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Assessment of different eating disorders pertaining its knowledge and effects on oral and general health amongst adolescents and adults in western India

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Abstract

Introduction: Eating disorders are a range of various psychological conditions that cause unhealthy eating habits to develop. Eating disorders include Anorexia Nervosa, Bulimia Nervosa, binge eating, muscle dysmorphia, drunkorexia, pregorexia, pica and restrictive food intake disorder. It's not entirely considered a health hazard as it cannot be detected at an earlier stage until physical complications arise. The aim of the study was to assess the knowledge pertaining to eating disorders and its oral and general health effects among the general population of Western India.

Materials and Methods: A questionnaire study was conducted in general population of Western India. The participants were selected based on the age group ranging from 15 to 35 years and above. The questionnaire consisted of 40 questions along with demographic details like age, gender, BMI of the participants.

Results: Out of 374 participants present in the study only 43.9% of the participants knew about various eating disorders. Approximately 35.6% of the participants were aware of oral effects and 36.4% participants knew about systemic symptoms of eating disorders.

Conclusion: The level of knowledge regarding eating disorders was satisfactory however very few considered it as a serious issue.

Keywords: Adolescents, Anorexia Nervosa, Bulimia Nervosa, Eating disorder, Oral health.

1. Introduction

The prevalence of eating disorders (EDs), both full and partial syndromes, have increased in the last decade. Eating disorders are a range of psychological conditions that develop into unhealthy eating habits. Initially it starts as an obsession with food, particularly grimed and unhealthy lifestyle traits, body weight, or body shape [1]. If left untreated, it could be life threatening [2]. These disorders are an important cause of physical morbidity and psychosocial impairment in adolescent and young adult women. Several factors may cause eating disorders including genetics, brain biology, personality traits, and cultural ideas [3, 4]. According to Diagnostic and Statistical Manual of Medicine Disorders-5 there are 2 main types of ED namely Anorexia Nervosa (AN) and Bulimia Nervosa (BN) [3]. Other Eating Disorders include binge eating, muscle dysmorphia, drunkorexia, pregorexia, pica, avoidant/restrictive food intake disorder. Anorexia nervosa is a condition which involves food-restriction and sometimes extreme exercising and other purging behaviours which is a spectrum away from Bulimia Nervosa in which people repeatedly binge on copious amounts of food followed by a force vomit [5, 7]. Muscle Dysmorphia, unlike most types of eating disorders, majorly marks men over women its trademarked with a disruptive obsession with musculature and physique, fixating and obsessing on the 'perfect' form of musculature. Binge Eating Disorder (BED) is characterized by episodes of bingeing on profuse amounts of food in relatively short periods of time [5]. Pica can be described as a disorder which involves intake of non-food substances such as ice, dirt, soil, chalk, soap, paper, etc [6]. Problematic eating attitudes and behaviours pertaining to the fear of being fat [3, 4] are now commonly found among young females in high income East Asian societies such as Japan, Singapore, Hong Kong, and the Republic of Korea [7].

Degenerative arthritis within the temporomandibular joint in the jaw is a dental complication often associated with eating disorders. Other oral effects of eating disorders include erosion of teeth, gingivitis, periodontitis, xerostomia, etc. [8] There is a belief that problems associated with eating disorders do not occur in India. Therefore, the purpose of this study was to assess the knowledge related to eating disorders and its oral and general health effects and create awareness for the following.

Material and Methods

A questionnaire study was conducted in Western India among the general population. The study aimed to assess the knowledge pertaining to eating disorders and its effects on oral and general health among the general population in the Western India. The participants were selected based on the following inclusion criteria: a) age group ranging from 15 to 35 years and above, b) individuals who were willing to participate at the time of the study, c) residents of Western India. However, individuals below 15 years of age and physically or mentally challenged people were excluded from this study. The input parameter for sample size calculation using G*power software version 3.1.9.2 as follows: 80% power of the study, alpha error 0.05, effective size 0.3 and degree of freedom 5. The calculated sample size for the study was around 364. Convenient sampling technique was used in the study. The final considered sample size for study population was 374. The convenient sampling technique was used in this study. The questionnaire was prepared in English language. The questionnaire was pre-tested and validated among 20 subjects to assess the knowledge, clarity and responsiveness. The reliability, statistics were calculated and the Cronbach Alpha value was 0.791. The performa was designed to collect data and consisted of different sections with 40 questions regarding knowledge, attitude and practice about eating disorders and its oral and general effects. Section one included the demographic data of the subjects such as name, age, gender, occupation, income, etc. The second section included questions related to knowledge of the participants and the third section was related to attitude whereas the final section included practice-based questions. The questionnaire was designed on Google form (Google LLC, Mountain View, California United States) and the link was distributed among the study population via email, WhatsApp and other social media platform. The statistical analysis was done using descriptive statistics using statistical package for the social science (SPSS) 23.0 version software (IBM, Chicago, Illinois, United States). The p-value was set at 5%.

