REVIEW OF RESEARCH

PSYCHOLOGICAL IMPACT AMONG POPULATION SUFFERING FROM CELIAC DISEASES IN DISTRICT BATHINDA, PUNJAB.

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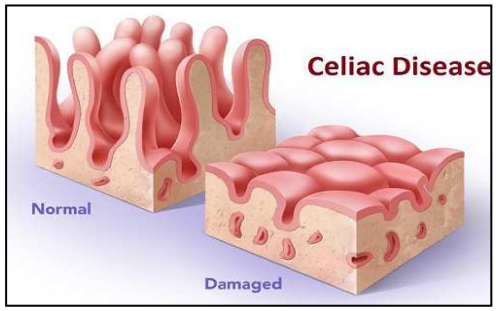
ABSTRACT :



Depression is a kind of a condition consists of many symptoms like sadness of mood, decreased interactions, decreased interest in pleasurable activities, increased guilt or worthlessness, decreased sleep, loss of energy, hypersomnia, change in appetite, psychomotor retardation or agitation and there may be difficulty in attention and concentration. Depression may be Unipolar or Bipolar depression .Depression without any episode of elated moods or touching highs, is referred as unipolar depression or major depressive disorder because the mood remains totally down and does not climb high. Bipolar depression is the one which is associated with episodes of elated moods [1].

KEYWORDS : *pleasurable activities , decreased sleep , loss of energy.*

INTRODUCTION

Celiac disease (CD) is an illness which is currently well understood. This illness is caused by an immune reaction to gluten, a protein found in wheat, barley and rye, and is generally characterized by villous atrophy, crypt hyperplasia, and increased intraepithelial lymphocytes. Presenting symptoms typically include postprandial bloating, steatorrhea, and weight loss, and it is present in about one percent of the population [2]. The diagnosis is confirmed by testing for a number of different antibodies including anti-endomysial antibodies (EMA), anti-tissue transglutaminase antibodies (tTG), and anti-gliadin antibodies (AGA)[3] .The disease is recognized not only throughout Europe and in countries populated by persons of European ancestry but also in the Middle East, Asia, South America and North Africa. The therapy for the disease is a gluten-free diet (GFD); however, the response to therapy is poor in up to 30% of patients mainly because of non-adherence to the GFD [4].

Comparatively there is great increase in psychological symptoms and celiac disease [5].from the last 40 years it is under observation the relationship between celiac disease and psychiatric complications [6,7]. Gluten sensitive patients also have a host of neurologic and psychiatric complications. Data suggests that up to 22% of patients with CD develop neurologic or psychiatric dysfunction [8] and as many as 57% of people with neurological dysfunction of unknown origin test positive for anti-gliadin antibodies [9].Indian population studies point towards that percentage of people with the disease may be below 0.33 and 1.06% in children

and 0.18-1.2% in adults. Maximum data exploration is from North India particularly Punjab, Haryana, Bihar, Delhi, Uttar Pradesh, Rajasthan and Uttrakhand [12].

Being non conformation of exact reason that has contributed to depression with CD there is probability that long term living with consistent stress and predominant lifestyle changes may contribute to depression [10]. The mechanisms to explain how celiac disease increases the risk of psychiatric problems are not fully understood, but it's probably a consequence of malnutrition affecting normal brain function. Tentative explanations include lack of amino acid tryptophan and vitamin B, as well as poor blood flow to the brain. Studies have shown that depression is one of the main reasons for patients ignoring their gluten-free diet, only making their condition worse and aggravating their feelings of anxiety and depression [11].Another nutritional deficiency that may play a role in depression is a lack of the essential amino acid tryptophan. People with celiac disease may not be able to absorb enough of this important protein. Tryptophan is converted by your body into serotonin. Serotonin is a chemical that helps regulate your mood. Low levels of serotonin may be associated with depression.

It is generally difficult to maintain special diet especially if you are suffering from depression but it is important that people with celiac disease stick to a completely gluten-free diet, which can dramatically improve the symptoms of celiac disease — including depression [10]. For patients where a gluten-free diet fails to reduce symptoms, psychological support and counseling may be the way to go. Multidimensional approach like this in a long term will be helping patient to stick to recommended diet as well as to fight depression. Most of the people with CD suffer with anxiety and depression. So this study will mainly focus on the mentioned psychiatry ailments due to CD. Moreover, very few studies have been conducted which show psychological impact on the person suffering from celiac disease in India.

