

## Stress-Related Oral Manifestations Disorders in A Population Sample of Patients Attending Ajman University Dental Clinics

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### Abstract

Psychological stress adversely affects the physiological functions of the body to a significant point leading to various psychosomatic diseases. These diseases have physical symptoms originating from mental or emotional causes, most common of which are stress, anxiety, and depression. The oral mucosa is highly sensitive and reactive to stress. Common oral problems related to stress are MPDS, aphthous ulcers, oral lichen planus, xerostomia, burning mouth syndrome, and bruxism.

In the present study, we aimed to study the stress-related oral manifestations and relate it to the type of stress and other psychosomatic disorders in patients attending Ajman University dental clinics. Results showed 46% of the participants in the study had combined two or more stress-related oral manifestations mainly attrition, bruxism, xerostomia, recurrent aphthous ulcer and chronic periodontal diseases, followed by 10.7% diagnosed with generalized attrition and 10% reported with the localized type. The least oral manifestation associated with erosion and MPDS (0.7%).

Concluding that, stress and other psychogenic factors play an essential role as contributory factors in the development and progression of oral lesions.

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### Introduction

Stress is a pathophysiological body response to various types of stressors. It is defined as a physical, emotional or mental response to stressful life events. Stress is a common element in the life of every individual, regardless to race or cultural background.<sup>1,2</sup>

Emotional and psychological factors may disturb a wide variety of hormonal, vascular, cellular and muscular functions of body producing many changes. Psychological stress may adversely affect the physiological functions of the body to a significant point of distress causing psychosomatic diseases.<sup>3</sup>

The list of stressors recognized varies chiefly in relation to the culture, ethnicity, geographical and educational background. High levels of stress may have a negative impact on both the mental and physical health of the individual.<sup>4</sup>

The oral mucosa is highly sensitive and reactive to stressors. Oral diseases may be direct or indirect expression of emotional problem or conflicts and expressed as psychosomatic disorders.

Psychosomatic Disorders are defined as disorders caused by emotional factors and may affect the whole body or a single organ system, usually under autonomic nervous control.<sup>4</sup>

Common oral problems related to stress are MPDS, aphthous ulcers, oral lichen planus, xerostomia, burning mouth syndrome, and bruxism.<sup>5-7</sup>

### Endocrinal responses to stress

Stress acts through activation of the Hypothalamo- Hypophyseal- Adrenal axis leading to increased serum cortisol levels. The

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hypothalamus secretes Corticotrophin Releasing Factor (CRF) that stimulates the anterior pituitary to secrete Corticotrophin, which in turns stimulates the Adrenal cortex to release Cortisol, which has anti-stress effects. On the other hand, stress activates the sympathetic nervous system and increases the output of catecholamines from the adrenal medulla.

In addition, there are direct links of norepinephrine neurons that synapse upon immune target cells, Thus, in the face of stressors there is also a profound immune activation, including the release of humoral immune factors (cytokines) such as interleukin-1 (IL-1) and IL-6. These cytokines can themselves cause further release of CRF, which in turn serves to increase glucocorticoid effects and thereby self-limit the immune activation.

Stress activates the Serotonergic and Dopaminergic systems, increasing serotonin turnover

Inappropriate activation of the autonomous nervous apparatus, endocrine network and the immune system leads to emotional overload to a condition leading to organic dysfunction. Psychosomatic diseases are characterized by the disruption of normally occurring vital physiological mechanisms, as well as the atypical interaction of the different body systems.<sup>8,9</sup>

#### **Stress biomarkers**

The levels of certain biomarkers are commonly used to assess the stress level. These biomarkers vary from markers of the autonomic nervous system such as adrenaline, noradrenaline, and dopamine. Endocrine system markers, such as corticoids, ACTH in the blood, urine and saliva, The immune system markers, such as the total number, T and B lymphocytes and natural killer cells, immunoglobulin's, and cytokines such as interleukin (IL)-1, IL-2, BL-6, interferon (IFN) and tumor necrosis factor (TNF).<sup>10</sup>

#### **Oral psychosomatic disorders**

##### **Lichen planus (LP) and glossitis areata**

Considerable information supports the concept that emotional stress is a major etiological factor in both diseases. The etiology of LP comprises a cell-mediated immunological response or disturbance, which leads to the degeneration of the basal epidermal cells.<sup>5</sup>

Oral lesions often appear after the patient experiences a period of extreme emotional stress.

