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## RESEARCH ARTICLE

## Prevalence of Anorexia Nervosa among College girls in Ernakulam city, Kerala, India.

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### Abstract

One hundred and fifty college girls in the age group of 17-22 years from five different colleges of Ernakulam city, Kerala, India were studied using a standardized tool of anorexia nervosa that comprised of thirty closed ended questions on four dimensions/symptoms of anorexia nervosa: food avoidance, medical complications, psychological symptoms and body/figure consciousness. The data collected was consolidated, classified and statistically analyzed. Percentage analysis and Chi square analysis were used. More than half of college girls (63%) in the city suffered from mild symptoms of anorexia nervosa and also a quarter (27%) of students showed the beginning of symptoms. One tenth of the sample had experienced severe symptoms of anorexia nervosa. Mild symptoms of food avoidance (42.6%), medical complications (64.6%) and body or figure consciousness (49.3%) were found among girls. One fourth of the college girls showed the beginning of medical complications (24%), psychological symptoms (33.3%) and body or figure consciousness (33.3%). Twelve percent (12%) of the college girls had experienced serious psychological symptoms related to anorexia nervosa. The study showed that there is no significant difference in the prevalence of anorexia nervosa among college girls in the age group of 17-19 years and 20-22 years.

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### Introduction

Anorexia nervosa is a serious eating disorder, occasionally chronic and potentially life-threatening, defined by a refusal to maintain minimal body weight within 15 percent of an individual's normal weight. Other essential features of this disorder include an intense fear of gaining weight, a distorted body image, denial of the seriousness of the illness and amenorrhea. Anorexia nervosa predominantly affects adolescent girls and young adult women, although it also occurs in boys (Berkman et al, 2006). People with anorexia nervosa usually lose weight by reducing their total food intake and exercising excessively. Many persons with this disorder restrict their intake to fewer than 1000 calories per day. Most avoid fattening, high calorie foods and often skip meals. Anorexia is commonly seen in women in developed countries. It is a psychological disorder related to the eating habits of a person.

In developing countries like India, severe anorexia is not commonly reported. There are no prevalence or co-morbidity studies on eating disorders in India. The prevalence of eating disorders in this part of the world is lower than that of western countries but appears to be increasing (Mamen et al, 2007). Current research findings about eating disorders in India seem to be moving in two different directions at once. On one hand there is increasing recognition of eating disorders within the multicultural Indian population (Sjostedt et al, 1998). On the other, a persisting belief that the culture-bound syndrome of eating disorders is alien to India (Khandelwal et al, 1995; Abrams et al, 1993). As India becomes more urbanized, weight phobia is becoming increasingly common in young adults, especially girls. Teenage girls living in big cities like Bangalore, Mumbai and Ernakulam tend to prefer wearing western clothes which necessitate slim figures, and may be more body and beauty conscious than their

counterparts living in rural areas. Infiltration of mass media is happening even into the remotest parts of India, showing young thin-looking models and celebrities. This kind of projection of slim and beautiful body image in men and women is adding fuel into the growing trend seen among the young urban girls aspiring to become like models. The study by Mammen et al (2007) on a large number of clinic-based population of children and adolescents, found that over a period of 6 years, the prevalence of eating disorders was only 1.25%, and anorexia nervosa was found to be an emerging disorder. So the study is more significant in the present day situation in urban India, especially in Ernakulam city, Kerala.

## Materials and Methods

The sample consisted of 150 college girls in the age group of 17-22 years from five different colleges in Ernakulam city. These colleges were selected using convenience sampling. Thirty samples of girls were selected from each college using random sampling method.

In the present study, anorexia nervosa refers to an eating disorder with symptoms/dimensions such as food avoidance, medical complications, psychological symptoms and body or figure consciousness measured using a standardized tool developed by Dr. V.L Chouhan and Aditi Banerjee. The score for anorexia nervosa is the total score obtained for the four dimensions/symptoms of anorexia nervosa: food avoidance, medical complications, psychological symptoms and body/figure consciousness. The data collected was consolidated, classified and statistically analyzed. Percentage analysis and Chi square tests were used for analysis.

