



## ASSOCIATION BETWEEN VARIOUS PSYCHO-SOCIAL FACTORS AND INCIDENCE OF FUNCTIONAL DYSPESPSIA

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**Abstract- Aims and Objective:** This research was carried out to determine the association between various psycho-social factors and incidence of functional dyspepsia.

**Subject and Methods:** A case-control study with area, age and sex matched 100 persons recruited randomly. Subjects of both gender aged 15-75 years were selected from urban population living in Lahore (Pakistan) after taking informed consent.

**Results:** Out of total population, 68% subjects were male and 32% were female. Functional dyspepsia was found more in males (46%) in age group (19-23) and less in females of same age group (19-23). In Bivariate analysis, functional dyspepsia was found significantly associated with *homelessness* (OR: 2.585, 95% CI: 0.45-14.81), *spices* (OR 2.86, 95% CI: 1.252-6.5), *continuous medication* (OR: 3.18, 95% CI: 0.91-11.15), *difficulty in sleep onset* (OR: 2.13, 95% CI: 0.93-4.87), *sleep interruption* (OR: 2.801, 95%CI: 1.20-6.50). However, in multivariate analysis while controlling other risk factors, *less income* (OR: 2.51, 95% CI: 0.52-12.04), *recent financial loss* (OR: 4.6, 95%CI: 0.55-38.56), *not able to meet expenditures easily* (OR:4.92, 95% CI: 0.49-48.56), *family conflict* (OR: 4.22, 95%CI: 0.65-27.31), *homelessness* (OR: 25, 95% CI:1.18-52), *spices* (OR:4.39,95% CI:1.29-14.93), *meat intake* (OR: 6.43, 95% CI: 0.09-2.03) were significantly associated with functional dyspepsia.

**Conclusion:** Functional dyspepsia was found significantly associated with low income, recent financial loss, not meeting expenditures easily, conflict in family, homelessness, spices, and meat and chicken intake.

**Keywords-** Dietary habits, Functional dyspepsia, Psychological factor, Social factor, Sleep disturbances

### Introduction

Dyspepsia is defined as pain or discomfort centered in the upper abdomen [1]. The presentation and symptoms include early satiety, nausea, fullness and upper abdominal bloating. The incidence of dyspepsia varies among different age groups and occupations. Anxious, hectic, overworked and traumatized youngsters are more vulnerable to develop this disease [2]. The incidence in Asian countries ranges from 8-23% [3].

Nandurkar, et al [4] discovered that aspirin, alcohol, caffeine, non-steroidal anti-inflammatory drugs, anxiety, tension, and neuroticism were the important factors associated with functional dyspepsia.

Track, et al [5] evaluated that among psychological factors, fear plays an important role in the development of functional dyspepsia. Several studies reported that fears of malignancy [6], negative assessment of health, depression [7], and a poor social network are the important contributory factors [8]. Similarly physical illness also causes psychological distress that can lead to functional dyspepsia [9].

Chen, et al [10] found in his study that low tea consumption is also a risk factor for above stated ailment.

Stressful life events, meal size and rate of meal consumption may also predispose an individual to post meal abdominal discomfort [10-12].

Other associated factors were somatoform disorders (any physical disability), changes in social network and family illness that can lead

to functional dyspepsia [13,14].

Obesity and the use of bisphosphonates were also considered as contributing factors in one study [15,16]. Another significant findings associated with this disease were, feeling of abdominal discomfort, exposure to psychological trauma, panic experiences and post-traumatic stress [17].

It has been observed that psychiatric ailment is associated with gut related autonomic nervous system dysfunction like hyper motility and secretions [18].

There is little data available in Pakistan on this issue, psychosocial determinants of functional dyspepsia is a potential field of research, so there was a need to conduct research study to explore the issue in depth. Therefore this study was conducted to provide ways to impede the incidence of this disease in our set up and to find out the extent and psycho-social determinants of functional dyspepsia to reduce incidence of this disease in Pakistan.

### Subjects and Methods

#### Study Design

A case-control study was conducted to identify various psycho-social factors associated with functional dyspepsia (FD) in urban areas of Lahore from January 15, 2014 to April 31, 2014.

#### Study Population

Subjects of both gender aged 15-75 years were selected from urban population living in Lahore after taking informed consent.

