

In The Name of God

**Shiraz university of Medical sciences
School of Dental Medicine**

Thesis for attaining D.M.D degree

**"BURNING MOUTH
SYNDROME"**

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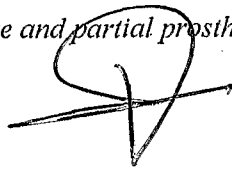
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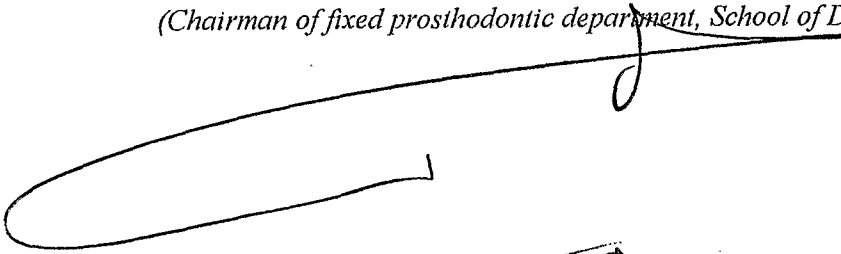
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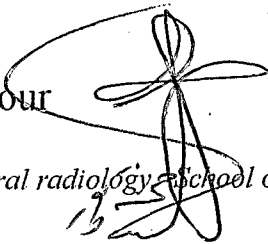
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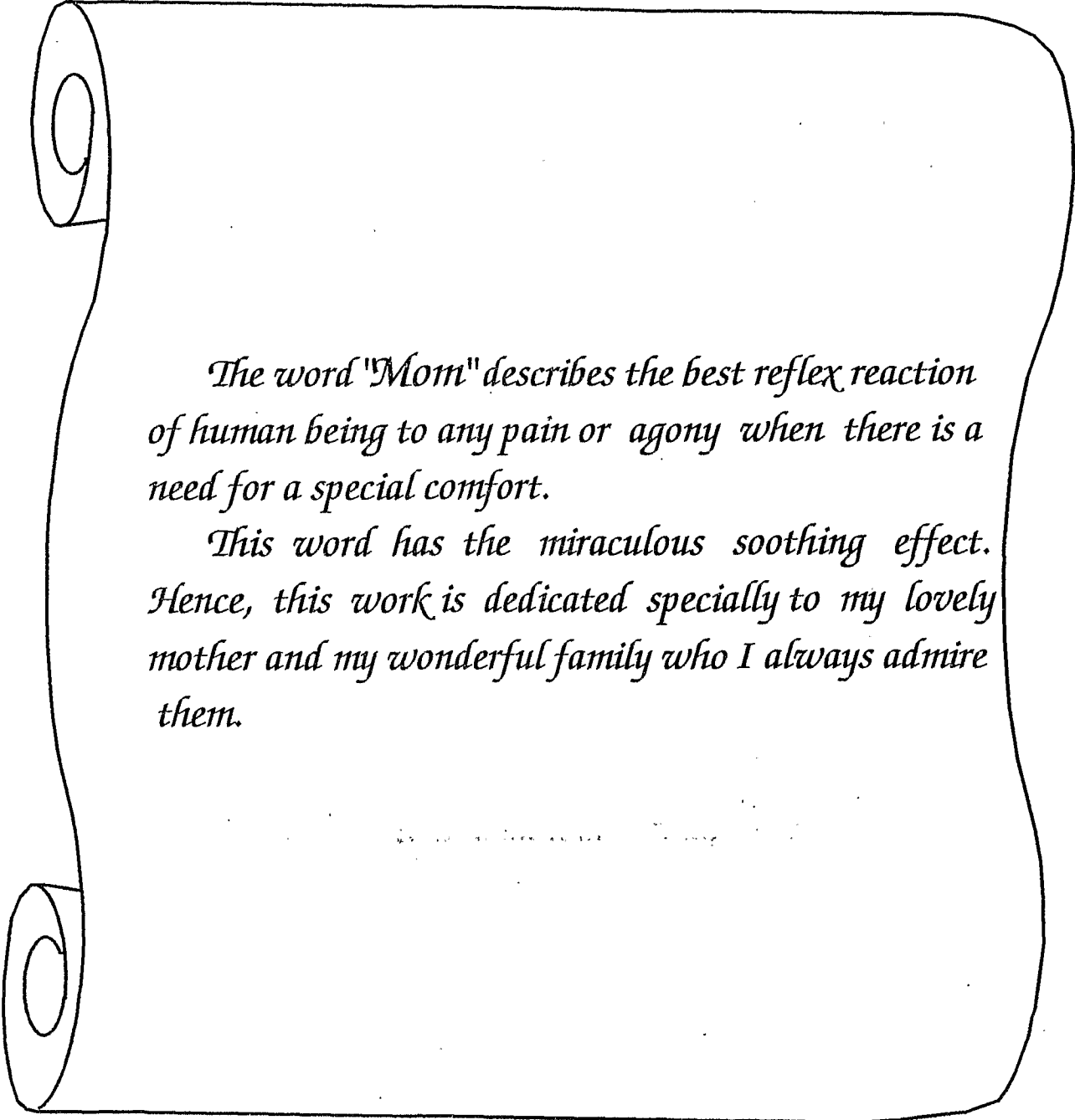
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The word "Mom" describes the best reflex reaction of human being to any pain or agony when there is a need for a special comfort.