Aim

Psychiatric impact on patients suffering from celiac disease.

Objectives

Association of demographic profile with psychiatric disorders.
Distribution of participants according to levels of Anxiety and Depression.

Material Methods

Study design: Cross sectional study was conducted among patients coming to IPD and OPD of Adesh Hospital.

Unit of study: Patients coming to OPD and those admitted in IPD suffering from celiac diseases were included in the study. Verbal consent was taken from all the participants. Basic demographic data was obtained using a questionnaire and HAM A and HAM D scores were used to analyze anxiety and depression among the participants.

Clearance forms AIMSR Research and University's Ethics Committee was taken before the conduct of study.

Sample size: According to a study conducted by Hauser W et al, titled " Anxiety and depression in adult patients with celiac disease on gluten free diet", the prevalence of anxiety among the patients was 16.8% [13]. Using the above prevalence and Daniel's method for calculation of sample size, the minimum sample size was 223.

Inclusion criteria: Patients both male and female with celiac diseases giving consent to participate in the study were included.

Exclusion criteria: Patients not giving consent to participate in the study and patients with co morbidities which may affect their psychological behavior were excluded from the study.

The data was analyzed using MS Excel.

RESULTS

244 subjects participated in the study with minimum age of 10 years and maximum 65 years. Mean age is 26 with standard deviation of 12.659. There were 109 (44.7%) females and 135 (55.3%) male participants. The minimum score for HAM A was 9 and maximum 25 for HAM-A with mean score of 16.23 and standard deviation 3.092. The minimum score for HAM D was 9 and maximum score 25 with mean of 20.55 and standard deviation of 3.450. Out of 244 participants 57.0% were unemployed, 60.2% semiskilled, 79.1 % skilled, 89.8% clerical/shop/farm workers and 10.2%. Semiprofessional. The education level of all the participants can be seen in Table I. 54.5% was rural population and 45.5% urban population. None of the participants had any previous psychaitric illness. The results showed that 15.2% had mild anxiety ,78.3 moderate anxiety and 6.6% severe anxiety (Figure I). While 4.9% were suffering from mild depression ,38.5% moderate depression and 56.6% severe depression (Figure II). Most of the partipiants belonged to Bathinda city proper followed by Bhucho Mandi (Figure III). Gender of the particpiants was not significatly associated with anxiety but was significantly associated with depression among the participants, with males being affected more than females. Occupation of the partipants was found to be significantly associated with both anxiety and depression, with most opf them being unemployed. Education was also significantly linked with both anxiety and depression (Most particpiants were those who studied till 12th class). More unmarried participants were suffering from anxiety as well as depression and the association was significant. 54.5% of partipants from rural sector were having anxiety (p=0.001) but the association was not significant for depression.

DISCUSSION

Anxiety has been widely described in CD patients ,in a study of 68 patients treated for mean of 10yrs , this is evaluated a nine-item burden of illness protocol, assessing perceived worries, restrictions and subjective outcome.10 yrs after the diagnosis women expressed more concerned about the impact of disease on socializing with people and have to abstain important things in life[4] .They express sense of loneliness, frustration and isolation which are the most common negative emotions. Patients were significantly more likely to have state of anxiety when compared to controls and after one year of GFD there was a significant improvement[14] .A higher lifetime prevalence of panic disorder has been found in CD patients [6]. Patients of CD show persistent depression after one year of GFD, major depressive disorders and adjustment disorders were common in a group of CD patients[15]. Patients of CD also show schizophrenic symptoms along with EEG changes [16]. In a research done patients show fronto temporal cortex hypo perfusion on SPECT scan, after 6 months of GFD no longer hypo perfusion is seen in same patients [9].Following a study based on psychiatric rating scale (BPRS) patients of CD, schizophrenia improved in their levels of functioning in gluten free phase[17]. ADHD symptoms are found in CD patients but less likely ,along with chronic fatigue. Patients also got increased frequency of altered eating behavior as compare to healthy and suffer from anorexia nervosa. In this study all the participants all the patients suffering from celiac disease were suffering from both anxiety and depression. This could possibly be due to the staple diet in this region of Punjab. People here mostly prefer wheat in their diet and it is considered as the most important ingredient in one's plate, bet it during the breakfast, lunch or dinner. There was significant association between various variables and levels of anxiety and depression among the participants. Most of the participants were suffering from Mild Anxiety and Severe Depression in the study. In recent years, there has been an increased interest in how celiac patients perceive the impact of their disorder, how this perception relates to the clinical presentation of the disease and how their health is modified by treatment with a GFD. It has been recognized that the aspects of health that should be addressed go beyond the usual biological parameters and extend also to social functioning and psychological issues. Mood disorders such as anxiety, depression and fatigue are often linked to CD, before and after diagnosis, and therefore may influence the patient's quality of life (QOL) and adherence to GFD.

