

Prevalence of eating disorders and risk profile in a group female college students

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Citation

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Abstract

To examine potential some risk factors considered related to eating disorders in a group of university female students. This cross-sectional study was carried out between March 1st and May 30th 2008. The Eating Attitudes Test-40 was used to determine eating disorders. The mean age of the students in the study group was 20.28 ± 1.61 years. The prevalence of eating disorders was 13.8%. It was found that the students with higher household income level showed higher prevalence of eating disorders ($p < .05$, for each one). The results indicate that further psychological counseling programs, for especially female students with higher EAT-40 scores are necessary.

INTRODUCTION

Eating disorders as defined by the 10th revision of the International Classification of Disorders (ICD)-10 are a series of behavioral disorders which are associated with physiological and physical alterations [1]. They are classified as anorexia nervosa (AN), bulimia nervosa (BN) and eating disorders not otherwise specified (EDNOS) as binge eating disorder by Diagnostic and Statistical Manual of Mental Disorders-IV-Text Revision (DSM-IV-TR) [2]. The eating disorders, in the group of psychiatric disorders, have a high mortality rate among adolescent and young adult females in developing and especially developed countries [3]. The individuals with eating disorders have eating related obsessions. The personality profiles that emerged are characterized by low novelty seeking, high harm avoidance, high persistence, and low self-directedness in AN, and by high novelty seeking, high harm avoidance, and low self-directedness in BN [4]. The etiology of eating disorders is widely accepted to be a combination of genetic, psychological and socio-cultural factors, i.e. they are bio-psycho-social disorders [5]. The common risk factors across eating disorders include sex, race or ethnicity, childhood eating and gastrointestinal problems, elevated shape and weight concerns, negative self-evaluation, sexual abuse and other adverse events, and general psychiatric co-morbidity [6].

Eating disorders are major public health problems among adolescents because of their high prevalence and their

potentially serious physical and psychosocial consequences [7,8]. The eating disorders occur equally in males and females before puberty with the ratio increasing to approximately 1:10 during adolescence and 1:20 during young adulthood [5]. Especially, female college students typically express concerns about body image, body shape, body size, and weight control [9].

The American Academy of Pediatrics has issued a policy statement on the medical dangers of both bulimic and anorexic behaviors [10]. Compulsory vomiting to which causes those behaviors can result in severe electrolyte imbalances, damage to the esophageal tube, poor dentition, and cardiac abnormalities. Severe caloric deficiency especially in AN can also lead to electrocardiographic and gastrointestinal abnormalities, anemia, amenorrhea, bone loss, and seizures. Eating disorders can be fatal; the mortality rate in women with AN is 12 times greater than that of women in the general population [11].

In various studies [12,13], the prevalence of eating disorders have been reported to be between 3.5% to 28.5% among college female students. In our country, some studies have reported this prevalence to be between 6.6% to 13.4% among college female students [14,15,16].

Eating disorders are known to be chronic, persistent, and refractory to treatment [17]. Considering the high cost and difficulties encountered in treatment for eating disorders, research aimed at understanding how to best prevent eating

disorders is imperative [18].

In adolescent age, increasing of interest to bodily image is basic of eating disorders [19]. Young adulthood, especially during the transition to a college setting, can be a vulnerable time for development and/or continuation of eating disorders when parents generally have little control or influence on eating behaviors [20].

In patients with eating disorders, in recent years, psychometric tests have been used to evaluate different factors that may be present in these patients. Among the many existing tests, two are the most commonly used to evaluate the eating disorders: the Eating Disorders Inventory and the Eating Attitudes Test (EAT-40).

The aims of this study were to determine the prevalence of eating disorders, and to examine potential some risk factors considered related to eating disorders, as well as to present some pertinent comments concerning prevention of eating disorders in a group of university female students

METHODS

SETTING

Eskisehir is a semirural province situated in the western part of Turkey, with a population of 704 849. The socioeconomic level of the city is average compared with other cities of the country. There are significant disparities in the socioeconomic characteristics of the quarters of the city. The city includes 2 universities and has a cosmopolitan structure. This study was conducted in 2 out of 7 schools at Eskisehir Osmangazi University (ESOGU) in Eskisehir called the college of health services, and the vocational college of health services.

