

# Benign Migratory Glossitis - A Neglected Oral Health Issue in Pakistan

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## ABSTRACT:

**Objective:** To investigate the frequency of benign migratory glossitis (BMG) and its association with medical conditions.

**Materials and Methods:** This descriptive cross-sectional and multicenter study was carried out in Karachi and Hyderabad city. A total of 2022 dental patients of 10-80 years of age were included. After taking verbal informed consent, clinical examinations and proforma was filled chair side. Descriptive and comparative analysis were done using SPSS version 23 and Chi-square test was the choice of analysis to test the significance of the undertaken objectives.

**Results:** Frequency of BMG was found to be 33(1.6%). Higher predilection was seen in females 21(1.03%) as compared to males 12 (0.59%). 10(5.8%) cases were found in 51-60 years of age group followed by 9 cases in 31-40 years. The most common affected site was dorsal surface of the tongue 29 (87.88%). Cross tabulation of BMG with medical condition revealed presence of BMG in 3hypertensives and 1 diabetes mellitus patient. Remaining 29 cases were not suffering from any medical condition. The association of BMG with fissured tongue was also investigated and found statistically significant in 11(33.3%) cases with a p-value (P<0.001).

**Conclusion:** Frequency of BMG was found to be 1.6%. Majority of cases of BMG did not have any association with medical conditions. Fissured tongue was found in statistically significant number of BMG cases.

**Keywords:** Glossitis, Benign Migratory Glossitis, Geographic Tongue, Lesion, Frequency, Association, Medical conditions

## INTRODUCTION:

Amongst the various oral mucosal conditions seen in oral cavity, the benign migratory glossitis (BMG) holds a unique importance in dentistry. It was documented in literature by Rayer in 1831. Due to the peculiar nature of this condition, it has also been reported by several other names such as, erythema migrans, glossitis exfoliativa, and wandering rash of the tongue.<sup>1</sup> This lesion when appear only on tongue with a map like

appearance is also referred to as geographic tongue.<sup>2</sup> BMG is defined as a clinically benign inflammatory condition of the dorsal surface of the tongue characterized by irregular well defined ulcer like erythematous patches. It may occur due to atrophy or loss of the filiform papillae. The lesions are surrounded by an elevated white hyperkeratotic border that may result in change in shape, size, and location with over a period of time<sup>1,3</sup> The most significant presentation of BMG in terms of clinical diagnosis is its presentation and behavior. Its frequently changes its location, size and pattern within minutes to days,<sup>4,5</sup> It may persist for months or longer and heals, often recurs on a different location thereby accounting for the term benign migratory glossitis or geographic tongue<sup>6,7</sup> BMG can occur in any area of the oral cavity. However, the most predominant site is dorsal surface of tongue<sup>7</sup> followed by lateral border and tip of the tongue.<sup>8,9</sup> At times, it may also involve buccal mucosa and floor of the mouth.<sup>10</sup>

The precise etiology of BMG is yet ambiguous. There are some factors which may contribute in the pathogenesis of BMG. These include emotional stress, allergy<sup>5,11,12</sup> endocrine disturbances, particularly diabetes mellitus.<sup>1,13</sup> Skin condition like psoriasis<sup>14,15</sup> has also been associated with benign migratory glossitis.<sup>16</sup> Evidence has shown strong association of psychosomatic and genetic factors in relation to benign migratory glossitis with increased frequency of occurrence in parents and their siblings than the rest of general population.<sup>7</sup> Genetic and immunological factors had also been reported which play an important role in the development of this disease. Marks investigated role of the increased frequency of HLA-B15 in atopic patients with geographic tongue. DR5 and DRW6 antigen had also been noticed in Greek BMG patients.<sup>1</sup> BMG has been under-addressed and neglected in our clinical dental settings. This could be because of its benign nature. That is why documented dental studies are scarce. The prime aims of this study were to

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investigate the frequency of BMG according to age, gender and site and to find out its association with medical conditions, clinical characteristic and fissured tongue.

**MATERIALS AND METHODS:**

The present cross sectional study was conducted at three centers, mainly done at Bahria University Dental Hospital (BUDH), Private Dental Clinic located at Mamji General Hospital in Karachi and Oral & Maxillofacial Surgical Department, Liaquat University of Medical Health Sciences (LUMHS) Jamshoro. A total of two thousand and twenty two patients were selected through convenient sampling with the patient age ranged from 10 to 80 years. The protocol of the study was approved by the Bahria University Dental College, Karachi. A performa was designed to collect data and verbal informed consent was taken prior to the patient’s oral examination and data collection. The inclusion criteria were all patients attending dental outpatient department clinics for their oral health issues. The exclusion criteria of the study included patients with special care need or those who refused to give consent for this study. Descriptive and comparative analysis were done using SPSS version 23 and Chi-square test was used to check the significance between variables.

**RESULTS:**

Out of 2022 dental out-patients, of which 1138 (56.2%) were males and 884 (43.7%) were females. From total study population, 1073 were seen at BUDH, 606 at Dental Clinic Mamji Hospital-Karachi and 343 at LUMHS, Jamshoro. The subjects’ age ranged from 10 to 80 years with a mean age of 32.57 years ±14.58 years. Of the total patients examined, 33 (1.6%) patients were diagnosed with BMG and its higher predilection was seen in females 21(1.03%) than males 12(0.59%). BMG was further investigated with respect to age group which revealed that most of the cases were found in 51-60, 10(5.8%) years of age group with a statistically significant p value (P<0.001). On the other hand only 1(0.2%) case had been reported at the age group of 10-20 years. On further scrutiny of BMG with medical conditions, no substantial relationship was found. Only 3 cases of BMG

were present in hypertensive patients while 1 case was observed in diabetes mellitus (Table 1).