Thus present study was conducted with the following objectives.

- To find out the prevalence of the severity of anorexia nervosa among college girls.
- To find out the prevalence of the severity of four symptoms/dimensions of anorexia among college girls.
- To compare the severity of the four symptoms/dimensions of anorexia among college girls of two different age groups.
- To compare the severity of anorexia among college girls of two different age groups.

## Results and Discussion

The results of the study are discussed under the following headings:

Prevalence of the severity of anorexia nervosa among college girls.

Prevalence of the severity of the symptoms/dimensions of anorexia among college girls.

Comparison of the severity of the symptoms/dimensions of anorexia nervosa (food avoidance, medical complications, psychological symptoms, body or figure consciousness) in college girls of different age groups.

Comparison of anorexia among college girls of different age groups.

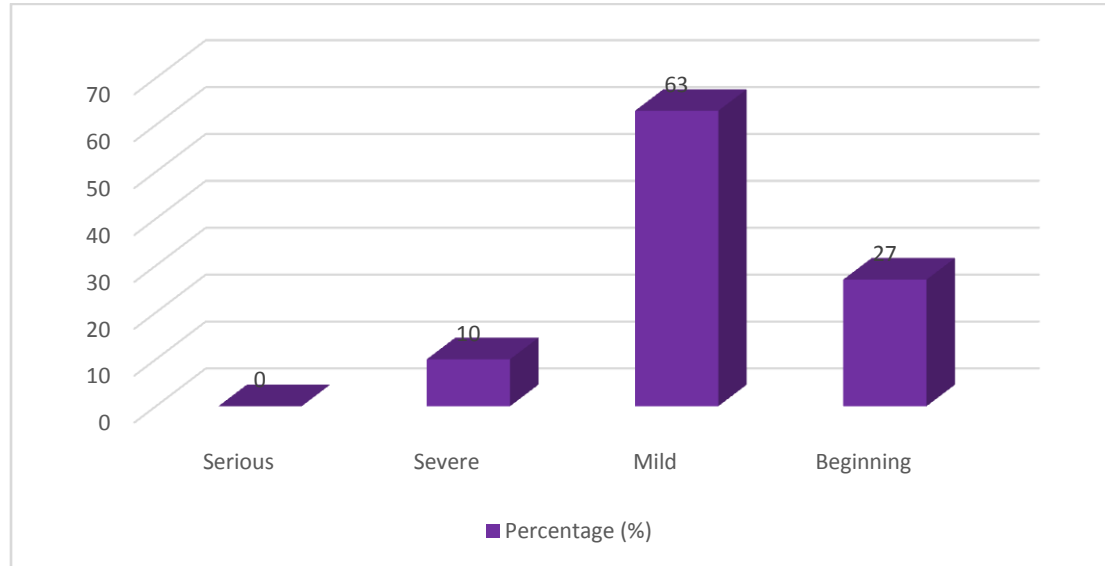
### Prevalence of the severity of anorexia nervosa among college girls

**Table 1: Prevalence of the severity of anorexia nervosa among college girls.**

	<b>N=150</b>	<b>Percentage (%)</b>
Serious	0	-
Severe	16	10
Mild	94	63
Beginning	40	27

Total	150	100
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**Figure 1: Prevalence of the severity of anorexia nervosa among college girls**



The data presented in table 1 and figure 1 shows that nearly one fourth i.e., 27 percent of the college girls, show the beginning symptoms of anorexia nervosa. Above half (63%) percent of the college girls in Ernakulam City suffer from mild symptoms of anorexia nervosa. Ten percent of the college girls (10%) had experienced severe symptoms of anorexia nervosa. The present study shows more than half of the college girls studied suffer from mild symptoms of anorexia, although no serious symptoms were observed. Pawluck and Gorey (1998) and Shisslale et al (1995) have reported that anorexia nervosa occurs more commonly in teenage girls; 85-90% of adolescents with anorexia nervosa are females. Barry et al (1990) reported that 90% of patients with anorexia nervosa were girls and 5-10% boys. Incidence of eating disorders reported by Moreande et al (1999) in a Spanish school population was 4.7% among girls and 0.9% among boys. Kjelsas et al (2004) from Norway reported a lifetime prevalence of eating disorders to be 17.9% among girls and 6.6% among boys. In India and neighboring countries, there have been a few reports of adolescents diagnosed to have anorexia nervosa. Mendhekar et al (2009) reported anorexia nervosa in two teenage girls from North India.

