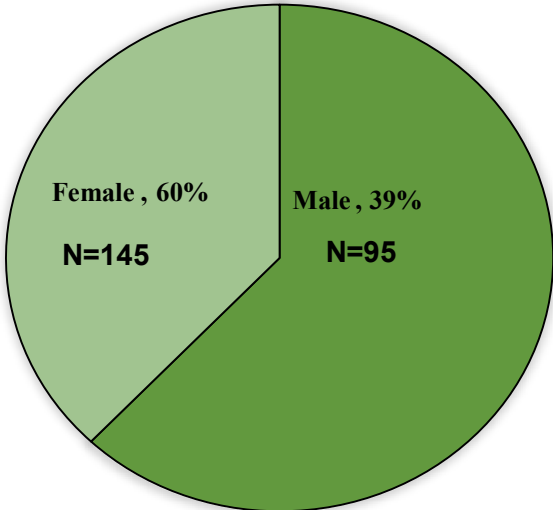
Figure 9. Percentage of gender in the study population

INSTITUTE OF THE STUDY POPULATION
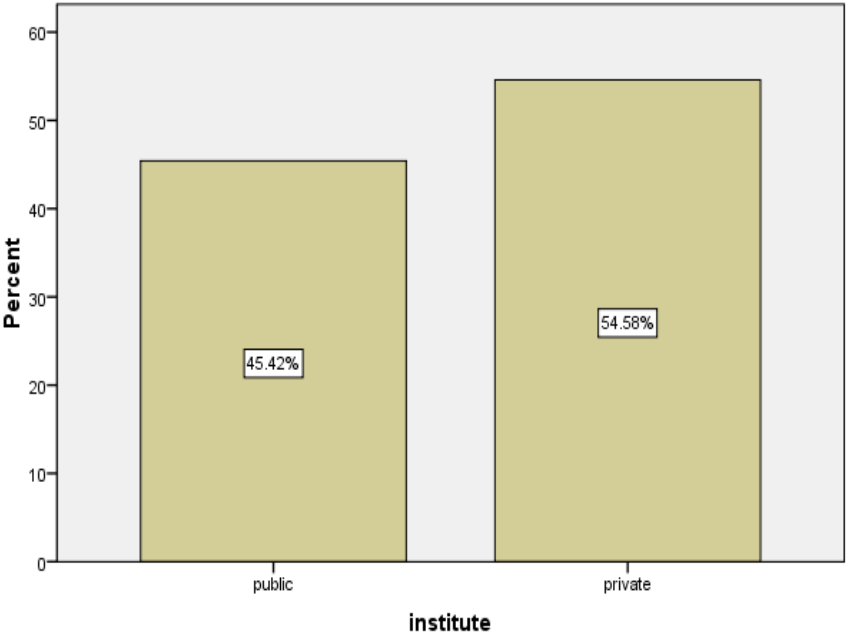
Figure 10. Graph shows the percentages of public and private institutes in study population.

This bar graph represents that out of 240 respondents 45% students were studying at a

public institute while the rest of 55% were studying in a private institute.

4.4 Inferential Results.

Table 3. Association of sociodemographic variables with eating habits of students.

Demographic variable	category	total	eat total analysis				Chi-square(df)	p value
			needs consultation		needs no consultation			
			n	%	n	%		
Age	19-21	155	48	31	107	69	3.783(1)	0.052
	22-24	85	37	44	48	56		
Gender	female	145	44	30	101	70	4.102(1)	**0.042**∗
	male	95	41	43	54	57		
Marital status	married	9	2	22	7	78	0.712(1)	0.399
	unmarried	231	83	36	148	64		
Type of living	day scholar	149	47	32	102	68	2.577(1)	0.108
	hostlite	91	38	42	53	58		
Institute	public	109	35	32	74	68	0.955(1)	0.329
	private	131	50	38	81	62		
Body mass index	Normal	164	61	37	103	63	1.267(2)	0.531
	underweight	58	7	12	41	71		
	overweight	18	7	39	11	61		
	obese	0	0	0	0	0		

α 0.05, CI 95%
*significant values
**highly significant value

(Chi-square results for the association between sociodemographic variables and eating habits (N= 240))

Chi-square test was carried out to check the association between sociodemographic variables and eating habits. Results showed that there was no significant association between the sociodemographic characteristics of the respondents except for the gender(0.042).

