



Technical Report on Investigation of Glossitis Outbreak in one of the Central Schools in Trashiyangtse District, Bhutan.

^aNamsa Dorji, ^bGyan Prasad Bajgai, ^cSheetal Bhujel, ^cTshering Pelzom, ^dSingye Dorji, ^dRinchen Phuntsho

^aDistrict Hospital, Trashiyangtse, Bhutan.

^bJigme Dorji Wangchuck National Referral Hospital, Thimphu, Bhutan.

^cKhamdang Hospital, Trashiyangtse, Bhutan.

^dDzongkhag Administration, Trashiyangtse, Bhutan.

ABSTRACT

Introduction: Oral health is an integral part of general health. It does not pose a major mortality threat but it influences the over-all health of an individual (1). Oral disease is highly influenced by individual's belief, attitude, knowledge, skills, dietary habits, nutrition, environment and day to day living practices (2). Oral hygiene is not perceived as an important procedure in most parts of the world including Bhutan and it is made worse by the inability to carry out normal daily procedures such as performing proper oral hygiene practices like tooth brushing or cleaning teeth and tongue due to various oral lesions and glossitis (3). Oral lesions can be anything in the mouth that is not normal, an ulcer or breach on the mucosa etc. Glossitis is inflammation of the tongue generally characterized by redness and swelling. There are two types, Benign Migratory Glossitis (BMG) and Atrophic Glossitis (AG) (4, 5).

Methods: Students were interviewed individually using the screening tool for oral lesions and peripheral neuropathy as per the national protocol (6). They were examined clinically for the physical signs of nutritional deficiency. Physical inspections of the kitchen and mess management were also conducted. All the students presenting with a history of painful mouth or tongue lesions within last one month were screened and examined.

Result: 103 glossitis cases were detected. 98% of them were boarders of which, 85.4% were non-vegetarians. Only 14.6% were vegetarians. The male to female ratio was 1:1.3. Higher predilection towards female was seen. The duration of symptoms ranged from 1 day to 2 months with majority of them having symptoms for a duration of at least 30 days. 13 students had aphthous ulcers (4 isolated and 9 mixed with Glossitis) and all of them were boarders. 7 students had angular cheilitis (3 isolated and 4 mixed with Glossitis) and all of them were females. 2 female students were found to have clinical pallor and were asymptomatic. 22 students also had features of chilblains upon clinical examination and all of them were boarders. In all the 5 conditions, female students were noted more affected than males.

Conclusion: Since this is a cross sectional, it is too early to conclude anything considering the type of study and the sample size. We recommend the concerned authorities/ organization to conduct a proper study to find out the etiologies of such outbreaks in the schools.

Keywords: Glossitis, Students, School, Trashiyangtse, Bhutan.

* Corresponding author.

E-mail address: drbajgai@gmail.com

1. Introduction

Oral health is an integral part of general health. It does not pose a major mortality threat but it influences the over-all general health of an individual(1). Oral disease is highly influenced by individual’s belief, attitude, knowledge, skills, dietary habits, nutrition, environment and day to day living practices (2).Oral hygiene is not perceived as an important procedure in most parts of the world including Bhutan and it is made worst by the inability to carry out normal daily procedures such as performing proper oral hygiene practices like tooth brushing or cleaning teeth and tongue due to various oral lesions and glossitis (3).Oral lesions can be anything in the mouth that is not normal, an ulcer or breach on the mucosa etc. Glossitis is inflammation of the tongue generally characterized by redness and swelling. There are two types, Benign Migratory Glossitis (BMG) and Atrophic Glossitis (AG) (4, 5).

Bhutan is a small landlocked country in the eastern range of Himalayas in South- East Asia between two mighty countries, China and India. It has an area of 38,394 square kilometers with a projected population of 7,41,672 for 2019 according to the National Statistics Bureau of Bhutan (7). The health services are provided by the state, free of cost at the point of delivery, through a three-tiered health system. There are 50 hospitals, 185 Primary Health Care Centers, 45 Sub-posts, 5 HISC, and 551 Out Reach Clinics under the Ministry of Health and 18 health facilities outside the purview of Ministry of Health. Khamdang Hospital is in Trashiyangtse district of Bhutan. It is 595 kilometers away from the capital city, Thimphu, in Bhutan. The glossitis outbreak this time happened in Trashiyangtse district.

Khamdang Hospital is a 10-bedded hospital with both inpatient and outpatient services. This hospital has detected around 25 cases of Glossitis in recent two days (27/01/2021-28/01/2021) among students of Tsenkharla Central School in Khamdang Gewog, Trashiyangtse. They reported to have symptoms of tongue inflammation. On examination, they had lesions characteristic of atrophic glossitis. All the students who presented to the hospital were treated symptomatically and given nutritional supplements on out-patient basis (OPD).