INSTRUMENT

The questionnaire included some socio-demographic characteristics such as the students' school type, age, place where they stay, habit of smoking-alcohol, the existence of any chronic disease diagnosed by a physician, obesity, whether she plays sports or not, allowance and some information about some familial properties such as parental income level, occupations, educational status, level of alcohol consumption, history of obesity, and psychological disorder history.

The people who smoke at least 1 cigarette a day were accepted as smokers; the people who haven't smoked for 6 months were accepted as former smokers. The people who consume alcohol at least once a week (30 grams of ethanol)

were evaluated as alcohol consumers [21].

EAT-40, which was applied in this study, is one of the scales used often in the screening of eating attitude disorders and was developed by Garner and Garfinkel (1979) [22]. Turkish validity and reliability study of this scale was modified by Savasir and Erol to suit the Turkish culture and norms [23]. It has been widely used in various studies in Turkey, and it has been accepted that the Turkish version of the scale has sufficient reliability and criterion-related validity, including use with school students.

EAT-40 is a self-administrated questionnaire and contains 40 questions made up of six choices. As in this study, the subjects is asked to choose 1 answer from a group of 6 that best described their status. The answers the students gave are arranged as always, very often, often, sometimes, hardly ever and never. The answers to the items 1, 18, 19, 23, 27 and 39 are evaluated as: sometimes: 1 point, hardly ever: 2 points, never: 3 points and 0 point for the other choices. The answers to the other questions are evaluated as always: 3 points, very often: 2 points, often: 1 point and 0 point for the other choices. The score varies between 0-120. The ones who obtained 30 points or over are considered at high risk in terms of having Eating Disorders. Higher scores from the items indicates that the severity of pathology get worse.

SAMPLING

This cross sectional study was conducted between 01 March 2008 and 30 May 2008 at Eskisehir Osmangazi University, a public university located in the west Turkey. There are Eskisehir High School of Health and Eskisehir Vocational High School of Health Services providing education within ESOGU. According to the registries of ESOGU Student Affairs Office: The number of student is studying in these two schools are 770. 222 (28.8%) of them is male, 548 (71.2%) of them is female. The study is limited to 312 (65.6%) students who have accepted to be involved in the research among the total number of 476 (88.9%) female students who can be reached via the method of simple randomized sampling. Participation was voluntary and anonymous, and the Director of the Institution approved this study. 68 students who did not accept being involved in the study and 96 students who did not attend school during the period in which this study was conducted, totally 164 students (34.4%) have not been included in the study.

PROCEDURES

The students at each school completed the questionnaire and

inventory by way of self-reporting during a class period. After distributing the questionnaires to students at the schools, they were informed of how questionnaires were to be filled in, and then were requested to make a choice applicable to themselves. The students completed questionnaires and inventories in the presence of a member of the research team. The data collected were self-reported by the students. All subjects (312, 100.0%) were told that participation in the investigation was strictly voluntary and that the data collected would not be used for anything except for this research study. Those who agreed to participate (312/476, 65.6%) were given the questionnaire and inventory to complete. The duration for completing the questionnaire and inventory was between 20 and 25 minutes for per subject. The principal investigators met daily with the data collectors to ensure the quality of data collected.

Following the completion of the questionnaires and inventories, their body mass indexes (BMIs) were calculated by measuring their heights and weights. BMI, computed as weight in kilograms divided by the square of height in meters ($\text{body mass}/\text{height}^2=\text{kg}/\text{m}^2$), is widely used in research and clinical practice. Those whose BMIs were 25 kg/m^2 and over were evaluated as overweight or obese [24]. Each student's body weight was measured with domestic scales and height with a meter rule.

LEGAL ETHICAL CONSENT

Ethical permission for the study was obtained prior to collecting data by contacting and receiving approval from the appropriate management authority, the college of health services, and the vocational college of health services at Osmangazi University involved. Participants were assured of the confidentiality of their responses and provided informed verbal consent. Assent was obtained from the students themselves.

The students who have been found out that they have an eating disorder have been informed about the risks of this situation and have been directed about the necessity of consulting to the specialized psychiatry clinics. These precautions were performed for the protection of participants in terms of ethical standards.