The disease then undergoes remissions and exacerbations that are often clearly related to the patient's emotional status.<sup>11</sup>

##### **Aphthous Stomatitis (AS)**

Aphthous stomatitis has a psychoanalytic etiology that is evident in many cases. The successful treatment depends upon the positive psychologic approach.<sup>8</sup> this reinforces the concept that AS has psychosomatic etiologic.<sup>2</sup>

##### **Erythema multiforme (EM) and mucous membrane pemphigoid (MMP)**

In EM and MMP, emotional stress plays a significant role in determining the severity of the disease as well as recurrent episodes. Remissions and exacerbations of long standing MMP are often related to specific periods of psychologic tension.<sup>11</sup>

##### **Chronic periodontal diseases (CPD)**

Emotional factors also probably play a significant role in the complex etiology of CPD, in which the gingival and underlying periodontal tissue cannot respond adequately to the local irritation of bacterial plaque and calculus. The loss of tissue resistance has been attributed to variety of systemic factors, including emotional stress.<sup>2</sup>

##### **Recurrent herpes labialis (RHL)**

RHL occurs due to either physical trauma or emotional stress leading to lesions of skin and labial mucosa. Emotional stress acts by preventing the antibodies from acting at the local mucosal site.<sup>2</sup>

##### **Necrotizing Gingivitis (ANUG)**

ANUG is a fusospirochetal infection caused by local and systemic predisposing factors. Among these, emotional stress appears to be the most common, although debilitating diseases, nutritional deficiencies and neurologic diseases play important roles.<sup>11</sup>

##### **Biting of oral mucosa (self-mutilation)**

Biting of oral mucosa or tongue can induce severe trauma. Neurotic patients may also traumatize their mouth with foreign objects such as sharp pencils, toothpicks, or fingernails.<sup>2</sup>

##### **Bruxism**

Grinding teeth is a neurotic habit that usually occurs during sleep. It may result in wear of teeth, trauma to periodontal tissues, and occasionally facial musculature and temporomandibular joint structures.<sup>4,12</sup>

##### **Gloss pyrosis**

Burning sensation in the tongue and oral mucosa are well-known and common complaints.

They are invariably neurotic symptoms and indicative of underlying psychologic problems, which are often severe and require appropriate psychiatric management.<sup>2</sup>

### **Dysgeusia**

Altered taste perception is a common complaint of severely neurotic patients and it suggests that the patient may be suffering from depression. Both complaints of burning oral mucosa and disturbed taste sensation are characteristics of patients with depression, and psychiatrist consultation may be indicated in these cases.<sup>2</sup>

### **Myofacial pain dysfunction syndrome (MPDS)**

MPDS is a muscle-contraction headache-like pain of the face. Patients with MPDS usually suffer from psychological symptoms such as depression, anxiety, frustrations and anger. If pain is prolonged, certain maladaptive behaviors such as poor sleep, disturbed dietary habits, lack of clenching, bruxism can be seen when pain becomes prolonged.<sup>12</sup>

### **Atypical facial pain**

Patients suffering from these pains are frequently described as having underlying psychiatric disturbances. However, the exact aetiology of orofacial pains remain a topic of controversy.<sup>2</sup>

### **Xerostomia**

Saliva plays a significant role in the maintenance of oral and general health. Xerostomia is the abnormal reduction of saliva and can be a common clinical finding in psychiatric patients. Dryness of mouth affects the quality of life.<sup>2</sup>

### **Aim and objectives**

The present study was conducted to evaluate the different types of stress that dental patients are suffering from and to relate these stress types to the diagnosed oral lesions.

The study also assessed these oral lesions and their prevalence according to demographic data as race, age, gender and occupation of the patients.

The relation between the stress related oral pathological conditions and the manifestations of other psychosomatic diseases were also studied.

### **Materials and methods**

After obtaining the ethical approval from the Ethical Committee of human researches at

Ajman University an observational comparative study was conducted among patients attending the dental clinics at Ajman University (AU).

A total of 150 cases were recruited in the study

#### Inclusion criteria:

1. Male and female patients attending the dental clinics at AU.
2. Age between 20 - 65 years.
3. Any nationality.

#### Exclusion criteria:

1. People from outside the AU dental clinic.
2. Age less than 20 or more than 65 years.

A questionnaire adapted from Barreca & Hepler (2000) consisting of multiple questions was designed and distributed by the investigators to patients at the clinic. Each question is explained to ensure the correct understanding.<sup>13</sup>

Furthermore, the questionnaire was field tested on a pilot sample of 10 participants for clarity, feasibility, and to determine the reliability of the questionnaire.

