



**Research Article**

**STATUS OF CHILD IMMUNIZATIONS AND VITAMIN A SUPPLEMENTATION  
IN UTTARAKHAND, INDIA**

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**ABSTRACT**

**Background:** Child immunization has a crucial role in reducing child mortality under five. Several immunization drives have been conducted to achieve the MDG, still significant inequalities have been observed in achieving universal coverage of child immunization in different regions. In the present study, usage of child immunization is assessed between two divisions of Uttarakhand: Garhwal and Kumaun.

**Method:** In this study z, test for proportions is used for comparing uptake of child immunization and vitamin A supplementation between Kumaun and Garhwal division of Uttarakhand.

**Result:** It is observed that Garhwal has better utilization of vaccination for child immunization in comparison to Kumaun division. Most of the districts in the state had almost same proportion of distribution excluding the district of Almora in Kumaun division and Haridwar and Tehri-Garhwal of Garhwal division.

**Conclusion:** A lot has been achieved in terms of child health since the inception of Uttarakhand as a separate state. Many efforts are required especially in hilly districts of Uttarakhand to have a positive impact on child health and reduced mortality.

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**INTRODUCTION**

Child immunization with vaccines has been the most novel approach in reducing the child mortality under five from some various life threatening diseases [1]. Universal vaccination coverage has been a major Millennium development Goal to improve child and maternal health [2]. Increase in vaccination coverage is an important strategy to achieve global goals, vaccination not only protects from a particular disease but also can provide a wide array of health benefits [3]. Vitamin A is required for development and differentiation of various cells and is said to have a preventive effect on all-cause and disease specific mortality in children under five [4].

Since the inception of Uttarakhand as a separate state government has constantly worked on improving child health by promoting child immunization programmes, but in year 2017-2018 only 61.32% children (9-11 months old) were covered with full immunization. These statistics are really a cause for concern since 99.3% full immunization was observed during 2015-2016 [5]. Child immunization programmes can only be effective if there is a precise knowledge on the distribution of vaccination coverage. This information is important to plan effective strategies and incentives and provide deeper insights to the problem of low immunization in certain areas.

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Thus, this study was carried out with an aim to identify the distribution of child vaccination and Vitamin A supplementation in the two divisions of Uttarakhand: Kumaun and Garhwal.

**MATERIAL AND METHOD**

For studies data mining was done using secondary database provided by International Institute for Population Sciences (IIPS) on National Family Health Surveys 4 conducted in 2015-2016 [6]. For Uttarakhand, NFHS-4 fieldwork was from 30 January 2015 to 19 July 2015 by Institute of Health Management Research (IIHMR University) and collected information from 15,171 households. Along with this data was assessed from the fact sheets for each district of Uttarakhand [7].

**Statistical Analysis**

The Z test for two-population proportion has been applied for different study indicators. P-value is calculated, if  $p > 0.05$ ,  $H_0$  is accepted, and if  $p < 0.05$ , then  $H_0$  is rejected at 5 % of level of significance.

**RESULT**

Table 1, represents distribution of child vaccination and Vitamin A supplement uptake in two divisions of Uttarakhand. There is a significance difference between Garhwal and Kumaun, where Garhwal has higher prevalence of utilizing child immunization and vitamin A supplementation.

**Table 1** Comparison of distribution of child immunization and vitamin A supplement uptake between Kumaun-Garhwal, Kumaun-Uttarakhand & Garhwal-Uttarakhand

Indicators	Uttarakhnad [U]	Garhwal [G]	Kumaun [K]	G vs. K (p-value)	U vs. K (p-value)	U vs. G (p-value)
Children age 12-23 months fully immunized (BCG, measles, and 3 doses each of polio and DPT) (%)	57.7	53.94	61.60	0.00	0.08	0.09
Children age 12-23 months who have received BCG (%)	92.9	81.81	94.63	0.00	0.12	0.00
Children age 12-23 months who have received 3 doses of polio vaccine (%)	68	61.66	72.58	0.00	0.02	0.00
Children age 12-23 months who have received 3 doses of DPT vaccine (%)	80	71.09	84.53	0.00	0.01	0.00
Children age 12-23 months who have received measles vaccine (%)	80.6	73.87	83.30	0.00	0.12	0.00
Children age 12-23 months who have received 3 doses of Hepatitis B vaccine (%)	59.4	50.84	58.83	0.00	0.79	0.00
Children age 9-59 months who received a vitamin A dose in last 6 months (%)	36.9	31.43	43.05	0.00	0.01	0.01
Children age 12-23 months who received most of the vaccinations in public health facility (%)	91	78.50	93.65	0.00	0.03	0.00
Children age 12-23 months who received most of the vaccinations in private health facility (%)	6.3	3.77	3.63	0.52	0.00	0.00

The distribution of uptake of child immunization and vitamin A supplementation in Kumaun division is depicted in Table-2. Almost all districts had good usage of vaccination services and vitamin A supplementation except Almora.

Table 3, represents distribution of usage of child immunization And vitamin A supplementation. Most of the districts had high distribution except Haridwar and Tehri-Garhwal.