As the p value for all the variables was more than 0.005 which is considered not significant.

(Table 3)

Whereas chi-square was carried out to find the association between psychosocial well-being and eating habits among university students, surprisingly it showed all the significant associations. All the p-values below 0.005 were considered statistically significant. Results of chi square test showed that eating lonely is significantly associated with eating habits (**p=0.003**) , feeling completely out of control when it comes to food (**p=0.000**), eat so much that stomach gets hurt (**p=0.001**), eat too much because feeling upset and nervous (**p=0.001**), eat with friends for the purpose of overstuffing (**p=0.002**), ate fastly that they did not know what they ate and how much they ate (**p=0.020**), used laxatives, diet pills and diuretics to control their weight (**p=0.000**)

A summary of association between psychosocial well-being (Table 4.5)

Chi square results for psychosocial well-being and eating habits							chi square (df)	p value
Variables	**category**	**Total**	**Eat total analysis category**					
			needs consultation		**need not to consult**			
			n	%	n	%		
Eat because feeling lonely	yes	28	17	61	11	39	8.869 (1)	**0.003****
	no	212	68	32	144	68		
Feel out of control when comes to food	yes	99	51	52	48	48	19.093(1)	**0.000****
	no	141	34	24	107	76		
Eat so much that stomach hurts	yes	79	40	51	39	49	11.921(1)	**0.001****
	no	161	45	28	116	72		
Eat too much because you are upset	yes	74	38	51	36	49	11.87(1)	**0.001****
	no	166	47	28	119	72		
Eat with friends for overstuffing	yes	117	53	45	64	55	9.748(1)	**0.002****
	no	123	32	26	91	74		
Eat fast that you don't know how much ate	yes	84	38	45	46	55	5.450(1)	**0.020***
	no	156	47	30	109	70		
Lost weight previously	yes	134	52	39	82	61	1.524(1)	**0.217**
	no	106	33	31	73	69		
Used laxatives, diet pills to control weight	yes	42	26	62	16	38	15.616(1)	**0.000****
	no	198	59	30	139	70		

4.5 Association between psychosocial well-being and eating habits.

α 0.05, CI 95%
*significant values
**hihly significant value

Note. Adjusted for age, gender, BMI, marital status and type of living.

Socio-demographic variables entered in the first step were age, gender, marital status, type of living, institute and body mass index. In the second step, psychological factors were entered: "eat because of feeling lonely", "feel out of control when eating", "eat so much until stomach hurts", "eat because of feeling upset or nervous", "go out with friends for the purpose of overstuffing with food", "eat so much food so fast that don't know how much ate and what it tasted like", "lost weight previously", "used laxatives, diet pills and diuretics to control weight" eating lonely is significantly associated with eating habits (**p=0.003**), feeling completely out of control when it comes to food (**p=0.000**), eat so much that stomach gets hurt (**p=0.001**), eat too much because feeling upset and nervous (**p=0.001**), eat with friends for the purpose of overstuffing **(p=0.002**), ate fastly that they did not know what they ate and how much they ate (**p=0.020**), used laxatives, diet pills and diuretics to control their weight (**p=0.000**).

The OR values for binary logistic regression showed that eat because of feeling lonely

Summary of binary logistic regression model			
Association between psychosocial well-being and eating habits			
variables	Eat total score analysis		
	OR	CI 95%	
		Lower	Upper
Eat because feeling lonely	0.004	0.136	0.688
Feel out of control when comes to food	0.000	0.175	0.551
Eat so much that stomach hurts	0.008	0.251	0.811
Eat too much because upset or nervous	0.004	0.226	0.748
Go out for overstuffing yourself with food	0.012	0.27	0.849
Eat food fastly that don't know how much ate	0.067	0.332	1.039
Used laxatives,diet pills and diuretics for weight loss	0.001	0.139	0.58

(**OR=0.004**)", "feel out of control when eating(**OR=0.000**)", "eat so much until stomach

hurts(**0R=0.008**)", "eat because of feeling upset or nervous(**OR=0.004**)", "go out with

friends for the purpose of overstuffing with food(**OR=0.012**)", "eat so much food so fast

that don't know how much ate and what it tasted like(**OR=0.067**)", "used laxatives, diet

pills and diuretics to control weight(**OR=0.001**)".

