

Title	Current situation of oral diseases in rural Mongolia
Author(s)	Tungalag, Ser-Od; Akram, Al-Wahabi; Masami, Sumi; Yoshihiko, Akashi; Kei, Nakajima; Katsutoshi, Kokubun; Kenichi, Matsuzaka; Takashi, Inoue
Journal	日本口腔検査学会雑誌, 9(1): 34-36
URL	<a href="http://hdl.handle.net/10130/4244">http://hdl.handle.net/10130/4244</a>
Right	
Description	

# Current situation of oral diseases in rural Mongolia

Tungalag Ser-Od, Akram Al-Wahabi, Masami Sumi, Yoshihiko Akashi,  
Kei Nakajima, Katsutoshi Kokubun, Kenichi Matsuzaka, Takashi Inoue

Department of Clinical Pathophysiology, Tokyo Dental College

## Abstract

The development of dentistry in remote areas of Mongolia has been much slower than in developed countries. According to a Mongolian National University of Medical Sciences study, 90% of the Mongolian population has an dental caries. We performed dental screening on 71 patients in northern Mongolia, and 89% of those patients had dental caries detected using an explorer. Clinically detectable enamel lesions were found in almost every individual who was screened. White spot lesions are usually not detected with an explorer. Our main goal was to identify dental caries at the earliest stage and prevent them. The purpose of this study was to investigate dental caries among children in remote areas of Mongolia and evaluating oral health care system in those areas.

Key words: Rural Mongolia, Dental caries, Dental situation in Mongolia

Submitted 25th January, 2017 Received 1st February, 2017

## Introduction

Mongolia is a landlocked country that covers 1.6 million km<sup>2</sup>. It is a developing country with a recent onset of democracy, which started in the early 1990s. Population-wise, young people aged between 15 to 45 years old (y.o.) make up 70% of the population. The capital city of Ulaanbaatar alone holds 35% of Mongolia's entire population and the remaining 40% lives in their ancestral way of a nomadic lifestyle<sup>1)</sup>. Administratively, Mongolia is divided into 21 provinces and those provinces are further divided into 365 soum centers. Due to the lack of funding and some other bureaucratic hurdles, the development of the medical field including dentistry lags far behind that of many other developing nations especially in remote locations where people have little or no access to medical care. Ulaanbaatar has 1

dentist per 1,592 people while the dentist-population ratio in the Khuvsgul province stands at 1:12,770 (Table 1). Those 9 dentists work in the center of the Khuvsgul province.

According to a survey performed by the School of Dentistry at the Mongolian National University of Medical Sciences, 90% of the population suffers from dental diseases nationwide<sup>2)</sup>. Dental caries in children is the highest among all age groups. Among oral-related diseases, inflammatory disease made up 49.88% of inpatients treated in the major hospitals of Ulaanbaatar in 2013; 36% of those patients were from the city, whereas 64% were from the provinces. Among inflammatory diseases, periodontitis and cellulitis had the highest incidence<sup>3)</sup>.

The DMF index is used in the dental field to

---

\* : 2-9-18, Misaki-cho, Chiyoda-ku, Tokyo, 101-0061 JAPAN

TEL : 083-6380-9252 FAX : 03-6380-9606

e-mail: tunga@tdc.ac.jp

table 1 2011 data (\*non-confirmed)

	Ulaanbaatar	Khuvsgul province
The number of dentists/ population	711/ 1,132,000	*9/ 115,000

table 2 DMF/dmf index (Tsagaan-Uur soum, Khuvsgul province)

Age	DMF score	
	Primary teeth	Permanent teeth
2	2.6	0
3	4.9	0
4	6.2	0
5	5	0
6	4.7	4
7	1.8	2.2
8	4.6	0.4
9	3.8	1
10	1.5	3.7
11	2.3	3.2
12	0	2.5
13	0	3

Table 3 Classification of Dental Caries

Caries scale	Age		
	2~5	6~12	13 or more
D1	77	56	14
D2	27	39	7
D3	23	12	3
D4	2	3	7

assess caries evaluation, and it is the simplest and most commonly used technique to survey dental caries. It counts the number of carious, missing and filled teeth<sup>4</sup>.

Our main goal was to explore the prevalence of dental caries, and assess the oral health situation of children in remote areas of Mongolia.

Materials and methods

Seventy-one children with an age range of 2 to 13 y.o. from the Tsagaan Uur soum in the northern Khuvsgul province were screened and filled out a questionnaire. Half of those children were from nomadic families and were examined in the local hospital while the other half were examined in a mobile kindergarten for nomadic children. Children

between the age of 2 and 5 y.o. were accompanied by their parent and the parent helped fill out the questionnaire.

