British Journal of Psychiatry (1985), **146,** 255–261

Eating Disorders in Schizophrenia

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Summary: An investigation of eating disorders in a population of chronic schizophrenic patients confirmed that there is a distinction between eating disorders of psychotics and eating disorders of the young. All the DSM-III criteria of eating disorders, except one, were observed among the psychotics although no patient fulfilled the necessary criteria for an eating disorder diagnosis except for one anorexic woman. All varieties of schizophrenic eating disorder were reported: in two-fifths of the patients eating disorders were associated with delusions and in one sixth with hallucinations; more than half of the patients had deviant eating behaviour which was not associated with any thought or perceptual disorders. Schizophrenic eating disorders were common, yet not disturbing to the social life of the open mental hospital or to that of the community surrounding it.

Early descriptions of eating disorders in schizophrenia exist in the literature (Bleuler, 1911). Anorexia nervosa and bulimia have been described as occurring in both chronic and acute schizophrenics, and pica was defined by Bleuler (1916) as a peculiar craving "to swallow all kinds of things, even their own excrement (coprophagia), sometimes accompanied by gustatory enjoyment". Eating disorders in schizophrenics have been thought to be dependent on delusions of poisoning, autism, catatonic negativism and agitation (Bleuler, 1911). This was not found to be the case with manic-depressive psychosis where eating disorders have been thought to depend on mood changes (Kraepelin, 1921). More recently, aberration of the pituitary-hypothalamus axis has been considered (Alexander, 1950; Russell, 1969), genetic predisposition (Dickens, 1970), or a defect in negative feed-back control mechanisms at central dopamine receptors (Barry and Klawans, 1976). For a long time, anorexia nervosa and schizophrenia were thought to be associated (Federn, 1934; Nicolle, 1938; Brill, 1939). More recently, eating disorders in the young have been regarded as distinct from schizophrenia (Crisp, 1967; Dally, 1969; Russell, 1970), their psychodynamics have been studied (Alexander, 1950; Meng and Stern, 1955; Kestemberg *et al,* 1972) and criteria for their differential diagnosis have been formulated (American Psychiatric Association, 1980); anorexia nervosa has also been found to be associated with thought and mood disorders (Cantwell *et al,* 1977; Mohl and McMahon, 1980) and some cases of confirmed anorexia nervosa have been reported to develop schizophrenia or an independent schizophrenic syndrome (Feighner *et al,* 1972; Crisp, 1977; Hsu *et al,* 1981).

The aim of the present study was to investigate eating disorders and eating attitudes in a population of chronic schizophrenic patients, using two comparison groups: psychotic affective disorder and normals. Differential diagnostic criteria, the extent of eating disorders, their association with body weight, eating attitudes, perception and thought disorders, and dysfunctions associated with medication have been studied. The investigation took place at the Dromokaition Mental Hospital, Athens, Greece, an open, community-orientated mental hospital.

Method

Material. A. The DSM-III criteria for anorexia, bulimia, pica and rumination (Appendix A) were rated as present or absent, following the examination of each patient, the study of his history, and the nurses' information about his behaviour in the ward.

B. Three questionnaires were given to all the subjects:

(1) A questionnaire relating to demographic data, i.e., sex, age, education, profession and residence.

(2) A questionnaire of 31 items, each rated as present or absent, covered disorders of thought and perception, deviant behaviour, eating dysfunctions probably associated with pharmacotherapy, and neurotic symptoms (Appendix B). This questionnaire was devised using common terms for eating disorders, and was classified in the same order as in a previous study of schizophrenic disorders (Lyketsos *et al,* 1983).

(3) Garner's and Garfinkel's (1979) Eating Attitudes Test (EAT).

For all subjects body weight and height were recorded and rated on a 3-point scale (underweight, normal weight, overweight), according to the Broca formula: ideal weight (kgs) = [height (cms)—100] −10% (Bray, 1976). Individuals weighing 10% below or above their ideal weight were judged to be underweight or overweight respectively. Coffee drinking (ground, not instant, coffee) was rated on

https://doi.org/10.1192/bjp.146.3.255 Published online by Cambridge University Press

a 2-point scale: up to four cups per day (normal use) and more than four cups per day (abuse); alcohol consumption was also rated on a 2-point scale, normal use or abuse (more than two glasses of wine or one glass of spirits per meal). All subjects were also asked if they had food intake dreams at night or fantasies during waking hours.