CONCLUSION

The main message from these studies is how dangerous anxiety and depression feelings can be for a patient with celiac disease, often resulting in a careless and reckless attitude towards their diet. If not treated, this could easily spiral out of control, significantly increasing the risk of long term problems, including developing other conditions such as diabetes or even cancer.

Table: I Demographic Profile of participants

	Frequency	Percent	Cumulative Percent
Gender			
Female	109	44.7	44.7
Male	135	55.3	100
Occupation			
Unemployed	139	57	57
Semiskilled	8	3.3	60.2
Skilled	46	18.9	79.1
Clerical/Shop/Farm	26	10.7	89.8
Semiprofessional	25	10.2	100
Education			
Illiterate	47	19.3	19.3
Upto 10th class	50	20.5	39.8
10th to 12th class	79	32.4	72.1
Graduate or above	68	27.9	100
Religion			
Sikh	135	55.3	55.3
Hindu	89	36.5	91.8
Christian	4	1.6	93.4
Muslim	16	6.6	100
Area			
Rural	133	54.5	54.5
Urban	111	45.5	100
Newly diagnosed case of Celiac Disease	8	3.3	3.3
Old Case of Celiac Disease	236	96.7	100

Table II: Scores of HAM A and HAM D

VARIABLES	N	Minimum	Maximum	Mean	Std. Deviation
AGE	244	10	65	26.45	12.659
HAM-A	244	9	25	16.23	3.092
HAM-D	244	9	29	20.55	3.45

