

# Low Prevalence of Mumps IgG Antibodies among the Paediatric Population Attending Tertiary Care Hospital in Southern India- A Pilot Study

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Dear Editor,

Mumps is a Vaccine-Preventable Disease (VPD) that can cause self-limiting parotid glands swelling to complicated meningitis, deafness, and infertility. In India, Mumps vaccine is not included in the universal immunisation program; hence sporadic outbreaks and incidents have occurred around the country. In this pilot study, it was revealed that the prevalence of IgG antibodies against the Mumps virus was significantly ( $p < 0.001$ ) lower than the Measles and Rubella viruses. Thus, we suggest the nation wide antibody prevalence study to unravel the protective IgG level and to incorporate the mumps component in the universal immunisation schedule.

Mumps is a vaccine preventable disease and an efficacious safe vaccine is available, which was integrated in routine immunisation schedule in 121 (62%) countries in the form of the Measles, Mumps and Rubella (MMR) vaccine. In India, Mumps is not viewed seriously due to the lack of sufficient published data and also this disease is considered to be self-limiting [1,2]. The Indian Academy of Paediatrics (IAP) has regarded the burden of Mumps and the same logistics can take care of these three Vaccine Preventable Disease (VPDs) instead of two, hence the association strongly recommended the inclusion of Mumps component in the MR vaccine [3]. Considering the facts above, a pilot study was conducted for estimating the IgG antibodies against the MMR viruses among the paediatric population.

This study was a single-centre pilot study done during the period of December 2018 to November-2019. After obtaining institutional ethical clearance (Ref No: 2544/ME1/18 Dated: 07.06.2018), a total of 124 anonymous serum samples were collected from children aged between 3-12 years and included in the present study. Among them, 65 and 59 were males and females, respectively. Through the peripheral vein puncture, 3 mL of blood were collected in the clot activator tube. The blood were mixed by inverting the tube 5 times and was left at room temperature for 30 minutes. Subsequently, the serum was separated using centrifugation at 1500 rpm for 10 minutes. Serum samples were stored in 2 mL storage vials at  $-20^{\circ}\text{C}$  deep freezer until further analysis. MMR IgG antibodies were tested by the ELISA (Calbiotech IgG ELISA kit, USA), as described by the manufacturer. The test for one proportion was used to test the hypothesis that an observed proportion is equal to a pre-specified proportion using the MedCalc web tool [4].

The Mumps virus is highly contagious and has a very high secondary attack rate [5]. Data and studies pertinent to Mumps virus infection and seroprevalence were scanty. Gupta R et al., observed a significantly decreased seroprevalence of Mumps IgG among the children in Rajasthan [6]. In this study, out of 124 samples tested, 107 (86.3%), 45 (36.3%) and 88 (71%) were positive for MMR IgG antibodies, respectively. The Mumps IgG antibodies were significantly ( $p < 0.001$ ) lower than Measles and Rubella [Table/Fig-1].

This study revealed that the protective antibodies against the Mumps virus were minimal compared to the other two viruses. The clinical spectrum of the mumps infection ranging from self-limiting parotid glands swelling to severe complications such as encephalitis, meningitis, orchitis, myocarditis, pancreatitis, and nephritis [7]. In 2015, Raut CG et al., reported Mumps outbreak in Karnataka [8], Chauhan P et al., reported the outbreak in 2018 at a naval training establishment in Andhra Pradesh [9]; and the Integrated Disease Surveillance Programme (IDSP) has reported 45 outbreaks of mumps in different parts of the nation [2]. Sporadic cases were also reported throughout the country. Considering the clinical spectrum of the disease, incidence and prevalence, there is an urgent need to incorporate the mumps component in the Indian immunisation schedule, which could prevent the larger outbreaks and associated morbidity and mortalities. A study conducted by Malaiyan J and Menon T showed the occurrence of Mumps infection among the MMR vaccinated individuals due to the discrepancy between the vaccine strain and the strains which were circulated in the reported region [10]. Hence, there is unmet need to conduct nation wide MMR vaccine efficacy studies and reconsider the Mumps component used for the vaccine production.

	Tested	Positive	Observed proportion (%)	p-value	95% CI of observed proportion
Measles IgG	124	107	86.3	<0.0001	78.97% to 91.81%
Mumps IgG	124	45	36.3		27.86% to 45.41%
Rubella IgG	124	88	71		62.17% to 78.80%

**[Table/Fig-1]:** Prevalence of Measles, Mumps and Rubella (MMR) IgG antibodies among the paediatric population.

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