The total model was significant.

4.6. Association between psychosocial well-being and eating habits using Binary logistic regression

Note, Adjusted for age, gender, BMI,marital status and type of living.

Results showed that full model containing all predictors was statistically significant (p = 0.0001) indicating that the model was able to distinguish between respondents who reported disturbed eating patterns because psychosocial factors.

CHAPTER 5: DISCUSSION

In the present study Association between eating habits and psychosocial well-being among university students in Rawalpindi city was carried out. This was carried out by using a standard reliable tool adapted from the previous studies. The study was conducted at public and private universities of Rawalpindi city. A stratified random sampling was used and universities were selected. Pilot testing was performed before starting the formal data collection procedure by including 10% of the actual sample size (240). Reliability was checked after entering data into SPSS version 17. The value of Cronbach's alpha for section 3 and 4 was carried out (EAT26 and CES respectively) was 0.837. Which is considered highly reliable. The present study showed a significant association between psychosocial well-being and eating habits among university students. By applying chi-square and binary logistic regression we found association between them. P-value was less than 0.005.

Hence there was no significant association found between sociodemographic features and eating habits. P value was more than 0.005.

Of 240 students who participated in this study, 155(64%) participants were between the age group of 19 to 21 years and 85(35%) of the participants were 22 to 24 years of age.

N=95(39%) were males and 145(60%) were females. Out of 240 respondents only N=9 (3%) were married and the rest 231(96%) were unmarried. Students who were studying in public universities were N=109 (45%) and N=131(54%) were studying in a private university. N=91 (37%) students were living in hostels whereas N=149 (62%) were day scholars. A recent study conducted in a university in India shows that a total of 332 students participated in the study. All the participants were aged between 18 and 21 years. Of the

respondents, 43.67% were males while 56.33% were females, Close to half of the students were in hostel and the rest were dayscholars. (Iyer, 2021)

The result of a previous study revealed EAT26 results that 43 (13%) of the participants scored above 20 on the test putting them at high risk for a possible eating disorder. Among males, 12.4% reported high-risk scores while 13.4% of the females had high-risk scores . The BMI was also assessed and cross-tabulated with the risk of eating disorders and was not found to be statistically significant (p=0.08). (Shriraam, 2021) Whereas the results concluded in this study also showed similarity that sociodemographic factors and EAT26 has no significant association. Results showed that there was no significant association between any of the sociodemographic characteristics of the respondents.

As the p value for all the variables was more than 0.005 which is considered not significant.

Our results revealed that only 86% of students take snacks apart from regular meals . This is higher compared with undergraduates from China (83.6%), Lebanon (61.4%), Malaysia (57.6%), and Saudi Arabia (50.5%). The urge to change these irregular eating habits through health promotion programs is well-recommended in the literature (Alzahrani S. , 2020)

Most participants reported eating with their family or friends more. The result is in line with reports from Malaysia (81.8%), Saudi Arabia (78.3%), and Lebanon (76.8%) (Al-Dubai, 2012)

In another study psychological factors stated to have significant association .Surprisingly 309 (42.1%) students ate because of feeling lonely (p < 0.001), 314 (43.1%) felt out of control with regards to food (p < 0.001), and 320 (43.6%) ate until they felt their stomach

hurts (p < 0.001). When asked if their mood affected their eating behavior, 235 (32.3%) and our study also stated this similarity chi-square was carried out to find the association between psychosocial well-being and eating habits among university students, surprisingly it showed all the significant associations. (Alolabi, 2022)