Further information, recorded from the patients, included diagnosis (according to DSM-III criteria), duration of illness, period of hospitalization, chemotherapy and a summary of medical and psychiatric records.

Subjects. There were 137 chronic schizophrenic patients, of median age 49.56 years (range 21–65) and all of them were able to communicate with the interviewer; 22 patients with chronic affective psychosis, who were being treated as in-patients at the same period, and 60 normal volunteers (mostly hospital staff) who were drawn at random with no refusals composed the comparison groups. Table I shows the classification of the samples according to sex, age, socio-economic class and duration of illness; there were significantly more women in the affective disorder group in comparison with the schizophrenic group. Patients and controls were divided into two age-groups: younger (21–30 years) and older (31–65 years) following the age limits of eating disorders used in DSM-III. No differences were found between the three groups, with the exception that the controls were significantly younger than the schizophrenics ($\chi^2 = 7.70$, df = 2, $P < 0.005$). The classification used for social class was: I for socio-economic classes 1 and 2 of the Registrar General's classification (1974), II for social class 3, and III for social classes 4, 5 and 6. All the patients had been in-patients for many years, and the comparison group of normals consisted of people who had been living near the hospital for years.

Statistical analysis. The data were analysed using the χ^2 method to compare answers to each question separately, for all questions and other information gathered. Fisher's exact test was used when the smallest expected frequency was less than 5.

Results

Diagnostic criteria. Eighty-four of the schizophrenic patients (45 men and 39 women), 19 of the affective disorder group, and 59 of the normal controls did not fulfill criteria for any of the eating disorders classified in the DSM III. Only one individual, a 22-year old female schizophrenic who was found to be anorexic, fulfilled all the criteria necessary for a diagnosis of any of the eating disorders. Schizophrenic men and women, total schizophrenics and affective disorder patients, total schizophrenics and normals, and normals and affective disorder patients were compared with regard to the total number of eating disorder criteria each group fulfilled for anorexia nervosa, bulimia, pica and rumination. Schizophrenic women were found to fulfill criteria for both anorexia and bulimia ($\chi^2 = 5.88$, $P < .02$, and $\chi^2 = 11.26$, $P < .005$ respectively) more often than schizophrenic men. Schizophrenics fulfilled anorexic and bulimic criteria more often than normals ($\chi^2 = 3.9$, $P < .05$, and $\chi^2 = 17.1$, $P < .005$) or affective disorder patients ($\chi^2 = 14.2$, $P < .005$ and $\chi^2 = 4.35$, $P < .05$). No inter-group differences were found for pica and rumination, or between normals and patients with affective disorder. In general, more schizophrenics (most of them women) than normals were afraid of being fat and claimed to be fat even when emaciated. They also had recurrent episodes of binge eating, with inconspicuous eating and with consumption of easily ingested food during a binge. Furthermore, schizophrenics with bulimic symptoms, regardless of their sex, terminated their binge episodes with abdominal pain, sleep, or self-induced vomiting. More schizophrenics than affective disorder patients had recurrent episodes of binge eating.

Eating attitudes. No group in this study had an average score of greater than 20 on the Eating Attitudes Test

TABLE I

Description of the population of the three groups

Age	*Schizophrenics*						*Affectives*					*Controls*		
	n	*Social class*			*Duration of illness in years**		n	*Social class*		*Duration of illness in years**		n	*Social class*	
		I	*II*	*III*	*A*	*B*		*II*	*III*	*A*	*B*		*II*	*III*
Male														
21–30	8	0	1	7	7	1	0	0	0	0	0	10	0	10
31–65	50	0	4	46	6	44	5	0	5	1	4	14	0	14
Total	58	0	5	53	13	45	5	0	5	1	4	24	0	24
Female														
21–30	9	0	2	7	6	3	0	0	0	0	0	16	2	14
31–65	70	2	14	54	4	66	17	6	11	5	12	20	4	16
Total	79	2	16	61	10	69	17	6	11	5	12	36	6	30
Total population	137	2	21	114	23	114	22	6	16	6	16	60	6	54

*A = less than 10 years. B = 10–50 years of hospitalisation.