**Prevalence of the severity of the symptoms/dimensions of anorexia nervosa among college girls**

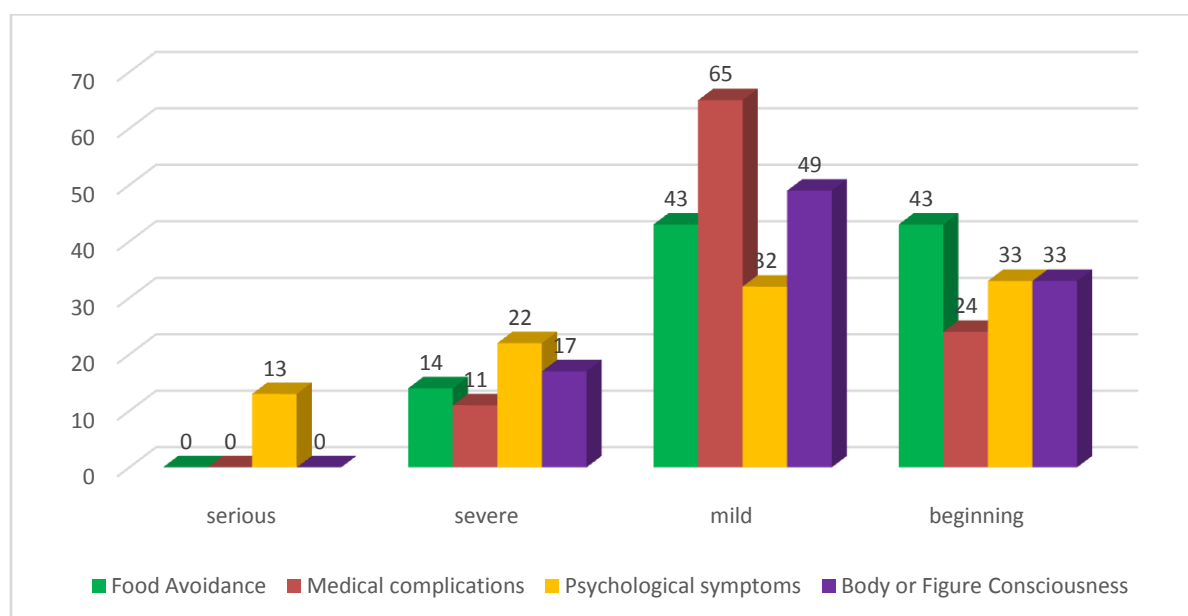
The different dimensions of anorexia studied among college girls are food avoidance, medical complications, psychological symptoms and body or figure consciousness

**Table 2**  
**Prevalence of the severity of the symptoms/dimensions of anorexia nervosa among college girls**

Severity of Anorexia	Symptoms/Dimensions of Anorexia (Percentage, %)
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	Food Avoidance	Medical complications	Psychological symptoms	Body or Figure Consciousness
Serious	-	-	13	-
Severe	14	11	22	17
Mild	43	65	32	49
Beginning	43	24	33	33