Results

In table 1, there were 56.1% of the participants who were males and the remaining 43.9% were females. Majority of the participants belonged to the age group of 18-25 years. In table 2, Out of 374 participants present in the study 71% of them were aware about the term eating disorder. Among them, only 43.9% of the participants knew about eating disorders such as Bulimia Nervosa, Binge Eating Disorder, Anorexia Nervosa and Muscle Dysmorphia. Approximately 35.6% of the participants were aware of oral effects of eating disorders like erosion of teeth, staining of teeth, caries, enlarged salivary glands, gingivitis, etc. Around 36.4% participants knew about systemic symptoms of eating disorder such as low blood pressure, fatigue, dizziness, irregular bowel movements, vomiting and gastric refluxes. In table 3, there were 21.9%

who were criticized for their weight therefore they isolate themselves and had a strong desire to lose weight. Additionally, around 19.3% participants reported that sometimes they feel uncomfortable in their current skin and want to bulk up to the societal standards and have a strong desire to gain weight. In table 4, only 17.6% participants weigh themselves every day. Around 19.3% who participated were currently on a diet. Moreover, only 18.2% people reported that sometimes they repeatedly induced themselves to throw-up. Few participants constituting of 13.1% have reported that they use diuretics or laxatives frequently. Around 22.5% people had reported that they either guilt exercise excessively or over-exert themselves to lose weight fast. The participants who had consulted a doctor at least once till date regarding eating disorders were only 12.3%.

Discussion

Eating disorders are delineated as disturbances in eating habits that may be either excessive or a deficient food intake. Although many may be concerned about their health, gait, weight, or appearance from time to time, some people fixate or obsess with weight loss, body weight or shape, and controlling their food intake. These may be vital signs of an eating disorder [9]. Primary care physicians may find it categorically challenging to detect an eating disorder in early stages, before palpable physical problems arise and while psychological symptoms are subtle [10]. Therefore, this study aims at assessing the knowledge pertaining to eating disorders and it's oral and general health effects.

Amongst adolescents living in the United Arab Emirates, about 66% of them perceived themselves as an overweight unsatisfactory product and had a foreseen desire to be thin in a study conducted by Eapen V *et al.* [11] However, the current study revealed better results where 28.2% of the participants felt the same. According to the study conducted by Mei-Rong Tsai *et al.*, around 2.48% of the participants were picked on or criticized for their current body weight which was different from the results found in the current study where 21.9% of the study population were criticized for the same [7]. Field AE *et al.* found in their study that 69% of the girls from US reported that pictures published in magazines influence their idea of perfect body shape and 47% reported losing weight because of these pictures [12]. On the contrary, only 14.3% of the participants found themselves spending time on the internet surrounded by pop culture and adversely non-realistic bodies, which leads to over scrutinizing and idealizing perfect body shapes and size in the present study.

There were 1-8% of the study participants who had abnormal eating patterns or consumed a scarce amount of food than required on a daily basis which may be suggestive of an eating disorder. This contradicts the results of Srinivasan TN *et al.* where 14.8% were diagnosed with an eating disorder of mild form [13]. In the United States, Killen JD *et al.* found that 11% of female adolescents regularly vomit their food after having it [14] which was similar to a report of youth risk behavioural surveillance system (YRBSS) where 8% of the girls reported vomiting their food after having it [15]. The current study also revealed similar results where 14% of the study participants have repeatedly induced vomiting sometimes.

Around 13% of the participants reported some form of purging behaviours like use of laxatives or diuretics for body weight control due to excessive concern over body weight in a study conducted by Killen JD *et al.* [14] Similarly, the present study revealed that 14% of the study participants use laxatives

or diuretics sometimes. There were only 4% who used diuretics or laxatives regularly. Augustine LF *et al.* [16] reported that more than half of the adolescent girls residing in Ernakulam wanted to lose body weight and their weight loss plans majorly included vigorous exercise (21%) and starvation (16%). This was in contradictory to the results of the current study as only 4% often exercised excessively. However, Mishra SK *et al.* revealed that about 78% of

adolescents expressed dissatisfaction with their current body weight and attempted to reduce it through a restrictive food intake, unnecessarily avoiding certain food groups, excessive and obsessive exercise regimes, and self-induced vomiting [17]. The limitation of this study was the small sample size. The study can be done in a large sample size and different variables of eating disorders in different regions of India.

Table 1: Demographic Details of Study Participants (N=374).