Determination of decayed, missing and filled teeth was evaluated by the DMF index and we used an explorer to detect caries. In order to categorize dental caries, patients were divided into 3 groups according to their age: Group 1: 2 to 5 y.o. (primary dentition), Group 2: 6 to 12 y.o. (mixed dentition) and Group 3: 13 y.o. (permanent dentition).

The shape and depth of caries lesions (WHO) were scored as follows:

- D1: Clinically detectable enamel lesions
- D2: Clinically detectable cavities limited to the enamel
- D3: Clinically detectable cavities in the dentin
- D4: Lesions extending into the pulp

Results

The results of the screening are depicted in Tables 2 and 3. The DMF index was much higher among 6 y.o. children mainly due to caries (Table 2). The average DMF index in developed countries is less than 0.3, whereas the DMF index of the Tsagaan-Uur village is much higher than that. Even among 2 y.o. children, the DMF index of 2.6 is 10 times higher than the international average.

D1, clinically detectable enamel lesions, were the most common among all types of caries in 5 y.o. children. However, D4, caries lesions which extend into the pulpal area, were the lowest in 2 y.o. children.

Discussion

Dental caries are the biggest threat to children's oral health. Generally, dental caries are related to socioeconomic status, dietary behaviors and oral hygiene habits. In the case of Mongolia, we found

that the incidence of caries is directly related to tooth brushing, the intake of sugar and sweets (breastfeeding for children under 2 y.o.) and also the place where they live. In rural Mongolia, people don't receive adequate dental treatment due to the absence of dentists and dental offices in the region and its remoteness. Also, they are not aware of the importance of oral health care.

According to a 1996 National Oral Survey conducted in Mongolia, the DMF index of urban 5 – 7 y.o. children was 7 while in rural areas it was 2.5 for 7 y.o. children<sup>5,6)</sup>. The DMF index of 5 y.o. children from Ulaanbaatar, the capital city, registered at 8<sup>7)</sup>. Our graph above shows the DMF index as of 2015 among the population of Tsagaan-Uur, Khuvsgul province. It can be noted that dental caries are the most prevalent form of oral-related diseases that affect children in Mongolia. These data are similar to those of earlier studies, which suggests that the prevalence of dental caries has remained steady for the past 10 years.

In remote areas like soum centers, there are no dental offices and people don't have regular access to preventive dental care. These rural populations who haven't received preventive care and treatment on a regular basis have more advanced dental caries and have complex treatment needs such as root canal treatment and/or tooth extraction. There are a number of factors that prevent practitioners from providing adequate oral health care to populations in soum centers including their remote locations, lack of funding, high equipment cost, staff shortage and small population. Changes in diagnostic criteria and preventive and curative efforts by dental health care services have certainly been parallel factors for the caries decline<sup>8)</sup>. Diagnostic techniques should also be both sensitive and specific. In order to detect caries in its earliest stage, caries detector dyes and laser fluorescence can be applied along with the explorer.

#### Conclusion

Caries incidence was found to be high in children from rural Mongolia. Detecting and diagnosing caries

in the early stage will help prevent further caries development in children. Thus, preventive measures, such as spreading the awareness and importance of oral health care, are equally as important as the treatment in rural Mongolia.

#### References

- 1) National Statistical Office of Mongolia, UBSEG.GOV.MN
- 2) The School of Dentistry, Mongolian National University of Medical Sciences. Caries prevalence among Mongolian population, 2008.
- 3) Davaadorj P, Otgonbileg E, Bold M: Эрүү нүүрний мэс заслын өвчний тархалтийг улсын хэмжээнд тодорхойлсон дүн, Innov Mongolian Med J, 3, 2016.
- 4) Joseph Z: Measurement of dental caries experience-modification of the DMFT index. Community Dent Oral Epidemiol, 1: 43-46, 1984.
- 5) Ministry of Health, Mongolia, National Oral Health Survey, 1996.
- 6) Tseveenjav B, Vehkalahti M, Murtomaа H: Oral health and its determinants among Mongolian dentists, Acta Odontol Scand, 62: 1-6, 2004.
- 7) Jigid B, Ueno M, Shinada K, Kawaguchi Y: Early childhood caries and related risk factors in Mongolian children, Community Dent Health, 26: 121-128, 2009.
- 8) Peterson PE, Torres AM: Preventive oral health care and health promotion provided for children and adolescents by the Municipal Dental Health Service 1 Denmark, Int J Paediat Dent, 9, 81-91, 1999.