Table: 1  
Cross tabulation showing presence of BMG with respect to medical conditions and age group

Age group	n	BMG present with insignificant medical conditions n	BMG with medical conditions	
			H	D
10-20	479	1	-	-
21-30	651	3	-	-
31-40	352	8	1	-
41-50	253	5	-	1
51-60	171	8	2	-
61-70	82	3	-	-
71-80	30	2	-	-
Total	1989	29	3	1

\*P value (P<0.001) H= Hypertension, D= Diabetes

Most common affected site observed was dorsal surface of the tongue in 29 (87.88%) examined subjects, followed by lesion on dorsal surface extending to lateral border of the tongue in 2 (6.06%) individuals and one case 1(3.03%) was detected on anterior surface and lateral surface of tongue each (Table 2 and Figure 1).

Table: 2  
Distribution of BMG

Sites	n %
Dorsal surface of tongue	29(87.88%)
Lateral surface of tongue	1(3.03%)
Dorsal surface extending to lateral border of tongue	2(6.06%)
Anterior surface of tongue	1(3.03%)
Total	33(100%)

As far as clinical presentation of the BMG is concerned 13 (39.4%) patients were asymptomatic and 2 (6.06%) cases presented with the complaint of burning sensation and pain. Present study finding showed that there is an association of BMG with fissured tongue found in 11(33.33%) of patients with a p-value (P<0.001) (Table 3 and Figure 2).

Table: 3  
Clinical Presentation of BMG

	n (BMG Cases)	Presence of atrophic patches circinate lines	Presence of burning sensation with pain	BMG associated with fissured tongue*	Atrophic patches with fissured tongue	Asymptomatic BMG
Present	33	6(18.18%)	2(6.06%)	11(33.33%)	1(3.03%)	13(39.4%)

Figure: 1

A 32 years old female patient with multiple irregular depapillated patches on the dorsal surface of the tongue



Figure: 2

BMG associated with fissured tongue (arrow)



#### DISCUSSION:

There is an abundant literature available on benign migratory glossitis addressing its pathogenesis, prevalence, site and gender distribution however in our country there is still a scarcity of data on this subject. Research has shown that there is no significant variation seen in terms of occurrence and clinical presentation of BMG around the globe. As far as our knowledge goes, there is no documented local study that has attempted to investigate frequency, and risk factors associated with BMG with such a large data. Using various key words and phrases in the search engines of Google, Pubmed, Yahoo, Medconnect, Medscape no such local study is found.

The prevalence of BMG in dental patients of present study was 1.6%, similar findings were found in a study done by Miloglu in turkey with 1.5%.<sup>17</sup> Kovac-Kovacic established the prevalence rate of BMG between 1% and 2.5%.<sup>18</sup> However a study conducted in Brazilian

military police showed high prevalence of 20.5%.<sup>19</sup> We also investigated the occurrence of BMG with respect to gender. Our study showed slight predilection towards female gender with a ratio of 1.75:1. Our study findings are in accordance to findings of other researchers.<sup>20,21</sup>

Jainkittivong have also observed higher rates in females (1.5:1) in Thailand.<sup>22</sup> On the contrary, Voros-Balog study showed male preponderance.<sup>23</sup> conducted a study on Iranian young students and found increased prevalence among males.<sup>24</sup>

According to a study BMG is mostly found on the dorsal surface of the tongue.<sup>25</sup> Our study outcomes are also in accordance to this study. The second most common site for BMG is the lesions extending from dorsal to the lateral border of the tongue followed by tip of the tongue<sup>8,9</sup> buccal mucosa and floor of the mouth.<sup>10</sup>

The exact etiology of BMG is unknown and its association had been established with many systemic disorders by different studies, these include diabetes mellitus, Reiter syndrome, Down syndrome<sup>1,14</sup> psychological factor<sup>25</sup>, pregnancy<sup>8,14</sup> drugs, excessive use of contraceptive pills etc.<sup>26,27</sup> Tobacco consumption, zinc deficiency and hormonal disturbances had also been reported.<sup>28</sup> It had also been linked to allergies and asthma<sup>18</sup> and psoriasis.<sup>17</sup>

Numerous studies had shown the coexistence of BMG with fissured tongue and present study findings are also in accordance to these studies 11 (33.3%) with a significant p-value of  $P < 0.001$ .

BMG has also been reported to be in association with plaque type psoriasis by a research conducted in Italy and many other researches.<sup>15,16,29,30</sup> On the other hand, we did not find any correlation in this regard. We have further observed the relationship of BMG with systemic diseases particularly diabetes and hypertension. The current data cannot authenticate the findings, as it may be due to limited presentation of study subjects; therefore, large sample size is advocated. Furthermore, other systemic disorders and their association with BMG like iron deficiency could not be explored as the limitations of this study.

Diagnosis of BMG is solely based on its distinctive clinical grounds. Yet biopsy may also be advice to confirm its definitive diagnosis. BMG is asymptomatic, as in our study 13 (39.4%) patients were not aware of this lesions present in their mouth. These patients did not require treatment except for reassurance. However, in some cases it may affect the quality of life by producing symptoms like pain, burning sensation, inability to eat spicy food that could further aggravate the symptoms<sup>23,31,32</sup> In present study only 2 patients (6.06%) were presented with complaint of burning sensation.

#### CONCLUSION:

Frequency of BMG was found to be 1.6%. Majority of cases of BMG did not have any association with medical conditions. Fissured tongue was found in statistically significant number of BMG cases.

Authors are interested to extend the study on a national



level to authenticate the findings on this neglected oral health issue in Pakistan.

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