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(EAT). Although these averages cannot be compared directly with those of the Garner and Garfinkel study, in which the EAT was given to patients suffering from anorexia nervosa, to normal female controls, to male controls, to obese subjects and to clinically recovered anorexia subjects, they are much lower than the averages they quoted for the anorexic group (58.9±13.3). Three schizophrenic women (one fulfilled the DSM-III criteria for anorexia) scored 51, 54 and 31; no other individual scored above 30 on this test. The EAT item responses were also analysed to investigate whether schizophrenics had a specific pattern of eating attitudes. Answers of 'always', 'very often' and 'often' were taken together as positive, and 'sometimes', 'rarely' and 'never' as negative. When schizophrenics were compared to normals, it was found that significantly more patients ($P<.001$) answered the following (EAT) items negatively: 2 (Prepare food for others but do not eat what I cook), 7 (Feel loss of control over binge eating), 9 (Aware of calorie content of food I eat), 16 (Exercise strenuously to burn off calories), 22 (Think of burning up calories when I exercise). Significantly more schizophrenics than patients with affective disorder ($P<.001$) gave positive answers to 8 (Cut my food into small pieces), and negative answers to 27 (Enjoy eating at restaurants) and 32 (Display self-control around food).

An intra-group comparison of schizophrenics between men and women showed that significantly more women ($P<.001$) gave positive answers to the following items: 3 (Become anxious prior to eating $P<.001$), 10 (Particularly avoid foods with a high carbohydrate content $P<.001$), 27 (Enjoy eating at restaurants $P<.001$) and 34 (Give too much time and thought to food $P<.001$); and gave negative answers to the following: 19 (Enjoy eating meat $P<.001$). When the group of affective disorder patients was compared with the normals, it was found that significantly more affective disorder patients gave a negative answer to the following item: 7 (Have gone on eating binges where I feel that I may not be able to stop $P<.001$).

Body weight differences. Table III shows the body weight distribution in the three groups. Comparing body weight distribution between women across the three groups, it was found that schizophrenic women and normal women were significantly more overweight ($P<.001$). It was also found that 23 of the 25 schizophrenic women who had bulimic symptoms were overweight. Comparing schizophrenic men with affective and normal men, no significant difference was found. It was also found that the female schizophrenic group had a significantly higher percentage of overweight patients in comparison with schizophrenic male group ($P<.001$).

Schizophrenic eating disorders

Delusions. Fifty-four (39%) of the schizophrenic group (26 men and 28 women) had delusional disorders: 21 (15%—12 men and 9 women) had delusions or fears of poisoning, 16 (12%—2 men and 14 women) had delusions or fears of criticism of their eating preferences and activities, 15 (11%—2 men and 13 women) had delusions concerning food, 3 (2%—all women) had delusions of fasting to expiate, and 10 (7.3%—all men) had other delusions about food. Only two patients with affective disorder had delusional disorders, one of fasting to expiate, and one of not deserving food.

Hallucinations. Twenty-three schizophrenics (17%—14 men and 9 women) had eating hallucinations: 18 (13%—10 men and 8 women) reported auditory hallucinations concerned with eating, 8 (6%—4 men and 4 women) had visual hallucinations concerned with eating, 4 (3%—2 men and 2 women) had olfactory hallucinations concerned with eating, 4 (3%—2 men and 2 women) had gustatory hallucinations concerned with eating, and 4 (all women) reported coenesthetic hallucinations associated with eating. No patients with affective disorder had hallucinations concerned with eating.

Behavioural disorders. Seventy-three schizophrenics (53%—33 men and 40 women) had deviant behaviour; 5 (4%—4 men and 1 women) reported preoccupation with eating matters or acting out, 15 (11%—10 men and 5 women) provoked vomiting, 25 (18%—10 men and 15 women) had negativism towards eating, 13 (10%—2 men and 11 women) used laxatives frequently, 28 (20%—15 men and 13 women) abused drinks (coffee or alcohol), 3 (2%—1 man and 2 women) selected disgusting substances to eat (faeces and rubbish), 16 (12%—2 men and 14 women) had eating stereotypes or mannerisms and 19 (14%—9 men and 10 women) were reported to have other bizarre behaviour while eating. Only four patients with affective disorder had behavioural disorders.