This word has the miraculous soothing effect. Hence, this work is dedicated specially to my lovely mother and my wonderful family who I always admire them.

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PREFACE

The intent of this thesis is to present a complete information concerning with Burning mouth syndrome(*BMS*). It consists of 4 sections. The first part presents an introduction, a review of the literature on BMS, focusing on its prevalence and signs and symptoms. The second part will focus on the proposed local etiological factors associated with the condition; possible systemic, psychological and other etiological factors in order to provide the readers with a prospective on the alternative factors that may cause BMS. The third section provides suggested treatment; possible reasons for failure of the treatment; and expert recommendations to deal with this conditions. Finally, in the last part, we would glance on the summary of the BMS concept in both English and Persian languages.

The multiple listing of references at the end of the thesis , and also providing charts, data and some pictures begin to recognize the true work behind this.

I hope this small collection could provide sufficient information for those who interested in finding more about burning mouth syndrome.

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PART I

A) Introduction

B) Prevalence and epidemiology

C) Signs and symptoms

A) Introduction

Many clinicians have encountered patients who complain of a burning sensation in the mouth. More than 1,000,000 US. adult population do complain of burning mouth syndrome that the majority are older females. ⁽¹⁾

Although a number of papers have discussed BMS and their etiologies, there are few prevalence data in the literature. Among studies that do report prevalence data, results appear to vary as a function of the population studied.

The increase in incidence of oral discomfort among women in a menopause is probably due to hormone modifications. Burning mouth syndrome is an oral pain disorder that has a prevalence in range of 5-18%. The majority of these patients are adult females in menopausal stage. ⁽²⁾

A recent study found that the tongue to be the most common site affected, followed by the palate/maxillary alveolus (maxillary denture-bearing area), lips, mandibular alveolus (mandibular denture-bearing area), buccal mucosa, throat, and the floor of the mouth. ⁽³⁾

Typically, the patient describes a burning sensation on the anterior portion of the tongue, which may be accompanied by sensations of a dry mouth or persistent taste. Usually, there are no signs to determine a specific pathology.

The symptoms reported with BMS vary. Although the syndrome usually is characterized by a persistent burning sensation, also commonly

reported are pain, itching, and stinging of the mucosa. Other symptoms commonly associated with BMS are xerostomia, persistent altered taste, dry eyes, difficult swallowing, intolerance to dentures, altered sense of smell, thirst and a sore mouth.

The pathogenesis of BMS is not yet understood. Different factors are involved relative to this syndrome. For convenience, the etiological factors are summarized in 4 categories: Local, systemic, psychogenic and miscellaneous.

Patients who wear dentures may present with variety of symptoms and abnormal intra-oral findings. The advanced age of the average denture wearer and the nature of the denture-bearing mucosa appear to influence the nature of the important problems such as burning mouth sensation, candidal infection, xerostomia, and etc.

Since burning mouth symptoms may arise as the result of a number of etiological factors (some of which are admittedly more clearly associated with these symptoms than others), diagnosis and management of the patient with BMS should involve consideration of all possible factors that the clinician reviews. The extent to which tests designed to element or confirm each of these possible etiologic factors will vary from patient to patient.

The clinician should remember that without a thorough medical and dental history, and necessary tests and investigations, there is a great possibility of failure of the treatment. Thus, if the clinician does not follow the right direction, BMS will be a very difficult problem to manage.