STATISTICS

The data were analyzed by using the computer software package Statistical Package for Social Sciences (SPSS, Chicago, IL, USA) for Windows version 15.0. The statistical analysis was carried out using the Student t test or One-way

analysis of variance (ANOVA) for continuous variables and Chi-square test for categorical variables. A value of $p<0.05$ was considered statistically significant.

RESULTS

In this study, in all, the data which were obtained from 312 subjects [127 students (40.7%) in the college of health services and 185 students (59.3%) in the vocational college of health services] were analyzed. Their mean age 20 ± 1.61 years (range 17 to 31). There was no significant difference between the mean ages of 164 students participating in and 312 students not participating in the study ($p>0.05$) (Unshown datum in the Table).

The age distribution of the study population was stratified as follows: 19 years and below, 34.3%; 20 years, 29.5%; 21 years, 17.3% and 22 years and over, 17.3%. most of the students reported that they resided in the dormitory, followed by in the house with her friends (27.2%). A total of 28.2% of the study group were smokers and 7.4% alcohol consumers. The proportion of people who had a history of any chronic disease such as peptic ulcer, anemia, sinusitis, bronchitis diagnosed by a physician was 14.3%. The number of those doing regular physical activity was 113 (36.2%). Most students (68.0%) stated that their allowances were enough and higher, followed by low or lower (32.1%). Prevalence of overweight-obesity is determined as 6.1%. The prevalence of overweight/obesity in the subjects was 6.1%. Their mean BMI was 20.59 ± 2.48 kg/m^2 , ranging from 15.43 ± 2.02 to 32.03 ± 3.67 kg/m^2 . In those in the college of health services (14.6%), in the age groups of ≤ 19 (34.3%), in the dormitory (11.8%), not smoking cigarette (13.6%), not consuming alcohol (14.5%), not having any chronic disease (14.7%), doing regular physical activity (16.8%), having very low allowance (26.3%) and not being overweight/obese (14.3%), the prevalences of eating disorder were higher when compared to the other group sociodemographics. There were no difference between those with eating disorders and without eating disorders in terms of their sociodemographic characteristics ($p>0.05$, for each one). The detailed background characteristics of the students are presented in Table 1.

Figure 1

Table 1: Some sociodemographic characters of students by status of eating Disorders

				Statistical analysis
	No n (%)	Yes n (%)	Total n (%)	χ^2 ; p value
	269 (86.2)	43 (13.8)	312 (100.0)	
School				
College of health services	158 (85.4)	27 (14.6)	185 (59.3)	0.253; 0.615
Vocational college of health services	111 (87.4)	16 (12.6)	127 (40.7)	
Age groups (yr)				
≤19	94 (87.9)	13 (12.1)	107 (34.3)	1.222; 0.748
20	78 (84.8)	14 (15.2)	92 (29.5)	
21	49 (83.1)	10 (16.9)	59 (18.9)	
≥22	48 (88.9)	6 (11.1)	54 (17.3)	
Residence				
Dormitory	134 (88.2)	18 (11.8)	152 (48.7)	1.204; 0.752
House with her friends	71 (83.5)	14 (16.5)	85 (27.2)	
Motel	15 (88.2)	2 (11.8)	17 (5.5)	
House with her family	49 (84.5)	9 (15.5)	58 (18.6)	
Smoking cigarette				
Yes	76 (86.4)	12 (13.6)	88 (28.2)	0.002; 0.963
No	193 (86.2)	31 (13.8)	224 (71.8)	
Alcohol				
Yes	22 (95.7)	1 (4.3)	23 (7.4)	Fisher Exact Test=0.144
No	247 (85.5)	42 (14.5)	289 (92.6)	
Chronic disease				
Yes	42 (91.3)	4 (8.7)	46 (14.7)	Fisher Exact Test=0.200
No	227 (85.3)	39 (14.7)	266 (85.3)	
Regular physical activity				
Yes	94 (83.2)	19 (16.8)	113 (36.2)	1.371; 0.242
No	175 (87.9)	24 (12.1)	199 (63.8)	
Family income				
Very low	14 (73.7)	5 (26.3)	19 (6.1)	4.110; 0.250
Low	73 (90.1)	8 (9.9)	81 (26.0)	
Enough	155 (86.6)	24 (13.4)	179 (57.4)	
High	27 (81.8)	6 (18.2)	33 (10.6)	
Family history of obesity				
Yes	18 (94.7)	1 (5.3)	19 (6.1)	Fisher's Exact Test=0.232
No	251 (85.7)	42 (14.3)	293 (93.9)	

