

ORIGINAL ARTICLE

Date of submission: 14 Jun 2024

Date of acceptance: 12 Jul 2024

Date of Publication: 14 Jul 2024

Correspondence:

Dr. Sajal Twanabasu

Dept. of Pediatrics, Dhading Hospital,
Nilkantha Municipality, Dhading, Nepal
Email: sajal.twanabasu@gmail.com

How to cite:

Twanabasu S, Homagain S, Tuladhar S,
Mahaseth A, Rijal RC, Maskey S, et al.
The unprecedented surge in mumps
cases: time to think about vaccination in
Nepal? J Gen Pract Emerg Med Nepal.
2024 Jun;11(17):87-91.

Online information**DOI:**

<https://doi.org/10.59284/jgpeman275>



This work is licenced under creative
commons attribute 4.0 international
licence

The unprecedented surge in mumps cases: time to think about vaccination in Nepal?

Sajal Twanabasu¹, Sushan Homagain², Sucharita Tuladhar³, Ashika Mahaseth⁴,
Ram Chandra Rijal², Sujina Maskey⁵, Dinesh Regmi⁶, Bhusan Kumar Subedi⁷

¹Pediatrician, ²Medical Officer, ⁶Medical Generalist, ⁷Internist, Dhading Hospital, Nilkantha Municipality, Dhading, Nepal; ³Asst. Prof., Dept. of Pediatrics, ⁴Gynaecologist, ⁵Medical Officer, Patan Hospital, Patan Academy of Health Sciences, Lalitpur, Nepal

Abstract

Introduction: Mumps is a self-limiting, common vaccine preventable viral disease characterized by fever and swelling of the unilateral or bilateral parotid gland. Nepal has not included mumps containing vaccines in the national immunization schedule and hence there are occasional outbreaks but the actual incidence is not known. We are trying to represent the burden of mumps in Nepal by reporting the cases visiting our center during the recent outbreak.

Method: This is a cross sectional study conducted at Dhading hospital for the period of 3 months from 15th of May 2023 to 14th of July 2023. All children that presented to pediatric OPD with age less than 14 years of age with symptoms of fever and parotid swelling were included in the study. Follow up was done after 5 days of presentation or immediately if any complications were noticed. Diagnosis of mumps was done clinically using Centers for Disease Control and Prevention (CDC)'s criteria. The data was analyzed using Microsoft Excel 2016.

Result: Out of 1875 outpatients, 124 (6.61%) were diagnosed as mumps among which 67 (54.03%) were male. Mean age of the patient was 5.9 years (± 1.71 SD). All the patients complained of fever and swelling of the cheek with abdominal pain 10 (8.06%) as predominant additional symptom. All the patients presented at the pediatric outpatient clinic and none of the cases developed complications.

Conclusion: The burden of mumps is underestimated in Nepal due to lack of surveillance and documentation as it is not a notifiable disease. It is evident that mumps pose a significant disease burden in Nepal and hence mumps vaccine should be considered in national immunization programme.

Keywords: Mumps; Nepal; Outbreak; Pediatrics

INTRODUCTION

Mumps is a self-limiting, common vaccine preventable disease caused by paramyxovirus. It is characterized by fever and swelling of the unilateral or bilateral parotid gland. Patients may also complain of headache, myalgia, fatigue and anorexia. It is common among school aged children and college aged young adults. The incubation period is usually between 16 to 18 days. Mumps is usually self-limited; most individuals recover completely within a few weeks. Asymptomatic infections occur in 15 to 20% of cases and are more common among adults than children.¹ Acute meningoencephalitis is the commonest serious complications seen in children and adolescents whereas pancreatitis, transverse myelitis, orchitis, oophoritis, deafness, facial palsy, ascending polyradiculitis, cerebellar ataxia, and mastitis are the other complications.^{2,3}

Mumps occurs globally but the global incidence is difficult to estimate as it is not a notifiable or reportable disease in many countries and the major burden comes from the countries without routine vaccination. It is estimated that in countries without routine mumps vaccination; the burden of mumps is high (100-1000 cases/ 100000 population), with epidemic peaks every 2- 5 years.⁴ Near-elimination of mumps could be achieved by adopting and maintaining good coverage of a two-dose strategy in the National immunization program.³ There have been concerns regarding the mumps outbreak among vaccinated individuals. Waning immunity is considered to be responsible. However, mumps occurs more commonly in unvaccinated compared to vaccinated individuals. Mumps vaccine is routinely administered in 123 WHO state members as of end 2022.⁵ Nepal has not included mumps containing vaccines in the national immunization schedule and hence there are occasional outbreaks but the actual incidence is not known.

