

ORIGINAL ARTICLE

Risk Factors in Burning Mouth Syndrome among Older Adults

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ABSTRACT

Background of the study: A chronic and untraceable condition of pain is burning mouth syndrome (BMS) and is commonly observed in middle-aged and elderly people of both the genders. Many psychiatric disease that include anxiety levels, personality disorders and depressions are caused by oral problems i.e dysgeusia, burning mouth, oral malodour and dry mouth.

Objective: This study aimed investigation of factors of risk associated with BMS in elderly people of both the genders.

Design: It was a systematic review.

Material and Methods: Inclusion and exclusion criteria were used and studies published from 2008 till date of review were included in the systematic review. For gathering relevant studies, some key words were used to find already published material i.e “elder, older, burning mouth syndrome / BMS, oral health problems, and elderly people”. Moreover, for enhancing relevancy and appropriateness, Boolean operators like AND, OR, double quotations, asterisk etc. were used. Popular and good reputed databases with peer-reviewed articles and journals were used that included PubMed health, Google scholar, EBSCO host, CINAHL, Embase and Cochrane Library. A table comprising of columns like study title, name of author, sample size, research objective, limitations and key findings was prepared for data extraction.

Results: Based on moderate or strong quality, thirteen studies relevant to the objective were shortlisted. These studies had highlighted BMS as risk factor. It was held that female population is more affected by BMS in comparison with males and its prevalence is high in elderly aged people i.e. above 55-years age.

Conclusion: From findings of the review, it is established that in older population numerous risk factors of BMS are dental procedures, increased age, lacking therapeutic treatments, lack of knowledge besides poor knowledge and practices of medical staff and poor care being given to older age people especially in post-menopausal stage in women.

Keywords: Burning mouth syndrome, WHO, global population, post-menopause.

INTRODUCTION

The International Association for the Study of Pain (IASP) has described burning mouth syndrome as an idiopathic condition characterized by a burning sensation in the tongue or other oral sites, usually in the absence of clinical and laboratory findings.^{1,2} BMS can be mild or severe, and vary from person to person. Some people describe the burning feeling as comparable to the burning sensation of eating food that's too hot.^{3,4} Only in US, about one million people are annually affected by BMS and it leads many psychiatric diseases.⁵ Among oral problems, a chronic and commonly reported disease is BMS and most of the middle aged or elderly people of both the genders face it.^{6,7} Some studies held 0.7-4.6% people annually suffer from BMS throughout the world and it has higher incidence among elderly age people.⁸ Usually BMS is divided into two types i.e primary BMS and secondary BMS where the former is also called idiopathic BMS as well. It is not possible to establish main cause of primary BMS however in case of secondary BMS, etiological syndrome can be identified quite well.⁷

Received on 24-01-2021

Accepted on 19-07-2021

In different people, its symptoms are different that include tickling, sticking sensation, burning sensation and sleeping disturbance.⁶ It was also reported that symptoms of BMS are usually noted in women during pre and postmenopausal age and that ratio BMS between men and women is 1:7-10.⁸ Moreover, due to increase in number of aged people in the world, frequency of BMS is also increasing.⁶ Previous researches showed that it is not easy to diagnose BMS owing to numerous risk factors and role played by each factor in occurrence of BMS in a particular individual. For its diagnosis many tests have been recommended i.e. salivary flow test, allergy test, imaging test, oral swab test and biopsy of tissues test.⁵

Many studies have been conducted in the past each having its unique variables and on different age groups while it is also established fact that frequency of BMS is high in women especially at postmenopausal stage. This ratio was found 14% in women at postmenopausal stage while only 2-3% men are affected by this disease. In Japan, it has been estimated that 38% of its population will be older by the end of 2050 with age above 55 years. This ratio is 16% in Europe and is also expected to increase 28% by 2050.³ If this happens as estimated, there will be

an automatic rise in people who will suffer from BMS. However, drastic improvements in systems of oral have helped to reduce these numbers. Moreover, older people face many oral health issues in which BMS is at the top. So, with expected increase in elder population in near future, it is imperative to identify and develop a system to identify these risk factors that would be helpful in early treatment which is rational of the study as well. That is why, it is expected that results of this research will have vital role to identify risk factors associated with BMS and recommendations for dealing with these problems in an effective and efficacious manner.