The students' detailed family characteristics are presented in Table 2. There is only 1 person (0.3%) among the students whose father is illiterate, and three people whose fathers were literate, and the students whose fathers were primary-school graduates (40.1%), and in total, the prevalence of those who at primary school and below was 41.3%. On the other hand, there were 67 people (21.5%) whose fathers were middle-school graduates, 82 people (26.3%) whose fathers were high-school graduates and 34 people (10.9%) whose fathers were university graduates, in total, the proportion of being middle school and over graduates was 58.7% ($p>0.05$).

There were 19 students (6.1%) whose mothers are illiterate, 20 students (6.4%) whose mothers were literates, 171 students (54.8%) whose mothers were primary-school graduates, and in total, the prevalence of those who at primary school and below was 67.3%. On the other hand, 55 students (17.6%) whose mothers were middle-school graduates, 43 students (13.8%) whose mothers were high-school graduates and 4 students (1.3%) whose mothers were university graduates, in total, the proportion of being middle school and over graduates was 32.7% ($p<0.05$). The proportion of unemployment for the students' fathers was 0.6%, whereas this proportion was 85.9% for their mothers.

The number of students who stated that their fathers are alcohol consumers was 39 (12.5%), however, the number of students who stated that their mothers are alcohol consumers was 7 (2.2%).

The number of students who had family history of obesity was 48 (15.4%), and the number of students who had a family history of psychological disorder was found to be 1 (0.3%).

There were no difference between those with eating disorders and without eating disorders in terms of the students' some family characteristics ($p>0.05$, for each one) except for family income where in those whose family income was very high the prevalence of eating disorder was higher when compared to those whose family incomes were lower ($p<0.05$). Most of the students reported that their family income was average or low 60.2% (197/312).

Figure 2

Table 2: Some family characteristics of students by status of eating disorder

				Statistical analysis
	No n (%)*	Yes n (%)*	Total n (%)**	χ^2 ; p value
Family income				
Very high	3 (42.9)	4 (57.1)	7 (2.2)	13.909; 0.003
High	93 (86.1)	15 (13.9)	108 (34.6)	
Middle	161 (89.0)	20 (11.0)	181 (58.0)	
Low	12 (75.0)	4 (25.0)	16 (5.1)	
Primary school and under				
Primary school and under	113 (87.6)	16 (12.4)	129 (41.3)	0.352; 0.553
Middle school and upper	156 (85.2)	27 (14.8)	183 (58.7)	
Mother's educational level				
Primary school and under	178 (84.8)	32 (15.2)	210 (67.3)	1.146; 0.284
Middle school and upper	91 (89.2)	11 (10.8)	102 (32.7)	
Unemployment				
Unemployment	2 (100.0)	0 (0.0)	2 (0.6)	0.340; 0.844
Employment	215 (86.0)	35 (14.0)	250 (80.1)	
Retired	52 (86.7)	8 (13.3)	60 (19.2)	
Unemployment/housewife				
Unemployment/housewife	228 (85.1)	40 (14.9)	268 (85.9)	2.481; 0.289
Employment	35 (94.6)	2 (5.4)	37 (11.9)	
Retired	6 (85.7)	1 (14.3)	7 (2.2)	
Students' father's alcohol consumption				
Yes	33 (84.6)	6 (15.4)	39 (12.5)	0.096; 0.756
No	236 (86.4)	37 (13.6)	273 (87.5)	
Students' mother's alcohol consumption				
Yes	7 (2.6)	0 (0.0)	7 (2.2)	Fisher Exact Test=0.285
No	262 (85.9)	43 (14.1)	305 (97.8)	
Family history of obesity				
Yes	41 (85.4)	7 (14.6)	48 (15.4)	0.031; 0.861
No	228 (86.4)	36 (13.6)	264 (84.6)	
Family history of psychological disorders				
Yes	1 (100.0)	0 (0.0)	1 (0.3)	Fisher Exact Test=0.689
No	268 (86.2)	43 (13.8)	311 (99.7)	
Total	269 (86.2)	43 (13.8)	312 (100.0)	

DISCUSSION

Eating disorders are considered the third most prevalent chronic health condition among females and female students [25]. Therefore, the epidemiology of eating disorders has focused mainly on youth. In this study, 13.8% of the college students rated eating disorders; this ratio appears to be

similar to the findings of other studies performed in Turkey [1516]. A similar result has been reported in the studies carried out in some other countries [2627]. The different results declared in various research studies can be derived from different usage of definitions for eating disorders, different screening methods and different study groups.

