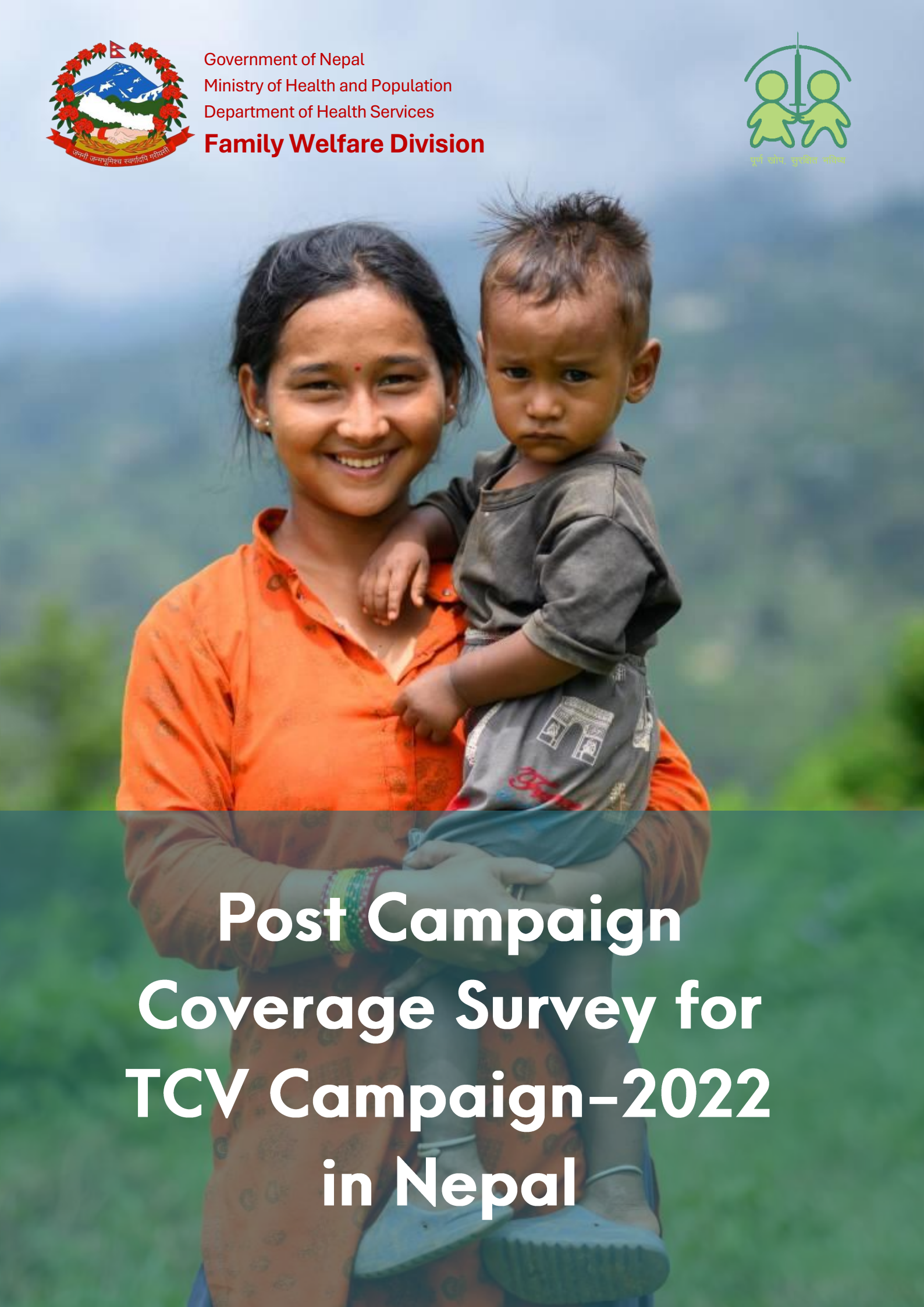
Government of Nepal
Ministry of Health and Population
Department of Health Services
Family Welfare Division



Post Campaign Coverage Survey for TCV Campaign-2022 in Nepal

Acknowledging the World Health Organization-Programme for Immunization Preventable Diseases (WHO-IPD) for continuous technical support to the National Immunization Program, including for conduction of the TCV campaign and the Post Campaign Coverage Survey in Nepal.

World Health Organization
Nepal

Government of Nepal
Ministry of Health and Population
Department of Health Services
..... Division

4-261712
4-261436
Fax: 4-262268

Pachali, Teku
Kathmandu, Nepal

Ref No.:

FOREWORD

Typhoid fever continues to present a substantial public health burden, posing a persistent threat. In consideration of the fact that Nepal has one of the highest typhoid burdens in the world, in August 2020, the National Immunization Advisory Committee (NIAC) recommended the introduction of typhoid vaccination in the National Immunization Program (NIP). The National Immunization Committee (NIC) endorsed NIAC's recommendation to introduce TCV in routine immunization, and the NIP introduced TCV in routine immunization in May 2022. Nepal conducted a typhoid catch-up vaccination campaign targeting 15 months to 14 years children from April 8th, 2022, to May 1st, 2022, before the introduction of TCV in routine immunization. This campaign aimed to reach 7.4 million children to quickly build immunity against typhoid fever and address the global rise in antimicrobial resistance.

To evaluate the operational effectiveness, reach, and preliminary impact of this landmark public health intervention, a Post-Campaign Coverage Survey (PCCS) was conducted. In total, 104 team members including 35 supervisors and 69 enumerators were deployed in the field for data collection. This survey has been instrumental in generating critical data and insights about achieved vaccination coverage, prevailing levels of public awareness regarding typhoid and its prevention, and the identification of enablers and barriers to vaccine uptake. The survey aims to provide evidence-based information crucial for guiding future immunization strategies, strengthening health service delivery mechanisms, and informing policy decisions. The outcomes of the PCCS underscore commendable progress in campaign implementation and vaccine delivery, reflecting the dedication and collaborative spirit of all involved.

My sincere appreciation to the team of Child Health and Immunization Service Section (CHISS), Family Welfare Division (FWD), for implementing the survey and Technical Working Group formed under the leadership of FWD for their valuable guidance and support throughout the survey process.

I would like to acknowledge GAVI, the vaccine alliance for their invaluable support and every individual, health professionals, Female Community Health Volunteers (FCHVs) and community representatives for their unwavering commitment, assistance and expertise which contributed significantly to the success of the Typhoid Conjugate Vaccine campaign and the subsequent Post-Campaign Coverage Survey.

I would also like to extend my appreciation to World Health Organization (WHO-Nepal) and implementing partners for their support throughout the survey.

Our collective commitment ensures that no child in Nepal is left vulnerable to vaccine-preventable diseases, as we strive towards a healthier and more prosperous future.

Dr Tanka Prasad Barakoti
Director General
Additional Health Secretary, MoHP

Government of Nepal
Ministry of Health and Population
Department of Health Services
Family Welfare Division

Phone: +977 01 5362273
5362155
Teku Kathmandu,
Nepal

ACKNOWLEDGEMENT

The successful completion and comprehensive findings of the Typhoid Conjugate Vaccine (TCV) Post-Campaign Coverage Survey (PCCS) are the result of the dedicated efforts and collaborative spirit of numerous individuals, organizations, and communities. We wish to express our sincere gratitude and acknowledge their invaluable contributions.

Our first and foremost appreciation is extended to the Department of Health Service, DoHS, Ministry of Health and Population, for its visionary leadership, unwavering commitment, and strategic guidance in prioritizing the evaluation of the TCV campaign. We are particularly grateful to the team of Child health and Immunization Services Section (CHISS), Family Welfare Division (FWD) for their instrumental role in overseeing and supporting the survey process.

We extend our profound thanks to the federal, provincial, and local government authorities, Immunization Coordination Committees (ICC) at all levels and health development partners including WHO, UNICEF and WaterAid for their support, facilitation of field activities, and engagement with local communities which were crucial for the smooth execution of the TCV campaign

We also acknowledge the critical role of Gavi, the Vaccine Alliance, for its overarching support to the TCV introduction and its commitment to conduct this survey. A special note of gratitude goes to the dedicated TCV PCCS technical working group (TWG) and implementing partners and its team including survey coordinators, supervisors, enumerators/data collectors, and data management personnel. Their diligence, professionalism, perseverance, and commitment to collecting high-quality data, often in challenging field conditions, were paramount to the success of this survey.

Sincere appreciation to our key immunization partner, the World Health Organization (WHO-Nepal). Their substantial technical expertise, financial support, and unwavering guidance throughout the survey implementation was indispensable.

We are also deeply indebted to the health workers, Female Community Health Volunteers (FCHVs), schoolteachers and community leaders at the implementation level. Their tireless efforts in mobilizing communities, facilitating access to households, and building trust were essential for ensuring high participation rates and the smooth conduct of fieldwork Our heartfelt gratitude is extended to all the parents, guardians, and caregivers who generously gave their time and willingly participated in the survey.

Finally, we are grateful to everyone who played a part in this significant public health effort, contributing towards a healthier future for the children of Nepal.

Dr Abhiyan Gautam
Section Chief, Child Health and Immunization service Section

Director

Dr Bibek Kumar Lal
Director

List of Contributors

Key Technical Contribution

Family Welfare Division

Name	Title	Department / Organization
Dr Bibek Kumar Lal	Director	Family Welfare Division, MOHP, Nepal
Dr Abhiyan Gautam	Chief of Child Health and Immunization Section	Family Welfare Division, MOHP, Nepal
Ms. Anju Basnet	Public Health Officer	Family Welfare Division, MOHP, Nepal
Mr Sanjay Mahaseth	Public Health Officer	Family Welfare Division, MOHP, Nepal

World Health Organization

Name	Title	Department / Organization
Dr Vinod Kumar Bura	Coordinator (Immunization & Vaccine Development)	WHO-SEARO
Dr Balwinder Singh Chawla	Team Lead	WHO-IPD Nepal
Dr Rahul Pradhan	National Professional Officer	WHO-IPD Nepal
Ms. Mona Lacoul	Consultant	WHO-HQ
Dr Dipesh Man Shrestha	Immunization Monitoring Officer	WHO-IPD Nepal
Dr Pawan Upadhyaya	New Vaccine Officer	WHO-IPD Nepal
Dr Ela Singh Rathaur	Urban Immunization Officer	WHO-IPD Nepal

Other Contributors

Name	Title	Department / Organization
Mr Anil Thapa	Section Chief, iHMIS	Management Division, MOHP, Nepal
Dr Adhish Dhungana	Health Specialists	UNICEF

Implementing Partners

Name	Title	Department / Organization
Dr Sameer Mani Dixit	Director	Center for Molecular Dynamics Nepal
Mr Rajesh Man Rajbhandari	Program Director	Center for Molecular Dynamics Nepal
Ms. Kavya Sharma	Head- Disease Management	IQVIA Pvt Ltd
Mr. Lakshya Sharma	Consultant-Public Health	IQVIA Pvt Ltd

Special Appreciation

Name	Title	Department / Organization
Mr Bishnu Nepal	Data Manager	Center for Molecular Dynamics Nepal
Mr Dhirendra Shahi	Sr Field Coordinator	Center for Molecular Dynamics Nepal
Ms. Nisha Shrestha	Public Health Manager	Center for Molecular Dynamics Nepal
Dr Janak Thapa	Executive Director	Nepal Public Health Research and Development Center (PHRD)
Ms Pragya Pokhrel	M and E Manager	Nepal Public Health Research and Development Center (PHRD)
Dr Sagar Tiwari	Surveillance and Immunization Medical officer	WHO-IPD Nepal
Dr Suresh Shukla	Surveillance and Immunization Medical officer	WHO-IPD Nepal
Mr Arpan DC	COVID-19 Technical Assistance	WHO-IPD Nepal
Mr Rajiv Kumar Sharma	COVID-19 Technical Assistance	WHO-IPD Nepal
Ms Anita Shrestha	COVID-19 Technical Assistance	WHO-IPD Nepal
Mr Sushil Shakya	Data Analysis Associate	WHO-IPD Nepal
Ms Punyashwori Koju Maharjan	Data Assistant	WHO-IPD Nepal
Mr Sanjeeb Ratna Tamrakar	Admin and Program Associate	WHO-IPD Nepal
Mr Rajesh Kumar Halwai	Executive Associate (Budget and Finance)	WCO- Nepal
Ms Shreya Shrestha	Graphic Designing & Crisis Management Assistant	WCO-Nepal

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Acronyms

BeSD	Behavioral and Social Drivers
CAPI	Computer assisted personal interviews
CBS	Central Bureau of Statistics
EA	Enumeration Area
FCHV	Female Community Health Volunteer
GPS	Global Positioning System
NDHS	Nepal Demographic and Health Survey
NHRC	Nepal Health Research Council
NIC	National Immunization Committee
NIP	National Immunization Program
PCCS	Post Campaign Coverage Survey
PPS	Probability Proportional to Size
RI	Routine Immunization
SAGE	Strategic Advisory Group of Experts
SIA	Supplementary Immunization Activities
TCV	Typhoid Conjugate Vaccine
WHO	World Health Organization

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Executive Summary

Background: Nepal has one of the highest burdens of typhoid globally, with an incidence rate of greater than 100 cases per 10,000. In response, the National Immunization Program introduced the typhoid conjugate vaccine (TCV) as part of the routine immunization schedule in May 2022. From April 8th, 2022, to May 1st, 2022, Nepal carried out a national typhoid vaccination campaign targeting 7.4 million children. The official report showed a national coverage rate of 99.7%. A post-campaign coverage survey (PCCS) was conducted to accurately assess the coverage rate achieved through the TCV catch-up campaign. The PCCS was also designed to assess campaign awareness, routine immunization (RI) coverage, vaccine card retention, factors that influence vaccine uptake, and reasons for partial or zero-dose immunization.

Results: The survey employed a two-stage probability-proportional-to-size sampling method. Data from the 2021 Census was utilized to develop the first-stage sampling frame. Sampling was carried out in one phase in all seven provinces. The survey sampled 17,190 households for TCV1, with 4,334 households found eligible, and 11,460 households for TCV2, with 5,401 households found eligible. 8,501 households were also found eligible for the RI target population.

The survey found a coverage rate of 84.1% nationally. Coverage varied notably by province, with the highest coverage in Sudurpaschim (91.9%) and the lowest coverage in Lumbini (75.2%). Coverage also differed by age group of the target population, educational level of the primary caregiver, lack of social support, and lack of trust in healthcare workers. Nationally, FCHVs (73.7%), local health workers (46.9%), and schools/teachers (41.3%) were identified as the most common sources of information about vaccination campaigns. Among the children vaccinated during the TCV campaign, the majority received a vaccination card (89.6%) and were vaccinated at a school (87.5%).