Sr no	Demographic details	Responses	Number (n)	Percentage (%)	Total
2	Gender	Male	210	56.1	374(100)
		Female	164	43.9	
3	Age (years)	15-18	70	18.7	374(100)
		18-25	186	49.7	
		25-35	84	22.5	
		>35	34	9.1	
4	Education	High school	77	20.6	374(100)
		Undergraduate	147	39.3	
		Post graduate	80	21.4	
		PhD	9	2.4	
		Other	61	16.3	
5	Occupation	Business owner	10	2.7	374(100)
		Government	2	0.5	
		Self employed	37	9.9	
		Employed	107	28.6	
		Student	198	52.9	
		Currently unemployed	20	5.3	
6	Family income	50,000-1,00,000	136	36.4	374(100)
		1,00,000-3,00,000	154	41.2	
		3,00,000-5,00,000	28	7.5	
		5,00,000 and above	56	15.0	
7	BMI status	<18.5 – underweight	66	17.6	374(100)
		18.5-24.9 – normal	183	48.9	
		25 – 29.9 – overweight	69	18.4	
		30 ≥ obese	56	15.0	

Table 2: Knowledge Related Responses of Study Participants (N=374).

Sr no	Questions	Responses	Number (N)	Percentage (%)	Total N (%)
1	Are you aware with the term eating disorder	I am aware of this term	266	71.1	374(100)
		I do not have an idea	61	16.3	
		I may have heard term	36	9.6	
		I have never heard of this term	11	2.9	
2	Do you consider it a serious health issue	It is considered a serious health issue	156	41.7	374(100)
		I don't consider it a very big problem	112	29.9	
		It may be a serious issue	80	21.4	
		I don't know	26	7.0	
3	Which of these are considered eating issues	Anorexia nervosa, muscle dysmorphia	57	15.2	374(100)
		Bulimia nervosa, binge eating disorder	68	18.2	
		All of the above.	164	43.9	
		I don't know	85	22.7	
4	What is anorexia nervosa	Feeling thin/underweight but being a standard weight	48	12.8	374(100)
		Feeling heavy/overweight but being a standard weight	98	26.2	
		Feeling fit but being underweight or feeling fit but being overweight.	44	11.8	
		I don't know	184	49.2	
5	What is muscle dysmorphia/reverse anorexia	Feeling thin/underweight but being a standard weight	67	17.9	374(100)
		Feeling heavy/overweight but being a standard weight	69	18.4	
		Feeling fit but being underweight or feeling fit but being overweight.	48	12.8	
		I don't know	190	50.8	
6	What is bulimia nervosa	When a person eats too much	47	12.6	374(100)
		When a person eats very less to control their weight	41	11.0	
		When a person eats too much and vomits to control their weight	78	20.9	
		I don't know	208	55.6	
7	What do you understand by binge eating disorder	Eating a limited amount	68	18.2	374(100)
		Eating as much you like in episodes	175	46.8	
		Eating less in episodes	48	12.8	
		I don't know	83	22.2	

8	What do you understand by night eating disorder	Eating throughout the night	101	27.0	374(100)
		Eating in episodes between sleep	142	38.0	
		Eating before bedtime	80	21.4	
		Not eating at night	51	13.6	
9	Binge eating and bulimia can cause	Erosion of teeth, staining of teeth, caries	42	11.2	374(100)
		Enlarged salivary glands, gingivitis periodontitis, xerostomia,	41	11.0	
		All of the above.	133	35.6	
		I don't know	158	42.2	
10	Which of the following options are systemic symptoms of eating disorders	Low blood pressure, fatigue, dizziness	60	16.0	374(100)
		Irregular bowel movements, bloating, vomiting, gastric refluxes	86	23.0	
		All of the above.	136	36.4	
		I don't know	92	24.6	
11	What do you understand by healthy eating	Eating a complete protein diet	28	7.5	374(100)
		Eating a balanced diet	216	57.8	
		Eating less because you are conscious of your weight	55	14.7	
		Avoid eating outside	75	20.1	
12	What are the symptoms of the disease, pica	Consumption of chalk/dust/soil	70	18.7	374(100)
		Consumption of ice/corn-starch	34	9.1	
		All of the above.	74	19.8	
		I don't know	196	52.4	
13	Pica can be commonly seen in patients with	Stress/nutritional deficiency	54	14.4	374(100)
		Cultural factors/pregnancy	57	15.2	
		All of the above.	77	20.6	
		I don't know	186	49.7	
14	What do you understand about selective/ restrictive eating	Avoiding a particular type of food	64	17.1	374(100)
		Eating only few varieties of food	103	27.5	
		All of the above.	124	33.2	
		I don't know	83	22.2	
15	Do you know what is drunkorexia	Eating less and saving space for alcohol	67	17.9	374(100)
		Eating more and over exercising to make space for alcohol	46	12.3	
		All of the above.	54	14.4	
		I don't know	207	55.3	
16	What is pregorexia	Dieting to control weight in an extreme before pregnancy	33	8.8	374(100)
		Dieting during pregnancy to control weight throughout and after	75	20.1	
		Dieting after pregnancy in an extreme to control weight	57	15.2	
		I don't know	209	55.9	

Table 3: Attitude Related Responses of Study Participants (N=374).