A recent study showed in multiple hierarchical regression that Socio-demographic variables entered in the first step were age, faculty, smoking status, alcohol consumption, exercise, and accommodation. In the second step, psychological factors were entered: "eat because of feeling lonely", "feel out of control when eating", "eat so much until stomach hurts", "eat because of feeling upset or nervous", "eat because of feeling bored", and "eat because of feeling happy". In the first step non-smokers ($p < 0.001$), exercise ($p = 0.002$), and living with family ($p < 0.001$) were factors significantly associated with higher eating habits scores ($R^2 = 0.118$; R^2 adjusted = 0.109). While in the second step results indicated that non-smokers ($p < 0.001$), exercise ($p = 0.007$), living with family ($p < 0.001$), and "eat because of feeling happy" ($p = 0.014$) were associated with higher eating habits score ($R^2 = 0.132$; R^2 adjusted = 0.117). The total model was significant ($p < 0.001$) and accounted for 13.2% of the variance whereas this study conducted binary logistic regression which stated significant results we carried out a binary logistic in this research as to only predict the presence or absence of the characteristics of the outcome variables. It uses one or more predictor variables and hence we found association between psychosocial characteristics and eating habits among university students.

The OR values for binary logistic regression showed that eat because of feeling lonely (**OR=0.004**)", "feel out of control when eating(**OR=0.000**)", "eat so much until stomach hurts(**0R=0.008**)", "eat because of feeling upset or nervous(**OR=0.004**)", "go out with

friends for the purpose of overstuffing with food(**OR=0.012**)", "eat so much food so fast that don't know how much ate and what it tasted like(**OR=0.067**)", "used laxatives, diet pills and diuretics to control weight(**OR=0.001**)".

The total model was significant.

5.1 Strengths:

The present study was conducted at public and private universities and respondents from variety of socioeconomic groups were included for assessment of psychosocial wellbeing and eating habits. Current findings of the study suggest that eating habits of university students is not only dependent on the sociodemographic features but also on the psychosocial wellbeing.. Little literature is available regarding effect of psychosocial wellbeing and eating habits among university students in Pakistan, so it is the main strength of this study.

5.2 Limitations:

The current study was a cross-sectional study, which limits the establishment of causality. Recall bias may be another limitation. This cross-sectional design of the study does not allow inferences to be drawn about causality, and longitudinal consequences of eating habits cannot be assessed. The results of this study are limited to a sample of students from just few university which may not be representative of all university students in Rawalpindi city.

5.3 Conclusion:

The current study concluded that there was significant difference between psychosocial wellbeing and eating habits among university students but had no significant association between sociodemographic and eating habits. Half of the students had unhealthy dietary habits. The unhealthy habits were irregular meals, inadequate consumption of snacks, and water intake. Students' eating habits were significantly affected by the psychological factors. In general, the study result indicated that psychosocial wellbeing did have an impact on eating habits. Understanding the bad eating habits may help the public health authorities, university authorities, food providers, and health promotion officers plan out the required nutritional education and actions needed by students across the region.

5.4 Recommendations:

Based on the current findings, following recommendations are put forward for the policy makers and future researches to address this untapped public health issue.

1. Encourage the person to seek trained professional assistance forcefully but gently. Be an example of positive body image and self-esteem. Recognize that people listen to and take note of how you talk about your body and yourself.

2. Although social media have become part of people's lives with a significant impact especially on younger adults, obtaining online health information has a negative effect on attitude toward eating habits. Data on healthy eating diets have become scarce, we need to work on that and try to bring healthy eating activities.

3. Less pressure on younger generation about body shaping, weight gain and loss issues.

4. Positive energies to be transferred for a healthier and better lifestyle.

5. There should be good nutritional program conduction at higher level in order to make the region healthier.

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ANNEXURE-A

Questionnaire

Please read all questions carefully and tick the most appropriate answer. You are requested to fill all information accurately so that appropriate results can be derived. All information will be kept confidential and your identity will not be disclosed at any time. Moreover, your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study.

Name of Researcher: Sana Asif

Respondent's Signature

_____

Organization: Alshifa School of Public Health Rawalpindi

Association between eating habits and psycho social well-being among university students in Rawalpindi City.