Tsenkharla Central School is in Khamdang Gewog, Trashiyangtse. The school currently has 423 students studying in grades IX to XII. Of this, 60 are day-scholars (day students) and 363 are residing in the boarding facilities (boarders). The school provides lunch to the day-scholars in addition to providing daily meals to boarders. The school remained closed during the National Lockdown 2.0 with the boarder students being kept in school in containment mode, however, the day- scholarsweresenthome.Theschoolresumedon18thofJanuary, 2021with strict compliance to COVID-19protocol.

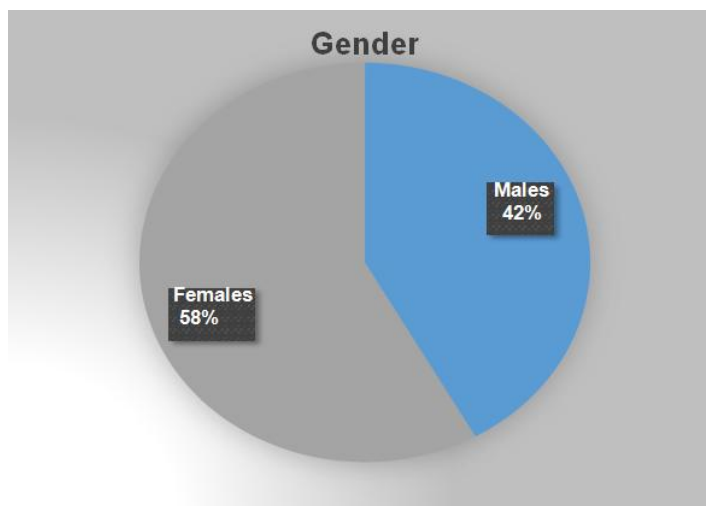
There were no reported incidences of any diseases related to nutritional deficiency in the last 5 years.

2. Methodology

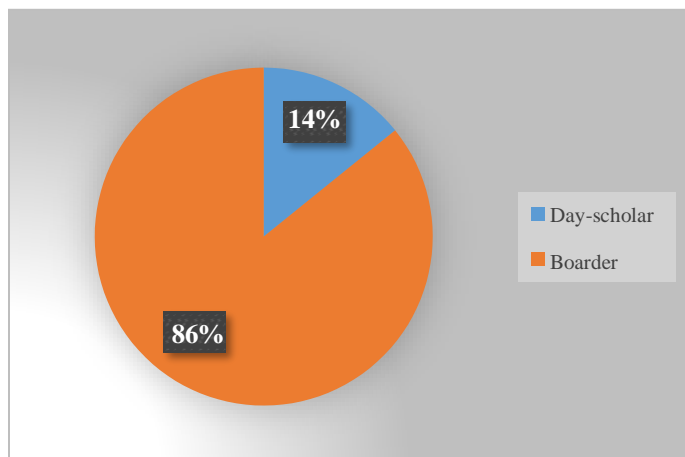
Students were interviewed individually using the screening tool for oral lesions and peripheral neuropathy as per the national protocol(6). They were examined clinically for the physical signs of nutritional deficiency. Physical inspections of the kitchen and mess management were also conducted. Any students presenting with a history of painful mouth or tongue lesions within the last one month.

3. Findings

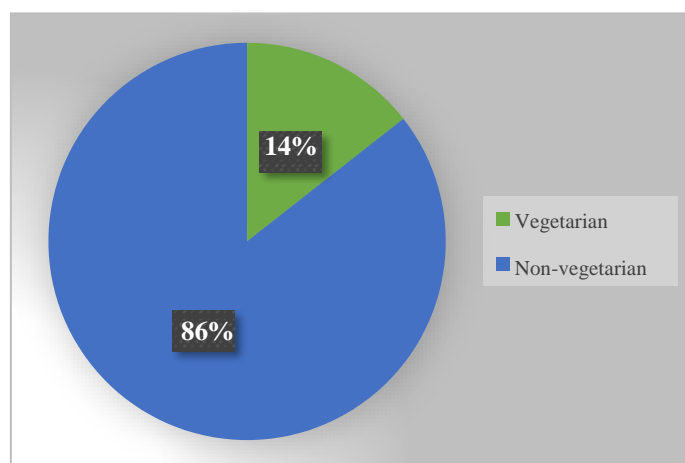
We screened all 423 students of TCS using the standard screening tool and clinical examination, looking for the diseases of nutritional deficiency and other medical conditions. Following are the findings: Table 1(below):



There were a total of 423 students comprising of 177 males and 246 females between the ages of 14 to 22.