The questionnaire includes questions related internal and external stressors as:

- Family related causes of stress
- Financial related causes of stress
- Work related causes of stress.
- Health related causes of stress.

After a detailed case history, all patients were subjected to routine oral and general health examination. A clinical diagnosis based on history, oral examination and medical records was carried out. A careful diagnosis of the oral pathological lesions related to stress was conducted.

#### Statistical analysis:

The results obtained were analyzed statistically using P value, t-test, Chi-square test and Pearson's correlation test.

#### Data Analysis:

The raw data acquired from the field were systematically organized for analysis. Data entry and analysis were carried on using the Statistical Program for Social Sciences (SPSS) version 21, frequencies of different variables will be determined and data will be expressed as percentages. Chi-square test were used to find

the significance (P value less than 0.05 was considered significant). In addition, correlation between the variables was studied.

## Results

Out of 150 participants in the study 94 (62.7%) were males while 56 (37.3%) were females in which most of them (73.3%) were married and within age group of 20-40 years old (72%).

The rest of the demographic characteristic of the participants were described in (table 1). Most of the participants (94%) reported as mixed diet consumers with improper consumption of regular food (46.7%) during breakfast timing comparing to the proper consumption of both lunch and Dinner meals (82.7% & 54%) respectively.

More than half of the participants (58.75%) reported with no medical illnesses, whereas 9.3% reported with two disorders mainly hypertension (HTN) and Gastrointestinal (GIT) disorders, followed by 6% reported with GIT disorders. Few cases >5% reported with HTN, Diabetes Mellitus and thyroid disorders.

### Oral lesions related to stress

This study raised the issue of oral manifestation in relation to stress as well, and we found of 46% of the participants in the study had combined two or more stress-related oral manifestations mainly attrition, bruxism, xerostomia, recurrent aphthous ulcer and chronic periodontal diseases, followed by 10.7% diagnosed with generalized attrition and 10% reported with the localized type. The least oral manifestations was associated with erosion and MPDS (0.7%).

Fortunately, two-third of the participants (63.3%) reported with no habits in related to stress, while 20% were smoking regularly, and 12% reported with a habit of nail biting since long time, comparing to only 0.7% reported with chewing Tobacco habit.

### Symptoms Related to psychosomatic disorders:

Symptoms related to the cognitive psychosomatic disorders was recorded from the participants in which 42% had no symptoms in relation to the cognitive factors while 26% had combined symptoms mainly inability to concentrate and memory problems, followed by 18% recorded with constant worrying and only

6.7% from all the participants were un-able to concentrate.

On the other hand, almost half of the participant 42.7% reported with combined emotional symptoms mostly short temper and inability to relax, comparing to 6.7% reported with tendency to isolate from the environment.

Regarding the physical psychosomatic symptoms one fourth of the participants 22.7% had combined symptoms like frequent cold and hyper-acidity along with aches and pain, with the least symptoms related to the rapid heartbeat 1.3% were reported. While the highest percentage 40% had, no previous psychosomatic symptoms related to the physical factors.

Last but not the least is the behavioural symptoms in which 37.3% had no symptoms previously, but 34% reported with combined symptoms like sleeping less and eating more than usual, followed by 12% participants experienced less sleeping hours and only 2.7% had eating disturbance associated with the stress.

### JOB & Family Related questions:

In both job and family related questions, the majority of the participants had no stress related factors to both 48% & 36.7% respectively. Moreover in both of them one-fourth (28%) experienced a combine issues mainly low wages and income along with mis-understanding, and the least factor was related to daily commute (4.7%) and inability to manage children (6%) (Table 1).

Statistically there was no significant different between the oral manifestations of the stress related lesions and the medical illnesses the participants were suffering from.

Female participants show higher prevalence of iron deficiency anemia than male participants do ( $p < 0.04$ ) (table 2). On the other hand male participants shows higher percentage of practicing nail biting habits and smoking tobacco ( $p < 0.001$ ) than females (table 3).

This study showed also a significant difference between males and females in relation to the psychosomatic disorders related to the physical symptoms in which female participants reported with combined symptoms like frequent cold and hyper-acidity along with aches and pain, more than males ( $p < 0.027$ ). Whereas male participants showed statistically more job related stresses than female participants did ( $p < 0.000$ ) (table 3).