**Table 2** Comparison of distribution of child immunization and vitamin A supplement uptake in Kumaun region with its district

Indicators	Kumaun	Pithoragarh	Almora	Champawat	Bageshwar	Nainital	Udham Singh Nagar
Children age 12-23 months fully immunized (BCG, measles, and 3 doses each of polio and DPT) (%)	61.60	74.2 (0.00)	60.6 (0.64)	68.4 (0.00)	60 (0.46)	59 (0.23)	47.4 (0.00)
Children age 12-23 months who have received BCG (%)	94.63	96.8 (0.02)	97.8 (0.00)	98.9 (0.00)	89.6 (0.00)	91.6 (0.01)	93.1 (0.16)
Children age 12-23 months who have received 3 doses of polio vaccine (%)	72.58	77.8 (0.01)	71.8 (0.68)	80.2 (0.00)	70.9 (0.49)	72.6 (0.96)	62.2 (0.00)
Children age 12-23 months who have received 3 doses of DPT vaccine (%)	84.53	89.9 (0.00)	83.7 (0.62)	83.7 (0.62)	89.6 (0.00)	76.2 (0.00)	75.8 (0.00)
Children age 12-23 months who have received measles vaccine (%)	83.30	90.3 (0.00)	85.5 (0.17)	86.3 (0.06)	80.5 (0.10)	78.5 (0.00)	78.7 (0.01)
Children age 12-23 months who have received 3 doses of Hepatitis B vaccine (%)	58.83	71.5 (0.00)	52.3 (0.00)	52 (0.00)	60 (0.58)	61.1 (0.29)	56.1 (0.22)
Children age 9-59 months who received a vitamin A dose in last 6 months (%)	43.05	46.1 (0.16)	53.4 (0.00)	35.7 (0.00)	34.1 (0.00)	49.5 (0.00)	39.5 (0.11)
Children age 12-23 months who received most of the vaccinations in public health facility (%)	93.65	91.4 (0.06)	96.5 (0.00)	95.8 (0.03)	94.8 (0.25)	89.8 (0.00)	93.6 (1.00)
Children age 12-23 months who received most of the vaccinations in private health facility (%)	3.63	2.1 (0.00)	3.5 (0.54)	4.2 (0.01)	0 (0.00)	8 (0.00)	4 (0.08)

**Table 3** Comparison of distribution of child immunization and vitamin A supplement uptake in Garhwal region with its district

Indicators	Garhwal	Uttarkashi	Rudraprayag	Paurigarhwal	Haridwar	Chamoli	Tehri-Garhwal	Dehradun
Children age 12-23 months fully immunized (BCG, measles, and 3 doses each of polio and DPT) (%)	53.94	72 (0.00)	70.3 (0.00)	61.3 (0.38)	55.3 (0.06)	62.2 (0.00)	51.1 (0.21)	60.7 (0.00)
Children age 12-23 months who have received BCG (%)	81.81	95.1 (0.00)	95.5 (0.00)	96.4 (0.00)	88.2 (0.00)	93.2 (0.00)	98.5 (0.23)	94 (0.00)
Children age 12-23 months who have received 3 doses of polio vaccine (%)	61.66	73.6 (0.00)	76.8 (0.00)	79.4 (0.00)	63.6 (0.36)	74.3 (0.00)	59 (0.23)	68.5 (0.00)
Children age 12-23 months who have received 3 doses of DPT vaccine (%)	71.09	86.1 (0.00)	85.7 (0.00)	78.2 (0.00)	75 (0.05)	76.4 (0.01)	85.4 (0.00)	85.8 (0.00)
Children age 12-23 months who have received measles vaccine (%)	73.87	95.1 (0.00)	87.2 (0.00)	80.1 (0.00)	71.9 (0.27)	81.6 (0.00)	85.6 (0.00)	87.5 (0.00)
Children age 12-23 months who have received 3 doses of Hepatitis B vaccine (%)	50.84	65 (0.00)	58.3 (0.00)	65.4 (0.00)	60.6 (0.00)	54.3 (0.17)	51.2 (0.86)	61.7 (0.00)
Children age 9-59 months who received a vitamin A dose in last 6 months (%)	31.43	28.4 (0.14)	49.1 (0.00)	40.3 (0.00)	28.3 (0.13)	38.6 (0.00)	29 (0.24)	34.6 (0.13)
Children age 12-23 months who received most of the vaccinations in public health facility (%)	78.50	98.4 (0.00)	95.3 (0.00)	88.9 (0.00)	88.9 (0.00)	80.9 (0.18)	98.6 (0.00)	87.4 (0.00)
Children age 12-23 months who received most of the vaccinations in private health facility (%)	3.77	0 (0.00)	1.8 (0.00)	11.1 (0.00)	8.1 (0.00)	1.7 (0.00)	0(0.00)	11.8 (0.00)

## DISCUSSION

Garhwal division has more utilization of child immunity and vitamin A supplementation services; widespread network of several PHC, CHC and district hospitals facilitates utilization of childcare services. Dehradun, Pauri-Garhwal, Uttarkashi and Rudraprayag district recorded highest usage of child immunization and vitamin A supplementation [8]. Haridwar and Tehri-Garhwal district had deplorable statistics, which could be attributed to low rates of literacy and awareness [9]. Migration is an important determinant for childhood immunization. There are lot of migrants in Haridwar districts as it is one of the industrial area of the state. A study has demonstrated that migrants prefer to utilize health services from their resident district as they have poor knowledge about utilization of local health facilities [10]. Maternal literacy has been associated with child immunization, low levels of literacy in Tehri-Garhwal coupled with inaccessibility and insufficient health facilities have led to such sad results [11].

In Kumaun region, most of the states had almost fair utilization of child immunization and Vitamin A supplementation. Pithoragarh and Nainital district are both well equipped with health facility and a high level of literacy positively influences the vaccination in the region [9]. Almora a hilly district of Kumaun has several constraints like inaccessibility and unavailability of female service provider higher than ANM. Mothers are hesitant to visit health center due to unavailability of female doctor and have poor knowledge on importance of immunization [12].

## CONCLUSION

Child health is not only an indicator of happy childhood but also determines the health of a nation. This study offers in-depth analysis on usage of child immunization between different districts in the state. There is need of Government intervention such as dissemination of information, enhancement of health services and awareness programmes need to be mediated in concerned areas.

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