Out of the 423 students, 60 students are day-scholars and 363 are boarders.

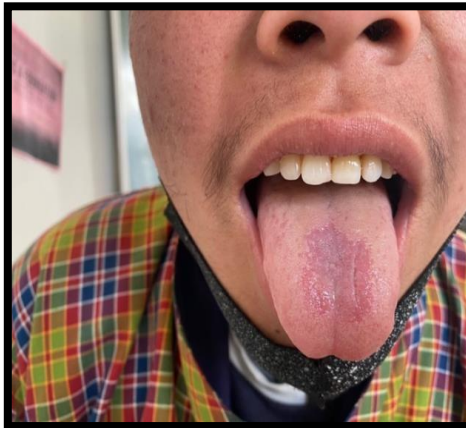


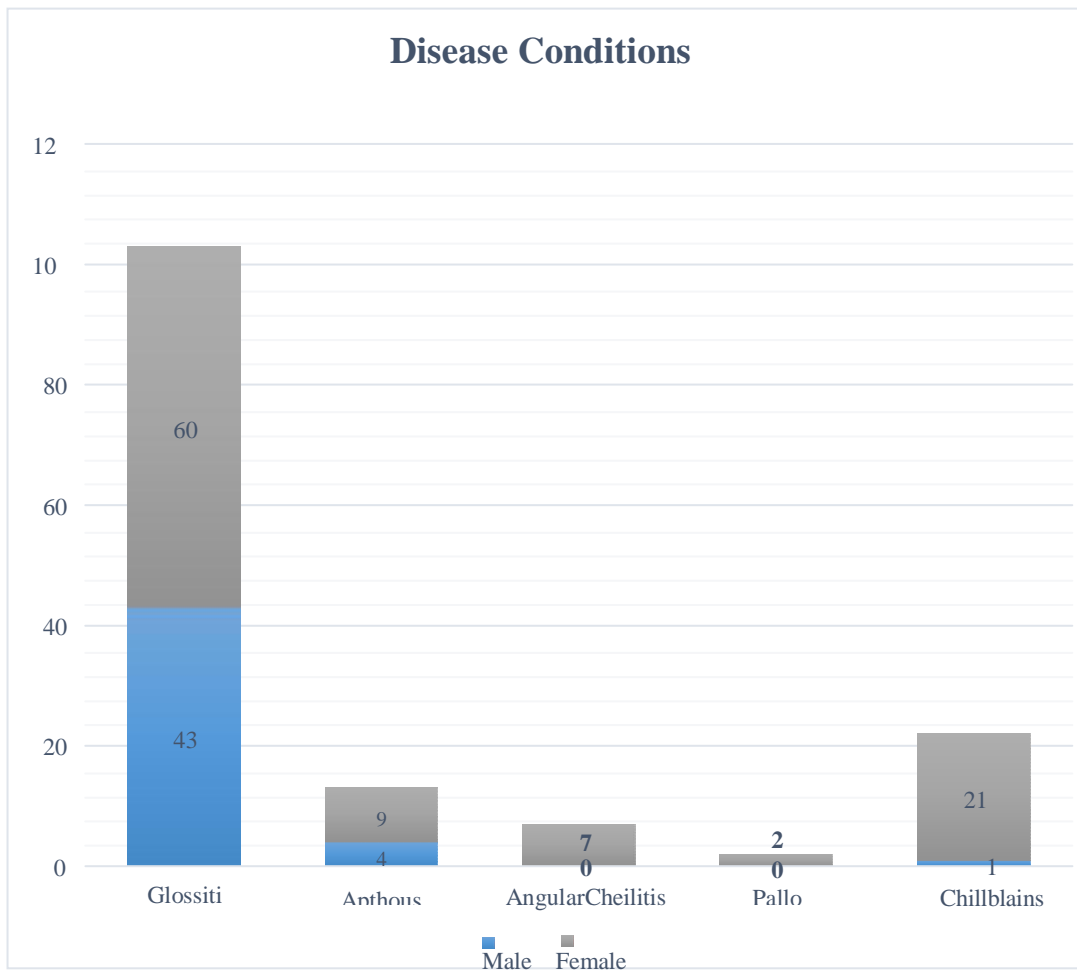
362 students reported to be non- vegetarians and there were 61 students who are strictly vegetarian. Students who avoided meat but took eggs were included in the Non-vegetarian group.

Table 1: Findings of the oral lesions.

Conditions	Male	Female	Total	Boarder	Day-scholar
Glossitis	43	60	103	101	2
Aphthous Ulcer	4	9	13	13	0
Angular Cheilitis	0	7	7	6	1
Pallor	0	2	2	2	0
Chilblains	1	21	22	22	0

Figures: Some Pictures of various types of Oral Lesions.