Family Related Stresses in relation to

Marital Status showed significant difference statistically as well in which married people showed more combined problems comparing to single people that mainly had a problem of mis-understanding ( $p < 0.000$ ) (table 4).

Significant difference were also reported between the nationalities in which this study showed that Asians had more proper and regular meal timings than others did ( $p < 0.008$ ) (table 5).

This study also revealed between the job related stresses and family related one along with the occupation of the participants, in which the majority of home makers had no job related stress compared to office worker that had more job related factors in comparison to the laborer as well ( $p < 0.000$ ). On the other hand homemakers had more family related stresses than office workers and laborers ( $p < 0.044$ ) (table 6).

## Discussion

Psychological stress is known to adversely affect the physiological functioning of the human body. These adverse effects are the result of a series of chemical events, which when prolonged cause the body to develop homeostatic, metabolic, immunological, and/or endocrinal disturbances.<sup>11, 14</sup>

MPDS was first associated to psychological stress by Schwartz. According to Schwartz, stress was a predisposing factor of MPDS. This is because stress significantly resulted in grinding of the teeth and clenching which resulted in spasms in the muscles of mastication.<sup>14-17</sup>

Grinding of the teeth whether during the day or night is known as bruxism. Bruxism results in significant tooth wear which leads to attrition. Attrition cases range from mild to severe with the loss of vertical dimension. Though the results of our study showed MPDS as one of the least prevalent physical manifestations of psychological disorders (0.7%), Bruxism was shown to be prevalent in 6.7% of the sample as the singular manifestation but showed higher prevalence in combined manifestations at 14.7%. there was a higher occurrence in males<sup>18</sup> than in females (14.94%).

Attrition, either in the localized or generalized form, was found to be prevalent in 20.2% of males and 20.4% of females as one of the most prevalent oral manifestations.

Recurrent aphthous stomatitis is one of the most prevalent oral mucus diseases. Found in an average of 20% of the population, it is a painful condition of recurrent ulcerations that appear on nonkeratinized and movable oral mucosa. The etiology of recurrent aphthous stomatitis is not known exactly but has been determined to be multifactorial: hereditary, deficiencies of iron, vitamin B12, iron, systemic diseases, hormonal imbalance, immunodeficiency, etc.<sup>14-16</sup>

Psychological stress is another factor that induces the occurrence of aphthous stomatitis. The results of our study stated that as a singular manifestation, recurrent oral aphthous was seen in 2.6 %, however in a group of combined manifestations it was seen in 15%. There was a higher prevalence in females (21.4%) than males (14.8%).

Xerostomia, which is dry mouth syndrome, is a decrease in the normal rate of salivary flow. It results in speech problems, difficulty chewing, an accumulation of plaque, mucosal atrophy among many others problems thus affecting the quality of life. Gholmai et al concluded a significant effect of psychological distress on the reduction of salivary flow. Furthermore, Hugos et al, Berghadal and Berghdal and Matos Gomas et al all found significant relationships between stress and anxiety and xerostomia in their studies. Bulthois et al studies stated that stress "seems to be related to several aspects of dry mouth including the perception of dry mouth, suffering from dry mouth and impact on quality of life".<sup>11, 14, 17</sup> Similarly, our results showed the prevalence of xerostomia in 21% with a higher incidence in females than males.<sup>19</sup>

Chronic periodontal disease, like RAS, is of multifactorial etiology: systematic disease, lack of oral hygiene, and even stress. The gingival and periodontal tissues fail to respond healthily and adequately to the irritation of accumulated plaque and bacteria and calculus. Our study indicated 24% of the patients had chronic periodontal disease with a higher incidence in older patients, with a higher incidence in males (16%) than females (7%). This may be a result of the increased care of oral hygiene in females than males.<sup>11, 14</sup>

Psychological distress can also be manifested in physical habits. Due to the increased amount of anxiety and stress, the body may compensate by developing parafunctional habits such as chewing nails or pencils, or

smoking. Our study concluded that 20% of the patients smoke while 12% of them bite their males. There was a higher incidence of these habits in males (22%) than females (5.3%).<sup>11, 14</sup>

Stress can also be manifested as cognitive disturbances such as the inability to recall things efficiently, or the inability to concentrate, and emotional disturbances such as the disruption of normal sleeping patterns, short temper, constant anxiety and isolation of one's self.

Patients with MPDS have been reported to have additional psychological symptoms such as anxiety and anger. When evaluating emotional psychosomatic symptoms, our results showed 76% of the patients demonstrated either one or more symptom. Generally, higher incidences were found in the females (78.1%) than in the males (48.8%). The most common symptom in females was the inability to relax while in the males it was the short temper, followed by the inability to relax and isolating one's self for both gender groups.