Routine Immunization (RI) strengthening activities were conducted during the campaign to promote routine immunization coverage. Of participants who were informed of a missed routine immunization, 96.2% received the missing vaccination after being advised by a vaccination campaign worker. Coverage for all routine antigens in the NIP schedule was assessed for children aged 12-35 months and was high nationally, i.e. for most vaccines the coverage exceeded 95%. RI card retention was 81.8% for children aged 12-14 months, 72.3% for children aged 15-23 months, and 64.0% for children aged 24-35 months. Nationally, 13.9 % of eligible children were identified as missed (partially or never immunized). Rates of partial or never immunization differed by region, urban status, level of education of the caregiver, and media exposure. The uptake of vaccines was greatly influenced by behavioral and social factors, particularly the attitudes and knowledge of primary caregivers.

Conclusion: The national TCV coverage achieved by this campaign was 84.1%. While the TCV campaign was able to achieve significant coverage across Nepal, coverage and awareness of vaccination opportunities and vaccination knowledge varies across regions.

CHAPTER I: INTRODUCTION

1.1 Background

As of 2019, the annual estimated incidence of typhoid fever was 9.2 million, with an estimated 110,000 deaths resulting from typhoid infection globally.[1] Typhoid fever is a serious, potentially life-threatening disease caused by infection with the bacterium *Salmonella* Typhi and is usually contracted through the ingestion of contaminated food and water.[2] Children are at the highest risk of contracting typhoid, with 55.9% of the estimated global incidence occurring in children aged 15 years or younger, and the highest incidence occurring for children aged 5 to 9 years.[2,3] While water, sanitation, and hygiene (WASH) infrastructure is effective in the control and prevention of typhoid, regions that currently lack improved infrastructure must rely on antibiotics for typhoid control.[4] The reliance of many low- and middle-income countries on antibiotics as the primary method of control of typhoid is of particular concern due to global trends in the rise of antimicrobial resistance (AMR).

In Nepal, where typhoid is endemic, the estimated incidence of typhoid was found to be between 268 to 330 cases per 100,000.[4] Of the estimated incidence, 60% of the typhoid cases were contracted by children aged 15 years or younger, with 49% of the cases contracted by children aged 5 to 14 years.[5] Other estimates of the typhoid burden in Nepal place the incidence even higher. The STRATAA study, a population-based study conducted at three sites in South Asia, estimated typhoid incidence in Nepal at 1062 cases per 100,000—placing Nepal's typhoid incidence at ten times the threshold used to define a high burden of enteric fever.[6,7] The incidence rate among children was even higher, with an adjusted rate of 6713 per 100,000 for children aged 5 to 9 years.[6] The survey also discovered high rates of AMR, with multidrug resistance identified in 44% of the samples and fluoroquinolone resistance identified in 61% of the samples.[6] While recent studies have report decreasing trends of S. Typhi resistance to several first-line antibiotics, treatment strategies have not been updated accordingly, leading to concerns about overuse of antimicrobials and the potential for outbreaks of resistant strains.[8]

While longer-term water and sanitation interventions are being undertaken, typhoid vaccinations are a key preventive step. In comparison to the unconjugated Vi polysaccharide and oral Ty21a vaccines, the more recent typhoid conjugate vaccines (TCV), single dose vaccinations approved for use in people aged 6 months to 45 years, offer a high level of protection against typhoid from an earlier age and a longer duration of protection.[9] Large-scale randomized control studies conducted in Bangladesh, Nepal, and Malawi revealed that typhoid conjugate vaccines had an effectiveness of 81–85%.[10] In locations where there is multidrug resistance, these vaccinations will be especially important in stopping the spread of resistant strains.

In October 2017, the Strategic Advisory Group of Experts (SAGE) on immunization recommended TCV for routine use in children over six months of age in typhoid endemic

countries. Gavi, the Vaccine Alliance (Gavi) subsequently approved funding for Gavi-eligible countries to apply for TCV introduction support. WHO recommends TCV introduction to be prioritized in countries with the highest burden of disease or a high burden of antimicrobial resistant S. Typhi. The recommendations further state that national decisions on introduction strategy (universal, risk-based, or phased) for both introduction into the routine immunization program and implementation of a one-time catch-up campaign targeting children up to 15 years of age at the time of introduction should be based on an analysis of disease burden and risk factors for transmission.

In consideration of the fact that Nepal has one of the highest typhoid burdens in the world, with an incidence rate of more than 100 cases per 100,000,[4] in August 2020, the National Immunization Advisory Committee recommended the introduction of typhoid vaccination in the NIP. The National Immunization Committee (NIC) endorsed NIC's recommendation to introduce TCV in routine immunization, and the NIP introduced TCV in routine immunization in May 2022.

Nepal conducted a typhoid catch-up vaccination campaign targeting 15 months to 14 years children from April 8th, 2022, to May 1st, 2022, before the introduction of TCV in routine immunization. This campaign aimed to reach 7.4 million children to quickly build immunity against typhoid fever and address the global rise in antimicrobial resistance. This campaign was a school-based vaccination programme, and 50,000 session sites were established across the country to deliver the vaccine.

The TCV campaign was conducted in a single phase nationwide. Municipalities, in coordination with their district, were responsible for determining the date of the campaign and location of sessions; however, each municipality was required to complete the campaign within nine days. In this vaccination campaign, as most of the target groups were present in schools and some populations were out of school, the vaccination centers were determined by giving priority to the schools within the ward which are accessible to everyone to provide access to vaccination service for all. The campaign was conducted through 50,000 centers with 10,000 vaccination staffs, 112,858 volunteers, 25,000 school health nurses, and about 50,000 teachers and students. In each vaccination center, one female community health volunteer (FCHV) and one female teacher as volunteers were made mandatory.

This TCV campaign included multiple activities to strengthen routine immunization (RI), here termed as SIA-RI linkages. The activities were (i) TCV vaccination campaign invitation cards with the immunization schedule printed on the reverse side were distributed to households with eligible children; (ii) two types of campaign vaccination cards were designed, one for above 2 years children and one for 15 months to < 24 months children, with counterfoil to keep at health facility for follow ups for missed doses in RI; and (iii) health workers at the vaccination session provided consultation to mothers/caregivers of <24 months children on importance of routine immunization and assessed for MR vaccine status, along with other routine vaccines. Health workers recorded missed doses in counterfoil (health worker copy) for follow ups for completion of all recommended doses in RI.

The national coverage was 99.7% with all provinces exceeding 95% coverage. Although the administrative coverage was optimum for immunization campaign, the coverage in the youngest age group is dismaying as about 30% children aged 15 to 23-month-old age group were missed during vaccination campaign.

Table 1: Official report of TCV coverage by province

S. No	Province	Total no. of vaccination centers	Target population			Total achievement number			Total coverage		
			15 months to 23 months	2 to 15 years	15 months to under 15 years	15 months to 23 months	2 to 15 years	15 months to under 15 years	15 months to 23 months	2 to 15 years	15 months to under 15 years (Total)
1	Province 1	7077	67506	1112673	1180179	55173	1153676	1208849	81.7	103.7	102.4
2	Madhesh	7511	101809	1732204	1834013	89572	1687202	1776774	88	97.4	96.9
3	Bagmati	6944	146117	1325907	1472024	69154	1330677	1399831	47.3	100.4	95.1
4	Gandaki	4270	40609	523537	564146	26614	552498	579112	65.5	105.5	102.7
5	Lumbini	6047	86225	1241727	1327952	61042	1329955	1390997	70.8	107.1	104.7
6	Karnali	3724	27308	492903	520211	26787	498021	524808	98.1	101	100.9
7	Sudurpaschim	4717	39363	777628	816991	34691	775120	809811	88.1	99.7	99.1
Grand Total		**40290**	**508937**	**7206579**	**7715516**	**363033**	**7327149**	**7690182**	**71.3**	**101.7**	**99.7**

Monitoring and supervision of the campaign (pre, during, and post campaign) using structured checklists was conducted by staff of all levels (from federal to health facility). Rapid Convenience Monitoring (RCM) focusing on high-risk areas/communities was conducted at the community level (house to house) to identify missed children, vaccinate them, and suggest immediate corrective actions for further improvement.

In Rapid Convenience Monitoring (RCM), more than 46,000 children were monitored across the country through WHO-hired and trained independent monitors. RCM data showed TCV coverage is similar to the official report. TCV coverage among 15 months to 14 years aged children was 92%. The coverage among 15 months to 59 months aged children (89%.) was found to be lower compared to coverage among 5 years to14 years aged children (93%).

This campaign was conducted with operational costs and vaccine support from Gavi, the Vaccine Alliance, and co-financed by Government of Nepal. Nepal is the fourth country in the world to introduce TCV in their RI programme with Gavi support. A post campaign coverage survey (PCCS) has been stipulated in the Gavi grant requirement. The survey estimate will provide an independent assessment of the campaign quality.

Conducting a post-campaign coverage survey is essential for several reasons, each contributing to a comprehensive understanding of the campaign's effectiveness and areas for

improvement: A post-TCV campaign coverage survey is planned to provide accurate vaccination coverage estimates to assess programme performance, for monitoring and planning, and for evidence-based decision making. This survey included additional components: (i) assessing the effectiveness of the RI-SIA linkage mechanism which was developed to strengthen routine immunization through supplementary immunization activity (SIA); and (ii) assessing RI coverage for all vaccines recommended to young children.

1.2 Objective of the Survey

The post campaign coverage survey is planned for evaluating achievements of national immunization program (NIP) in reaching children through typhoid campaign in each province.

1.2.1 Primary objective:

- To estimate the proportion of children aged 15 months to 14 years at the time of the campaign (national and provincial) who were vaccinated against typhoid during the national catch-up campaign conducted during April/May 2022
- To estimate the proportion of children aged 12-23 and 24-35 months[1] at the time of the survey (national and provincial) who have received vaccination for each of the vaccines recommended in the national immunization schedule for Nepal (except TCV through RI).

1.2.2 Secondary objectives:

- To assess awareness of the national typhoid vaccination campaign among the mothers/caretakers of the eligible children.
- To assess behavioral and social drivers (BeSD) for vaccination and their relation with non-participation in national typhoid vaccination campaign among the mothers/caretakers of eligible children who did not receive the vaccines in the campaigns.
- To assess the proportion of 15-35 months children who received zero dose or one dose of measles rubella vaccine in routine were identified during the national catch-up campaign conducted during April/May 2022 (among campaign card holders)
- To assess proportion of home-based vaccination card ownership and retention and assess the reasons for an absent home-based vaccination record among the mother/caretakers of children aged 12-35 month at time of survey.
- To assess vaccination timeliness with routine vaccines and other related indicators (such as missed-opportunities for vaccination for selected vaccine-doses) among children with documented evidence of routine immunization
- To assess behavioral and social drivers (BeSD) for immunization and their relation with non-participation in routine immunization services among the caretakers of children aged 12-35 months who have not received all vaccinations or missed any of the schedule doses in routine.

[1] This age cohort will allow estimating coverage with the second dose of MR vaccine, to verify that coverage is closer to that of other vaccines. It will also allow to better understand catch-up of routine immunization for infants who may have initially missed routine vaccine-doses due to the COVID-19 pandemic.

CHAPTER II: RESEARCH METHODOLOGY

2.1 Research Design and Location

This study was designed to evaluate the achievements of the NIP in reaching children through the typhoid campaign in each province. A cross-sectional study design was used, employing quantitative data collection techniques to achieve the study objectives.

The study was conducted nationwide, including all seven provinces, where household visits were carried out.

2.2 Study population:

The study population for the study was mothers/caretakers of eligible children.

Here "mothers" and "caretakers" (grandmother, grandfather, uncle, aunt, and relatives with relationship with the eligible child) refers to individuals who take on the responsibility of caring for and nurturing the child, typically in the context of family or caregiving roles.

"Household" refers to a social unit composed of people who live together in the same dwelling and share common living arrangements.

2.2.1 Inclusion criteria:

The detail target population for the survey were as follow;

Objectives	Target Age Group
Typhoid campaign: estimate the coverage among <5 years	15 months to 59 months (4 years) children at the time of campaign
Typhoid campaign: estimate national and provincial coverage	60 months to 179 months (14 years) children (at the time of campaign)
Typhoid campaign: RI SIA linkage	15-23 months children at the time of campaign
Routine immunization: estimate the routine vaccination coverage recommended in routine schedule immunization schedule during the first year of life	12-35 months children at the time of survey

2.2.2 Exclusion criteria:

Any child less than or older than the defined age criteria.

2.3 Sample Size

In the TCV campaign, interim coverage report was found greater than 90% in all provinces at national level. However, 15 to 23 months coverage is around 60% and thus, for calculating sample size, a conservative estimate of expected coverage at 50 percent (between 30% to 70%) for this age group is considered. The following table provides details of sample size calculation for 15 months to 59 months' cohort.

Table 2: Details of sample size calculation

Number of strata = 7	Coverage estimates for seven provinces
Expected coverage falls between 30% and 70% Desired precision = 5% Effective sample size = 401	Number of respondents required to estimate coverage for a simple random sample to be done. This number is derived with assumption that expected coverage of 50% and with desired precision of 5%. (WHO manual, 2018)
Design effect = 2.04	To inflate the number respondent to achieve same level precision as in case simple random sampling, taking 11 as target number of respondents, Intra-cluster correlation coefficient to 0.167 and adjusting the variation occurred due to survey weight as 0.3. Readjusted to 2.04 based to match with RI design based on similar national level survey.
Average number of households to find an eligible child = 3	Three parameters, crude birth rate, infant mortality rate and household size are taken from NDHS 2016. (3.75 years cohort)
Non- response rate = 1.02	Earlier household survey shows very few non- response rates, taking 2% as percentage of eligible household and likely to not respond.
Total number of completed interview = 5726	Total number of completed interview required is multiplication of three parameter - no of strata, effective sample size and design effect
Total number of HH to visit at the national level = 17529	Multiplication of non-response rate, average number to household to visit to get an eligible and total number of completed interview required
Total number of households to visit per stratum/province = 2504	Multiplication of effective sample size, design effect and average number to household to visit to get an eligible and total number of completed interview required
Total number of clusters per stratum = 164	Total number of clusters per stratum is outcome of three parameters which are effective sample size, design effect and target number of respondents
Total number of households per cluster = 15	Total number of households per cluster is outcome of average number to household to visit to get an eligible, non-response rate and target number to respondent
Total number of clusters = 1148	This total number of clusters per stratum and number of strata

WHO/UNICEF Joint Estimates of National Immunization Coverage (WUENIC) in 2021 shows the lowest coverage of 76% for rotavirus vaccine second dose.[11] Hence, to estimate routine immunization coverage among 12 -23 months' cohort at the time of survey, taking 75% as expected coverage with 5% desired precision, effective sample size came around 340. A total of 5712 completed interviews was needed for the design. Around 69943 households would be required to visit to complete 5712 interviews. A total of 61 household needed to be visited in each cluster to receive 5 completed interview per cluster from 164 clusters. Thus, nationwide, 22,457 sub-wards were sampled, resulting in 69,906 households being listed. Of these, 16,920 households were identified as having eligible target populations, representing 24.2% of the total listed households. The survey sampled 17,190 households for the first dose of the Typhoid Conjugate Vaccine (TCV1), with 4,334 (25.2%) found eligible. For the second dose (TCV2), 11,460 households were sampled, and 5,401 (47.1%) were eligible. Additionally, 8,508 households were identified as eligible for the RI target population (Annex 1).