Section 1
(Socio demographic features)

1. Age
   a. 19-21 years
   b. 22-24 years

2. Gender
   a. Male
   b. female

3. Marital status
   a. Married
   b. Unmarried

4. Type of living
   a. Hostlite
   b. Dayscholar

5. Institute
   a. Public
   b. Private

Section 2
(General physical examination)

Height_____

Weight_____

BMI_____

Section 3
(Eating pattern/ Habits)

	Check a response for each of the following statement.	always	usually	often	Some times	rarely	never
1.	Do you take snacks apart from your regular meals?						
2.	Avoid eating when I am hungry.						
3.	Find myself preoccupied with food.						
4.	Have gone on eating binges where I feel that I may not be able to stop.						
5.	Aware of the calorie content of foods that I eat.						
6.	Avoid foods with a high carbohydrate content.						
7.	Feel that others would prefer if I eat more.						
8.	Vomit after I have eaten.						
9.	Feel extremely guilty after eating.						
10.	Am preoccupied with a desire to be thinner.						
11.	Think about burning up calories when I exercise.						
12.	Other people think that I am too thin.						
13.	Am preoccupied with the thought of having fat on my body.						

14.	Eat diet foods.						
15.	Display self-control around foods.						
16.	Feels that others pressure me to eat.						
17.	Give too much time and thought to food.						
18.	Feel uncomfortable after eating sweets.						
19.	Eat more junk food then homemade food.						
20.	Have the impulse to vomit after meals?						
21.	Do you drink 8 glass of water a day?						
22.	Ever made yourself sick (vomited) to control your weight or shape?						
23.	Exercised more than 60 minutes a day?						
24.	Enjoy trying new rich foods?						

Section 4
(Psycho social well-being)

1. Eat because you are feeling lonely.

    a. Always
    b. Usually
    c. Often
    d. Sometimes

2. Feel completely out of control when it comes to food.

    a. Yes
    b. No

3. Eat so much that your stomach hurts

    a. Yes
    b. No

4. Eat too much because you are upset or nervous?

    a. Yes
    b. No

5. Go out with friends for the purpose of over stuffing youself with food?

    a. Yes

    b. No

6. Eat so much food so fast that you don't know how much you ate or how it tasted?

    a. Yes
    b. No

7. Have you lost any weight previously?

    a. Yes
    b. No

8. Ever used laxatives, diet pills or diuretics to control your weight?

    a. Yes
    b. No

INFORMED CONSENT FORM

I am Sana Asif, student of MSPH- Final Semester, Alshifa School of Public Health,

Alshifa Eye Hospital, Rawalpindi. I am doing research on association between eating

habits and psychosocial wellbeing among university students of Rawalpindi, Pakistan.

PURPOSE OF THE RESEARCH

The purpose of this study is to assess eating habits and psychosocial wellbeing among

university students. Studying at public and private institutes of Rawalpindi, Pakistan.

PARTICIPATION

I do not anticipate that taking this study will contain any risk or inconvenience to you. Your

participation is strictly voluntary and you may withdraw your participation at any time

without penalty. I request you to answer the questions as honestly as possible. It will take

no longer than 20 minutes to complete a questionnaire. All information collected will be

used only for my research and will be kept highly confidential. Your identity and your

responses will not be identifiable; all data will be stored anonymously.

As this is solely a student project no incentive will be provided. Once study is completed,

I would be happy to share the results with you if you desire. Thank you for agreeing to

participate in this study. Your feedback is important.

I have read and understand the information sheet and agree to take part in the study.