**Figure 2: Prevalence of the severity of symptoms/dimensions of anorexia nervosa among college girls**



**Comparison of the dimensions/ symptoms of anorexia nervosa among different age groups of college girls**

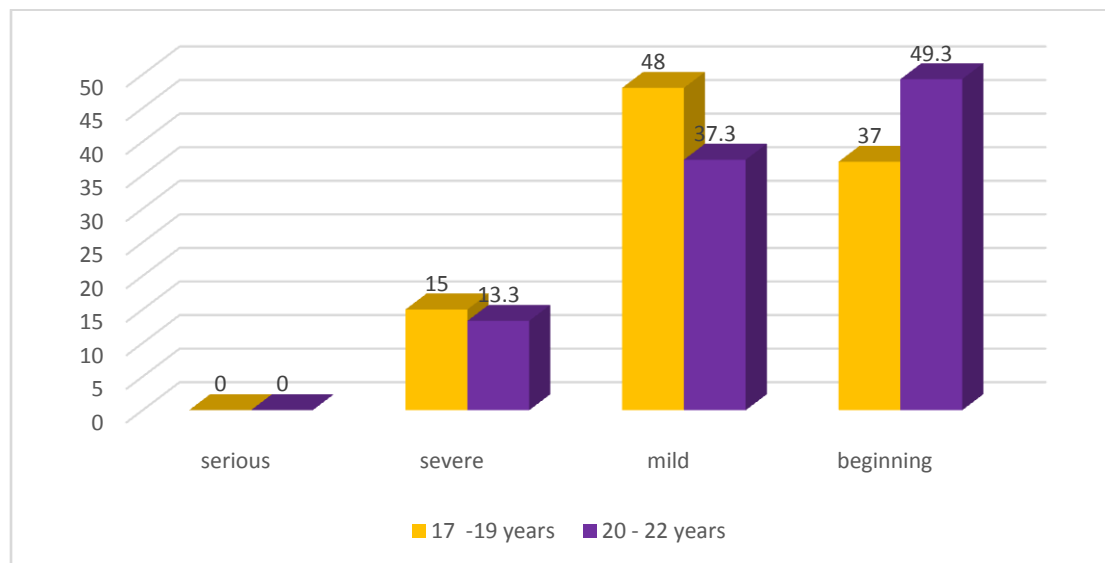
**Comparison of food avoidance in college girls of different age groups:**

Anorexia is an emotional disorder that focuses on food, but it is actually an attempt to deal with perfectionism and a desire to gain control by strictly regulating food and weight. The comparison of the severity of food avoidance in college girls of different age groups is given in table 3.

**Table 3: Comparison of the severity of food avoidance in college girls of different age groups**

	17-19 years		20-22 years			17-19 years
	Frequency	Percentage (%)	Frequency	Frequency		
Serious	0	-	Serious	0	2.291 <sup>NS</sup>	3
Severe	11	15	Severe	11		
Mild	36	48	Mild	36		
Beginning	28	37	Beginning	28		
Total	75	100	Total	75		