Nationally, out of 9,043 children aged 12-35 months eligible for routine immunization (RI) on the survey day, 8,501 (94.0%) were surveyed. For TCV1, 6,469 children aged 15-59 months were eligible at the time of the campaign, with 4,334 (67.0%) being surveyed. Additionally, for TCV2, 11,286 children aged 60-179 months were eligible, and 5,258 (46.6%) were surveyed. Table 3 summarizes the coverage of eligible target children surveyed across various age groups and immunization campaigns by province.

Table 3: Eligible target child and sample covered by province

Province	# of RI (12-35) Months child at the survey day	RI (12-35) months surveyed		# of TCV1(15-59) months child at the campaign	(15-59) months child surveyed (TCV1)		# of TCV2(60-179) months child at the time of campaign	(60-179) months child Surveyed (TCV2)	
	N	N	%	N	N	%	N	N	%
Koshi	1114	1056	94.8	771	533	69.1	1325	714	53.9
Madhesh	2138	1917	89.7	1632	921	56.4	2489	864	34.7
Bagmati	1282	1209	94.3	720	528	73.2	1363	755	55.4
Gandaki	908	874	96.3	690	511	74.1	1330	726	54.6
Lumbini	1359	1315	96.8	1002	697	69.6	1713	776	45.3
Karnali	1062	1022	96.2	834	587	70.4	1549	721	46.5
Sudurpaschim	1180	1108	93.9	820	557	67.9	1517	702	46.3
National	**9043**	**8501**	**94.0**	**6469**	**4334**	**67.0**	**11286**	**5258**	**46.6**

2.4 Sampling of Households and Respondents

A two-stage probability proportional to size sampling method was used to select clusters and households in each province. A "ward" OR "within" award (population size of 230 HH) was considered as a cluster. Census-2021 enumeration area was taken as sampling frame for first stage sampling (i.e., clusters). Large EAs with greater than 350 HHs were segmented into smaller segments of size 230 to 350 HHs and random selection of one of the segments for enumeration.

2.4.1 Sampling technique for households

The survey teams verified all cluster boundaries and visited all households in each of the selected clusters for household listing. Total households of 15 were selected per cluster for SIA (15 months to 4 years), 10 for SIA (5 years to 14 years), and 61 for RI were selected. The survey team selected households for interview using a standard procedure to be programmed in the CAPI tool, i.e., by using systematic random sampling. If in a household there were two or more children of the targeted SIA age group who were eligible, then the CAPI-supported random selection method was utilized to select a child; for RI, all eligible children in the household were selected for the survey. The households where there was no one at home were visited thrice. There was no replacement for non-response households. In the third stage, interview was conducted with mothers or primary caregiver of the selected child.

2.4.2 Selection of clusters per stratum

We selected 164 clusters per stratum (i.e., province). Based on that, we first used the list of municipalities, including wards, obtained from the Central Bureau of Statistics (CBS) 2021. First, the list was synthesized with district name, local municipality name, ward number, and total households in the ward. Second, wards were segmented based on the average number of households per segment. Third, we calculated the cumulative household list and then calculated the sampling interval. The formula used for the sampling interval was: *Cumulative total household list/164*. Then, the first random number was generated from the first sampling interval, and the interval was added to the first random number until the count reached 164. Based on that, clusters were selected. Selected 164 clusters for all provinces were further verified with the WHO team and the survey taskforce before implementation in the field.

2.5 Development of Data Collection Tools

The data collection tools were designed/developed based on a previous "Post Campaign Coverage Survey of Measles Rubella Supplementary Immunization Activity 2021 in Nepal"[12]and in close consultation with WHO-IPD. The tools were developed in different sections specific to different objectives of the surveys. Seven sections were developed, i.e., household information details, children roster to assess eligibility of children and select the appropriate child, details of selected child to assess the child's eligibility, and TCV campaign and routine immunization related details, background profile and media habits of mothers/caregivers of selected child, typhoid vaccination campaign, SIA RIA linkage, routine

immunization, and behavior and social drivers of immunization to understand general perception of vaccine not the child specific information. The questions related to behavior and social drivers were adapted based on "Behavioral and Social drivers of vaccination -Tool and practical guidance". Survey tools were developed in English, translated into Nepali and back-translated into English to monitor the quality of translation. The finalized tools were digitalized in tablets using computer assisted personal interviews (CAPI) with GPS.

2.5.1 Piloting

Before finalizing the survey tools, piloting was carried out in consultation with WHO-IPD. Non sampling sites were used for pre-testing of tools. The piloting was carried out in the following two sites of Ward 5 of Kiritpur Municipality, Kathmandu:

1. Chovar/Taudaha (Ward 5)
2. Bhatekopati (Ward 5)

A team of two enumerators was formed and deployed to the field. The field teams were provided with instructions to visit households in pairs and collect data using the survey questionnaire in the CAPI tool. In case of any issues faced during data collection with the CAPI form, the field staff were requested to record all the details and report them in the review section. The feedback and findings from the pretesting were incorporated into the data collection tools for finalization.

▶ 2.6 Recruitment and Training of Field Staff

The recruitment of field supervisors and enumerators was done by I (IMS Health), Q (Quintiles), and VIA (by way of) {IQVIA}, selecting enumerators with prior work experience in similar settings. In total, there were 104 team members {35 supervisors and 69 enumerators}. The details of the team members per province are as follows;

- Province 1: 5 teams (5 supervisor, 10 enumerators)
- Province 2: 4 teams (4 supervisors, 8 enumerators)
- Province 3: 5 teams (5 supervisor, 10 enumerators)
- Province 4: 4 teams (4 supervisors, 8 enumerators)
- Province 5: 6 teams (6 supervisors, 17 enumerators)
- Province 6: 5 teams (5 supervisors,10 enumerators)
- Province 7: 6 teams (6 supervisors, 12 enumerators)

The field enumerators received intensive five-day training from 21st August to 25th August in Kathmandu with support from FWD and WHO-IPD. The training aimed to familiarize the field enumerators and staff about the survey, its objectives, methodology, survey questionnaires and tablet use. It included theoretical knowledge, mock interviews, and field practice. The training agenda is attached in Annex 5.

2.7 Data Collection and Monitoring

The field teams were initially deployed in the Kathmandu Valley on August 28th, 2023, allowing for supervision and monitoring by the central level to ensure data quality. This setup also enabled the central core team to provide feedback to the field teams. Following the initial deployment in the Kathmandu Valley, a review program was conducted to discuss progress, data quality of completed clusters, the field plan, and further steps. Extended field deployment to the rest of the study sites began on September 10th, 2023, after addressing issues identified in the review program. The field data collection was completed on December 31st, 2023. Core team members of CMDN along with WHO-IPD, IQVIA representatives monitored the fieldwork to ensure adherence to study protocol.

2.8 Data Quality Control Measures

All data collectors were trained in the survey procedures and interviewing techniques before data collection was initiated. At the end of each interview, the interviewers reviewed the completed questionnaire for completeness and consistency, and any inconsistencies denoted were reconciled before ending the interview. Completed interviews were also checked by the field supervisor for completeness and accuracy at the end of each day, and periodically by the data manager during their supervisory visits to the sites. Logic checks were built into the database, and the data manager downloaded the electronic data received from the field on a regular basis to conduct quality assurance checks. Any errors or inconsistencies identified were communicated to the field supervisors for clarification and resolution.

An effective and robust monitoring system was established to guarantee the collection of high-quality data and the timely completion of field tasks. The data collected were uploaded in real-time and were continuously monitored. Furthermore, there were inbuilt validations in the tool to prevent any mistakes. A live dashboard was established to provide real-time insights, visualization, and tracking of data as it was collected. The live dashboard was also be used to spot and address data quality issues as they arose and to analyze the data collection by different teams.

2.9 Data Management and Analysis

Survey data were primarily collected electronically on mobile electronic devices with paper-based tools available as a backup in the event of failure of electronic devices in the field. The master database was stored on a secure server and were subjected to the security protocols described below to prevent unauthorized access. Field teams and data collectors were trained in the survey procedures, interviewing techniques, and use of mobile devices for data collection before data collection was initiated. A data dictionary was created to describe all the variables in the data system. From the point of entry, survey data were synchronized from the field

devices into a cloud-based server at the end of each interview, or once per day. Only the data manager had access to the data.

For this survey, participants' IDs were linked only by their unique study identification number, a unique ID for each participant consisting of a fixed area code, the interviewer code, and a serially assigned survey code. This unique ID code was associated with the questionnaire; when the participant is enrolled, no one would be able to link this "Unique ID" to a single individual. All survey data were password-protected and accessible only to authorized survey staff. All hard copy forms, field monitoring checklists, data output reports, and field notes were kept in a locked, secure, and fireproof file cabinet at the survey offices.

After the dataset was cleaned, descriptive analysis was carried out separately for each province. Because the sample was not proportionally allocated among different provinces and their urban and rural areas, and due to potential variations in response rates, sampling weights were used to calculate the coverage. Further descriptive analyses were performed to summarize immunization status, (RI, TCV, RI- SIA linkage) and coverage of immunizations, media exposure, and social behaviors. The TCV campaign coverage was seen by variables like campaign awareness, mothers/caregiver's media exposure, invitation card received or not, area of residence, socio-demographics (age, religion, ethnicity, sex etc.). For this aspect, the data was analyzed using simple frequencies, mean, median, and proportions, along with the corresponding 95% confidence interval. As separate sampling was done for each province, all measures that are calculated to derive national coverage for any variable were weighted based on sampling fractions. All statistical analysis was carried out using IBM SPSS (Statistical Package for the Social Sciences) (V.20).

2.9.1 Data weight calculation:

Due to the nonproportional allocation of the sample to different provinces and their urban and rural areas, as well as possible differences in response rates, sampling weights are required for any analysis using the Post Campaign Coverage Survey for TCV Campaign-2022 in Nepal data. This ensures the actual representativeness of the survey results at both the national and domain levels. Since the PCCS for TCV Campaign-2022 in Nepal sample was a two-stage stratified cluster sample, sampling weights were calculated based on sampling probabilities separately for each sampling stage and for each cluster. The detail data weight calculation method in in Annex 2.

▶ 2.10 Ethical Considerations

Ethical approval was obtained from the Nepal Health Research Council (NHRC) {Ref No:3789} and WHO-SEARO ERC prior to start of the survey. All the participants were informed about purpose, recruitment procedures, possible risks and benefits of the study and also informed about their rights of decision to participate and abstain from answering particular question(s). Study participants were made aware about confidentiality of their information and the voluntary and anonymous nature of the study. Their names and other individual identifiers were not

disclosed. The purpose and activities of the study were explained in simple and understandable terms. They were also informed that their participation or non-participation in no way would affect treatment they would normally receive. Confidentiality and anonymity of the participants were strictly maintained strictly. The research was conducted in compliance with ethical and human rights standards and followed NHRC and WHO ethical guidelines. The samples of consent forms (both English and Nepali version) used before data collection is are attached as Annex 3.

2.11 Limitations of the Study

Since this is a cross-sectional study, data are collected on the whole study population at a single point in time to examine the relationship between variables of interest, i.e., TCV coverage in SIA, RI-SIA linkage, and coverage of routine immunization. Therefore, this survey provides a snapshot of the frequency of vaccination-related characteristics in a population at a given point in time.

Another major bias is obtaining the immunization information based on reports from the mother or caregiver, which could lead to recall bias, especially in situations where the vaccination card could not be presented during the interview. This recall bias could have been reduced by visiting health facilities to validate the vaccination records. However, due to time and cost constraints, this was not possible.

Government of Nepal
Ministry of Health and Population

I GOT MY TYPHOID VACCINE

Vaccines are
Safe and **Effective**

CHAPTER III: RESULTS

3.1 Demographic Characteristics of Respondents

3.1.1 Background characteristics of selected children

At the time of the survey, most children were aged 36 months and above (47.5%), with the largest regional proportion in Gandaki (53.5%). At the time of the TCV campaign, the majority of children (53.1%) were aged 60-179 months, consistent across all provinces. The sex distribution shows a slight male predominance at 54.2% nationally. Most children were delivered in government hospitals or clinics (60.3%), with Gandaki reporting the highest proportion (72.1%). Home deliveries accounted for 20.7% of births nationally, with highest proportion in Madhesh province (37.2%).

Table 4: Background characteristics of selected children at the time of TCV campaign

Background characteristics	National		Koshi		Madhesh		Bagmati		Gandaki		Lumbini		Karnali		Sudurpaschim	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Age of child at the time of survey																
12-14 months	1056	6.2	130	5.9	299	8.7	131	5.5	143	7.1	129	4.9	89	4.0	135	6.1
15-23 months	3237	18.9	416	18.9	664	19.4	527	22.1	338	16.7	518	19.7	345	15.6	429	19.3
24-35 months	4686	27.4	568	25.9	1062	31.0	606	25.4	459	22.7	737	28.0	656	29.7	598	26.8
36 months and above	8111	47.5	1082	49.3	1396	40.9	1118	47.0	1081	53.5	1247	47.4	1121	50.7	1066	47.8
Total	**17090**	**100.0**	**2196**	**100.0**	**3421**	**100.0**	**2382**	**100.0**	**2021**	**100.0**	**2631**	**100**	**2211**	**100.0**	**2228**	**100.0**
Age of child at the time of TCV campaign category 1																
15-23 months	1375	14.5	193	15.2	289	17.2	237	17.5	119	9.9	218	14.9	153	11.8	166	13.5
24-59 months	3073	32.4	395	31.1	573	34.1	387	28.6	385	32.1	507	34.6	427	33.2	399	32.4
60-179 months	5040	53.1	683	53.7	818	48.7	731	53.9	694	58.0	739	50.5	708	55.0	667	54.1
Total	**9488**	**100.0**	**1271**	**100.0**	**1680**	**100.0**	**1355**	**100.0**	**1198**	**100.0**	**1464**	**100.0**	**1288**	**100.0**	**1232**	**100.0**
Age of the child at the time of TCV day category 2																
15-59 months	4448	46.9	588	46.3	862	51.3	624	46.1	504	42.1	725	49.5	580	45.0	565	45.9
60-179 months	5040	53.1	683	53.7	818	48.7	731	53.9	694	57.9	739	50.5	708	55.0	667	54.1
Total	**9488**	**100**	**1271**	**100**	**1680**	**100**	**1355**	**100**	**1198**	**100**	**1464**	**100**	**1288**	**100**	**1232**	**100**
Sex of children																
Male	9255	54.2	1150	52.4	1887	55.2	1285	53.8	1065	52.7	1398	53.2	1240	56.1	1230	55.2
Female	7835	45.8	1046	47.6	1534	44.8	1097	46.2	956	47.3	1233	46.8	971	43.9	998	44.8
Total	**17090**	**100.0**	**2196**	**100.0**	**3421**	**100.0**	**2382**	**100.0**	**2021**	**100.0**	**2631**	**100**	**2211**	**100**	**2228**	**100**
Delivery place of child																
Home	3526	20.7	344	15.7	1274	37.2	308	12.9	278	13.8	379	14.4	594	26.9	349	15.7
Govt. Hospital/clinic	10299	60.3	1227	55.9	1788	52.2	1627	68.3	1457	72.1	1811	68.7	1058	47.9	1331	59.7
PHC center	378	2.2	23	1.0	14	0.4	35	1.5	23	1.1	57	2.2	115	5.2	111	5
Health post	1251	7.3	52	2.4	9	0.3	117	4.9	123	6.1	173	6.6	438	19.8	339	15.2
Other NGO facilities	179	1.0	106	4.8	2	0.1	23	1	5	0.2	34	1.3	-	-	9	0.4

Background characteristics	National		Koshi		Madhesh		Bagmati		Gandaki		Lumbini		Karnali		Sudurpaschim	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Private Hospital/nursing home	1443	8.4	444	20.2	334	9.8	270	11.3	131	6.5	173	6.6	5	0.2	86	3.9
Others	14	0.1	-	-	-	-	2	0.1	4	0.2	4	0.2	1	0.0	3	0.1
Total	**17090**	**100.0**	**2196**	**100.0**	**3421**	**100.0**	**2382**	**100.0**	**2021**	**100.0**	**2631**	**100.0**	**2211**	**100.0**	**2228**	**100.0**

3.1.2 Background characteristics of mothers/caregivers of selected children

Nationally, most mothers/caregivers were aged 20-29 years (49.4%) at the time of the survey, with Madhesh having the highest proportion (62.3%). Most respondents were mothers (84.7%), followed by grandmothers (5.5%), and fathers (5.0%). In terms of ethnic groups, upper caste groups constitute the largest segment (33.6%) nationally, with Sudurpaschim showing the highest proportion (53.4%). Most mothers/caregivers have secondary (24.8%) or no formal education (25.4%). Hinduism is the predominant religion (88.6%), and housewives make up 71.6% of the respondents. Facebook is the most popular media platform, used by 53.9% of mothers/caregivers nationally.