Dysfunctions probably associated with psychotropic drugs. Fifty-three schizophrenics (39%—28 men and 25 women) had eating dysfunctions; 10 (7%—all men) had dysphagia, 39 (29%—23 men and 16 women) had a dry

TABLE II

Body weight distribution in the three groups: numbers (percentages)

	Schizophrenics		*Normals*		*Affectives*	
	Men	*Women*	*Men*	*Women*	*Men*	*Women*
Normal	39 (67)	26 (33)	14 (58)	22 (61)	1 (20)	6 (35)
Underweight	3 (5)	5 (6)	4 (17)	6 (17)	0 (0)	2 (12)
Overweight	16 (28)	48 (61)	6 (25)	8 (22)	4 (80)	9 (53)
Total	58 (100)	79 (100)	24 (100)	36 (100)	5 (100)	17 (100)

https://doi.org/10.1192/bjp.146.3.255 Published online by Cambridge University Press

mouth, 24 (45%—9 men and 15 women) frequently burping, and 20 (15%—10 men and 10 women) complained of dyspepsia. Nine patients with affective disorder (14%—4 men and 5 women) had eating dysfunctions: 2 men had dysphagia, 8 had a dry mouth, 2 frequent eructation, and 6 complained of dyspepsia. The differences between the two groups were not significant.

Neurotic symptoms. Thirty-seven schizophrenics (27%—12 men and 25 women) had neurotic symptoms associated with food intake; 14 (10%—2 men and 12 women) had obsessive-compulsive symptoms, 20 (15%—9 men and 11 women) had physical complaints, 9 (7%—2 men and 7 women) had hypochondriacal symptoms, and 8 (6%—all women) were hyperactive. Sixteen of the patients with affective disorder (73%) had neurotic symptoms associated with food intake: 2 (9%) had obsessive-compulsive symptoms, and one woman was (5%) hyperactive; 7 (31.2%) had physical complaints and 7 (31%) hypochondriacal complaints. The differences for the two latter symptoms between the groups of schizophrenics and affective disorder were significant ($P < .05$), with the affectives showing more symptoms. Twelve normal controls (20%) complained of physical symptoms associated with food intake. No other of the above-mentioned symptoms was reported. This difference between the groups of schizophrenics and normal controls was not significant.

Effect of psychopathology. The schizophrenic group was divided into two sub-groups: (i) 80 patients with chronic active form (DSM-III criteria) (ii) 57 patients with chronic residual form. Table III shows that the two groups were found to be significantly different ($P < .01$) only in perceptual disorders, with the actives exhibiting more such disorders.

A further division was made according to length of hospitalisation: (i) up to 10 years, and (ii) from 11 to 49 years. The two groups did not differ significantly on any of the sub-types of eating disorder.

Discussion

Criteria of eating disorders. The present investigation of eating disorders in a population of chronic schizophrenic patients confirms that there is a distinction between eating disorders in psychotics and eating disorders in the young. All the DSM-III criteria of eating disorders except one—frequent weight fluctuations (bulimia)—were observed in a population of psychotics, although only one of them fulfilled the necessary criteria for an eating disorder. (Eating disorder in this patient was determined by perception and thought disorders, i.e., she frequently had hallucinations of other patients and herself being cooked). The EAT scores of all patients in the schizophrenic sample were found to be below the lowest score of anorexic subjects (Garner and Garfinkel, 1979) except for the anorexic woman, and for two other women who did not fulfill a DSM-III diagnosis of anorexia. The most common eating disorder criteria found in schizophrenics, significantly more common than in normals, were intense fear of obesity and disturbance of body image (criteria A and B of anorexia nervosa) and recurrent binge eating with consumption of high calorie food, inconspicuous eating and bulimic sequelae (criteria A and B1, 2, 3 of bulimia); this difference from normals, however, occurred because the majority of schizophrenic women were found to fulfill these criteria. Nursing staff have known for a long time that schizophrenic women become anxious and greedy at meal times; the EAT confirmed these attitudes. Schizophrenic women were found to give too much time and thought to food, to be preoccupied with food and to become anxious prior to eating. It is not surprising that 60% of schizophrenic women were found to be overweight, while 67% of schizophrenic men were found to be of normal weight. The physicians' attempts to help the overweight women to lose weight may have contributed to the psychopathology of the findings in the questionnaires: the women's fears about being overweight, even when they lose weight, and their avoidance of food with a high carbohydrate content.