NS: not significant at 5% level

**Figure 3: Comparison of the severity of food avoidance in college girls of different age groups**

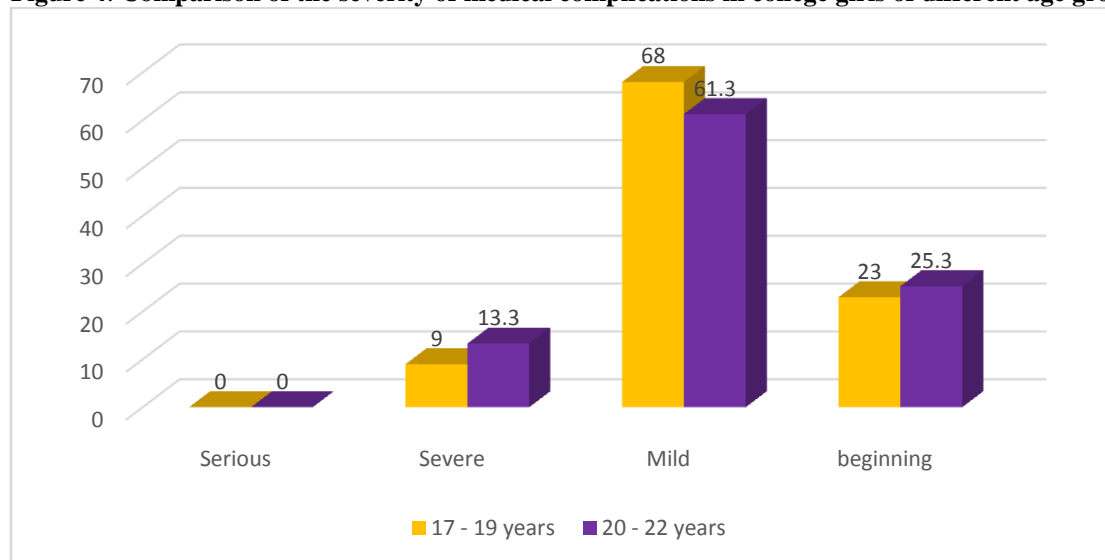
The results furnished in table 3 and figure 3 reveal that about 49% of the college girls in the age group of 20-22 years and 37% of those in the age group of 17-19 years were found to show the beginning symptoms of food avoidance. In college girls in the age group of 17-19 years, nearly half (48%) of them showed mild symptoms of food avoidance and nearly one fifth (15%) of them showed severe symptoms of food avoidance. But in the case of college girls in the 20-22 age group, 37% showed mild symptoms of food avoidance and 13% showed severe symptoms of food avoidance. It is worth mentioning that none had serious symptoms of food avoidance. The difference in the symptoms of food avoidance in college girls in the age group of 17-19 years and 20-22 years were found to be statistically not significant by chi square analysis. Cooke and Sawyer (2004) have reported that people with anorexia often ignore hunger signals and thus control their desire to eat. Often they may cook for others and be pre-occupied with food recipes, yet they will not eat themselves.

#### Comparison of the severity of medical complications in college girls of different age groups

Many studies reported that a number of medical complications are associated with anorexia nervosa. In the study by Stoving and his colleagues (2001), anorexia nervosa and the associated malnutrition that results from self imposed starvation can cause complications in every major organ system in the body. The table below shows the severity of medical complications seen in college girls.

**Table 4: Comparison of the severity of medical complications in college girls of different age groups**

Severity of Medical complications	17-19 years		20-22 years		chi-square value	Df
	Frequency	Percentage (%)	Frequency	Percentage (%)		
Serious	0	-	0	-	0.898 <sup>NS</sup>	3
Severe	7	9	10	13.3		
Mild	51	68	46	61.3		
Beginning	17	23	19	25.3		
Total						

**Figure 4: Comparison of the severity of medical complications in college girls of different age groups**

From table 4 and figure 4, it is clear that about one fourth of the college girls (23% in 17-19 years and 25% in 20-22 years) were reported to be showing the beginning symptoms of medical complications. Above half of the college girls (68%) belonging in the age group 17-19 years and (61%) in the age group 20-22 years show mild symptoms of medical complications. But college girls in the age group 20-22 years (13%) show more severe medical complications than those in 17-19 years (9%). But it is important to note that there are no serious symptoms of medical complications in college girls. The difference in the symptoms of medical complications between the college girls in the age group of 17-19 years and 20-22 years were found to be non significant at 0.05 significant level.

Rosen, Reiter and Orosan (1995) have stated that patients suffering from anorexia nervosa deal with symptoms such as dizziness, headache, drowsiness and lack of energy. A study by Mitchel and Crow (2007) revealed that low weight patients are at high risk for osteopenia/ osteoporosis. Nutritional abnormalities are also common, including sodium depletion and hypovolemia, hypophosphatemia and hypomagnesemia. Berkman et al (2007) have pointed out that the starvation experienced by persons with anorexia nervosa can cause damage to vital organs such as the heart, kidneys and brain.