Table 5: Background characteristics of mothers/caregivers of selected children

Background characteristics	National		Koshi		Madhesh		Bagmati		Gandaki		Lumbini		Karnali		Sudurpaschim	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Age of mothers/caregivers																
Below 20 years	189	1.1	24	1.1	42	1.2	11	0.5	20	1.0	38	1.4	39	1.8	15	.7
20-29 years	8448	49.4	1002	45.6	2132	62.3	947	39.8	852	42.2	1300	49.5	1108	50.1	1107	49.7
30-39 years	6438	37.7	893	40.7	994	29.1	1064	44.6	936	46.3	980	37.2	794	35.9	777	34.9
40-49 years	1554	9.1	217	9.9	221	6.5	279	11.7	168	8.3	231	8.8	199	9.0	239	10.7
50 years and above	461	2.7	60	2.7	32	0.9	81	3.4	45	2.2	82	3.1	71	3.2	90	4.0
Total	**17090**	**100.0**	**2196**	**100.0**	**3421**	**100.0**	**2382**	**100.0**	**2021**	**100.0**	**2631**	**100.0**	**2211**	**100.0**	**2228**	**100.0**
Relation of respondent with child																
Mother	14471	84.7	1913	87.7	3081	90.2	2041	85.9	1592	78.9	2280	86.6	1650	74.5	1914	85.9
Grandmother	946	5.5	126	5.7	123	3.6	117	4.9	164	8.1	126	4.8	167	7.6	123	5.5
Father	854	5.0	92	4.2	82	2.4	144	6.0	142	7.0	126	4.8	191	8.6	77	3.5
Grandfather	391	2.3	26	1.2	54	1.6	39	1.6	55	2.7	48	1.8	101	4.6	68	3.1
Uncle	81	0.5	3	0.1	23	0.7	8	.3	12	0.6	10	0.4	19	0.9	6	0.3
Aunty	261	1.5	28	1.3	45	1.3	20	.8	37	1.8	32	1.2	63	2.8	36	1.6
Sister	51	0.3	4	0.2	9	0.3	8	.3	14	0.7	5	.2	8	0.4	3	0.1
Maternal uncle	10	0.1	3	0.1	-	-	2	.1	3	0.1	-	-	2	0.1	-	-
Brother	25	0.1	1	0.0	4	0.1	3	.1	2	0.1	4	0.2	10	0.5	1	0.0
Total	**17090**	**100.0**	**2196**	**100.0**	**3421**	**100.0**	**2382**	**100.0**	**2021**	**100.0**	**2631**	**100.0**	**2211**	**100.0**	**2228**	**100.0**
Ethnic group of mothers/caregivers																
Dalit	2843	16.6	212	9.7	765	22.4	146	6.1	438	21.7	361	13.7	533	24.1	388	17.4
Disadvantaged Janajatis	3132	18.4	631	28.8	675	19.7	717	30.1	344	17.0	260	9.9	58	2.6	447	20.1
Disadvantaged non-dalit Terai caste groups	1824	10.7	293	13.3	741	21.7	85	3.6	35	1.7	584	22.2	1	0.0	85	3.8
Religious Minorities	564	3.3	67	3.1	203	5.9	41	1.7	56	2.8	188	7.1	6	0.3	3	0.1
Relatively advantaged Janajatis	2691	15.7	406	18.5	752	22.0	523	22.0	367	18.2	317	12.0	232	10.5	94	4.2

Background characteristics	National		Koshi		Madhesh		Bagmati		Gandaki		Lumbini		Karnali		Sudurpaschim	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Upper caste groups	5749	33.7	561	25.5	261	7.6	813	34.1	725	35.8	833	31.7	1367	61.9	1189	53.5
Don't know	264	1.5	23	1.0	23	.7	46	1.9	52	2.6	86	3.3	13	0.6	21	0.9
No response	23	0.1	3	0.1	1	0.0	11	0.5	4	0.2	2	0.1	1	0.0	1	0.0
Total	**17090**	**100.0**	**2196**	**100.0**	**3421**	**100.0**	**2382**	**100.0**	**2021**	**100.0**	**2631**	**100.0**	**2211**	**100.0**	**2228**	**100.0**
Education of mothers/caregivers																
No formation education	4348	25.3	316	14.4	1603	46.8	435	18.3	204	10.1	628	23.9	631	28.4	531	23.8
Primary (1-5) class	1977	11.6	208	9.5	393	11.5	212	8.9	212	10.5	370	14.1	272	12.3	310	13.9
Lower secondary (6-8) class	2470	14.5	385	17.5	362	10.6	333	14.0	344	17.0	402	15.3	285	12.9	359	16.1
Secondary (9-10) class	4235	24.8	764	34.7	643	18.8	542	22.7	541	26.8	672	25.5	514	23.2	559	25.1
Higher secondary (11-12) class	2956	17.3	403	18.4	314	9.2	554	23.2	507	25.1	428	16.3	392	17.7	358	16.1
Graduate	902	5.3	90	4.1	90	2.6	226	9.5	192	9.5	116	4.4	97	4.4	91	4.1
Post Graduate	202	1.2	30	1.4	16	0.5	80	3.4	21	1.0	15	0.6	20	0.9	20	.9
Total	**17090**	**100.0**	**2196**	**100.0**	**3421**	**100.0**	**2382**	**100.0**	**2021**	**100.0**	**2631**	**100.0**	**2211**	**100.0**	**2228**	**100.0**
Religion of mothers/caregivers																
Hindu	15134	88.6	1740	79.2	3078	90.0	1791	75.3	1858	91.9	2331	88.6	2161	97.7	2175	97.6
Buddhist	745	4.4	132	6.0	20	.6	456	19.1	85	4.2	20	.8	22	1.0	10	0.4
Islam	760	4.4	85	3.9	323	9.4	40	1.7	46	2.3	243	9.2	17	0.8	6	0.3
Kirat	220	1.3	202	9.2	-	-	10	0.4	-	-	8	.3	-	-	-	-
Christian	227	1.3	37	1.7	-	-	84	3.5	32	1.6	26	1.0	11	0.5	37	1.7
Undefined	4	0.0	-	-	-	-	1	0.0	-	-	3	0.1	-	-	-	-
Total	**17090**	**100.0**	**2196**	**100.0**	**3421**	**100.0**	**2382**	**100.0**	**2021**	**100.0**	**2631**	**100.0**	**2211**	**100.0**	**2228**	**100.0**
Occupation of mothers/caregivers																
Business/ technical sector workers	1147	6.7	178	8.1	47	1.4	338	14.2	153	7.6	167	6.3	189	8.5	75	3.4
Clerical	243	1.4	19	0.9	17	0.5	50	2.1	43	2.1	49	1.9	38	1.7	27	1.2
Sales and services	1191	7.0	144	6.6	28	0.8	360	15.1	244	12.1	201	7.6	129	5.8	85	3.8
Skilled manual	196	1.1	44	2.0	17	0.5	54	2.3	16	0.8	30	1.1	23	1.0	12	.5
Unskilled manual	106	0.6	14	0.6	12	0.4	20	0.8	16	0.8	29	1.1	6	0.3	9	.4
Agriculture	1770	10.4	281	12.8	77	2.3	193	8.1	92	4.6	359	13.6	561	25.4	207	9.3
Student	164	1.0	5	0.2	25	0.7	20	0.8	21	1.0	15	0.6	60	2.7	18	.8
House wife	12243	71.6	1511	68.8	3195	93.3	1338	56.2	1434	70.9	1775	67.6	1195	54.1	1795	80.6
Don't know	30	0.2	-	-	3	0.1	9	0.4	2	0.1	6	0.2	10	0.5	-	-
Total	**17090**	**100.0**	**2196**	**100.0**	**3421**	**100.0**	**2382**	**100.0**	**2021**	**100.0**	**2631**	**100.0**	**2211**	**100.0**	**2228**	**100.0**
Media habits of mothers/caregivers																
None	1316	7.7	232	10.6	338	9.9	58	2.4	33	1.6	218	8.3	335	15.2	102	4.6
Facebook	9218	53.9	1347	61.4	869	25.3	1543	64.8	1452	71.8	1404	53.4	1321	59.8	1282	57.4
Instagram	36	0.2	1	0.0	-	-	8	0.3	15	0.7	7	0.3	-	-	5	0.2
TikTok	1481	8.7	111	5.1	567	16.6	332	13.9	118	5.8	162	6.2	80	3.6	111	5.0
Twitter	2	0.0	1	0.0	-	-	-	-	-	-	-	-	1	.0	-	-
YouTube	999	5.8	121	5.5	310	9.1	128	5.4	153	7.6	172	6.5	82	3.7	33	1.5
Emo	1140	6.7	51	2.3	840	24.5	11	0.5	63	3.1	160	6.1	9	0.4	6	0.3
Snapchat	3	0.0	-	-	-	0.0	1	0.0	-	-	1	0.0	1	0.0	-	-
Viber	9	0.1	-	-	2	0.1	1	0.0	5	0.2	1	0.0	-	-	-	-
WhatsApp	115	0.7	28	1.3	42	1.2	5	0.2	7	0.3	21	0.8	6	0.3	6	0.3
Google search	3	0.0	-	-	-	-	1	0.0	-	-	-	-	-	--	2	0.1

Background characteristics	National		Koshi		Madhesh		Bagmati		Gandaki		Lumbini		Karnali		Sudurpaschim	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Local FM/Radio	1353	7.9	130	5.9	77	2.3	110	4.6	48	2.4	212	8.1	284	12.8	492	22.1
Television	1412	8.3	174	7.9	376	11.0	183	7.7	126	6.2	272	10.3	92	4.2	189	8.5
Newspaper/magazine	3	0.0	-	-	-	-	1	0.0	1	0.0	1	0.0	-	-	-	-
Total	**17090**	**100.0**	**2196**	**100.0**	**3421**	**100.0**	**2382**	**100.0**	**2021**	**100.0**	**2631**	**100.0**	**2211**	**100.0**	**2228**	**100.0**

3.2 Typhoid Conjugate Vaccination Campaign

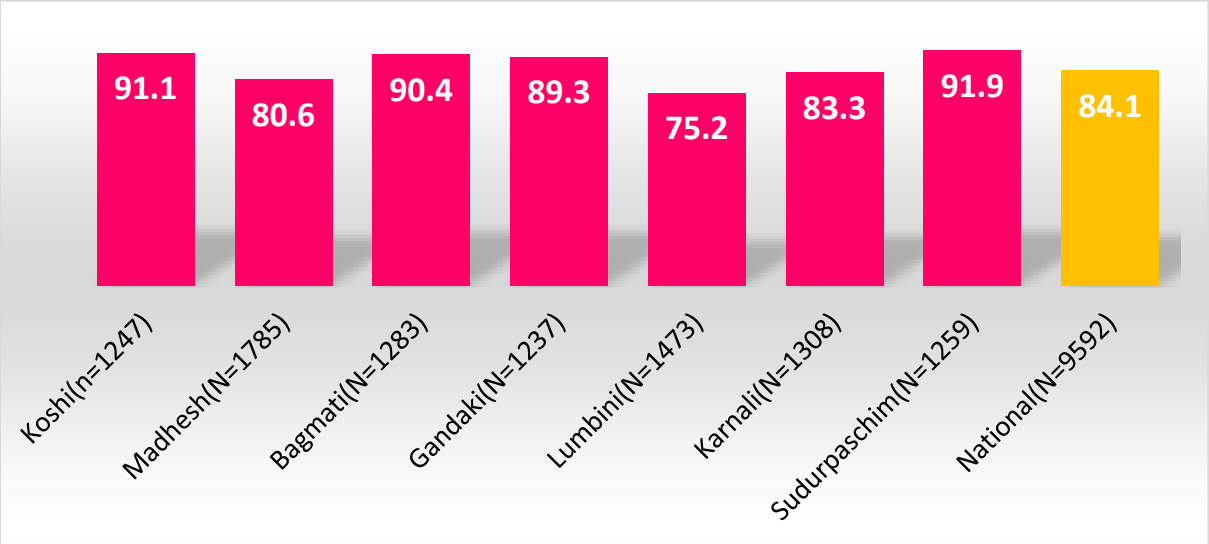

Figure 1: Coverage of Typhoid Conjugate Vaccination Campaign

National and provincial coverage of the Typhoid Conjugate Vaccine (TCV) campaign was assessed via the TCV PCCS. The national coverage of the TCV campaign was found to be 84.1 percent. The highest coverage was observed in Sudurpaschim Province (91.9%), while the lowest was in Lumbini Province (75.2%).

3.2.1 Information and coverage of typhoid conjugate vaccine campaign

Nationally, 63.5% of respondents were aware of the campaign, with notable disparities observed between provinces, such as the higher awareness in Koshi (86.9%) compared to Madhesh (52.3%). While 84.1% of respondents received the vaccine nationally, the retention of vaccination cards varied, with 89.6% receiving cards but only 66.9 % having them seen. Reasons for not having the card included loss (25.0 %) and card with someone else (70.8%). The majority (87.5%) of TCV vaccine were received at school and 12.2 % were from a government hospital/health post. These findings underscore the need for targeted interventions to improve awareness and ensure better retention of vaccination cards, particularly in provinces with lower coverage and card visibility.