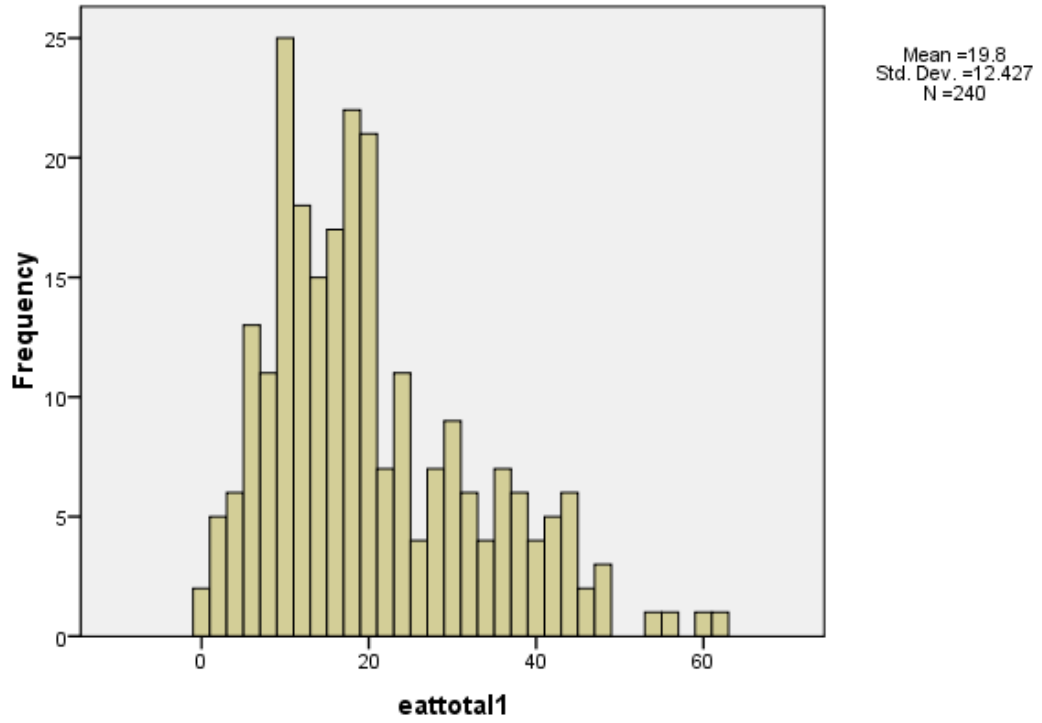Signature_____   Data Collector Name:_____Sana Asif_____

Date_____

Histogram

Figure 9 Histogram of computed variable

ANNEXURE-D

Reliability Statistics

Cronbach's Alpha	N of Items
.834	32

AL-SHIFA SCHOOL OF PUBLIC HEALTH
PAKISTAN INSTITUTE OF OPHTHALMOLOGY
AL-SHIFA TRUST, RAWALPINDI

MSPH-NOC/14S-08
16th Nov, 2022

To Whom It May Concern

This is to certify that <u>Sana Asif</u> D/O <u>Asif Mahmood</u> is a student of Master of Science in Public Health (4 Semester Programme) at Al-Shifa School of Public Health, Pakistan Institute of Ophthalmology (Al Shifa Trust) affiliated with Quaid-i-Azam University, Islamabad. She has completed course work and now in final (research) semester.

She is a keen learner, hardworking and persistent in her studies and assignments.

Dr. Ayesha Babar Kawish
Head
Al-Shifa School of Public Health, PIO
Al-Shifa Trust, Rawalpindi

AL-SHIFA TRUST, JEHLUM ROAD, RAWALPINDI – PAKISTAN
Tel: +92-51-5487820-472   Fax: +92-51-5487827
Email: info@alshifaeye.org. Web Site: www.alshifeye.org

Budget item	Transport	Stationery and internet	Printing	Publishing
Pilot testing	2000 Rs/-	6000 Rs/-	4000 Rs/-	-
Data collection	12,000 Rs/-	8,000 Rs/-	-	-
Thesis write-up	6000 Rs/-	7,000 Rs/-	6000 Rs/-	25,000 Rs/-
Total expenditure	20,000 Rs/-	21,000 Rs/-	10,000 Rs/-	25,000 Rs/-
Grand total				

ANEXURE-G

Activities	September 2022	October 2022	November 2022	December 2022	January 2023	February 2023	March 2023
Literature search	■	■	■	■	■	■	
Synopsis writing and IRB approval	■	■					
Pilot testing		■					
Data collection and entry			■	■			
Data analysis					■		
Write-up					■	■	
Thesis submission					■	■	■