B) Prevalence and epidemiology

The prevalence of BMS according to some data from different literature varies. Most burning mouth syndrome subject seem to be in menopausal stage. The majority of the clinical research emphasize on the clinical features of BMS subjects and their signs and symptoms. On the other hand, a few studies have randomly been investigated on a group of non-patients who are counted as a representative of the entire population. (1) In 1989, two organizations by name of National Institute of Dental Research and National Center for Health Statistics conducted a survey in adult US. population to find the magnitude and distribution of orofacial pain disorders including burning mouth syndrome. This process was done through National Health Interview Survey (NHIS). The survey was performed on patients' homes and included a questionnaire form concerned with their personal experiences of orofacial symptoms and pain. (1)

"The interview sample was representative of the entire civilian, non-institutionalized, non-military population living in the United States (including subjects wearing dentures). Trained interviewers obtained self-reports from respondents; no physical examination was performed and no attempt was made to develop subsequent clinical diagnosis." (4)

The usable data relevant to survey of the presence of BMS were obtained from one person per household over previous six months. The finding was that out of 45,711 total households, 42,051 have a response to BMS. Therefore, the response rate was 92%. Of those respondents, 69% of patients reported that burning sensation was in an interrupted sequence.

Almost 60% reported that their first experiences were more than six months ago. From this study, one can conclude that most of the subjects had chronic burning mouth sensations/pain according to their reports on the questionnaire survey. (1)

"The estimated frequency and percent of burning mouth combinations (figs. 1, 2) represent mutually exclusive groupings that are additive." (4)

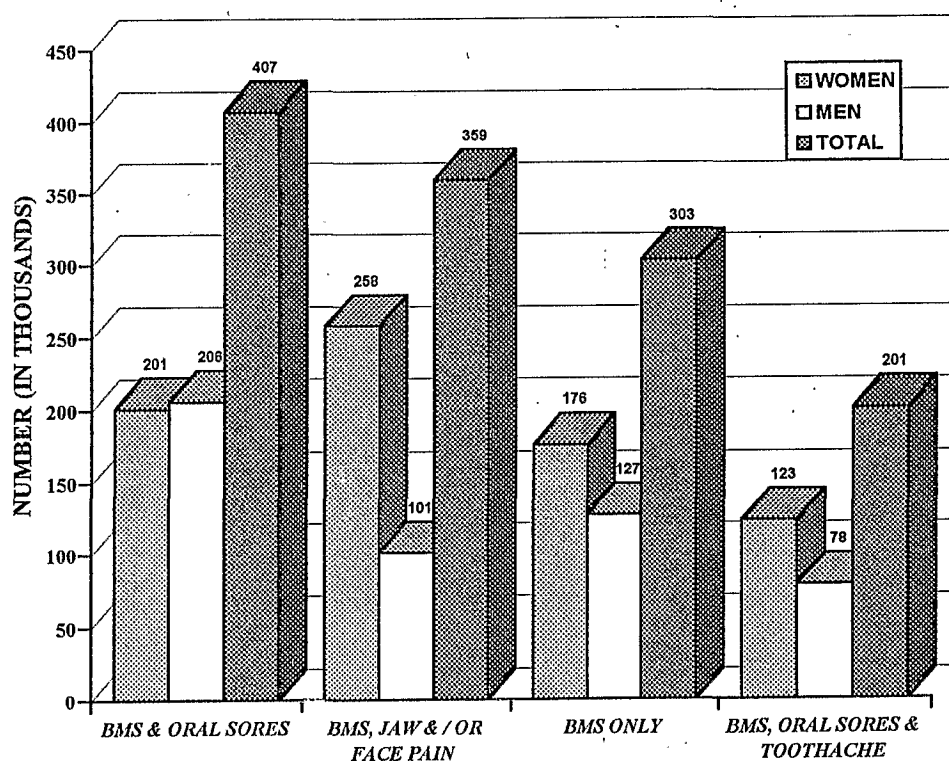


Figure 1. Estimated number (in thousands) of people in the United States, by gender, who are at risk for burning mouth syndrome and who reported having various combinations of burning mouth symptoms more than once during the six months before they were surveyed. Based on data from the National Health Interview Survey, 1989.