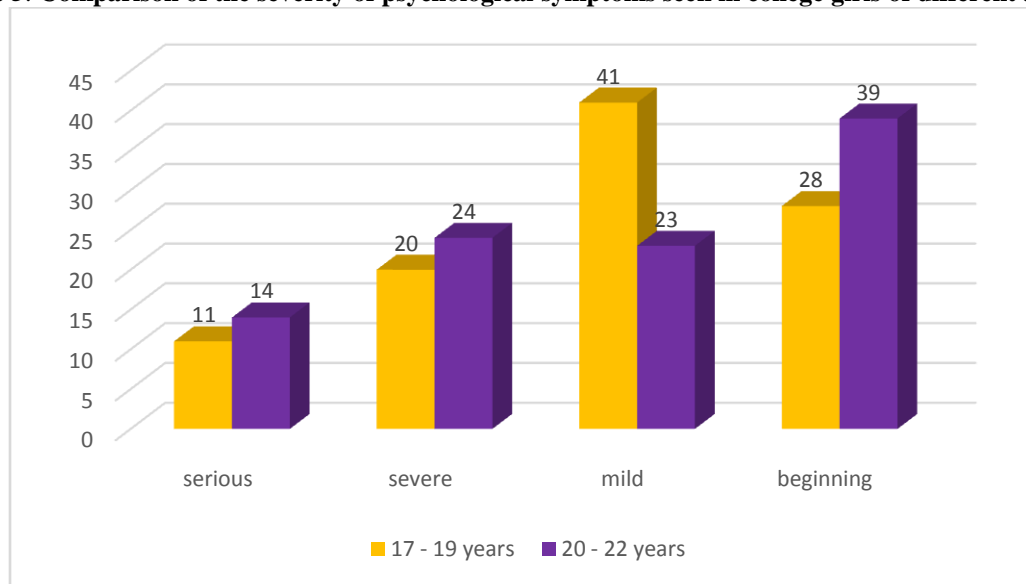
#### Comparison of the severity of psychological symptoms in college girls of different age groups

Anorexia nervosa is a psychological disorder characterized by abnormal eating behavior, severe self-induced weight loss and psychiatric co-morbidities, and most of the anorexia patients have poor self-image and low self-esteem. Table 7 shows the severity of psychological symptoms of anorexia nervosa among college girls.

**Table 5: Comparison of the severity of psychological symptoms seen in college girls of different age groups**

Severity of psychological symptoms	17-19 years		20-22 years		chi-square value	df
	Frequency	Percentage (%)	Frequency	Percentage (%)		
Serious	8	11	11	14	6.11*	3
Severe	15	20	18	24		
Mild	31	41	17	23		
Beginning	21	28	29	39		
Total	75	100	75	100		

\* significant at 5% level

**Figure 5: Comparison of the severity of psychological symptoms seen in college girls of different age groups**

The results presented in the above table and figure shows that 39% of college girls in the age group of 20-22 years show the beginning of psychological symptoms, when compared to 28% of those in the age group of 17-19 years. Mild psychological symptoms are seen more in college girls in 17-19 years (41%) than those in 20-22 years (23%). But the study revealed that severe and serious psychological symptoms are more in the age group of 20-22 years (24% and 14% respectively), rather than those of girls in the age group 17-19 years (20% and 11% respectively). It is statistically proven that there is a significant difference in the severity of psychological symptoms of anorexia between college girls of 17-19 years and 20-22 years, at 0.05 significance level.

Attia (2010) has stated that people suffering from anorexia nervosa often view themselves as 'too fat' even if they are already underweight. Nilson et al (1999-2010) have pointed out that someone with anorexia may not like him or herself, hate the way he or she looks, or feel helpless. They often set hard to reach goals for themselves and may try to be perfect in every way. Those with anorexia may also have a distorted body image, shown by thinking they are fat, wearing baggy clothing, weighing themselves many times a day and fearing weight gain.

According to Jordanova (2000) it is clear that anorexia patients suffer from depression, obsessive compulsive disorder (O.C.D.) or other anxiety disorders – O.C.D. is present in up to two thirds of people with anorexia. Obsessive compulsive disorder associated with an eating disorder is often accompanied by a compulsive ritual around food (such as cutting into tiny pieces). Major depression, specific phobias, oppositional defiant disorder and conduct disorder were associated with sub threshold anorexia nervosa.