Figure I: Distribution of participants according to levels of Anxiety

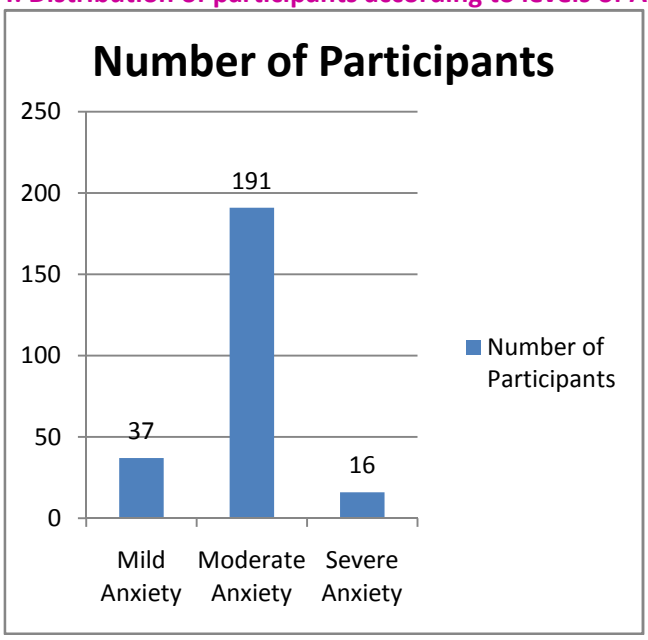


Figure II: Distribution of participants according to levels of Depression

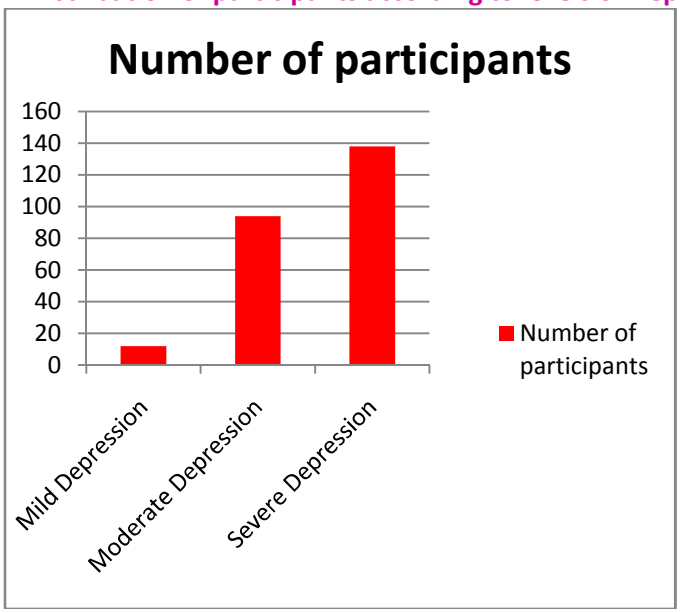


Figure III: Area distribution of Participants

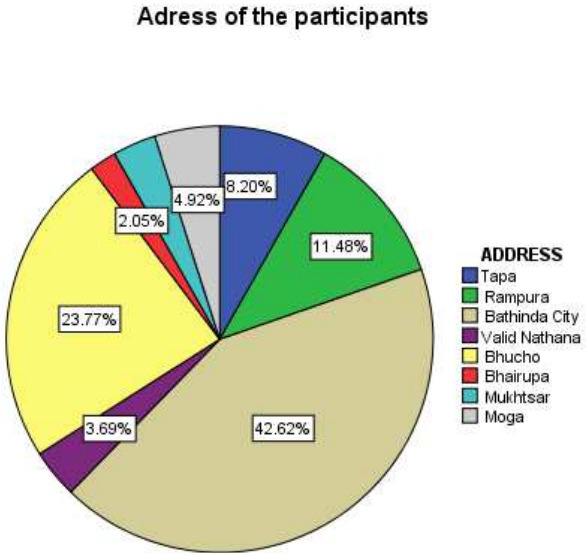


Table III: Association between various variables and levels of Anxiety

VARIABLES			Grading of Anxiety			Total	P value
			Mild Anxiety	Moderate Anxiety	Severe Anxiety		
SEX	Female	Count	13	88	8	109	0.428
		% of Total	5.30%	36.10%	3.30%	44.70%	
	Male	Count	24	103	8	135	
		% of Total	9.80%	42.20%	3.30%	55.30%	
	Total	Count	37	191	16	244	
		% of Total	15.20%	78.30%	6.60%	100.00 %	
OCCUPATION	Unemployed	Count	17	114	8	139	0.001
		% of Total	7.00%	46.70%	3.30%	57.00%	
	Semiskilled	Count	0	8	0	8	
		% of Total	0.00%	3.30 %	0.00%	3.30%	
	Skilled	Count	16	26	4	46	
		% of Total	6.60%	10.70%	1.60%	18.90%	
	Clerical/Shop/Farm	Count	0	22	4	26	
		% of Total	0.00%	9.00 %	1.60%	10.70%	