### Study Population Groups

The study population was placed in two groups. The control group comprised of healthy adults (same age and region) who did not suffer from functional dyspepsia while case group comprised of patients suffering from (FD).

### Methods

Group 1 (cases) included 50 individuals (n=50). Group 2 (healthy controls) also comprised of 50 individuals (n=50). Systematic random sampling approach was used to recruit study controls from all eligible controls. Written informed consent was obtained from all selected study subjects. Data was collected by interviews, conducted by the members; using pretested and close ended questionnaire, while keeping all ethical and social considerations in mind. Study was approved by local ethics committee of King Edward Medical University.

### Data Analysis

Data entry and analysis was done by statistical software SPSS version 17. After describing the demographic characteristics using frequency tables, simple and multivariate logistic regression was used to calculate odds ratio and their 95% confidence intervals.

### Results

Out of total population, 68% subjects were male and 32% were female. Functional Dyspepsia was found more in males (46%) in age group (19-23 years) and less in females in this same age group (19-23 years). In bivariate analysis, functional dyspepsia was found significantly associated with homelessness (OR: 2.58, 95%CI: 0.45-14.81), use of spices (OR 2.86, 95% CI: 1.25-6.53), intake of continuous medication (OR: 3.18, 95% CI: 0.91-11.15), difficulty in sleep onset (OR: 2.13, 95% CI: 0.934-4.870), sleep interruption (OR: 2.801, 95% CI: 1.206-6.505) [Table-1].

**Table 1-** Association of Psycho-social factors with functional dyspepsia, Neela Gum bad (Anarkali) Lahore, Pakistan

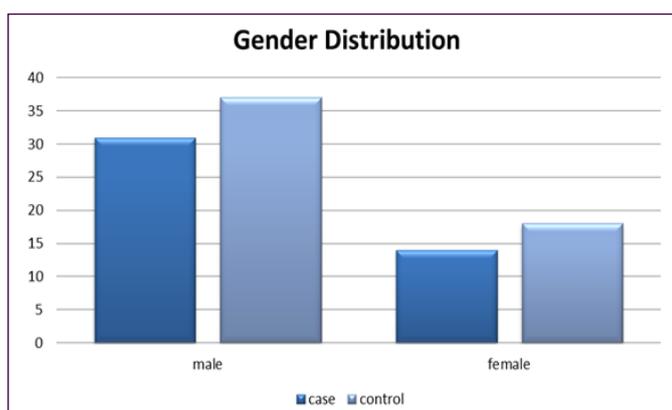
S No.	Psychosocial Factors	Dyspepsia		Crude odds ratio	Bivariate Analysis		Chi-square values
		Case (n = 50)	Control (n = 50)		95% C.I.	Lower	
1	Income	33	42	0.851	0.343	2.109	0.121
2	Recent financial loss	10	3	4.952	1.272	19.286	6.153
3	Meet expenditures easily	38	48	0.792	0.256	2.453	0.164
4	Death of family member	3	7	0.490	0.119	2.015	1.010
5	Health of family member	34	46	0.605	0.226	1.621	1.010
6	Family conflict	12	5	3.636	1.172	11.281	5.418
7	Family support	41	55	0.427	0.339	0.538	5.093
8	Friends support	35	50	0.350	0.110	1.113	3.347
9	homelessness	4	2	2.585	0.451	14.813	1.211
10	Live alone	6	9	0.786	0.257	2.404	0.178
11	Academic satisfaction	28	33	1.098	0.489	2.465	0.051
12	Conflicts with teacher	5	4	1.594	0.402	6.325	0.445
13	Fear of failure	20	21	1.295	0.581	2.886	0.401
14	Spices	31	24	2.860	1.252	6.533	6.377
15	Meat and chicken	36	43	1.116	0.423	2.948	0.049
16	Fast foods	28	33	1.098	0.489	2.465	0.051
17	Soft drinks	30	31	1.548	0.684	3.506	1.104
18	Regular meals	25	33	0.833	0.375	1.851	0.201
19	Dieting schedule	6	9	0.786	0.257	2.404	0.178
20	Aspirin	10	12	1.024	0.396	2.648	0.002
21	Brufen	9	8	1.469	0.516	4.183	0.522
22	Paracetamol	13	12	1.456	0.587	3.610	0.660
23	Continuous medication	9	4	3.188	0.911	11.155	3.545
24	Difficulty in sleep onset	21	16	2.133	0.934	4.870	3.28
25	Sleep interruption	22	14	2.801	1.206	6.505	5.899
26	Disturbed sleep wake cycle	22	20	1.674	0.751	3.733	1.594
27	Depression	19	18	1.502	0.664	3.400	0.957
28	Gender	31	37	1.077	0.462	2.510	0.030