## Conclusions

Within the objectives of the current study, it was concluded that, stress and other psychogenic factors play an essential role as contributory factors in the development and progression of oral lesions. These results indicate that certain job stress factors are associated with specific oral health symptoms. Dental health professionals and workplace health management officials should consider the possibility that oral health symptoms may be partially caused by underlying stress factors, concluding that reducing stress in the workplace and providing stress management training may have a positive effect on oral health.

## Declaration of Interest

The authors report no conflict of interest.

		Frequency	Percentage
Gender	Male	94	62.7
	Female	56	37.3
Age Group	20-40	108	72.0
	41-60	38	25.3
	61-70	3	2.0
	70-75	1	.7
Marital status	Married	110	73.3
	Single	38	25.3
	Divorced	2	1.3
Level of education	primary school	9	6.0
	high school	48	32.0
	Diploma	27	18.0
	Bachelor	53	35.3
	higher education	12	8.0
	none	1	.7
Nationality	UAE	2	1.3
	Arab	85	56.7
	Asian	54	36.0
	Others	9	6.0
Occupation	office work	52	34.7
	laborer	16	10.7
	home maker	31	20.7
	others	37	24.7
	none	14	9.3
Job type	full time	93	62.0
	part time	11	7.3
	no job	46	30.7

Type of Diet	Vegetarian	7	4.7
	Non-vegetarian	2	1.3
	Mixed diet	141	94.0
Consumption of food at regular time period (Breakfast)	Proper	57	38.0
	Improper	70	46.7
	Skip	23	15.3
Consumption of food at regular time period (Lunch)	proper	124	82.7
	Improper	17	11.3
	Skip	9	6.0
Consumption of food at regular time period (Dinner)	Proper	81	54.0
	Improper	44	29.3
	Skip	25	16.7
Medical illnesses	hypertension	6	4.0
	Diabetes Mellitus	1	.7
	Cardiovascular disease	4	2.7
	Iron Deficiency Anemia	5	3.3
	Obstructive airway diseas	2	1.3
	chronic renal diseas	1	.7
	thyroid disorder	2	1.3
	arthritis disorders	5	3.3
	Gastrointestinal disorder	9	6.0
	others	1	.7
	2 disorders	14	9.3
	more than 2	12	8.0
	NONE	88	58.7
Oral manifestations in relation to stress	Generalized Attrition	15	10.0
	Localized Attrition	16	10.7
	Generalized Erosion	1	.7
	Bruxism	6	4.0
	Halitosis	1	.7
	Xerostomia	5	3.3
	MPDS	1	.7
	Recurrent Aphthous stomatitis	2	1.3
	Chronic periodontal diseases	3	2.0
	2 oral manifesations	34	22.7
	more than 2 manifestations	35	23.3
	NONE	31	20.7
	Habits	smoking tobacco	30
chewing tobacco		1	.7
Nail biting		18	12.0
others		1	.7
2 or more habits		5	3.3
NONE		95	63.3
Symptoms of Psychosomatic disorders (cognitive)	Memory problems	11	7.3
	inability to concentrate	10	6.7
	Constant worrying	27	18.0
	combined problems	39	26.0
	NONE	63	42.0
Symptoms of Psychosomatic disorders	short temper	31	20.7
	inability to relax	12	8.0

(Emotional)	Sense of loneliness and isolation	10	6.7
	combined problem	64	42.7
	NONE	33	22.0
Symptoms of Psychosomatic disorders (physical)	Aches and pain	21	14.0
	hyperacidity	15	10.0
	Diarrhea and constipation	7	4.7
	Nausea	3	2.0
	Rapid Heartbeat	2	1.3
	frequent cold	8	5.3
	combined problems	34	22.7
	NONE	60	40.0
Symptoms of Psychosomatic disorders (behavioural)	eating more	4	2.7
	eating less	4	2.7
	sleeping more	7	4.7
	sleeping less	18	12.0
	isolating oneself	10	6.7
	combined problems	51	34.0
	NONE	56	37.3
Job related Questions	low wages	20	13.3
	daily commute	7	4.7
	stress related to workplace hierarchy	8	5.3
	combined	43	28.7
	NONE	72	48.0
Family related Questions	paucity of income to meet the demands	18	12.0
	unable to manage children	9	6.0
	misunderstandings	26	17.3
	combined	42	28.0
	NONE	55	36.7