Table 6: Information and coverage of typhoid conjugate vaccine campaign

	National		Koshi		Madhesh		Bagmati		Gandaki		Lumbini		Karnali		Sudurpaschim	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Knowledge about the Typhoid Vaccination Campaign held on respondent's district																
Yes	6727	63.5	1040	86.9	1046	52.3	924	81.9	905	75.7	980	61.6	866	64.6	966	69.0
No	2865	36.5	207	13.1	739	47.7	359	18.1	332	24.3	493	38.4	442	35.4	293	31.0
Total	**9592**	**100.0**	**1247**	**100.0**	**1785**	**100.0**	**1283**	**100.0**	**1237**	**100.0**	**1473**	**100.0**	**1308**	**100.0**	**1259**	**100.0**
Received vaccine in TCV campaign																
Yes	8120	84.1	1103	91.1	1452	80.6	1100	90.4	1038	89.3	1171	75.2	1174	83.3	1082	91.9
No	1472	15.9	144	8.9	333	19.4	183	9.6	199	10.7	302	24.8	134	16.7	177	8.1
Total	**9592**	**100.0**	**1247**	**100.0**	**1785**	**100.0**	**1283**	**100.0**	**1237**	**100.0**	**1473**	**100.0**	**1308**	**100.0**	**1259**	**100.0**
Received vaccination card at the campaign																
Yes	7257	89.6	1025	95.5	1329	92.4	952	89.7	911	89.8	1031	86.7	1038	84.6	971	91.3
No	863	10.4	78	4.5	123	7.6	148	10.3	127	10.2	140	13.3	136	15.4	111	8.7
Total	**8120**	**100.0**	**1103**	**100.0**	**1452**	**100.0**	**1100**	**100.0**	**1038**	**100.0**	**1171**	**100.0**	**1174**	**100.0**	**1082**	**100.0**
TCV campaign card seen																
TCV card seen	4768	66.9	671	74.4	882	60.7	553	68.3	582	64.1	619	55.0	712	63.6	749	86.1
TCV card not seen	2489	33.1	354	25.6	447	39.3	399	31.7	329	35.9	412	45.0	326	36.4	222	13.9
Total	**7257**	**100.0**	**1025**	**100.0**	**1329**	**100.0**	**952**	**100.0**	**911**	**100.0**	**1031**	**100.0**	**1038**	**100.0**	**971**	**100.0**
Reason for not having TCV campaign card																
Torn	98	4.2	7	2.5	22	3.8	6	2.1	15	5.2	14	4.3	21	4.7	13	5.9
Card lost	807	25.0	162	32.3	98	15.2	171	53.5	94	29.2	101	29.4	78	25.2	103	45.5
With someone else	1584	70.8	185	65.3	327	81.0	222	44.3	220	65.6	297	66.3	227	70.1	106	48.6
Total	**2489**	**100.0**	**354**	**100.0**	**447**	**100.0**	**399**	**100.0**	**329**	**100.0**	**412**	**100.0**	**326**	**100.0**	**222**	**100.0**
Place where TCV vaccine received																
Government hospital/health post	813	12.2	81	6.1	228	15.5	48	7.2	106	8.8	101	9.2	160	15.5	89	7.1
School	7276	87.5	1018	93.4	1213	84.0	1047	92.5	930	91.2	1068	90.7	1012	84.4	988	92.7
Ward office	31	0.3	4	0.5	11	0.5	5	0.3	2	0.0	2	0.1	2	0.1	5	0.2
Total	**8120**	**100.0**	**1103**	**100.0**	**1452**	**100.0**	**1100**	**100.0**	**1038**	**100.0**	**1171**	**100.0**	**1174**	**100.0**	**1082**	**100.0**

3.2.2 Sources of information about TCV campaign

Sources of information and recommendations regarding the TCV campaign were assessed across different regions and demographics. The most common sources of campaign awareness nationally are FCHVs (73.7%) and local health workers (46.9%). There is notable variation by province, with FCHVs being particularly influential in Madhesh (89.7%) and Karnali (75.4%), and schools/teachers being a major source in Bagmati (63.0%). For vaccine recommendations, mothers/caregivers (57.3%) and teachers (45.1%) are the leading sources nationwide, with considerable provincial differences, such as teachers in Sudurpaschim (72.5%) and volunteers in Sudurpaschim (53.7%).

Table 7: Sources of information about TCV campaign

	National (%)	Koshi (%)	Madhesh (%)	Bagmati (%)	Gandaki (%)	Lumbini (%)	Karnali (%)	Sudurpaschim (%)	Rural (%)	Urban (%)
Source of Campaign Awareness										
FCHV	73.7	70.4	89.7	35.4	50.4	57.1	75.4	75.2	70.2	77.4
Local health worker	46.9	47.1	60.8	21.4	28.2	38.8	38.2	57.0	40.8	53.4
Radio/FM	11.2	9.9	21.2	1.9	4.6	8.2	8.8	6.8	8.0	14.6
TV	5.3	5.0	9.8	.6	2.4	3.5	4.3	3.4	3.8	7.0
Newspaper	0.1	0.4	0.1	0.0	-	0.1	0.1	-	0.1	0.1
Invitation card	4.2	7.3	0.9	4.0	1.1	3.2	2.3	12.7	3.3	5.2
Neighbor	4.1	12.7	0.8	2.7	2.7	5.3	5.0	4.5	3.4	4.8
Miking	0.4	0.8	-	0.8	0.0	1.2	-	1.1	0.6	0.2
SMS	0.1	-	-	0.0		0.0	0.4	0.2	0.3	0.0
Poster	0.2	0.5	0.3	0.1	0.1	0.3	0.1	-	0.1	0.3
Social media/internet	0.7	1.9	0.1	1.1	2.5	0.9	0.4	0.9	0.7	0.8
Community/village/municipality people	3.7	5.5	1.7	0.6	1.1	3.1	1.1	12.3	3.3	4.1
School/teacher	41.3	62.8	20.1	63.0	58.5	54.8	35.8	53.9	45.4	36.9
Caller ring back tone in mobile	0.1	0.4	-	0.2	0.0	0.4	0.0	0.2	0.1	0.1
Total	**6726**	**1040**	**1046**	**924**	**905**	**980**	**866**	**966**	**2406**	**4321**
Source of Typhoid Vaccine Recommendation										
Mother/Caregiver	57.3	47.7	71.2	47.6	56.0	51.5	54.0	45.9	53.2	61.2
Family Member	23.2	26.0	35.5	5.3	10.4	15.0	12.5	28.5	19.8	26.5
Neighbor	18.6	16.7	35.1	3.0	2.7	8.9	9.3	17.2	12.6	24.3
Volunteer	39.3	34.1	54.0	12.1	9.5	21.8	29.9	53.7	30.8	47.4
Teacher	45.1	62.4	36.7	51.3	45.5	53.1	29.3	72.5	43.9	46.2
Health Worker	16.9	30.4	18.5	7.7	20.2	13.6	16.4	12.4	15.5	18.2
Total	**8120**	**1103**	**1452**	**1100**	**1038**	**1171**	**1174**	**1082**	**2842**	**5278**

3.2.3 Coverage of typhoid conjugate vaccine campaign by key indicators

The TCV campaign's coverage was assessed by various provinces, demographic, and other key indicators. Nationally, the overall TCV coverage for children aged 15-179 months stands at 84.1%. Among the different provinces, Sudurpaschim exhibits the highest coverage at 91.9%, while Lumbini shows the lowest at 75.2%. Likewise, TCV coverage is highest among the age group of 60-179 months at 88.5%, followed by the 15-59 months age group at 79.3%, and lowest among the 15-23 months age group at 73.9%. An analysis of the educational status of mothers/caregivers reveals that those with primary education (grades 1-5) or no formal education tend to exhibit comparatively lower TCV coverage across all age groups. Furthermore, individuals whose mothers/caregivers follow the Islam religion also demonstrate lower TCV coverage rates. Similarly, caregivers/mothers who received recommendations from health workers for child vaccination exhibit notably higher prevalence rates. Conversely, those lacking support from close family and friends depict lower coverage across all age categories.

Table 8: Coverage of typhoid conjugate vaccine campaign by key indicators

	TCV coverage (15-179) Months		TCV coverage (15-23) Months		TCV coverage (24-59) Months		TCV coverage (15-59) Months		TCV coverage (60-179) Months	
	N	%	N	%	N	%	N	%	N	%
Province										
Koshi	1247	91.1	100	84.6	433	90.3	533	89.2	714	92.4
Madhesh	1785	80.6	197	69.1	724	75.7	921	74.2	864	87.6
Bagmati	1283	90.4	106	81.9	422	89.1	528	87.9	755	92.2
Gandaki	1237	89.3	84	85.8	427	88.1	511	87.7	726	90.4
Lumbini	1473	75.2	112	71.4	585	75.1	697	74.5	776	75.9
Karnali	1308	83.3	91	72.6	496	78.2	587	77.2	721	89.3
Sudurpaschim	1259	91.9	89	86.4	468	91.6	557	90.9	702	92.9
Total	**9592**	**84.1**	**779**	**73.9**	**3555**	**80.6**	4334	**79.3**	**5258**	**88.5**
Sex of children										
Male	5268	83.5	413	74.5	2026	80.6	2439	79.5	2829	87.3
Female	4324	84.8	366	73.3	1529	80.7	1895	79.1	2429	89.8
Total	**9592**	**84.1**	**779**	**73.9**	**3555**	**80.6**	4334	**79.3**	**5258**	**88.5**
Ecological belt										
Mountain	719	86.4	50	74.1	281	83.6	331	82.0	388	90.9
Hill	4136	88.2	306	85.1	1453	85.5	1759	85.5	2377	90.2
Terai	4737	80.0	423	69.1	1821	75.8	2244	74.3	2493	85.8
Total	**9592**	**84.1**	**779**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Local government classification										
Metro City	693	86.0	63	78.9	224	81.5	287	81.0	406	90.2
Sub-Metro City	575	82.2	45	94.3	220	73.2	265	78.1	310	85.5
Urban/Rural Municipality	8324	84.1	671	72.5	3111	81.0	3782	79.4	4542	88.7
Total	**9592**	**84.1**	**779**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Area of residence (ward classification)										
Urban	2360	80.1	210	82.7	824	71.1	1034	73.5	1326	85.6
Peri-urban	3639	80.2	324	65.5	1407	77.1	1731	74.5	1908	86.3
Rural	3593	87.4	245	79.7	1324	84.8	1569	84.0	2024	90.4
Total	**9592**	**84.1**	**779**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Relation of respondent with child										
Mother	8024	84.2	833	72.4	2987	81.8	3654	79.9	4370	88.3
Other family member (Grandmother, Father, Grandfather, Uncle, Aunty, Sister, Maternal uncle, Brother)	1568	83.2	114	84.5	568	75.5	680	76.7	888	89.6
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Ethnic group of mothers/caregivers										
Dalit (Hill and Terai)	1585	80.7	259	72.5	651	76.1	800	75.3	785	86.8
Janajati (Hill and terai)	4552	84.4	409	77.4	1645	81.4	2034	80.6	2518	87.9
Upper caste (Hill and Terai Brahmin Chhetri)	3303	85.7	275	69.9	1206	82.8	1441	80.8	1862	90.0
Others (Muslim and other undefined caste)	152	79.9	4	74.5	53	65.8	59	66.8	93	92.0
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**

	TCV coverage (15-179) Months		TCV coverage (15-23) Months		TCV coverage (24-59) Months		TCV coverage (15-59) Months		TCV coverage (60-179) Months	
	N	%	N	%	N	%	N	%	N	%
Education of mothers/caregivers										
No formal education	2964	84.5	336	74.3	917	79.6	1101	78.6	1863	88.5
Primary (1-5) grade	1196	78.5	136	58.4	406	76.7	486	73.7	710	83.6
Lower secondary (6-8) grade	1421	86.0	94	81.8	541	83.1	648	82.9	773	88.8
Secondary (9-10) grade	2197	84.4	194	71.6	929	80.6	1127	78.8	1070	92.4
10+2 and higher	1814	87.6	187	82.7	762	86.4	972	85.4	842	90.8
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Religion of mothers/caregivers										
Hindu	8494	84.7	852	73.7	3155	80.9	3837	79.5	4657	89.7
Buddhist	436	90.4	16	90.2	142	95.4	178	94.7	258	87.0
Islam	388	66.5	66	70.4	158	63.2	196	65.1	192	67.6
Kirat	136	98.7	4	97.6	48	97.3	56	97.3	80	99.8
Christian	138	86.9	9	78.2	52	83.7	67	82.3	71	90.8
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Occupation of mothers/caregivers										
Housewife	6633	83.4	730	72.1	2540	80.6	3118	78.9	3515	87.8
Working women including student	2959	85.8	217	80.0	1015	80.7	1216	80.6	1743	90.1
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Media habits of mothers/caregivers										
No media exposure	798	81.1	111	68.0	283	77.9	342	76.3	456	85.4
Facebook	4992	88.3	394	84.3	1896	85.4	2331	85.2	2661	91.4
TikTok	712	77.7	55	64.6	296	73.1	365	71.8	347	86.9
YouTube	550	85.1	73	84.6	198	87.2	250	86.5	300	83.8
Other media*	2540	81.8	315	62.0	882	77.0	1046	74.2	1494	87.9
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Health worker or Specialist suggestion for child vaccination										
Yes	6949	92.2	782	77.7	2538	91.0	3196	88.2	3753	96.0
No	2643	60.7	165	55.8	1017	53.5	1138	53.8	1505	67.1
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Support from close family and friends for child vaccination										
Yes	8722	85.8	899	74.9	3193	82.7	3926	81.1	4796	90.2
No	870	69.5	48	55.3	362	63.8	408	62.9	462	75.1
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Perceived importance of vaccines for child health										
Not at all important	44	59.2	4	30.3	15	39.8	20	38.3	24	94.6
little important	102	47.0	3	70.3	48	41.2	53	42.7	49	57.7
Moderately important	2009	78.9	216	62.7	738	75.8	899	73.4	1110	83.8
Very important	7437	86.4	724	77.5	2754	83.3	3362	82.2	4075	90.3
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Perceived safety of vaccines for child										
Not at all safe	17	86.5	2		6	100.0	7	81.8	10	96.0
A little safe	110	45.9	7	50.5	44	35.4	52	37.2	58	60.9
Moderately safe	1930	78.9	173	61.9	738	76.6	871	74.3	1059	83.0