In this survey, there was not found any differences between the students of two schools in which this study has been conducted in terms of frequency of eating disorder ($p>0.05$). One of the reasons of this situation can be that both of the schools provide education in the field of health services. It has been reported in some studies [2728] that no difference was not found between similar aimed schools in terms of frequency of eating disorder.

In the current study, there was no relationship between frequency of eating disorder and age groups ($p>0.05$). This case can be explained through the fact that the range of age of the people who form the study group is similar. A similar result has been reported in various studies [2930]. However, in a study performed by Uzun et al. [9], it has been reported that there is a negative relation between EAT-40 scores and age, necessitating further research.

The students' living with their families can be important for them in terms of some comforts provided and psychological support. Therefore, it is expected that there should be less frequency of eating disorder among the ones who stay with their families. However, any difference did not reveal between the frequency of eating disorder and the place where they stay ($p>0.05$). In some other studies [3132] a similar result has been reported. This show that living place does not affect eating disorders.

Adolescence is the typical time of onset for eating disorders as well as substance use, and therefore this age group warrants further investigation [33]. In this study, no difference was not found between the students who smoke and who do not in terms of frequency of eating disorders ($p>0.05$). In some other studies [2934] a similar result has been reported. On the other hand, there are also several studies which indicate that smoking is one of the risk factors for eating disorder [3536].

Croll et al. [35] stated that alcohol consumption is among the risk factors for eating disorder. In some studies conducted on adolescents [3738] it has been reported that there is more alcohol consumption especially among the ones having eating disorders, especially BN symptoms. In this study, no

difference was detected between the students who consume alcohol and the ones who do not consume in terms of frequency of eating disorder ($p>0.05$). A relation may have not found because of the facts that the number of people making up the study group is low and the number of people consuming alcohol regularly is low. In some other studies performed [3436] a similar result has been reported.

As part of the developmental process of adolescence the individual undergoes dramatic physical, psychological, and social change. For the adolescent with a chronic illness, these changes may impact on the ability of the adolescent and their family to successfully negotiate the demands of this period [39]. Chronic health conditions may increase dissatisfaction with the body and feelings of isolation from peers, potentially increasing the risk of psychopathology associated with adolescence, such as eating and body image disorder [40]. In some of the studies conducted [414243], it has been reported that there is a strong connection between chronic somatic diseases and mental disorders. Yet in our study, no difference was found between the students who have any chronic disease diagnosed by a physician and the students who don't have in terms of frequency of eating disorders ($p>0.05$).

The studies performed with the aim of evaluating the impact of sports on eating disorders are especially realized on athletes and the results of these studies have been taken into consideration. Female athletes are known to be a potential risk group for developing eating disorder. Taub and Blinde [44] declared in their study that the athletes have the existing behavioral and psychological relations of eating disorders with a higher possibility than the ones who are not athletes. In the study conducted by Hopkinson and Lock [45] it has been reported that the type of the sport does not have an important impact on eating disorder. In this study, no difference has been detected between the students who play sports and who do not in terms of frequency of eating disorders ($p>0.05$). In the study performed by Fulkerson et al. [46] a similar result has been reported.

The allowance of the students is one of the indirect indicators reflecting the income of the family. There are studies putting forward that as the socio-economic condition of the families gets better, the frequency of eating disorder observed in their children becomes less [4748]. In this study, a relation has not been detected between the frequency of eating disorder and the amount of allowance ($p>0.05$). This result can be explained by the facts that the students studying

in two schools have similar socio-economic background and the number of students was low.

It is known that obesity is a risk factor in emergence of eating disorders and it is among the causes of eating disorders [4950]. Overweight girls show some of the psychological features associated with the development of eating disorders, including a link between concerns and self-esteem based on physical appearance. This may help to explain why childhood obesity increases the risk of a later eating disorder [51]. In this study, there was no difference between the students who are overweight/obese and who are not in terms of frequency of eating disorders ($p>0.05$). The low prevalence of obesity can be one of the reasons of this situation.