	Semi professional	Count	4	21	0	25	
		% of Total	1.60%	8.60 %	0.00%	10.20%	
	Total	Count	37	191	16	244	
		% of Total	15.20%	78.3 0%	6.60%	100.00 %	
EDUCATION	**Illiterate**	Count	4	39	4	47	0.002
		% of Total	1.60%	16.0 0%	1.60%	19.30%	
	Upto 10th class	Count	4	42	4	50	
		% of Total	1.60%	17.2 0%	1.60%	20.50%	
	10th to 12th class	Count	21	50	8	79	
		% of Total	8.60%	20.5 0%	3.30%	32.40%	
	Graduate or above	Count	8	60	0	68	
		% of Total	3.30%	24.6 0%	0.00%	27.90%	
	Total	Count	37	191	16	244	
		% of Total	15.20%	78.3 0%	6.60%	100.00 %	
Marital Status	**Unmarried**	Count	12	110	4	126	0.002
		% of Total	4.90%	45.1 0%	1.60%	51.60%	
	Married	Count	25	81	12	118	
		% of Total	10.20%	33.2 0%	4.90%	48.40%	
	Total	Count	37	191	16	244	
		% of Total	15.20%	78.3 0%	6.60%	100.00 %	
Area	**Rural**	Count	21	96	16	133	0.001
		% of Total	8.60%	39.3 0%	6.60%	54.50%	
	Urban	Count	16	95	0	111	
		% of Total	6.60%	38.9 0%	0.00%	45.50%	
	Total	Count	37	191	16	244	
		% of Total	15.20%	78.3 0%	6.60%	100.00 %	
History of any	**No**	Count	33	191	16	240	<0.001

Medical Illness		% of Total	13.50%	78.30%	6.60%	98.40%	
	Yes	Count	4	0	0	4	
		% of Total	1.60%	0.00%	0.00%	1.60%	
	Total	Count	37	191	16	244	
		% of Total	15.20%	78.30%	6.60%	100.00%	

Table IV: Association between various variables and levels of Depression

VARIABLES			**Grading of Depression**			**Total**	**P value**
			Mild Depression	**Moderate Depression**	**Severe Depression**		
SEX	**Female**	Count	8	32	69	109	0.016
		% of Total	3.30%	13.10%	28.30%	44.70%	
	Male	Count	4	62	69	135	
		% of Total	1.60%	25.40%	28.30%	55.30%	
	Total	Count	12	94	138	244	
		% of Total	4.90%	38.50%	56.60%	100.00%	
OCCUPATION	**Unemployed**	Count	8	61	70	139	<0.001
		% of Total	3.30%	25.00%	28.70%	57.00%	
	Semiskilled	Count	0	8	0	8	
		% of Total	0.00%	3.30%	0.00%	3.30%	
	Skilled	Count	0	13	33	46	
		% of Total	0.00%	5.30%	13.50%	18.90%	
	Clerical/Shop/Farm	Count	0	4	22	26	
		% of Total	0.00%	1.60%	9.00%	10.70%	
	Semiprofessional	Count	4	8	13	25	
		% of Total	1.60%	3.30%	5.30%	10.20%	
	Total	Count	12	94	138	244	
		% of Total	4.90%	38.50%	56.60%	100.00%	
EDUCATION	**Illiterate**	Count	0	29	18	47	<0.001
		% of	0.00%	11.90%	7.40%	19.30%	

		Total					
	Upto 10th class	Count	0	25	25	50	
		% of Total	0.00%	10.20%	10.20%	20.50%	
	10th to 12th class	Count	8	24	47	79	
		% of Total	3.30%	9.80%	19.30%	32.40%	
	Graduate or above	Count	4	16	48	68	
		% of Total	1.60%	6.60%	19.70%	27.90%	
	Total	Count	12	94	138	244	
		% of Total	4.90%	38.50%	56.60%	100.00 %	
MARITAL STATUS	**Unmarried**	Count	4	57	65	126	0.005
		% of Total	1.60%	23.40%	26.60%	51.60%	
	Married	Count	8	37	73	118	
		% of Total	3.30%	15.20%	29.90%	48.40%	
	Total	Count	12	94	138	244	
		% of Total	4.90%	38.50%	56.60%	100.00 %	
AREA	**Rural**	Count	8	50	75	133	0.676
		% of Total	3.30%	20.50%	30.70%	54.50%	
	Urban	Count	4	44	63	111	
		% of Total	1.60%	18.00%	25.80%	45.50%	
	Total	Count	12	94	138	244	
		% of Total	4.90%	38.50%	56.60%	100.00 %	
HISTORY OF ANY MEDICAL ILLNESS	**No**	Count	12	90	138	240	0.039
		% of Total	4.90%	36.90%	56.60%	98.40%	
	Yes	Count	0	4	0	4	
		% of Total	0.00%	1.60%	0.00%	1.60%	
	Total	Count	12	94	138	244	
		% of Total	4.90%	38.50%	56.60%	100.00 %	