	TCV coverage (15-179) Months		TCV coverage (15-23) Months		TCV coverage (24-59) Months		TCV coverage (15-59) Months		TCV coverage (60-179) Months	
	N	%	N	%	N	%	N	%	N	%
Very safe	7535	86.0	766	77.0	2767	82.5	3404	81.4	4131	90.4
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Desire for all routine vaccines for child										
None of these vaccines	173	36.1	3	67.1	63	29.2	76	30.3	97	41.4
Some of these vaccines	439	63.2	38	53.4	174	58.6	208	57.6	231	70.6
All of these vaccines	8980	86.0	906	74.8	3318	83.1	4050	81.4	4930	90.2
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Heard negative about Immunization last year										
Yes	712	73.4	48	59.1	254	62.3	309	61.9	403	84.1
No	8880	84.9	899	74.7	3301	82.1	4025	80.7	4855	88.8
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Decision maker for Child vaccination										
Mother	8522	85.5	843	75.5	3186	82.0	3880	80.8	4642	90.0
Father	834	73.9	86	59.1	279	73.8	346	70.4	488	76.6
Mother in-law	159	65.7	16	69.9	60	51.8	71	54.1	88	82.2
Other specify	77	75.5	2	68.6	30	94.2	37	90.4	40	64.7
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Trust in Health Workers for Child vaccination										
Not at all trust	43	87.5	-	-	18	89.9	18	89.9	25	84.4
A little trust	132	49.1	4	34.7	54	35.5	60	35.4	72	66.8
Moderately trust	2030	78.3	178	63.0	752	75.6	919	73.6	1111	82.7
Very trust	7387	86.1	766	76.6	2731	82.8	3337	81.5	4050	90.5
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Community leaders support Child vaccination										
Yes	5533	85.3	517	76.6	2037	81.7	2486	80.7	3047	89.4
No	370	76.2	78	73.9	130	73.5	157	73.6	213	78.8
Don't know	3689	83.5	353	69.9	1388	80.1	1691	78.4	1998	88.7
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Turned away for Child vaccination										
Yes	710	76.1	121	72.5	256	67.9	329	69.1	381	83.7
No	8882	84.9	827	74.1	3299	81.9	4005	80.5	4877	89.0
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Ease of Access to Child vaccination										
Not at all easy	70	31.8	2	28.7	21	12.3	25	12.8	45	50.7
A little easy	269	58.8	39	38.6	111	52.9	133	49.7	136	68.5
Moderately easy	2504	81.6	212	64.2	914	79.3	1109	76.6	1395	85.6
Very easy	6749	87.2	694	79.0	2509	84.0	3067	83.0	3682	91.3
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**
Permission required for Mother to take Child to Clinic										
Yes	1125	83.5	137	74.6	390	80.1	490	79.0	635	88.6
No	8467	84.1	810	73.8	3165	80.7	3844	79.4	4623	88.5
Total	**9592**	**84.1**	**947**	**73.9**	**3555**	**80.6**	**4334**	**79.3**	**5258**	**88.5**

*Other media: Instagram, Twitter, Emo, Snapchat, Viber, WhatsApp, Google search, Local FM/Radio, Television, Newspaper/magazine

3.2.4 Reasons for not receiving the typhoid conjugate vaccine

Nationally, the predominant reason was a lack of awareness of the campaign, with 80.5% of respondents citing this. This issue was particularly high in Bagmati (89.6%) and Karnali (93.6%). Many respondents were aware of the campaign but unaware of the time and location, especially in Koshi (21.1%) and Sudurpaschim (17.2%). Access issues like vaccinators not arriving were noted more in peri-urban areas (15.0%). Concerns about the vaccine being unsafe or just a trial were minimal, but Sudurpaschim reported higher doubts (3.4%). Other significant barriers included the absence of parents or guardians during the campaign, especially in Madhesh (24.7%) and urban areas (23.9%).

Table 9: Reasons for not receiving the TCV vaccine in SIA

Reasons	National	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim	Urban	Peri-urban	Rural
Access											
Vaccinator did not come to appointed site	4.7	1.9	10.0	1.8	3.6	1.2	0.7	1.2	15.0	4.8	1.2
Inconvenient session timing	0.3	-	0.5	-	0.0	0.6	-	0.0	1.9	0.1	0.0
Affordability											
Mothers/guardians too busy	0.6	-	1.3	0.3	-	-	-	1.3	0.9	0.9	0.2
Awareness											
Unaware of campaign	80.5	80.9	72.7	89.6	83.4	82.0	93.6	67.5	55.1	82.6	86.9
Aware of campaign but did not know about time and location	12.1	21.1	16.2	2.9	1.4	4.4	10.0	17.2	6.9	14.3	11.6
Unaware of need for vaccination	6.6	8.9	11.7	3.5	2.7	5.7	0.6	5.8	4.8	11.3	2.5
Confusion on target group/eligibility	0.4	2.9	0.1	0.0	0.0	0.8	0.3	1.1	0.1	0.3	0.6
Thinking vaccine is for trial/unsafe	0.5	1.0	0.2	0.1	-	0.3	0.1	3.4	0.6	0.1	0.8
Acceptance											
Fear of pain from injection	0.3	0.1	0.6	0.0	0.3	-	-	-	0.1	0.6	-
Fear of side effects of vaccine	0.3	-	0.4	-	-	0.6	-	0.4	0.7	0.4	0.1
Others											
Childs' parent/guardian not present during campaign	12.3	17.3	24.7	0.2	2.5	2.3	1.5	11.8	23.9	16.4	4.2
Don't know	4.3	4.7	5.3	1.6	4.6	6.6	0.2	9.9	2.6	6.2	2.9

Reasons	National	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim	Urban	Peri-urban	Rural
Child sick and parent/guardian unwilling to get child vaccinated	1.8	1.6	3.0	3.0	3.5	1.1	0.6	0.7	2.7	2.4	1.0
Child taken to vaccination site but not vaccinated	1.1	0.6	0.4	-	-	0.0	3.2	-	1.0	0.0	2.1
Child sick and health worker unwilling to vaccinate the child	0.5	2.7	0.4	2.1	1.4	0.4	-	0.7	1.1	0.5	0.2
Vaccination team ran out of vaccine at session site	0.2	-	-	0.1	-	0.1	0.7	-	0.0	0.0	0.5
Total	**1488**	**148**	**341**	**185**	**200**	**303**	**134**	**177**	**452**	**593**	**1036**

Note. The reasons for lack of vaccine uptake were grouped according to the 5As taxonomy (Access, Affordability, Awareness, Acceptance, Activation; Thomson et al., 2015), which has been widely used to characterize vaccine uptake and under-vaccination in the literature.

3.3 SIA RI Linkage

Supplementary immunization activities (SIA) were implemented to link the TCV campaign to routine immunization (RI). SIA are activities conducted to increase the coverage of key vaccinations in a short timeframe.[13] RI SIA was carried out during the TCV campaign to assess coverage of routine vaccinations among those children who were vaccinated in the campaign and to identify missed doses of any of those RIs specified in the national schedule. RI SIAs during the TCV campaign included (i) distribution of campaign cards with the immunization schedule printed on the reverse; (ii) two kinds of cards, each targeted to a specific age group; (iii) consultations for mothers/caregivers provided by campaign healthcare workers regarding the importance of vaccination, including referrals for obtaining missed doses.

3.3.1 Invitation card received for Typhoid Vaccine campaign

Nationally, only 25.4% of people reported receiving the invitation, with the highest regional receipt in Sudurpaschim at 41.2% and the lowest in Madhesh at 15.4%. Most regions show a significantly higher percentage of individuals who did not receive the invitation card, indicating a widespread gap in distribution.

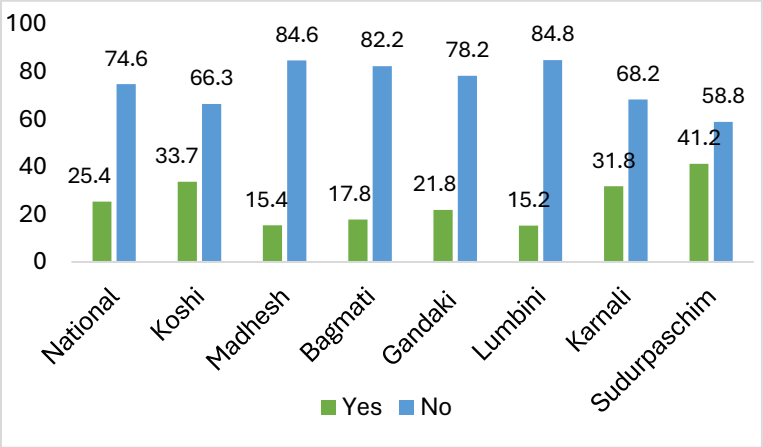

Figure 2: Invitation card received for Typhoid vaccine campaign

3.3.2 Linkage between supplementary immunization activities and routine immunization

The table presents data on the receipt of invitation cards for supplementary immunization activities, categorized by various demographic and social factors. Among ecological belts, the Mountain region shows the highest receipt of invitation cards (33.2%), while the Terai has the lowest (18.2%). Metro Cities have the lowest card receipt (10.6%) at the Palika level, and peri-urban areas show low receipt (16.0%) at the Ward level. Media exposure through platforms like TikTok (34.3%) and Facebook (31.6%) is associated with higher receipt rates, contrasting with low rates among those with no media exposure (17.0%).

Table 10: Linkage between supplementary immunization activities and routine immunization

	Base (N)	Received invitation card	
		Yes %	No %
Ecological Belt			
Mountain	719	33.2	66.8
Hill	4136	29.3	70.7
Terai	4737	18.2	81.8
Total	**9592**	**25.4**	**74.6**
Degree of local government (Palika level)			
Metro City	693	10.6	89.4
Sub-Metro City	575	24.5	75.5
Urban/Rural Municipality	8324	25.5	74.5
Total	**9592**	**25.4**	**74.6**
Degree of local government (Ward level)			
Urban	2360	29.8	70.2
Peri-urban	3639	16.0	84.0
Rural	3593	30.5	69.5
Total	**9592**	**25.4**	**74.6**
Birth place			
Home	2664	21.9	78.1
Institutional	6928	27.7	72.3
Total	**9592**	**25.4**	**74.6**
Relation of child with respondent			
Mother	8024	24.7	75.3
Other family member	1568	28.8	71.2
Total	9592	25.4	74.6
Ethnic group			
Dalit	1585	21.0	79.0
Janajati	4552	19.2	80.8
Upper caste	3303	35.4	64.6
Others	152	22.3	77.7
Total	**9592**	**25.4**	**74.6**

	Base (N)	Received invitation card	
		Yes %	No %
Education of mother/ caregivers			
No formal education	2964	20.8	79.2
Primary (1-5) grade	1196	25.6	74.4
Lower secondary (6-8) grade	1421	31.7	68.3
Secondary (9-10) grade	2197	26.7	73.3
10+2 and higher	1814	33.8	66.2
Total	**9592**	**25.4**	**74.6**
Religion of mother/caregiver			
Hindu	8494	26.1	73.9
Buddhist	436	21.6	78.4
Islam	388	11.9	88.1
Kirat	136	47.0	53.0
Christian	138	21.0	79.0
Total	**9592**	**25.4**	**74.6**
Occupation of mother/ caregivers			
Housewife	6633	25.9	74.1
Working women	2959	24.0	76.0
Total	**9592**	**25.4**	**74.6**
Media exposure			
No media exposure	798	17.0	83.0
Facebook	4992	31.6	68.4
TikTok	712	34.3	65.7
YouTube	550	14.7	85.3
Other media	2540	22.7	77.3
Total	**9592**	**25.4**	**74.6**

3.3.3 Information obtained from the TCV campaign invitation card

The table provides insights into the linkage between supplementary immunization activities (SIA) and routine immunization (RI) based on data obtained from TCV cards in Nepal. Several noteworthy findings emerge from the analysis. It can be observed that out of 2526 children, 87.8% had learned about the vaccine date/duration, 87.0% had learned about the vaccine center mentioned, whereas age was recorded in 65.2% about eligible age of the child for TCV vaccination and 39.1 about routine immunization schedule from the TCV invitation cards.

Table 11: Information obtained from the TCV card

	Total	Vaccine date/duration	Vaccine Center	Age of child	Routine immunization schedule
	N	%	%	%	%
Province					
Koshi	330	91.6	86.6	55.9	29.8
Madhesh	289	73.3	79.2	57.4	24.4
Bagmati	311	94.6	76.3	54.1	30.0
Gandaki	248	67.8	78.1	64.8	36.7
Lumbini	347	94.4	96.1	89.1	41.6
Karnali	550	95.7	89.2	62.5	38.7
Sudurpaschim	451	89.3	90.8	73.3	54.4
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**
Ecological Belt					
Mountain	244	93.1	92.9	79.9	60.2
Hill	1212	91.6	87.1	51.2	27.4
Terai	1070	78.0	80.4	64.1	28.6
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**
Degree of local government (Palika level)					
Metro City	138	96.7	69.2	47.6	20.3
Sub-Metro City	145	23.8	70.9	87.9	6.9
Urban/Rural Municipality	2243	91.3	87.9	64.0	40.9
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**
Degree of local government (Ward level)					
Urban	713	66.3	78.2	67.7	22.4
Peri-urban	788	87.7	85.8	54.8	29.7
Rural	1025	92.2	89.2	68.2	45.7
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**
Birth place					
Home	645	92.6	87.9	56.8	35.5
Institutional	1881	85.2	86.5	69.7	41.0
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**
Relation of child with respondent					
Mother	2118	89.6	85.3	63.0	39.2
Other family member	408	79.8	94.3	74.9	38.5
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**
Ethnic group					
Dalit	408	92.6	89.0	66.1	45.2
Janajati	1065	78.4	82.1	63.0	27.8
Upper caste	1022	91.9	89.3	66.0	43.6
Others	31	99.6	97.3	92.2	80.5
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**

	Total	Vaccine date/duration	Vaccine Center	Age of child	Routine immunization schedule
	N	%	%	%	%
Education of mother/care givers					
No formal education	638	92.5	90.0	63.8	39.6
Primary (1-5) grade	320	89.0	84.1	65.2	41.4
Lower secondary (6-8) grade	390	84.1	88.5	71.2	42.9
Secondary (9-10) grade	626	83.0	86.9	63.3	33.0
10+2 and higher	552	84.6	81.3	64.5	38.4
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**
Religion of mother/caregiver					
Hindu	2268	87.5	87.0	65.5	39.3
Buddhist	106	91.1	82.4	51.2	32.7
Islam	66	91.0	91.0	73.2	34.0
Kirant	60	90.6	84.9	54.6	32.2
Christian	26	97.9	83.5	75.5	68.7
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**
Occupation of mother/caregivers					
Housewife	1727	87.0	85.2	64.2	38.3
Working women	799	89.9	91.8	68.1	41.2
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**
Media exposure					
No media exposure	135	97.2	97.3	77.8	44.9
Facebook	1465	88.7	83.3	62.0	35.7
TikTok	237	50.8	84.5	64.5	18.5
YouTube	139	92.6	93.3	84.2	53.6
Other media	550	91.9	89.1	64.3	45.6
Total	**2526**	**87.8**	**87.0**	**65.2**	**39.1**

3.3.4 SIA RIA linkage

The PCCS also aimed to assess SIA RI linkage activities focusing on those who were asked about routine immunization status during the campaign and informed about missed doses. Key findings indicate that out of 593 children, 63.5% of mothers/caregivers were informed about the importance of routine vaccination, while 67.1% were asked about the child's routine immunization status during the campaign. Among those, 24.9 % were informed during the campaign that the child had missed routine immunization doses. Regarding the action taken, 41.0% were directed to the same place for the missed dose, while 53.8% were advised to go to public hospitals/health posts/facilities. Notably, 96.2% of children received the missed routine MR vaccine.