**Table 1.** Demographic distributions of the sample size and frequencies.

	hypertension	Diabetes Mellitus	Cardiovascular disease	Iron Deficiency Anemia	Obstructive airway diseases	chronic renal diseases	thyroid disorder	arthritis disorders	Gastrointestinal disorder	others	2 disorders	more than 2	NONE	P-value
Male	5.3%	1.1%	4.3%	0.0%	1.1%	1.1%	0.0%	3.2%	5.3%	0.0%	8.5%	3.2%	67.0%	0.004
Female	1.8%	0.0%	0.0%	8.9%	1.8%	0.0%	3.6%	3.6%	7.1%	1.8%	10.7%	16.1%	44.6%	
Total	4.0%	0.7%	2.7%	3.3%	1.3%	0.7%	1.3%	3.3%	6.0%	0.7%	9.3%	8.0%	58.7%	

**Table 2.** Medical Illnesses in relation to Gender.



<b>Habits</b>				
	Male	Female	Total	P-value
smoking tobacco	28.70%	5.40%	20.00%	0.001
chewing tobacco	1.10%	0.00%	0.70%	
Nail biting	13.80%	8.90%	12.00%	
others	1.10%	0.00%	0.70%	
2 or more habits	5.30%	0.00%	3.30%	
NONE	50.00%	85.70%	63.30%	
<b>Symptoms of Psychosomatic disorders (Physical)</b>				
	Male	Female	Total	P-value
Aches and pain	14.90%	12.50%	14.00%	0.027
hyperacidity	11.70%	7.10%	10.00%	
Diarrhea and constipation	2.10%	8.90%	4.70%	
Nausea	2.10%	1.80%	2.00%	
Rapid Heartbeat	2.10%	0.00%	1.30%	
frequent cold	7.40%	1.80%	5.30%	
combined problems	14.90%	35.70%	22.70%	
NONE	44.70%	32.10%	40.00%	
<b>Job related Stresses</b>				
	Male	Female	Total	P-value
low wages	19.10%	3.60%	13.30%	0.000
daily commute	6.40%	1.80%	4.70%	
workplace hierarchy	7.40%	1.80%	5.30%	
combined	37.20%	14.30%	28.70%	
None	29.80%	78.60%	48.00%	

**Table 3.** Habits, Symptoms of psychosomatic disorders and job related stresses in relation to Gender.

	paucity of income to meet the demands	unable to manage children	misunderstandings	combined	NONE	P-value
Married	14.5%	7.3%	13.6%	35.5%	29.1%	0.000
Single	5.3%	0.0%	28.9%	7.9%	57.9%	
Divorced	0.0%	50.0%	0.0%	0.0%	50.0%	
Total	12.0%	6.0%	17.3%	28.0%	36.7%	

**Table 4.** Family Related Stresses in relation to Marital Status.

	Proper	Improper	Skip	P-value
UAE	50.0%	0.0%	50.0%	0.008
Arabs	25.9%	54.1%	20.0%	
Asians	55.6%	38.9%	5.6%	
Others	44.4%	33.3%	22.2%	
Total	38.0%	46.7%	15.3%	

**Table5.** Consumption of food at regular time (Breakfast) in relation to the nationality.

Job related Stresses							
	Office work	Laborer	Home maker	Others	None	Total	P-value
low wages	13.50%	31.20%	0.00%	16.20%	14.30%	13.30%	0.000
daily commute	7.70%	6.20%	0.00%	5.40%	0.00%	4.70%	
workplace hierarchy	9.60%	0.00%	0.00%	8.10%	0.00%	5.30%	
combined	48.10%	25.00%	3.20%	35.10%	0.00%	28.70%	
NONE	21.20%	37.50%	96.80%	35.10%	85.70%	48.00%	
Family related stresses							
	Office work	Laborer	Home maker	Others	None	Total	P-value
income to meet the demands	11.50%	18.80%	9.70%	13.50%	7.10%	12.00%	0.044
unable to manage children	1.90%	0.00%	16.10%	8.10%	0.00%	6.00%	
misunderstandings	13.50%	18.80%	9.70%	27.00%	21.40%	17.30%	
combined	26.90%	18.80%	41.90%	29.70%	7.10%	28.00%	
None	46.20%	43.80%	22.60%	21.60%	64.30%	36.70%	

**Table 6.** Job and Family related stresses in relation to the Occupation.

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