The role of drugs, particularly those with hypothalamic side-effects such as chlorpromazine, should be considered. However, individualised pharmacotherapy aiming at the mobilisation of the chronic patients at the Dromokaition Mental Hospital has reduced the use of such drugs to a minimum. Furthermore, there was no difference in

TABLE III

Effect of psychopathology on schizophrenic eating disorders: numbers (percentages)

	Thought disorders	*Perceptual disorders*	*Behavioural disorders*	*Neurotic symptoms*	*Dysfunctions associated with psychopharmaca*
Active ($n = 80$)	37 (46)	19* (24)	44 (55)	20 (25)	34 (42)
Residual ($n = 57$)	18 (32)	4 (7)	24 (42)	17 (30)	19 (33)
Total	55 (40)	23 (17)	68 (50)	37 (27)	53 (39)

*$P < 0.01$

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the use of these drugs between men and women to explain the differences of weight between the two sexes.

Psychopathology. The psychopathology of eating disorders appears to be multifactorial. Organic factors have been considered important by some authors, e.g. a hypothalamic dysfunction (Russell, 1969), or a variant of epilepsy (Wermuth *et al,* 1977). An adolescent maturational conflict has been emphasised as the essential psychodynamic factor in anorexia; this last view is supported by recent papers (Akhtar and Thomson, 1980; Lyketsos *et al,* 1983) which conclude that the evolution of schizophrenia is accompanied by a regression of sexuality from mature towards immature satisfactions. If a further consideration is added, namely that the world of Greek women of the lower social classes tends to be limited to housework, in which cooking is of considerable importance, while Greek men go to the 'men only' cafés to discuss, play games and smoke, we could speculate that the observed pattern of eating attitudes in psychotic women was determined by their regression to immature oral satisfaction accompanying the evolution of schizophrenia and was associated with Greek cultural influences. Schizophrenic men did not manifest the same pattern of oral regression.

Varieties of schizophrenic eating disorders. All varieties of schizophrenic eating disorders were reported; two fifths had delusional eating disorders, only one sixth had eating disorders of perception, half of the total had deviant eating behaviour, almost two-fifths had eating dysfunctions probably associated with psychotropic drugs, and a quarter had neurotic symptoms associated with food intake. Bizarre delusions or hallucinations were found to motivate episodic disordered behaviour; for example the food was believed to contain disgusting or frightening substances or animals. Such delusions could be associated with taste or smell or auditory hallucinations; (one patient used to see her father and hear his voice cursing her and forbidding her to eat, calling her to make love with him instead. She then used to lock herself in the lavatory, searching in the lavatory bowl for faeces, eating them and vomiting). The attitude of family members, the hospital staff, other patients, or the patients' own self-punitive attitude, controlled food intake. Common reactions on the part of the patients were food avoidance, changing plates, fasting, ptyalism, voluntary or involuntary vomiting, taking laxatives etc.

Other patients did not react to their delusions and hallucinations, or exhibited other deviant behaviour such as negativism, mannerisms or stereotypes, which were not associated with delusional or perceptual disorders. Eating dysfunctions probably associated with psychotropic drugs were generally mild in both schizophrenics and affectives, except for a few cases of dysphagia. Neurotic symptoms (compulsive or hypochondriacal), associated with food, motivated disordered eating behaviour in a few cases.