We are conducting this study to report the unprecedented rise in the mumps cases in the pediatric outpatient clinic at Dhading hospital and possible need of inclusion of the mumps vaccine in the routine immunization schedule of Nepal.

METHOD

This is a cross sectional study done in Dhading hospital, Nepal. Study was conducted for the period of 3 months from 15th of May 2023 to 14th of July 2023 during which the whole country was witnessing a surge of mumps cases. All children that presented to pediatric OPD with age less than 14 years of age with symptoms of fever and parotid swelling were included in the study. Consent was taken from the parents or legal guardian before the enrollment. Detailed history was elicited regarding the disease and necessary details were entered in proforma. Follow up was done after 5 days of presentation or immediately if any complications were noticed. Diagnosis of mumps was done clinically as virological tests to diagnose mumps were not available.

Centers for Disease Control and Prevention (CDC)'s criteria was used for clinical diagnosis which states: clinical case of mumps is defined as acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary glands that lasts for ≥ 2 days and occurs in the absence of other apparent causes. Data was collected on proforma and entered and analyzed in Microsoft Excel 2013. Continuous variables were expressed as mean or median. Percentage was used to show the proportion of a group or a set.

RESULT

Mumps was diagnosed clinically in 124 out of 1875 (6.61%) total patients that visited pediatric outpatient clinic during the study period. All children diagnosed as mumps were analyzed. Out of 124 children, 67 (54.03%) were male. (Figure 1)

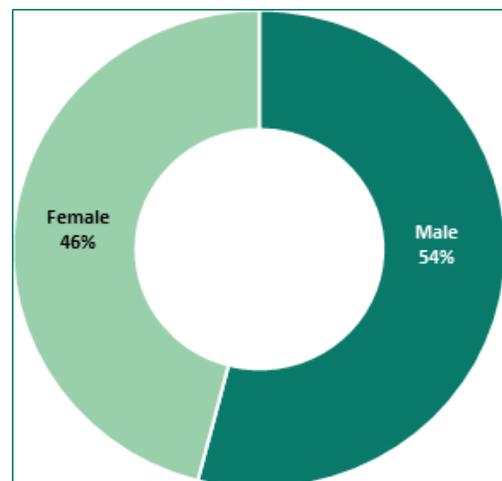


Figure 1. Gender distribution

Mean age of the patient was 5.9 years (± 1.71 SD). All the patients complained of fever and swelling of the cheek. 10 (8.06%) patients complained of abdominal pain, 8 (6.45%) patients complained of headache and 2 (1.6%) patients complained of vomiting as additional symptoms (Figure 2).

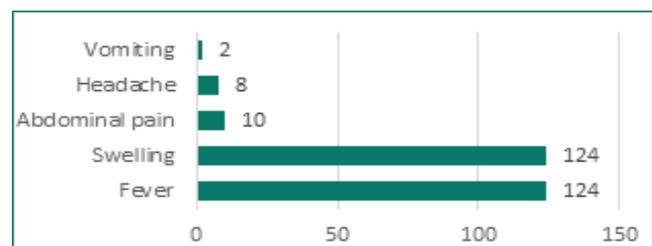


Figure 2. Symptoms at presentation

All the patients were presented at the pediatric outpatient clinic and none of the cases developed complications. Eighty which makes up 64.5% of the patients had unilateral parotid swelling out of which, 50 (40.32%) patients had swelling of the right and 30 (24.19%) patients had swelling

of the left parotid gland. 44(35.49%) patients had bilateral parotid involved (Figure 3).