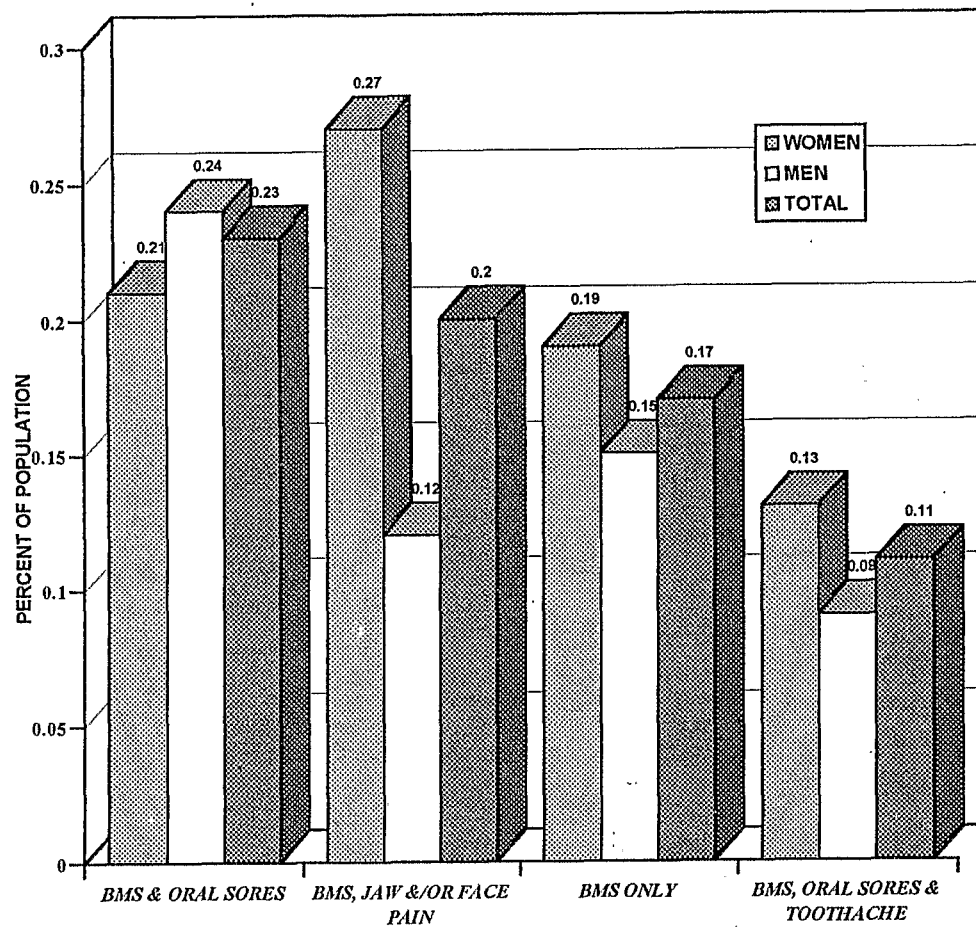


Figure 2. Estimated percent of people in the United States, by gender, who are at risk for burning mouth syndrome and who reported having various combinations of burning mouth symptoms more than data from the National Health Interview Survey, 1989.

In comparison the data from these two figures, one can suggest that the respondents reported some patterns of burning symptoms. In addition, the female population had higher incidence of burning pain than male population.

Based on the NHIS survey that there was no physical assessments, one can hardly reach to a specific conclusion regarding a definite diagnosis of burning mouth syndrome. Even though the result in the USA survey showed the prevalence that obtained by mail or telephone survey in Canada, is much lower. (1)

"The prevalence of BMS was determined according to gender, age, race/ ethnicity and region of residence (table I), and data include all individuals (including patients wearing dentures) who reported burning mouth symptoms, regardless of whether they had other pain symptoms. The overall prevalence rate was 707 cases per 100,000 individuals over the six months period. Greater prevalence was found among women, older people (including individuals wearing any type of dentures); individuals not classified as white, black or Hispanic (Asian Americans and American Indians); and those who reside in the Western United States. These findings are consistent with previous investigations, which have shown a predominance of BMS in older, usually post-menopausal women." (5)

Table-I*Estimated prevalence rates for BMS*

prevalence rate / 100,000 persons

<i>Over all</i>	707
Women	804
Men	601
<i>Age (years)</i>	
18 to 34	609
35 to 54	696
55 to 74	757
75 or older	1,184
<i>Race/ethnicity</i>	
Asian Americans, American Indians	1598
Hispanic	786
White non-Hispanic	693
Black non-Hispanic	531
<i>Region of residence</i>	
west	920
Midwest	837
South	639
Northeast	451