The effect of severity of psychopathology was expected: active schizophrenics exhibited significantly more perceptual eating disorders in comparison with residual schizophrenics. The period of hospitalisation did not influence schizophrenic eating disorders. No schizophrenic patient reported fantasies or dreams associated with food intake. It is noteworthy that no food deprivation stimuli were provided in a hospital where patients are adequately fed. In view of the large number of comparisons made (280 on the EAT, 16 comparing DSM-III eating disorders, and 19 miscellaneous others), the reservation that significant results could have occurred by chance must be remembered. However, most differences reached much higher levels of significance and moreover they followed a general pattern which argues against the likelihood of chance results.

Appendix A

Diagnostic criteria for eating disorders, DSM-III (1980)

Diagnostic criteria for anorexia nervosa:

A. Intense fear of becoming obese, which does not diminish as weight loss progresses.
B. Disturbance of body image, e.g., claiming to "feel fat" even when emaciated.
C. Weight loss of at least 25% of original body weight, or if under 18 years of age, weight loss from original body weight plus projected weight gain expected from growth charts may be combined to make the 25%.
D. Refusal to maintain body weight over a minimal normal weight for age and height.
E. No known physical illness that would account for the weight loss.

Diagnostic criteria for bulimia

A. Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period of time, usually less than two hours).
B. At least three of the following:
   1. consumption of high-caloric, easily ingested food during a binge
   2. inconspicuous eating during a binge
   3. termination of such eating episodes by abdominal pain, sleep, social interruption, or self-induced vomiting
   4. repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, or use of cathartics or diuretics
   5. frequent weight fluctuations greater than ten pounds due to alternating binges and fasts.
C. Awareness that the eating pattern is abnormal and fear of not being able to stop eating voluntarily.

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D. Depressed mood and self-deprecating thoughts following eating binges.
E. The bulimic episodes are not due to Anorexia Nervosa or any known physical disorder.

Diagnostic criteria for pica

A. Repeated eating of a nonnutritive substance for at least one month.
B. Not due to another mental disorder, such as Infantile Autism or Schizophrenia, or a physical disorder, such as Klein-Levin Syndrome.

Diagnostic criteria for rumination disorder of infancy

A. Repeated regurgitation without nausea or associated gastro-intestinal illness for at least one month following a period of normal functioning.
B. Weight loss or failure to make expected weight gain.

Appendix B

Schizophrenic eating disorders questionnaire

		A = yes	B = no
1.	Thought disorders (eating themes in schizophrenic thought)		
	I. Ideas of poisoning	A	B
	II. Preoccupation with eating matters or eating acting out	A	B
	III. Ideas of reference or fears of criticism	A	B
	IV. Delusions related to food	A	B
	V. Fasting for expiation (ideas of self-punishment)	A	B
	VI. Other	A	B
2.	Perceptual disturbances related to food intake in schizophrenia		
	I. Auditory hallucinations with eating themes	A	B
	II. Visual hallucinations with eating themes	A	B
	III. Olfactory hallucinations related to food intake	A	B
	IV. Gustatory hallucinations related to food intake	A	B
	V. Coenesthetic hallucinations with eating themes	A	B
3.	Disturbed eating behaviour in schizophrenia		
	I. Provoked vomiting	A	B
	II. Negativism	A	B
	III. Excessive demand for laxatives	A	B
	IV. Abuse of coffee or alcohol	A	B
	V. Counter regulating mechanisms	A	B
	VI. Oral sexuality (autofellatio)	A	B
	VII. Selection of disgusting food	A	B
	VIII. Stereotypes, mannerisms associated with food intake	A	B
	IX. Bizarre behaviour associated with food intake	A	B
	X. Other	A	B
4.	Eating dysfunctions associated with antipsychotic medication	A	B
	I. Dysphagia	A	B
	II. Mouth dryness	A	B
	III. Frequent burping	A	B
	IV. Dyspepsia	A	B
	V. Other	A	B
5.	Neurotic symptoms and characteristics associated with food intake		
	I. Obsessive-compulsive-ceremonial	A	B
	II. Physical complaints	A	B
	III. Hypochondriasis	A	B
	IV. Hyperactivity	A	B
	V. Other	A	B

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(Received 6 February; revised 23 July 1984)

https://doi.org/10.1192/bjp.146.3.255 Published online by Cambridge University Press