#### Comparison of the severity of body or figure consciousness in college girls of different age groups

Anorexia is increasingly common, especially among young women in industrialized countries where cultural expectations encourage women to be thin. But today in our country, women tend to be more figures conscious and more displeased with their bodies. So the symptoms of figure consciousness or body consciousness in college girls are important and are presented in the table given below.

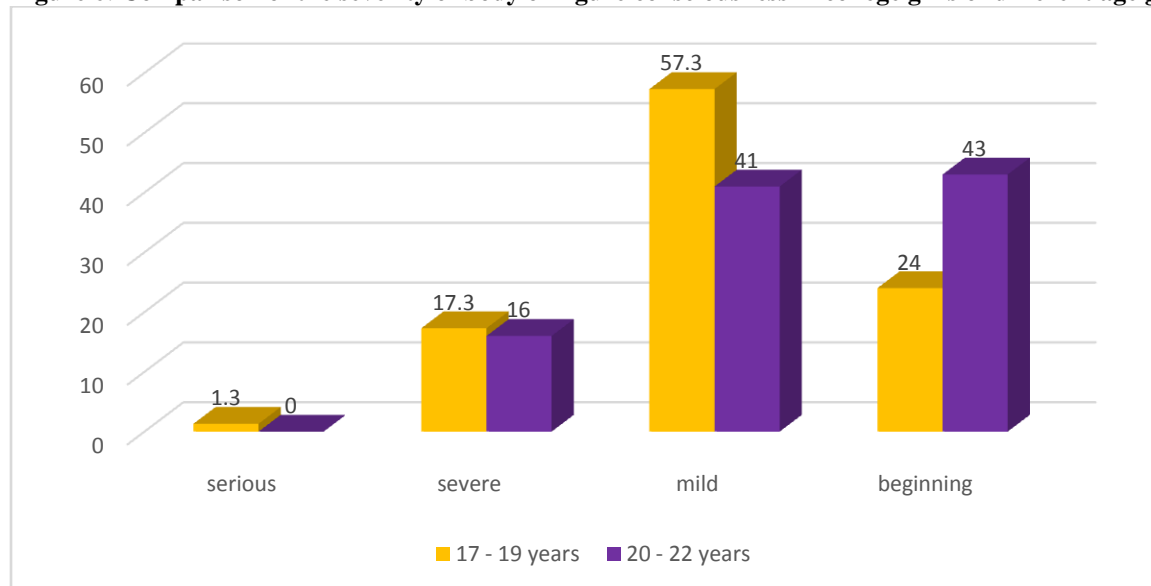
**Table 6: Comparison of the severity of body or figure consciousness in college girls of different age groups**

Dimension	17-19 years		20-22 years		chi-square value	df
	Frequency	Percentage (%)	Frequency	Percentage (%)		
Serious	1	1.3	0	-	6.02*	3
Severe	13	17.3	12	16		

Mild	43	57.3	31	41		
Beginning	18	24	32	43		
Total	75	100	75	100		

\* significant at 5% level

**Figure 6: Comparison of the severity of body or figure consciousness in college girls of different age groups**



The results furnished in the above table and figure revealed that nearly half (43%) of the college girls in the age group of 20-22 years start to show the symptoms of body or figure consciousness, but it is only one fourth (24%) in 17-18 years. In the case of 17-19 years college girls, 57% show mild symptoms of body or figure consciousness and nearly half (41%) of the girls in the age group 20-22 years also show mild symptoms of body or figure consciousness. College girls both in 17-19 years and 20-22 years show severe symptoms of body or figure consciousness (17% and 16% respectively). The study showed that only 1% of the college girls in 17-19 years age group had serious symptoms of body or figure consciousness. The difference in symptoms of body or figure consciousness between college girls in the age group of 17-19 years and 20-22 years was found to be statistically significant at 0.05 significance level using chi square analysis.

Rosen, Reiter and Orosan (1995) have stated that individuals suffering from anorexia may also practice repetitive weighing, measuring and mirror gazing alongside other obsessive actions to make sure they are still thin, a common practice known as ‘body checking’.