MATERIAL AND METHODS

This systematic review was conducted to redress research questions regarding elaboration of key factors of risk for BMS in elderly patients, usefulness of identifying these factors in its treatment and impact of BMS in overall health of elder people. Plethora of studies was analyzed critically for gaining evidences on the topic by strictly observing inclusion and exclusion criteria. Furthermore, systematic reviews have transparent, feasible and widespread base having many variables used in primary studies, out of which it is easy to derive desired variables as per research objectives. It was argued that despite of increased use of systematic review in health sector, it is not straight-forward collection of information.⁹

Inclusion criteria for this review was studies having primary research on BMS and published from 2008 till date of review, studies having key focus on risk factors of BMS, studies focusing on elder age oral health care problems and that had been developed in English language. However, studies that were published prior to 2008, having unmatched primary research objective and who were not discussing oral health are problems in old aged people were excluded from the study. For gathering relevant studies, some key words were used to find already published material i.e “elder, older, burning mouth syndrome / BMS, oral health problems, and elderly people”. Moreover, for enhancing relevancy and appropriateness, Boolean operators like AND, OR, double quotations, asterisk etc. were used. Popular and good reputed databases with peer-reviewed articles and journals were used that included PubMed health, Google scholar, EBSCO host, CINAHL, Embase and Cochrane Library. Following flow chart was used to screen available studies. A table comprising of columns like study title, name of author, sample size, research objective, limitations and key

findings was prepared for data extraction. In collection of data, ethical issues were also observed.

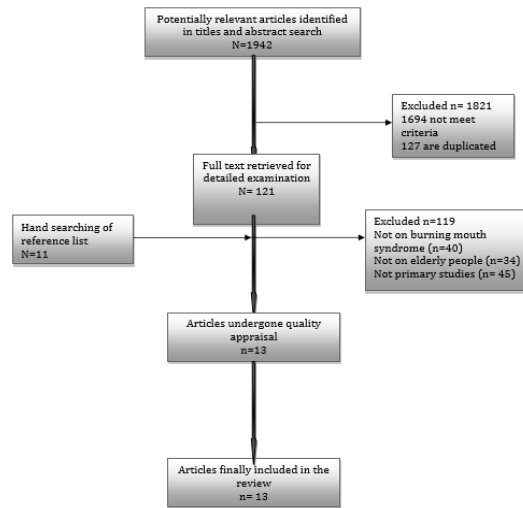


Figure 1:

RESULTS

From above given sources, a total of 1942 studies were collected that had relevant title. However, 1821 studies failed to meet inclusion and exclusion criteria set for this systematic review. Second stage screen was conducted on remaining 121 articles by further retrieving and checking their full texts. Additional 11 articles were also added by using reference list of selected articles. At this stage, 123 articles failed to meet preset criteria and only 9 studies were selected for final review as given in table 1.

All the studies had both male and female participants and BMS incidence was shown higher in women in comparisons with men. Moreover, in women its incidence was higher in age above 55 years than young age. One study had 300 participants while another had only 13.^{14,17} One study had higher participation of females than male i.e 26 vs 6.¹³ Moreover, some studies had no population because they were systematic review. But, all the included studies had been conducted in various parts of the world and hence they had their unique importance. It was unanimously suggested by the studies that in postmenopausal stage women had high incidence of BMS while compared with women of premenopausal stage as given in table below.

Table 1 Quality Assessment list as per Kennelly (2011) Checklist

Sr. No.	Authors	Reporting (13)	Power (2)	Validity		Total Score	Interpretation / Decision
				Internal (15)	External (4)		
1	Kohorst et al. (2015) ¹⁰	10	1	12	2	25	Strong/Accepted
2	Komiyama et al. (2015) ¹¹	9	1	9	1	20	Strong/Accepted
3	Javali (2015) ¹²	8	1	7	1	17	Strong/Accepted
4	Ni Riordain et al. (2010) ¹³	11	1	10	2	24	Strong/Accepted
5	Jääskeläinen (2012) ¹⁴	7	1	6	1	15	Strong/Accepted
6	Klasser et al. (2008) ¹⁵	7	0	6	1	14	Strong/Accepted
7	Minor and Epstein (2011) ¹⁶	12	1	11	3	27	Strong/Accepted
8	Just et al. (2010) ¹⁷	10	1	8	2	21	Strong/Accepted
9	Popa et al. (2011) ¹⁸	12	2	13	3	30	Strong/Accepted
10	Han et al. (2015) ¹⁹	11	2	11	2	26	Strong/Accepted
11	Kim et al. (2014) ⁸	11	1	9	2	23	Moderate/Accepted
12	Abetz and Savage (2009) ²⁰	9	1	9	1	20	Strong/Accepted
13	Vaidya (2012) ²¹	11	1	10	2	24	Strong/Accepted