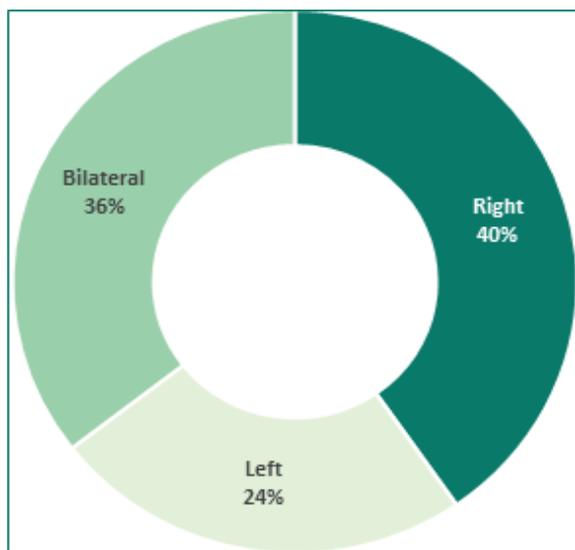


Figure 3. Side distribution

The average duration of illness before presentation was 2.8 days with a range of 1 to 7 days. 11 (8.88%) patients had other family members with similar symptoms. 46 (37.09%) were applying belladonna plaster during the presentation. None of the children were vaccinated against mumps. 36 (29%) of the patients were taking antibiotics at the time of presentation without a doctor's prescription. (Figure 4).

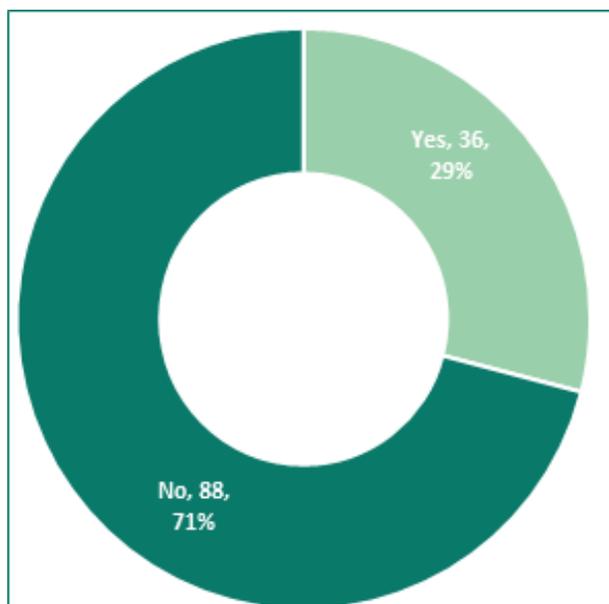


Figure 4. Use of antibiotic at the time of presentation

Among those, the majority (47%) were taking Amoxicillin/Amoxicillin and clavulanate and about 12% were taking cefixime (Figure 5).

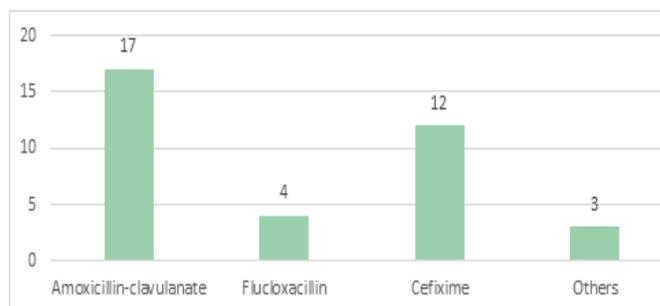


Figure 5. Type of antibiotic used

DISCUSSION

Mumps is widely prevalent in Nepal. National data is very limited. Mumps is considered as an insignificant public health problem because of poor documentation of clinical cases and lack of published studies. In Nepal, data on mumps is very limited. In our study, 124 cases were clinically diagnosed whereas in a study done by Keyal K, et al, at Civil service hospital; Kathmandu, Nepal 113 mumps cases were diagnosed over a span of two years between November 2009 to October 2011.⁶ We couldn't find other studies on mumps conducted in Nepal.