In multivariate analysis while controlling other risk factors, low income (OR: 2.519, 95%CI: 0.52-12.04), recent financial loss (OR: 4.6, 95%CI: 0.55-38.56), could not meet expenditures easily (OR: 4.92, 95% CI: 0.498-48.56), conflict in family (OR: 4.22, 95%CI:

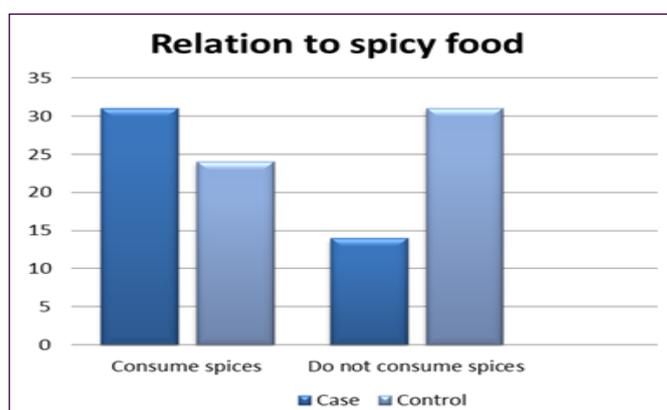
0.65-27.31), homelessness (OR: 2.58, 95%CI: 0.45-14.81), use of spices (OR: 2.86, 95% CI: 1.25-6.53), meat and chicken intake (OR: 1.116, 95% CI: 0.423-2.948) were significantly associated with functional dyspepsia [Table-2], [Fig-1], [Fig-2], [Fig-3] & [Fig-4].

**Table 2-** Association of Psycho-social factors with Functional dyspepsia, Neela Gumbad (Antalkali) Lahore

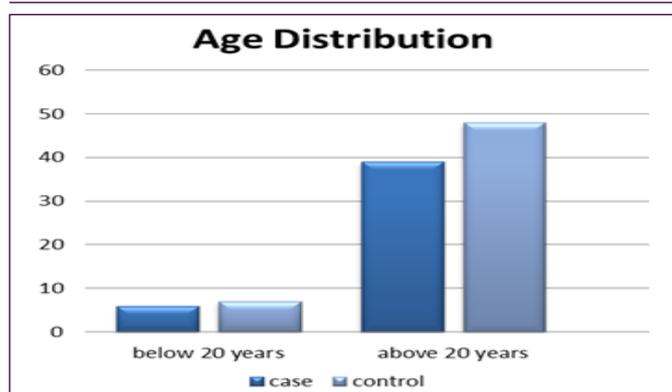
No.	Psychosocial Factors	Functional dyspepsia		Multivariate Analysis		
		Case (n = 50)	Control (n = 50)	Adjusted odds ratio	Lower 95% C.I.	Upper
1	Low Income	33	42	2.519	0.525	12.074
2	Recent financial loss	10	3	4.613	0.552	38.565
3	Meet expenditures easily	38	48	4.926	0.498	48.563
4	Death of family member	3	7	0.28	0.021	3.701
5	Conflict in family	12	5	4.226	0.654	27.319
6	Support by family	41	55	0.000	0.000	0.000
7	Support by friends	35	50	0.210	0.023	1.879
8	Homelessness	4	2	25.05	1.188	528.326
9	Live alone	6	9	0.196	0.031	1.234
10	Academic satisfaction	28	33	0.893	0.248	3.212
11	Conflict with teacher	5	4	0.439	0.046	4.172
12	Fear of failure in exams	20	21	1.448	0.352	5.948
13	Spices	31	24	4.396	1.290	14.983
14	Intake of meat and chicken	36	43	6.430	0.091	2.034
15	Fast food	28	33	0.367	0.082	1.637
16	Carbonated drinks	30	31	1.695	0.409	7.029