Environmental

The kitchen was found to be clean and well organized, and the kitchen staff were kempt and tidy with appropriate protective attires upon inspection. There was 24 hour running water. The stocks were up to date and there was efficient store management. The menu planning, food preparation and serving were found to be satisfactory as per the mess management protocol (National 3rd draft)(6, 8)

Mess Menu for the academic year 2020 for both boarder and dayscholar students.

Day	Breakfast	Lunch	Evening	Dinner
Mon	Rice with milk	Rice, Alu dham, Dhal	Milk tea	Rice, Mixed Vegetable Curry and Dhal
Tue	Cabbage fried rice, suja	Rice, MEAT, Ema datshi and dhal	Milk tea	Rice, mixed vegetables, dhal
Wed	Chana curry, plain rice and Milk Tea	mixed vegetables with dhal, boiled egg	Milk tea	Rice, Dhal and Kewa datsi
Thu	carrot, pea, beans, fried rice, suja, egg	Ema datsi with dhal	Milk tea	Rice, Dhal & Vegetable Curry
Fri	soya chunk fried rice, and milk	Rice, MEAT, ema datsi, dhal	Milk tea	Rice, mixed vegetables, dhal.
Sat	Fried Rice, boiled egg and milk tea	Rice, Dhal and Vegetable mixed Curry	Milk tea	Rice, Dhal & Vegetable Curry.
Sun	Fried rice and Suja	Rice, Dhal & dried fish, Vegetable Curry	Milk tea	Rice, Dhal and mxd vegetables

* Fruits will be served once a week
 * Puri will be served once a month
 * Meat will be served twice a week


 Mess Incharge



4. Intervention

Health education was provided to all students regarding taking a healthy balanced meal, importance of micronutrients and oral hygiene along with answering any queries they had. Vitamin B/complex, vitamin C and folic acid were supplemented to all students for a period of two weeks as per the treatment protocol in the National Protocol for Management of Oral Lesions and Peripheral Neuropathy (3rd draft). 3 students who reported to have tingling sensation, pins and needle sensation and hypersensitivity in lower extremities were asked to report to the hospital for thorough examination and investigation.

5. Recommendation

Education sector to find ways to improve the variety of vegetables that is being provided to the students along with procurement and providing of seasonal fruits. School Health Coordinator to report new cases on daily basis to the investigating health center/personnel until the outbreak is declared to be over. School management to allow students to wear warm hand gloves, warm footwear, use of heaters and providing warm water for washing during peak winter. Reinforcement of clean plate policy and compulsory presence at meal time. Schools to come up with innovative ideas to combat cold. For e.g., a knitting club with members who will knit gloves, socks and hats of various sizes for use in the winter. All schools under Trashiyangtse Dzongkhag to keep high vigilance over presence of any disease conditions and collaborate with the nearest health center for early intervention.

6. Conclusion

Since this is a cross sectional study with just single visit to the school, it is too early to conclude anything. However, we recommend a proper study to find out the cause of the outbreaks in the schools.

Conflict of Interest: There is no conflict of interest among authors.

Acknowledgement:

We are very thankful to the school authority, Principal, Teachers and students of Tshenkarla central school for their cooperation and support.

REFERENCES

- Srivastava R, Nongkynrih B, Mathur V, Goswami A, Gupta S. High burden of dental caries in geriatric population of India: A systematic review. Indian journal of public health. 2012;56:129-32.
- Osadolor O, Amuta H, Obi D, Ogbozor B. Oral Health Conditions among Elderly Patients Attending a Nigerian Tertiary Health Facility. 2019.
- Kelsall DL, o Keefe JP. Good health requires a healthy mouth: improving the oral health of Canadians seniors. Canadian Medical Association Journal. 2014;186:893 Stoopler ET, France K, Ojeda D, Sollecito TP. Benign Migratory Glossitis. The Journal of emergency medicine. 2018;54(1):e9-e10.
- Khozeimeh F, Rasti G. The Prevalence of Tongue Abnormalities Among the School Children in Borazjan, Iran. 2008. 2008;3(1).
- Protocol for Management of Glossitis and Peripheral Neuropathy (3rd Draft) MoH, Thimphu, Bhutan. 2020.
- Bhutan NSBo. Projected population and Geographic demography of bhutan, 2018. National Statistic Bureau of Bhutan. 2018.
- Nutrition Program MoH, Thimpohu B. Report of Outbreak Investigation on Oral Sores (Glossitis) among the Students of Two Central Schools, Tsirang Dzongkhag, Bhutan, Sept 2018. Thimphu; 2018. 2018.