In some studies conducted, it is stated that there is a reverse relation between socio-economic status and eating disorder [4852]. In this study, the average point obtained from EAT-40 scale by the students whose family has a very high income is evaluated as significantly higher than the ones whose family has a good income ($p=0.013$) and whose family has a low income ($p=0.007$). However, in a study conducted by Hay [53] it was reported that “No significant differences in rates of these behaviors were found for household income”. In a study conducted by Chen et al. [54] it has been reported that as the income of household increases, the symptoms of eating disorder among family members also increases.

One of the factors that affect the communication between the parents and children is the educational level of parents. The relation of parents having a higher level of education with their children is expected to be better. In a study performed by Kim and his friends [55], it was forward that there was a significantly negative relation between parent-adolescent communication and eating disorders. In our study, no difference was found between the average point the students obtained from EAT-40 scale and the educational level of the father ($p>0.05$). However, the average point of the students whose mothers' educational levels are primary school and below was found out as significantly higher than the ones whose mothers' educational levels were middle school and upper ($p<0.05$). In a study conducted by Díaz Benavente et al. [56] it was reported that there was no difference between family conditions and EAT-40 scores.

Maor et al. [57] stated that the scores of eating attitude tests are not different between the students whose mothers have jobs and the students whose mothers do not; however, they declared that the scores of eating attitude tests were higher

among the students whose fathers were unemployed. In this study, no difference was found between the average point the students obtained from EAT-40 scale and mother-father occupation (for each of them; $p>0.05$). In the study conducted by Wang et al. [58] a similar result has been reported.

Specific relationships between personality and family factors in the development of eating disorders are still unclear [59]. Tweed and Ryff [60] stated that “adult children of alcoholics were described having more negative relationships with their alcoholic fathers. Daughters of alcoholic fathers were reported having more negative relationships with their fathers in the areas of role performance, affective expression, and control than did sons.” In our study, no difference was found between the average scale points of the students whose mothers-fathers are alcohol consumers and whose mothers-fathers are not (for each of them; $p>0.05$). García-Vilches et al. [61] declared that there are no significant differences in symptomatologic and psychopathologic variables between the two groups one of whom is alcohol consumer and the other is not. Laporte et al. [62] have reported that parents of women with AN have more problems together with alcohol consumption.

Delgado et al. [63] reported that the people who had history of personal psychiatric disease have very often family history of obesity. Field et al. [64] put forward that the ones whose mothers had history of eating disorder could have a risk factor only if they were young adolescent women. In our study, no difference revealed between average points obtained from the EAT-40 scale by the students whose family had history of obesity and whose family did not have ($p>0.05$). In the study by Robertson and Palmer [65] a similar result was reported between eating disorders and existence of obesity history in the family.

The cause of eating disorders is complicated and it is not well-understood. There is a genetic proclivity including certain specific environmental risk factors [17]. In some studies carried out [6667] it was pointed out that the existence of psychological disorder history in the family was an important element for eating disorders. In this study, no difference was found between the students who had history of psychological disorder in their family and who did not have in terms of average points that they obtained from EAT-40 scale ($p>0.05$). The study conducted by Lee et al. [68] also reported a similar result.

Several important limitations should be considered in

interpreting the results of our study. One of the limitations of this study was that it was cross-sectional, thus precluding inferences of causality among variables. The second limitation is the self-reported nature of this study. The third limitation is that the sample of the current study comprised a group of students in just 1 city of Turkey, which may limit generalization of the results. Thus, in order to definitively answer this question, a large sample containing different universities in the country needs to be conducted. The fourth limitation is that using the EAT-40 scale is complicated with chronically ill people as several items of the EAT-40 contain physical issues that are part of an illness and thus may not necessarily reflect eating disorder. Finally, since this scale was used as a screening test, not a definite diagnosis, those who were at the risk of eating disorder were not actually diagnosed with eating disorder.

CONCLUSION

In this study, it was determined that prevalence of eating disorder is high among female university students. It is decided upon that students should be given psychological counseling service about eating

disorders and periodical screenings should be conducted for early diagnosis and treatment and doubtful cases should be directed to specialized psychiatry clinics for accurate diagnosis.

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