Andrist (2003) has reported that teenage girls are more concerned about their weight and believe that slimness is more attractive among peers, which leads to weight control behaviors. Teenage girls are learning from each other to consume low calorie, low fat foods and diet pills. This results in lack of nutrition and greater chance of developing anorexia nervosa.

**Comparison of the severity of overall anorexia among college girls of different age groups**

The symptoms of food avoidance, medical complications, body or figure consciousness and psychological symptoms constitute overall anorexia nervosa.

**Table 7: Comparison of the severity of overall anorexia among college girls of different age groups**

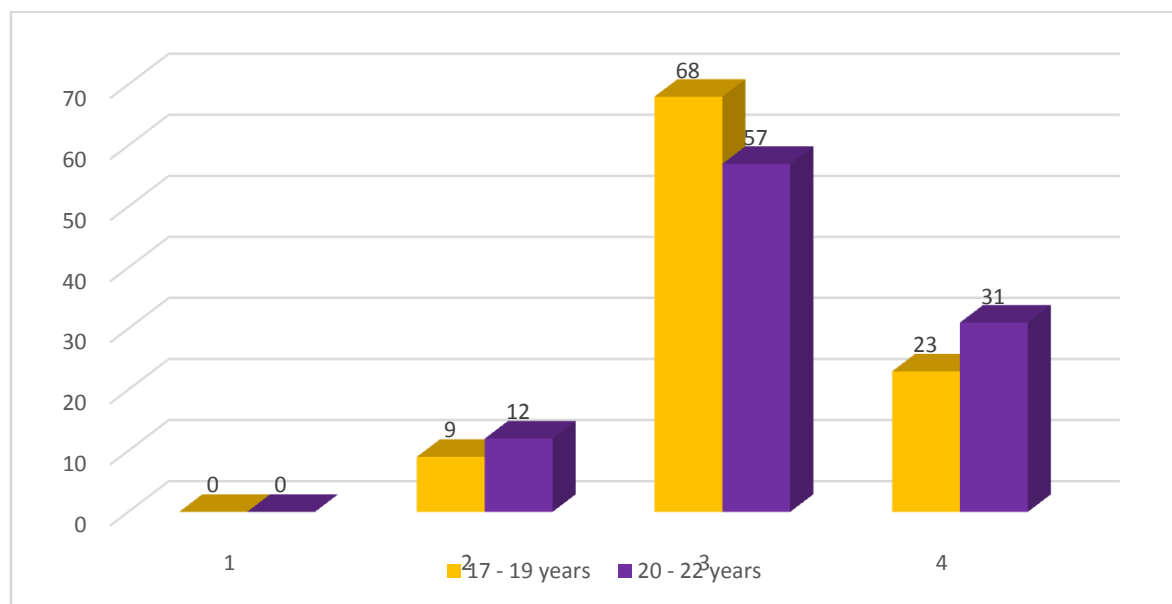
Dimension	17-19 years		20-22 years		chi-square value	df
	Frequency	Percentage (%)	Frequency	Percentage (%)		



Serious	0	-	0	-	1.831 <sup>NS</sup>	1.08
Severe	7	9	9	12		
Mild	51	68	43	57		
Beginning	17	23	23	31		
Total	75	100	75	100		

NS: not significant at 5% level

**Figure 7: Comparison of the severity of overall anorexia among college girls of different age groups**



From the above table and figure, it is clear that beginning of anorexia is seen more in college girls in the age group of 20-22 years (31%) than those in the age group of 17-19 years (23%). But more than half of the college girls (68% and 57% respectively) in both 17-19 and 20-22 years age groups had the symptoms of mild anorexia. But severe anorexia is comparatively more in the 20-22 age group (12%) than those in the age group 17-19 years (9%). Chi Square analysis proved that there is no significant difference in anorexia nervosa among college girls in the age group of 17-19 years and 20-22 years.

The study of Hockenbury et al (2008) have reported that anorexia nervosa is usually found more in females than in males and it usually develops during adolescence and early adulthood. Shisslak et al (1995) have stated that 91% of women surveyed on a college campus had attempted to control weight through dieting.

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