Mumps should be suspected in the presence of typical presentations i.e. parotitis or other salivary gland swelling, orchitis or oophoritis and relevant epidemiological exposure. When parotitis is present, diagnosis may be established by laboratory testing.⁷ Laboratory confirmation of mumps virus infection may include; detection of mumps virus RNA by reverse transcriptase polymerase chain reaction (RT-PCR) or positive serum mumps immunoglobulin IgM antibody. However, in resource limited settings, diagnosis is made on clinical grounds as diagnostic laboratory investigations are either unavailable or unaffordable.

Similarly, there is slight male predominance (male:female ratio of 1.17:1) which is similar to the study done by Keyal K and D Whyte.^{6,8} Mean age of the patient was 5.9 years (± 1.71 SD) which was similar with another study done in Nepal where the commonest age group affected was between 4-6 years.⁶

Parotitis may be unilateral or bilateral. Initially, swelling is unilateral followed by contralateral involvement in 90% of cases.⁹ However, only 35.49% of the patients had bilateral swelling of the parotid gland in our study. Parotid swelling can last up to 10 days. In our study, the average duration of illness before presentation was 2.8 days with a range of 1 to 7 days.

Mumps is transmitted by respiratory droplets, direct contact or fomites. Those living in close proximity with the infected might be at the risk of infection. Outpatients with mumps should avoid contact with others from the time of diagnosis until at least five days after onset symptoms by

staying at home from school, work and staying in a separate room if possible.¹⁰ Infection control guidance for schools and nurseries advises that children stay away from school for five days from the onset of swollen glands.¹¹ Contrary to the guidelines, most of the children in our study were going to school during the period of infection, which might have contributed to the rapid surge in case. Positive family history was present only in 8.88% of the total children in our study; however, most of the children were exposed to their friends at school.

Treatment is largely supportive. There is no role of any specific antiviral therapy for treatment of mumps. Supportive care includes the use of analgesic/antipyretic. Discomfort alleviation by using warm or cold packs. Following exposure there is no role of immunoglobulin. All of the patients were treated symptomatically and none of them developed complications. It is interesting that 37.09% of the children presented with balladona plaster. We couldn't find any study or guideline regarding its use in case of mumps. However, it is traditionally believed that the application of balladona plaster provides symptomatic relief from heat therapy.

Incidence of mumps in Nepal is increasing despite the availability of a safe and effective vaccine; which is concerning. Mumps-containing vaccines have not been introduced in the national immunization schedule but are available only as optional vaccines in the private sector. Universal vaccination has contributed greatly to the decline in the incidence of mumps worldwide. Without routine immunization, the incidence is estimated to be 100-1,000 cases per million, with an epidemic every 4-5 years. The reduction in mumps incidence varies from 88% to 97% in countries adopting a single or two doses of vaccine, respectively.⁴ Finland was the first country to declare itself mumps-free in 2000 after a national 2-dose MMR vaccination program for children, resulting in high vaccination coverage.¹² Studies done in India showed mumps-containing vaccines provide good sero-conversion amongst the vaccinated individuals.^{13,14,15}

Indian academy of pediatrics, committee on vaccination strongly recommends the use of MMR vaccine instead of MR vaccine in universal immunization programme as it believes mumps is a serious health concern in India.¹⁶ Moreover, no additional logistics will be required to incorporate mumps vaccine in already existing measles and rubella vaccination.

This is a single center study done over a short period of time from a local level hospital with the limited catchment area. Study can't reflect the actual scenario as patients as there is no data on patients not seeking health care which could be even higher. Data from this study is inadequate to make recommendations. Studies from multiple centers across the countries should be conducted to reflect the actual need of incorporating mumps in a national immunization schedule

CONCLUSION

The incidence of mumps is increasing. Significant proportion of total pediatric outpatients is covered by mumps. Though, the exact burden of mumps in Nepal is not known due to lack of surveillance and documentation as mumps is not a notifiable disease; we can assume that the real burden across the country is quite high. Same applies with the complications associated with mumps. There seems an urgency to include mumps vaccine in the national immunization programme.