Table 2 Prevalence of BMS

Sr. No.	Authors & Years	Prevalence of BMS
1	Popa et al. (2011) ¹⁸	High incidence of BMS in women older than 50-years
2	Kim et al. (2014) ⁸	In women during postmenopausal phase, prevalence of BMS was high.
3	Javali (2015) ¹²	Older patients had higher incidence of BMS
4	Kohorst et al. (2015) ¹⁰	Prevalence of BMS was high in women in age group 70-79 years
5	Abetz and Savage (2009) ²⁰	Higher incidence of BMS was noted in patients suffering from psychological disorders
6	Klasser et al. (2008) ¹⁵	Older patients had higher prevalence of BMS
7	Just et al. (2010) ¹⁷	High prevalence of BMS was noted in patients having reduced amounts of gustatory as well as somatosensory perception.

Table 3 Various Risk Factors of BMS

Sr. No.	Authors & Years	Prevalence of BVMS
1	Jääskeläi nen (2012) ¹⁴	Improper use of diagnostic tests
2	Abetz and Savage (2009) ²⁰	Anxiety, depression & stress
3	Klasser et al. (2008) ¹⁵	Failure on the part of medical staff to diagnose
4	Ni Riordain et al. (2010) ¹³	Poor quality of life and overall health
5	Popa et al. (2011) ¹⁸	Pain in oral mucosa
6	Vaidya (2012) ²¹	Lack of standardized treatment
7	Minor and Epstein (2011) ¹⁶	Lack of modern therapies
8	Kohorst et al. (2015) ¹⁰	Age e.g high frequency in women above age 52 years
9	Just et al. (2010) ¹⁷	Decreased amount of gustatory and somatosensory perception
10	Javali et al. (2015) ¹²	Changed taste and xerostomia
11	Han et al. (2015) ¹⁹	Extensive medicine leading dry mouth
12	Kim et al. (2014) ⁸	Altered taste perception and in women postmenopausal stage
13	Komiyama et al. (2013) ¹¹	Anxiety and depression

DISCUSSION

Selected thirteen studies had strong to moderate level methodological quality as per Kennelly (2011) criteria. Importance of managing both physiological and psychological factors was elaborated in treatment of BMS.²⁰ However, patient's acceptance regarding chief components of psychological disease proved a major hurdle, proving higher impact of psychological factors in BMS. Despite of already huge published material, a gap exist regarding establishment of depression as main factor for BMS either directly or through psychological factors having key role in it. Patient's lack of knowledge about dry mouth impact in BMS was yet another factor. That is why, educating people and let them have better understanding about causes of dry mouth is highly important that can be met by initiating prevention programs.

Additionally, neurogenic factors play different role in various age groups which have high role in women above age 55 years.¹⁴ Another study reported late checkup and diagnosis a key factor in BMS.¹¹ It was reported that patients having BMS had reduced amounts of gustatory and somatosensory perception while camped with healthy population.¹⁷ In male patients, discomfort of tongue was not very common in comparison with females. Moreover, symptoms like xerostomia, oral mucosal pain and dysguesia were high in post and pre-menopausal women. BMS was declared as a frustrating condition in elderly patients.¹⁵ Another study reported high incidence in females and in old age patients.¹⁰ It was also conducted in this review that women are more affected by BMS in comparison with men and its prevalence is high in population above age 50 years. Variable role of different psychological traits was also reported.¹¹

Furthermore, throughout the world therapeutic treatment has not been considered for treating BMS. It was recommended to include clonazepam, paroxetine and other cognitive behavioral therapies in treatment of BMS.¹⁶

Previous researches have shown that overall quality of life is not affected by BMS. But, upon diagnosis, the individual feels shabby and reduces social interactions. Likewise, systematic and local risk factors of burning have also been discussed with regard to selected studies that have concluded ill-fitting dentures, vitamin & hormone deficiencies, allergies and hypersensitivity are major risk factors under the ambit of local risk factors. They may cause burning mouth symptoms directly so before diagnosis of BMS it should be excluded.

A major limitation with this study was its dependency on findings of previously conducted studies which were less in number also. Moreover, this study was over generalized therefore in future it should be narrowed. Owing to heterogeneity of results, it was not possible to conduct meta-analysis of the studies so mere findings have been reported instead of comparisons among the studies.

CONCLUSION

From findings of the review, it is established that in older population numerous risk factors of BMS are dental procedures, increased age, lacking therapeutic treatments, lack of knowledge besides poor knowledge and practices of medical staff and poor care being given to older age people especially in post-menopausal stage in women.

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