"The NHIS data included a sub-sample of the total population with burning mouth who reported that their symptoms had been presented during at least two of the previous six months. These people were considered to have persistent burning mouth symptoms. They were questioned about their behavior in response to pain, such as seeking professional care over the past six months. Women sought care from dentists and physicians more often than men did." (5)

The interesting point was that patients with persistent BMS more often referred to the physician rather than to a dentist office. It seems the most patients with some sort of orofacial pain/symptoms, report some form of chronic oral burning sensations. Even though these pain most likely resulted from disturbance in the oral cavity, they would prefer to see a physician rather than a dentist. (1)

In another study (refer to table II), some authors indicate that tongue has the highest prevalence of pain site and then followed by the upper denture-bearing areas, lips, lower denture-bearing areas, buccal mucosa, throat and floor of the mouth. (3)

In a survey conducted at general practice dental clinics, the overall prevalence of BMS reported to be 5.1% and most of these patients had denture on. (3)

Table - II

Prevalence of pain sites in sample of BMS patients:

<i>Author</i>	<i>n</i>	<i>tongue</i>	<i>upper denture bearing area</i>	<i>lips</i>	<i>lower denture bearing area</i>	<i>buccal mucosa</i>	<i>throat</i>	<i>floor of the moth</i>
Lamy & Lamb	150	78	45	38	36	4	8	2
Basker et al.	22	50	50	36	18	14	13	—
Main & Basker	37	67	68	34	25	18	5	3

C) Signs and symptoms

Burning mouth syndrome has been applied by many dental clinicians nowadays. In the past, this condition was described by terms such as "*glossopyrosis*", "*glossodynia*", "*stomatopyrosis*", "*stomatodynia*", and "*oral dysesthesia*" to present patient burning sensation in the mouth. (6)

However, this is a misnomer because syndrome implies a group of signs and symptoms that are indicative of particular disease.

When patients with BMS describe their symptoms in detail, it becomes clear that burning mouth is not one symptoms but rather a term used to describe a variety of symptoms. In the literature, the word burning is used by clinicians as a symptom for a variety of words (tingling, signed, numb, scorched, or peppery) that are used by patients to describe their symptoms. In addition to the character of these burning sensations, the site and diurnal pattern of intensity of BMS also varies among patients.

Most BMS subjects have reported that their burning pain start mid-morning or early afternoon; and intensify by early evening. In another words, the burning pain reaches to the highest peak in the evening. The pain could occur in more than one site in the mouth. The most affected areas reported by the BMS patients respectively are: anterior two thirds of the tongue, the anterior hard palate, and the lower lip [refer to fig 3]. The burning sensations might not be present at night. (7), (8), (9)