Table 12: SIA RI linkage by categories (Children who were asked about the routine immunization status in the campaign and who were informed on missed routine immunization dose in the campaign)

	National	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim	Urban	Peri-urban	Rural
		%	%	%	%	%	%	%	%	%	%
Vaccination campaign workers informed about the importance of routine vaccination											
Yes	63.5	64.3	48.1	69.4	57.3	65.1	87.4	65.8	37.2	57	75.3
No	36.5	35.7	51.9	30.6	42.7	34.9	12.6	34.2	62.8	43	24.7
Total	**593**	**79**	**135**	**85**	**60**	**81**	**79**	**74**	**158**	**229**	**206**
Asked about child's routine immunization status at the campaign											
Yes	67.1	76.4	55.5	75.5	63.4	73.4	77.2	76.5	40.5	65.1	75.5
No	32.9	23.6	44.5	24.5	36.6	26.6	22.8	23.5	59.5	34.9	24.5
Total	**593**	**79**	**135**	**85**	**60**	**81**	**79**	**74**	**158**	**229**	**206**
Details of Measles vaccination status as mentioned in the campaign card											
Received MR vaccine in 9 months	39.6	36	40.8	32.5	21.8	24.5	51.5	27.2	30.3	45.9	37.4
Received MR vaccine in 15 Months	28.9	40.9	15.8	35	41	42.3	30.6	46.6	13	19.4	39.2
Received none of the MR vaccine	1	-	0.4	-	-	5.6	-	3.5	-	0.6	1.5
Not recorded	30.4	23.1	43	32.5	37.1	27.6	17.9	22.7	56.7	34.1	21.9
Total	**593**	**79**	**135**	**85**	**60**	**81**	**79**	**74**	**158**	**229**	**206**
Informed during the campaign that the child had missed routine immunization dose											
Yes	24.9	42.9	33.4	17.2	13.6	19.6	11.3	25.4	10.3	38.4	18
No	75.1	57.1	66.6	82.8	86.4	80.4	88.7	74.6	89.7	61.6	82
Total	**593**	**79**	**135**	**85**	**60**	**81**	**79**	**74**	**158**	**229**	**206**
If yes, Place where the child was told to come for missed dose											
Come to the same place	41	63	37.2	43.4	52.4	57.5	65.5	13.3	57.3	39.2	41.6
Go to Public Hospital/health post/health facility	53.8	22.3	62.8	55.7	42.6	14.4	21	81.6	41.3	60.1	45
Go to private health facility	3.5	14.3	-	0.3	5	9.9	13.5	-	0.1	0.7	8.6
Contact FCHV	1.8	0.4	-	0.6	-	18.2		5.1	1.3	-	4.9
Total	**166**	**29**	**52**	**22**	**11**	**20**	**17**	**15**	**38**	**75**	**53**
Received missed routine vaccine											
Yes	96.2	100	95.6	99.2	100	93.3	100	93.5	82.1	95.9	98.9
No	3.8	-	4.4	0.8	-	6.7	-	6.5	17.9	4.1	1.1
Total	**166**	**29**	**52**	**22**	**11**	**20**	**17**	**15**	**38**	**75**	**53**


D.H.S.

3.4 Routine Immunization Coverage (12-35 months at the time of survey)

3.4.1 Coverage of routine immunization by key indicators

The table presents routine immunization coverage data for children aged 12-35 months, broken down by various key indicators. The data shows high overall vaccination rates, with coverage rates for most vaccines exceeding 95%, indicating a robust immunization program. The coverage is consistently high across different age groups, provinces, ecological belts, and local government levels, with slight variations. The data also highlights disparities based on factors such as birth place and caregiver education; children born in institutions or to caregivers with higher education levels generally have higher immunization rates. Finally, coverage rates for vaccines like MR2 show room for improvement, especially among children born at home or to caregivers with no formal education.

Table 13: Routine immunization coverage of children who were of age 12-35 months at the time of survey by key indicators

	Base(N)	BCG	fipv-1	fipv-2	ROTA-1	ROTA-2	OPV1	OPV2	OPV3	PCV1	PCV2	PCV3	DPT1	DPT2	DPT3	MR1	JE	Base(N) MR2*	MR2
Age of child at the time of survey																			
12-14 months	1056	99.7	94.3	94.8	96.8	95.6	99.2	98.7	97.3	97.9	97.0	95.1	98.4	97.8	96.7	94.7	71.1	-	-
15-23 months	3237	99.7	98.9	97.9	98.2	97.1	99.3	99.2	98.7	99.1	98.1	96.8	99.0	98.6	98.4	97.3	95.8	3226	88.3
24-35 months	4208	99.5	98.8	97.9	98.0	97.2	99.2	99.0	98.6	99.0	98.3	97.7	99.1	98.6	98.5	97.4	97.1	4190	95.8
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**
Card observation or recall																			
Card recorded	3946	99.8	97.7	96.6	98.0	96.5	99.3	99.0	98.0	99.3	98.5	96.5	99.4	99.0	98.2	97.2	91.3	3260	89.3
Recall	4555	99.4	98.8	98.3	97.9	97.3	99.2	99.1	98.9	98.5	97.6	97.4	98.6	98.1	98.2	96.9	94.9	4156	95.1
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**
Province																			
Koshi	1056	99.8	98.6	97.8	97.6	96.6	99.5	99.1	98.7	99.2	98.4	97.0	99.5	99.2	98.7	97.4	92.9	924	91.4
Madhesh	1917	99.4	96.6	94.5	96.1	94.6	98.9	98.4	97.0	97.9	96.1	94.2	98.1	97.3	96.3	94.0	89.0	1608	86.6
Bagmati	1209	99.6	98.6	98.1	97.2	96.0	98.5	98.6	98.3	98.8	98.4	97.5	99.0	98.6	98.4	97.9	95.3	1076	94.0
Gandaki	874	99.7	98.2	99.2	99.0	98.8	99.7	99.7	99.5	99.5	99.6	98.5	99.4	99.6	98.9	99.1	93.6	729	94.9
Lumbini	1315	99.7	99.1	99.1	99.2	98.7	99.7	99.5	99.3	99.6	99.2	98.9	99.6	99.3	99.2	99.2	96.6	1185	94.5
Karnali	1022	99.7	99.2	98.8	98.9	98.8	99.3	99.3	99.2	99.3	98.6	98.0	99.2	99.1	98.6	98.7	96.6	929	95.9
Sudurpaschim	1108	99.4	98.6	97.8	98.5	96.9	99.3	99.3	98.7	98.8	97.9	97.2	98.9	97.6	98.5	95.9	92.1	965	94.9
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**
Ecological Belt																			
Mountain	641	99.3	98.1	96.4	97.9	95.0	98.2	98.0	98.3	98.3	95.2	94.9	98.6	95.3	97.8	92.7	91.4	577	92.6
Hill	3269	99.7	99.0	98.9	98.7	98.3	99.5	99.4	99.1	99.3	99.0	98.3	99.3	99.3	98.9	98.5	95.2	2887	95.1
Terai	4591	99.5	97.7	96.7	97.3	96.2	99.2	98.9	98.1	98.6	97.7	96.3	98.8	98.3	97.7	96.5	92.1	3952	90.7
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**
Degree of local government (Palika level)																			
Metro City	645	99.5	98.8	98.3	97.8	97.4	99.3	99.3	98.3	98.9	98.1	96.7	98.8	98.7	98.2	97.6	92.0	562	93.2
Sub-Metro City	531	99.7	98.7	98.2	98.3	97.6	99.4	99.1	98.8	98.8	98.5	98.7	98.9	98.4	98.1	98.5	93.5	466	92.9
Urban/Rural Municipality	7325	99.6	98.2	97.4	97.9	96.9	99.2	99.0	98.5	98.9	98.0	96.9	99.0	98.5	98.2	96.9	93.4	6388	92.5
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**

Degree of local government (Ward level)																		
Urban	2102	99.6	97.4	96.8	97.5	96.4	99.1	98.8	98.1	98.7	97.9	96.8	98.7	98.1	97.4	97.2	92.7	1830	93.5
Peri-urban	3501	99.5	98.2	97.1	97.4	96.2	99.2	99.0	98.2	98.8	97.8	96.2	98.9	98.6	98.0	96.4	92.3	3018	90.4
Rural	2898	99.7	99.0	98.5	98.8	98.1	99.5	99.3	99.1	99.2	98.5	98.0	99.2	98.7	98.9	97.7	94.8	2568	94.4
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**
Age of mothers/caregivers																		
Below 20 years	166	100.0	100.0	96.7	99.1	97.5	100.0	100.0	98.7	99.5	97.2	93.3	100.0	99.6	98.7	93.4	88.2	135	88.9
20-29 years	5774	99.7	98.5	97.4	98.0	97.1	99.4	99.1	98.6	98.9	98.2	97.2	99.1	98.5	98.2	97.2	93.5	5013	92.8
30-39 years	2193	99.4	97.5	97.9	97.7	96.9	99.0	98.9	98.3	98.9	97.8	96.8	98.8	98.5	98.2	97.1	93.3	1944	92.1
40-49 years	236	99.3	97.9	97.6	96.4	94.0	98.8	98.2	98.1	98.0	96.8	95.7	98.0	97.2	98.0	96.3	90.5	206	91.9
50 years and above	132	98.0	98.4	97.8	96.9	95.7	98.7	98.7	98.7	98.4	97.2	97.2	98.7	98.4	98.4	97.5	96.2	118	95.0
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**
Birth place																		
Home	1046	99.2	96.2	94.1	94.5	92.8	98.6	97.6	96.5	96.9	94.3	92.6	97.1	96.1	95.2	92.6	88.4	930	86.5
Institutional	7455	99.7	98.5	98.0	98.4	97.5	99.4	99.2	98.8	99.1	98.5	97.6	99.2	98.8	98.6	97.6	93.9	6486	93.4
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**
Relation of child with respondent																		
Mother	7312	99.7	98.2	97.6	97.9	96.9	99.3	99.2	98.6	99.0	98.1	97.1	99.0	98.5	98.3	97.0	93.2	6371	92.5
Other family member	1189	98.9	98.4	97.3	97.7	97.0	98.8	98.3	98.0	98.4	97.9	96.5	98.7	98.3	97.8	97.5	93.9	1045	93.3
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**
Ethnic group																		
Dalit	1461	99.2	97.9	94.8	96.4	95.2	99.0	98.3	97.3	98.1	97.0	95.2	98.0	97.4	96.7	94.8	91.3	1285	89.6
Janajati	4115	99.7	97.9	97.7	97.7	96.7	99.2	99.1	98.5	98.9	97.9	96.8	98.9	98.6	98.2	97.1	92.8	3556	91.8
Upper caste	2751	99.7	98.8	98.6	98.9	98.1	99.4	99.4	99.0	99.3	98.7	98.0	99.5	98.9	98.8	98.1	94.8	2430	95.2
Others	174	100.0	99.8	98.8	99.7	99.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.6	100.0	95.7	145	92.8
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**
Education of mother/caregivers																		
No formal education	1633	98.9	97.0	94.1	96.3	94.6	98.3	97.1	96.1	97.8	95.6	93.9	97.5	96.3	96.1	93.7	88.8	1421	87.2
Primary (1-5) grade	911	99.2	95.6	96.5	96.7	95.9	99.0	98.8	97.8	97.7	96.9	95.6	98.4	98.0	96.9	96.2	91.1	806	89.8
lower secondary (6-8) grade	1188	99.6	98.1	97.4	97.8	96.9	99.6	99.5	98.5	99.1	98.3	97.4	99.2	98.5	98.0	96.8	92.8	1031	91.7
secondary (9-10) grade	2305	99.9	99.2	98.7	98.5	97.5	99.5	99.6	99.3	99.2	98.7	97.9	99.4	99.2	99.0	98.1	94.5	2025	94.5
10+2 and higher	2464	99.9	99.1	99.0	98.8	98.3	99.6	99.6	99.4	99.5	99.2	98.4	99.6	99.4	99.2	98.6	95.8	2133	95.5
Total	**8501**	**99.6**	**98.3**	**97.5**	**97.9**	**96.9**	**99.3**	**99.0**	**98.5**	**98.9**	**98.0**	**97.0**	**99.0**	**98.5**	**98.2**	**97.1**	**93.3**	**7416**	**92.6**

Occupation of mother/caregivers																		
Housewife	6381	99.7	98.1	97.5	97.7	97.0	99.4	99.1	98.4	98.9	98.1	96.9	98.9	98.7	98.2	97.1	92.9	5509	92.2
Working women	2120	99.2	98.7	97.7	98.4	96.8	98.9	98.8	98.6	98.9	97.9	97.2	99.1	98.0	98.2	97.0	94.4	1907	93.7
Total	8501	99.6	98.3	97.5	97.9	96.9	99.3	99.0	98.5	98.9	98.0	97.0	99.0	98.5	98.2	97.1	93.3	7416	92.6

*Note: Base N is different for MR2 because of difference in age eligibility for MR 2 vaccine

3.4.2 Routine immunization card retention (12-35 months children)

Retention and handling of routine immunization cards was assessed for children aged 12-35 months. Overall, 69.4% of participants received a routine vaccination card, and 66.6% of those cards were seen. Only 9.6% had taken photos of the cards. The most common reason for not having a card was that it was with someone else (55.0%), followed by it being lost (35.4%) and torn (9.6%). Retention rates varied by age, with the highest retention in children aged 12-14 months (81.8%). There were also differences across provinces, with Koshi having the highest rate (82.1%) and Karnali the lowest (56.6%). Factors such as the mother's education level and occupation also influenced card retention, with higher rates among more educated mothers and housewives compared to working women.