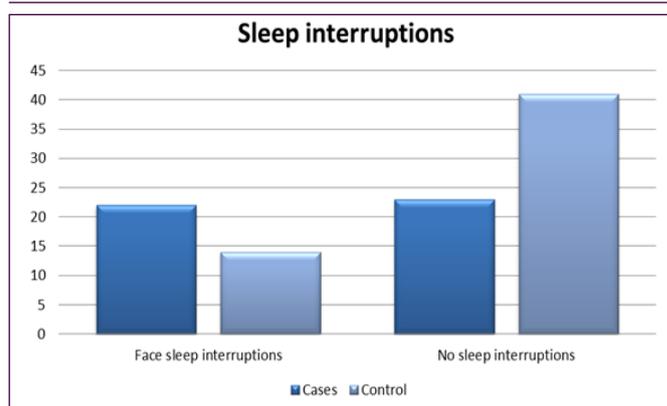
**Fig. 1-** Distribution of functional dyspepsia in males and females



**Fig. 3-** Relationship of functional dyspepsia to usage of spicy food



**Fig. 2-** Age distribution of functional dyspepsia in males and females



**Fig. 4-** Relationship of sleep interruptions with functional dyspepsia

## Discussion

Functional dyspepsia is known to be a prominent cause of discomfort, lethargy and lowness of mood leading to inefficiency in performing daily activities among the youngsters. A study was conducted to familiarize its cause to medical professionals so that joint efforts be made to alleviate this problem [19,20].

The Bivariate results showed that spices, continuous medication, difficulty in sleep onset and sleep disturbance were significantly associated with functional dyspepsia [21]. Similarly, multivariate analysis showed that less income, recent financial loss, inability to meet expenditures easily, conflict in family [22], homelessness, spices and intake of meat and chicken [12] were significantly associated. Poor social network [8], changes in social network and fami-

ly illness [14] also play a significant role. Within the dimensions of above stated references, homelessness and those having a conflict in the family had a greater preponderance of functional dyspepsia.

Meal size and rate of meal consumption also predispose an individual to post meal abdominal discomfort [12] because those who take high quantity of spices and frequent meat and chicken have documented complaints of indigestion and acidity. Our study clearly pointed out that stress of financial crises greatly predisposes an individual to digestion related disorders. Most of the cases were either not satisfied with their income, could not easily make the both ends meet or had recently faced a financial loss.

Continuous medication also leads to functional dyspepsia. The specificity of medication for any particular illness or any specific group of drugs for example, Nonsteroidal anti-inflammatory drugs has not been well established [4].

Difficulty in falling to sleep and frequent interruptions in sleep due to noise or any other cause, grouped together as sleep disturbance are also significantly associated with functional dyspepsia [23].

Similarly, depression [7] is found to play no role in its occurrence in contradiction to previous researches. The association of somatoform disorders [13], obesity [15] and physical illness, fear of malignancy [6] and fear of developing dyspepsia with the occurrence of functional dyspepsia is pointed out in previous researches but these factors were not tested in our research.

Constraints or respondent's hesitation in not disclosing his/her ailment or not genuinely filling the questionnaire with the view of keeping matters like family conflict, financial loss, depression etc., secret were encountered and have affected the results. Nevertheless our research has brought some new determinants of functional dyspepsia into light, for instance; difficulty in falling to sleep and frequent sleep interruptions grouped together as sleep disturbances, conflict running in the family and financial crisis including less income, inability to meet expenditures easily and recent financial loss [23].

## Conclusion

From the results of this, it has been observed that spicy food, continuous medication, difficulty in sleep onset, sleep interruption, less income, recent financial loss, inability to meet expenditures easily, conflict in family, homelessness and intake of meat and chicken are found as some of the psycho-social determinants of functional dyspepsia. However, academic problems and depression are not associated with functional dyspepsia.

**Conflict of Interest:** All authors declare there is no any actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations within three years of beginning the submitted work that could inappropriately influence, or be perceived to influence, our work.

**Submission Declaration and Verification:** Authors declare that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, is approved that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder.

**Authorship:** MF, MBM, AH, ZF were the principal researcher and prepared the first draft of the report, SK and BMH supervised the study.

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