REFERENCES:

1. Lane,C.,(2017).*Mood Disorders.* Retrieved September 19, 2016, from http://www.psyweb.com/mdisord/jsp/moodd.jsp
2. Fasano A, Catassi C. Current approaches to diagnosis and treatment of celiac disease: An evolving spectrum. Gastroenterology. 2001;120:636–651. [PubMed]
3. Bizzaro N, Tozzoli R, Villalta D, Fabris M, Tonutti E. Cutting-edge issues in celiac disease and in gluten intolerance. Clinical Reviews in Allergy and Immunology. 2010 doi: 10.1007/s12016-010-8223-1.
4. Green PH, Cellier C. Celiac disease. N Engl J Med. 2007;357:1731–1743.
5. Addolorato G, Leggio L, D'Angelo C, Mirijello A, Ferrulli A, Cardone S, Vonghia L, Abenavoli L, Leso V, Nesci A, et al. Affective and psychiatric disorders in celiac disease. Dig Dis. 2008;26:140–148.
6. Bender L. Childhood schizophrenia. Psychiatric Quarterly. 1953;27:663–681.
7. Dohan FC. Wheat "consumption" and hospital admissions for schizophrenia during World War II. A preliminary report. American Journal of Clinical Nutrition. 1966;18:7–10.
8. Briani C, Zara G, Alaedini A, Grassivaro F, Ruggero S, Toffanin E, et al. Neurological complications of celiac disease and autoimmune mechanisms: A prospective study. Journal of Neuroimmunology. 2008;195:171–175.
9. Hadjivassiliou M, Grunewald RA, Chattopadhyay AK, Davies-Jones GA, Gibson A, Jarratt JA, et al. Clinical, radiological, neurophysiological, and neuropathological characteristics of gluten ataxia. Lancet. 1998;352:1582–1585.
10. The Link Between Celiac Disease and Depression [Internet]. EverydayHealth.com. 2017 [cited 10 March 2017]. Available from: http://www.everydayhealth.com/celiac-disease/celiac-disease-depression-link.aspx
11. Depression is linked to celiac disease - Gluten Free Therapeutics [Internet]. Gluten Free Therapeutics. 2017 [cited 10 March 2017]. Available from: https://www.glutenfreetherapeutics.com/living-gluten-free/medicine-research/depression-is-linked-to-celiac-disease/
12. . Zingone F, Swift G, Card T, Sanders D, Ludvigsson J, Bai J. Psychological morbidity of celiac 3. disease: A review of the literature. United European Gastroenterology Journal. 2014;3(2):136-145.
13. Häuser, Winfried et al. "Anxiety and Depression in Adult Patients with Celiac Disease on a Gluten-Free Diet." *World Journal of Gastroenterology : WJG* 16.22 (2010): 2780–2787. *PMC*. Web. 10 Mar. 2017.
14. Celiac Disease Related Conditions & Diseases | BeyondCeliac.org [Internet]. Beyondceliac.org. 2016]. Available from: http://www.beyondceliac.org/celiac-disease/related-conditions/
15. The Spectrum of Celiac Disease: Epidemiology, Clinical Aspects and Treatment [Internet]. Medscape. 2016 [cited 29 September 2016]. Available from: http://www.medscape.com/viewarticle/720681
16. Celiac Disease Mental Health - Celiac Disease Foundation [Internet]. Celiac Disease Foundation. 2016 [cited 29 September 2016]. Available from: https://celiac.org/celiac-disease/understanding-celiac-disease-2/child-mental-health/
17. MD. Gluten Allergy and the Brain - Neurologic Disease and Mental Illness [Internet]. Nutramed.com. 2016 [cited 29 September 2016]. Available from: http://www.nutramed.com/celiac/celiacbrain.htm
18. Schizophrenia / Mental Problems and Celiac Disease - Celiac.com [Internet]. Celiac.com. 2016 [cited 29 September 2016]. Available from: http://www.celiac.com/categories/Celiac--Disease--____--Related--Diseases--and--Disorders/Schizophrenia--_____--Mental--Problems--and--Celiac--Disease-c-3375.html