DECLARATIONS

Acknowledgement

None

Conflict of Interest

None

Funding

None

Consent for study

It was taken from parents or accompanying legal guardian.

REFERENCES

1. Philip BN, Reinhard KR, Lackman DB. Observations on a mumps epidemic in a "virgin" population. *Am J Epidemiol*. 1959;69(2):91-111. | [DOI](#) | [PubMed](#) |
2. Masters BR, Mandell GL, Bennett JE, Dolin R. (eds). Principles and practice of infectious diseases, 6th ed. *Graefes Arch Clin Exp Ophthalmol*. 2006;244(6):765-7. | [DOI](#) |
3. World Health Organization. Mumps virus vaccines: WHO position paper, 2007 [Internet]. World Health Organization; 2007. [cited 2023 Aug 20]. Available from: | [Web Link](#) |
4. Galazka AM, Robertson SE, Kraigher A. Mumps and mumps vaccine: a global review. *Bull World Health Organization*. 1999;77(1):3. | [PubMed](#) | [Full Text](#) |
5. World Health Organization. Immunization coverage [Internet]. World Health Organization. Fact Sheets / Detail / Immunization Coverage. [cited 2023 Aug 14]. | [Web Link](#) |
6. Keyal K, Joshi BG, Bhatt S, Pandey R, Shrestha RM. Study of mumps in children attending a tertiary care centre. *J Nepal Paedtr Soc*. 2012;32(1). | [DOI](#) |
7. Davison P, Rausch-Phung EA, Morris J. Mumps. 2024 May 1. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan | [PubMed](#) | [Full Text](#) |
8. Whyte D, O'Dea F, McDonnell C, O'Connell NH, Callinan S, Brosnan E, et al. Mumps epidemiology in the mid-west of Ireland 2004-2008: increasing disease burden in the university/college setting. *Euro Surveill*. 2009;14(16):19182. | [DOI](#) |
9. Hviid A, Rubin S, Mühlemann K. Mumps. *The Lancet*. 2008;371(9616):932-44. | [DOI](#) |
10. Masters NB, Leung J, Tappe J, Marin M, Crooke SN, Bankamp B, et al. Mumps - vaccine preventable diseases

- surveillance manual [Internet]. Centers for Disease Control & Prevention. 2023. [cited 2023 Aug 20]. | [Full Text](#) | [Web Link](#) |
11. Richardson M, Elliman D, Maguire H, Simpson J, Nicoll A. Evidence base of incubation periods, periods of infectiousness and exclusion policies for the control of communicable diseases in schools and preschools. *Pediatr Infect Dis J*. 2001;20(4):380-91. | [DOI](#) |
 12. Peltola H, Davidkin I, Paunio M, Valle M, Leinikki P, Heinonen OP. Mumps and rubella eliminated from Finland. *JAMA*. 2000;284(20):2643-7. | [DOI](#) | [PubMed](#) | [Full Text](#) |
 13. Yadav S, Thukral R, Chakarvarti A. Comparative evaluation of measles, mumps & rubella vaccine at 9 & 15 months of age. *Indian J Med Res*. 2003;118:183–6. | [PubMed](#) |
 14. Raut SK, Kulkarni PS, Phadke MA, Jadhav SS, Kapre SV, Dhere RM, et al. Persistence of antibodies induced by Measles-Mumps-Rubella Vaccine in children in India. *Clin Vaccine Immunol*. 2007;14(10):1370-1. | [DOI](#) | [PubMed](#) | [Full Text](#) |
 15. Gomber S, Arora SK, Das S, Ramachandran VG. Immune response to second dose of MMR vaccine in Indian children. *Indian J Med Res*. 2011;134(3):302-6. | [PubMed](#) | [Full Text](#) |
 16. Vashishtha VM, Yadav S, Dabas A, Bansal CP, Agarwal RC, Yewale VN, et al. IAP position paper on burden of mumps in India and vaccination strategies. *Indian Pediatr*. 2015;52:505-14. | [DOI](#) | [PubMed](#) |