Sr no	Questions	Responses	Number (n)	Percentage (%)	Total
1	Do you ever feel fat and often worry about your current weight?	Never	89	23.8	374(100)
		Rarely	142	38.0	
		Sometimes	79	21.1	
		Often	36	9.6	
		Always	28	7.5	
2	Do you feel afraid of gaining a few kilos of weight and have a lack of interest in consuming food?	Never	108	28.9	374(100)
		Rarely	150	40.1	
		Sometimes	64	17.1	
		Often	37	9.9	
		Always	15	4.0	
3	Do you ever feel thin and often worry about your current weight?	Never	127	34.0	374(100)
		Rarely	111	29.7	
		Sometimes	77	20.6	
		Often	43	11.5	
		Always	16	4.3	
4	Do you think you get criticized therefore isolate yourself and have a strong desire to lose weight?	Never	126	33.7	374(100)
		Rarely	89	23.8	
		Sometimes	82	21.9	
		Often	56	15.0	
		Always	21	5.6	
5	Do you get think you criticized and feel uncomfortable in your current skin and bulk up to the societal standards and have a strong desire to gain weight?	Never	137	36.6	374(100)
		Rarely	99	26.5	
		Sometimes	72	19.3	
		Often	54	14.4	
		Always	12	3.2	
6	Do you feel you spend a lot of time on your browser, over scrutinizing and idealising celebrities/models, body types and diet facades?	Never	99	26.5	374(100)
		Rarely	83	22.2	
		Sometimes	95	25.4	
		Often	75	20.1	

		Always	22	5.9	
7	Do you feel guilt and remorse after eating?	Never	101	27.0	374(100)
		Rarely	84	22.5	
		Sometimes	78	20.9	
		Often	84	22.5	
		Always	27	7.2	
8	Do you feel you often get told that you eat more than you should but still continue eating all day?	Never	118	31.6	374(100)
		Rarely	84	22.5	
		Sometimes	92	24.6	
		Often	57	15.2	
		Always	23	6.1	

Table 4: Perception Related Responses of Study Participants. (N=374).

Sr No	Questions	Responses	Number (n)	Percentage (%)	Total
1	Do you consume a small amount of food on a regular basis to influence your weight or shape?	Never	119	31.8	374(100)
		Rarely	129	34.5	
		Sometimes	74	19.8	
		Often	38	10.2	
		Always	14	3.7	
2	Do you weigh yourself practically every day?	Never	101	27.0	374(100)
		Rarely	134	35.8	
		Sometimes	66	17.6	
		Often	52	13.9	
		Always	21	5.6	
3	When were you last on a diet?	I have never been on a diet	154	41.2	152(100)
		A year ago	98	26.2	
		6 months ago	50	13.4	
		I'm on a diet now	72	19.3	
4	Do you eat more than others that fall in your age group?	Never	83	22.2	374(100)
		Rarely	128	34.2	
		Sometimes	90	24.1	
		Often	50	13.4	
		Always	23	6.1	
5	Have you repeatedly induced yourself to throw-up?	Never	152	40.6	374(100)
		Rarely	96	25.7	
		Sometimes	68	18.2	
		Often	45	12.0	
		Always	13	3.5	
6	Do you frequently use diuretics/laxatives?	Never	145	38.8	374(100)
		Rarely	107	28.6	
		Sometimes	51	13.6	
		Often	49	13.1	
		Always	22	5.9	
7	Do you guilt exercise, excessively or fast to be in shape according to societal norms?	Never	125	33.4	374(100)
		Rarely	80	21.4	
		Sometimes	84	22.5	
		Often	49	13.1	
		Always	36	9.6	
8	Do you avoid a particular type of food because of its colour, texture, consistency and smell?	Never	76	20.3	374(100)
		Rarely	82	21.9	
		Sometimes	117	31.3	
		Often	59	15.8	
		Always	40	10.7	
9	Have you ever consulted a medical professional regarding eating disorders?	I have consulted a doctor	46	12.3	374(100)
		I have not consulted	131	35.0	
		I have never considered consulting one	109	29.1	
		I am thinking of seeking help	47	12.6	
		I don't know where to find one	41	11.0	

Conclusion

The level of knowledge regarding eating disorders was satisfactory however very few considered it as a serious issue and were unaware about their habitual abnormal eating patterns which can be suggestive of an eating disorder.

Recommendations

1. The comprehensive awareness pertaining to the oral and

general health effects among the population needs to be increased through various awareness programs.

2. Periodic dental and general health check-ups followed by health education can improve attitude and practices of the general population related to eating disorders.

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