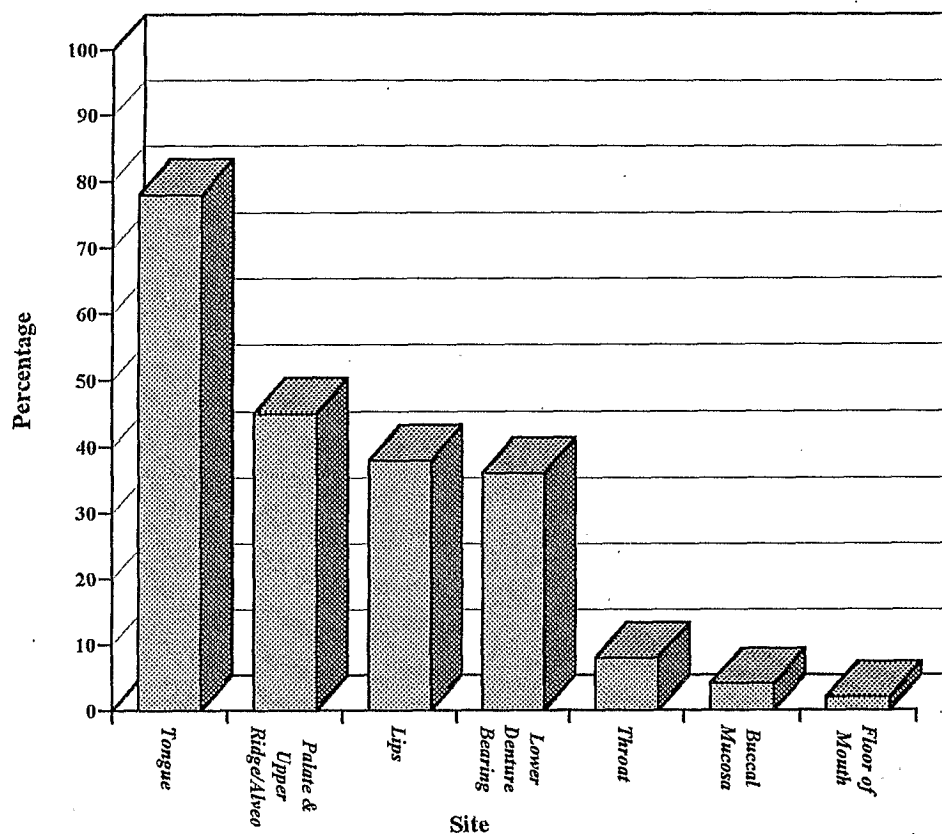


FIG. (3): Distribution of orofacial sites affected by burning mouth syndrome (Reproduced courtesy of Br Med J).

"More than one site is usually affected and there is nearly always a bilateral involvement. The distribution of symptomatic areas can give a clue to possible aetiological factors; for example, the involvement of the tip and lateral margin of the tongue suggests a tongue thrusting habit, while symptoms from the dorsum of the tongue suggest tongue posturing, perhaps to hold a non-retentive denture in position." (10)

Grushka confirmed some of the past studies in her research. She presented that BMS occurred in the distal part of the mouth most of the time. BMS subjects most likely did not wake up by their pain. As the time

went by, their pain increased until it reached to the highest point in the early evening. (11)

In another study, "The results indicated that BMS pain is quantitatively similar to, but quantitatively different from toothache pain, that self-reports of BMS pain appear to be valid, that when compared to the asymptomatic control subjects, BMS subjects show elevations in certain personality characteristics which are similar to those seen in other chronic pain patients, and that these personality disturbances tend to increase with increased pain. Therefore, our findings indicate that the pain of BMS is more severe than has previously been suggested and that the severity of this pain may explain some of the personality changes which occur in the BMS subjects." (12)

In another investigation conducted by Svensson and his colleagues, they performed different tests with applying argon laser stimulation on 23 elderly subjects who wore dentures, and were diagnosed as patients suffering from burning mouth syndrome. There was a control group included 23 subjects in different age, sex and wearing denture. After obtaining the pain threshold and comparing with results from the control group, they indicated the following findings.

"Sensory thresholds were significantly lower in patients with BMS on all the tested regions. Pain thresholds were significantly elevated on the lower lip skin, the anterior hard palate (especially on denture-bearing area), and the hand in patients with BMS. At sensory threshold level, a faint pinprick perception was often reported by patients with BMS contrary to a perception of warmth described by control subjects. The intra-regional variations in sensory and pain thresholds on the hard palate, the lower lip

mucosa, and in the skin were similar in both groups, but differences occurred in sensory thresholds on the tongue in patients with BMS." (13)

Svensson and his colleagues concluded that "The presence of abnormal pre-pain perceptions and disturbances in the perception of non-nociceptive and nociceptive thermal stimuli applied on both pain affected and normal regions suggest a perceptual deficit unrelated to specific pathophysiological mechanisms in BMS. However, it appears that a psychological explanation of BMS should be used cautiously, as the present results suggest alterations in sensory function." (13)

Cekic and et al. developed a method for recording the local temperature by using thermoesthesiometry test. In their research, they found out that the temperature was lower in the control group compared to that one in the patients suffering from burning sensation of the tongue. This test could allow the clinician to approach an appropriate treatment for oral sensation. (14)

In general "The nature of symptoms of BMS tend to fall into 3 broad categories: Type 1, Type 2 and Type 3. Although in terms of aetiology there are similarities between these subtypes, there is merit in distinguishing between them, since further investigation and indeed prognosis varies with each type. In type 1 BMS, patients suffer on symptoms on waking, but the burning begins and increase in severity as day goes on. In type 2 BMS, the burning is present on waking and persists throughout the day. In both type 1 and 2, symptoms are intermitting and present every day. In contrast to these findings, patients with type 3 BMS have symptom free days, and also complain of involvement at unusual sites, such as the floor of the mouth or the throat." (10)