Table 14: Retention of routine immunization card

	Received routine vaccination card		Seen routine vaccination card		Taken photo of routine vaccination card		Reasons for not having routine vaccination card			
	Base(N)	%	Base(N)	%			Base	Torn	Card lost	With someone else
					Base(N)	%	Base(N)	%	%	%
Total	**8501**	**69.4**	**5866**	**66.6**	**3946**	**100.0**	**1920**	**9.6**	**35.4**	**55.0**
Age of child										
12-14 months	1056	81.8	852	77.6	672	100.0	180	14.0	17.6	68.4
15-23 months	3237	72.3	2334	72.4	1681	100.0	653	10.6	36.2	53.3
24-35 months	4208	64.0	2680	58.1	1593	100.0	1087	8.3	38.1	53.6
Province										
Koshi	1056	82.1	842	71.9	610	100.0	232	9.7	39.9	50.3
Madhesh	1917	64.9	1233	61.8	742	100.0	491	7.7	34.6	57.7
Bagmati	1209	66.0	826	64.3	539	100.0	287	12.6	33.0	54.4
Gandaki	874	73.4	630	77.0	493	100.0	137	6.6	41.7	51.6
Lumbini	1315	78.7	1033	60.9	646	100.0	387	7.0	37.5	55.5
Karnali	1022	56.6	596	49.9	314	100.0	282	12.9	31.4	55.7
Sudurpaschim	1108	66.8	706	82.3	602	100.0	104	13.5	31.8	54.7
Ecological Belt										
Mountain	641	59.8	377	66.7	254	100.0	123	8.5	28.8	62.7
Hill	3269	65.8	2189	66.9	1496	100.0	693	11.7	33.1	55.2
Terai	4591	73.1	3300	66.3	2196	100.0	1104	8.4	37.6	54.1
Degree of local government (Palika level)										
Metro City	645	63.4	407	55.7	230	100.0	177	12.2	34.1	53.7
Sub-Metro City	531	74.6	395	65.3	260	100.0	135	8.5	39.8	51.7
Urban/Rural Municipality	7325	69.4	5064	67.5	3456	100.0	1608	9.4	35.1	55.4

	Received routine vaccination card		Seen routine vaccination card		Taken photo of routine vaccination card		Reasons for not having routine vaccination card			
	Base(N)	%	Base(N)	%			Base	Torn	Card lost	With someone else
					Base(N)	%	Base(N)	%	%	%
Degree of local government (Ward level)										
Urban	2102	69.6	1439	61.5	881	100.0	558	8.7	31.9	59.4
Peri-urban	3501	73.5	2540	66.1	1699	100.0	841	9.4	36.4	54.1
Rural	2898	64.6	1887	70.9	1366	100.0	521	10.7	37.4	51.8
Ethnic group of mother/caregivers										
Dalit	1461	66.0	956	70.2	668	100.0	288	7.4	38.4	54.2
Janajati	4115	72.8	2982	67.5	2029	100.0	953	7.9	37.9	54.1
Upper caste	2751	66.3	1811	63.9	1175	100.0	636	13.1	30.4	56.5
Others	174	68.8	117	57.5	74	100.0	43	4.9	40.9	54.3
Education of mother/caregivers										
No formal education	1633	62.2	1009	58.8	600	100.0	409	9.1	33.3	57.6
Primary (1-5) grade	911	64.5	576	68.4	389	100.0	187	9.3	34.0	56.7
Lower secondary (6-8) grade	1188	72.5	855	70.0	613	100.0	242	11.0	39.4	49.6
Secondary (9-10) grade	2305	72.8	1681	70.8	1199	100.0	482	11.0	37.1	52.0
10+2 and higher	2464	70.8	1745	64.4	1145	100.0	600	8.3	34.2	57.4
Age of mother/caregivers										
Below 20 years	166	77.2	133	73.1	96	100.0	37	15.6	25.2	59.3
20-29 years	5774	69.6	4013	67.8	2763	100.0	1250	9.4	35.8	54.8
30-39 years	2193	70.0	1522	65.2	994	100.0	528	10.2	34.5	55.2
40-49 years	236	62.8	138	57.2	81	100.0	57	7.5	39.1	53.4
50 years and above	132	49.1	60	27.0	12	100.0	48	6.3	38.0	55.7
Occupation of mothers/caregivers										
Housewife	6381	70.8	4515	69.0	3140	100.0	1375	9.9	35.7	54.3
Working women	2120	65.1	1351	58.5	806	100.0	545	8.8	34.7	56.5

3.4.3 Missed children in Routine immunization

The data on missed children in routine immunization reveals a significant variance across different demographics. Overall, 13.9% of children missed routine immunizations. By province, Madhesh had the highest percentage of missed children at 22.5%, while Karnali had the lowest at 7.8%. Ecologically, the Terai region had a higher percentage (16.7%) of missed children compared to the Hill (9.9%) and Mountain (15%) regions. Children aged 12-14 months had the highest rate of missed immunizations at 31.7%. Educational attainment of mothers also played

a role, with those having no formal education showing a higher rate (19.3%) of missed immunizations, compared to mothers with higher education (9.9%). Additionally, mothers with no media exposure had a higher percentage (18.2%) of missed immunizations than those who used media like Facebook (12.3%) and TikTok (14.3%).

Table 15: Missed children in routine immunization

	Missed children in routine immunization	
	N	%
Total	8501	13.9
Province		
Koshi	1056	14.5
Madhesh	1917	22.5
Bagmati	1209	12.6
Gandaki	874	12.2
Lumbini	1315	9.6
Karnali	1022	7.8
Sudurpaschim	1108	12.3
Ecological belt		
Mountain	641	15
Hill	3269	9.9
Terai	4591	16.7
Degree of local government (Palika level)		
Metro City	645	12.3
Sub-Metro City	531	11.9
Urban/Rural Municipality	7325	14.2
Degree of local government (Ward level)		
Urban	2102	14.2
Peri-urban	3501	16.8
Rural	2898	10.6
Age of child		
12-14 months	1056	31.7
15-23 months	3237	15.7
24-35 months	4208	8.1
Relation of respondent with child		
Mother	7312	14.3
Other family member	1189	11.7
Ethnic group of mothers/caregivers		
Dalit	1461	17.5
Janajati	4115	15.4
Upper caste	2751	10.3
Others	174	9.2

Education of mothers/caregivers		
No formal education	1633	19.3
Primary (1-5) grade	911	18.3
Lower secondary (6-8) grade	1188	14.5
Secondary (9-10) grade	2305	12.8
10+2 and higher	2464	9.9
Age of mothers/caregivers		
Below 20 years	166	15.7
20-29 years	5774	13.7
30-39 years	2193	14.6
40-49 years	236	14.6
50 years and above	132	7.9
Occupation of mothers/caregivers		
Housewife	6381	14.6
Working women	2120	11.9
Media habits of mothers/caregivers		
No media exposure	610	18.2
Facebook	4747	12.3
TikTok	846	14.3
YouTube	514	16.8
Other media	1784	16.2

3.4.4 Reasons for missed routine vaccination (partially or never immunized)

The table presents reasons for missed routine vaccination across various regions and settings in Nepal. A total of 1488 responses were recorded, with significant variations observed across different factors contributing to incomplete vaccination. "Not vaccinated due to inappropriate age" was the most common reason nationwide, followed by "Unaware of vaccination site" and "Child's parent/guardian not present during vaccination day." Other reasons included lack of awareness, logistical barriers, and concerns about vaccine safety and side effects. The data highlights the multifaceted challenges in achieving comprehensive vaccination coverage and the need for targeted interventions to address specific barriers in different communities.

Table 16: Reasons for missed routine vaccination

	National	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim	Urban	Peri-urban	Rural
Access											
Vaccination site too far away	0.8	2.1	0.5	-	-	1.8	-	1.1	1.0	0.9	0.4
Inconvenient session timing	0.4	-	0.9	1.2	-	-	-	-	0.5	0.7	-
Vaccinator did not come to appointed site	0.3	0.5	0.4	1.0	-	-	-	-	0.3	0.3	0.3
Affordability											
Mothers/guardians too busy	2.9	0.7	4.8	3.5	-	1.1	1.2	3.8	0.6	4.4	2.4
Long waiting time	0.2	-	0.3	-	-	0.5	-	0.4	-	0.5	-
Awareness											
Unaware of vaccine site	18.7	11.3	26.7	19.2	8.4	5.5	23.9	17.1	22.9	19.0	14.1
Unaware of need for vaccination	5.6	2.9	5.7	11.1	2.4	4.6	6.0	6.4	5.1	4.5	8.0
Aware of campaign but did not know about time and location	4.8	3.2	7.5	5.4	0.3	2.0	8.6	1.6	4.8	6.0	2.8
Acceptance											
Fear of side effects of vaccine	1.0	1.6	0.9	-	0.5	1.0	-	2.5	0.2	1.1	1.7
Fear of pain from injection	1.4	0.4	3.5	0.6	-	-	-	0.3	3.1	1.4	-
Others											
Not vaccinated due to inappropriate age	46.1	50.4	32.3	40.2	78.1	63.8	39.6	54.9	41.4	45.0	52.5
Childs' parent/guardian not present during vaccination day	14.4	11.1	21.9	5.1	5.0	8.3	6.5	18.5	13.0	15.1	14.3
Don't know	11.8	12.6	11.6	20.3	4.6	11.4	17.8	6.8	14.9	11.2	9.9
Child sick and parent/guardian unwilling to get child vaccinated	7.0	11.9	9.0	2.8	4.6	6.5	3.3	3.9	6.7	7.7	6.1
Child sick and health worker unwilling to vaccinate the child	1.0	-	1.8	1.9	0.6	0.6	0.6	0.3	0.7	1.3	0.8
Vaccination team ran out of vaccine at session site	0.6	0.3	0.6	-	1.3	0.4	3.3	-	-	0.8	0.9

	National	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim	Urban	Peri-urban	Rural
Child taken to vaccination site but not vaccinated	0.4	-	0.8	-	-	0.6	-	-	-	0.8	-
Were out of Nepal during campaign	0.1	-	-	-	-	0.7	-	-	-	0.2	-
Known severe allergy to any drug food or medicine	0.1	-	0.2	-	-	-	-	-	-	0.2	-
Total	**1488**	**148**	**341**	**185**	**200**	**303**	**134**	**177**	**452**	**593**	**1036**

Note. The reasons for partial or zero dose vaccination are grouped according to the 5As taxonomy (Access, Affordability, Awareness, Acceptance, Activation; Thomson et al., 2015), which has been widely used to characterize vaccine uptake and under-vaccination in the literature.
{Note: Total % may be greater than 100 due to multiple responses.)

3.4.5 Time to reach the nearest immunization center

Karnali province and rural areas have the longest mean travel times of 21 and 19 minutes, indicating access challenges. In contrast, Madhesh province and peri-urban areas have shorter mean times, with 12 and 13 minutes, respectively. Overall, the average travel time is 16 minutes, with variations reflecting geographic and administrative differences.

Table 17: Time to reach nearest immunization center from house (In minutes)

	Time to reach nearest immunization center					
	Minimum	Maximum	Mean	Median	Mode	Std Deviation
Province						
Koshi	1	90	17	10	5	14
Madhesh	1	60	12	10	10	8
Bagmati	1	90	17	15	10	14
Gandaki	1	60	15	10	10	12
Lumbini	1	68	15	10	10	10
Karnali	1	90	21	15	15	17
Sudurpaschim	1	90	18	15	15	12
Total	**1**	**90**	**16**	**12**	**10**	**13**
Ecological Belt						
Mountain	1	90	19	15	10	16
Hill	1	90	18	15	10	15
Terai	1	68	14	10	10	10
Total	**1**	**90**	**16**	**12**	**10**	**13**
Degree of local government (Palika level)						
Metro City	1	60	15	10	10	10
Sub-Metro City	2	68	16	15	5	11
Urban/Rural Municipality	1	90	16	12	10	13
Total	**1**	**90**	**16**	**12**	**10**	**13**
Degree of local government (Ward level)						
Urban	1	68	15	12	10	10
Peri-urban	1	90	13	10	10	9

Rural	1	90	19	15	10	16
Total	**1**	**90**	**16**	**12**	**10**	**13**

3.4.6 Source of information about routine immunization

Sources of information about routine immunization in Nepal primarily include health workers and Female Community Health Volunteers (FCHVs), as shown by the table across various provinces, ecological belts, and levels of local government. Health workers are particularly prominent in Metro Cities and Bagmati Province, with over 90% reliance, while FCHVs are especially influential in Sudurpaschim (84.4%) and Madhesh (76.7%). Neighbors are also a significant source in Madhesh and Lumbini, particularly in peri-urban areas. Overall, social media is the least utilized source of information.

Table 18:Source of information about routine immunization

	Base (N)	Health Workers	FCHV	Neighbor	Village Head	Family members	Social media
Province							
Koshi	1056	82.5	57.7	24.4	1.3	6.7	.2
Madhesh	1917	90.1	76.7	36.3	1.2	.5	-
Bagmati	1209	92.7	35.8	10.7	.7	1.1	.1
Gandaki	874	90.5	46.8	23.3	3.0	1.1	.5
Lumbini	1315	88.0	63.6	29.2	7.7	.5	-
Karnali	1022	91.4	59.2	24.1	3.5	.1	-
Sudurpaschim	1108	73.4	84.4	21.8	.3	.6	-
Total	**8501**	**86.8**	**63.9**	**25.9**	**2.5**	**1.4**	**.1**
Ecological Belt							
Mountain	641	85.5	58.7	22.1	1.1	.2	-
Hill	3269	88.4	58.1	21.6	2.0	.7	.1
Terai	4591	85.7	68.8	29.6	3.1	2.0	.0
Total	**8501**	**86.8**	**63.9**	**25.9**	**2.5**	**1.4**	**.1**
Degree of local government (Palika level)							
Metro City	645	94.7	44.3	26.0	.4	2.1	.6
Sub-Metro City	531	89.7	63.3	19.9	6.5	-	-
Urban/Rural Municipality	7325	85.9	65.5	26.4	2.4	1.5	.0
Total	**8501**	**86.8**	**63.9**	**25.9**	**2.5**	**1.4**	**.1**
Degree of local government (Ward level)							
Urban	2102	89.1	52.2	22.5	2.5	2.4	.2
Peri-urban	3501	86.6	68.8	31.0	2.6	1.7	.0
Rural	2898	85.4	66.5	22.6	2.5	.3	-
Total	**8501**	**86.8**	**63.9**	**25.9**	**2.5**	**1.4**	**.1**

3.4.7 Retention of routine vaccination card

The table illustrates the retention of routine vaccination cards among children across different regions in Nepal. While the national average for possessing routine vaccination cards is 69.4%, there are notable regional differences, with Koshi and Lumbini showing relatively higher rates (82.1% and 78.7% respectively), while Karnali exhibits the lowest rate at 56.6%. Reasons for not having the card varied, including loss (39.9% nationally), sharing with someone else (50.3% nationally), and torn (9.7% nationally).

Table 19: Retention of routine vaccination card

		National	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim
		%	%	%	%	%	%	%	%
Routine vaccination card	Yes	69.4	82.1	64.9	66.0	73.4	78.7	56.6	66.8
Seen routine vaccination card	RI Card seen	66.6	71.9	61.9	64.3	77.0	60.9	49.9	82.3
Taken photo of routine vaccination card	Photo taken	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Reasons for not having routine vaccination card									
Torn		9.7	7.7	12.6	6.6	7.0	12.9	13.5	9.7
Card lost		39.9	34.6	33.0	41.7	37.5	31.4	31.8	39.9
With someone else		50.3	57.7	54.4	51.6	55.5	55.7	54.7	50.3

▶ 3.5 Behavioral and Social drivers of vaccination

The survey also evaluated the behavioral and social drivers of vaccination (BeSD) to understand what influences vaccine uptake, which can help improve program implementation. BeSD are defined as vaccination-specific beliefs and experiences that can potentially be modified to increase vaccine uptake. These factors, identifiable through the survey, can be changed by vaccination programs. The assessment was based on the "Behavioral and Social Drivers of Vaccination - Tool and Practical Guidance."

Nationally, 87.9% of respondents indicated that health workers or specialists recommended vaccinations for their children, with Gandaki (94.3%) and Karnali (91.3%) showing the highest percentages. Most respondents (95.6%) reported no difficulty in receiving vaccines, though issues like distance and wait times were noted in some regions, particularly Sudurpaschim. Family and friends strongly support vaccination (93.1% nationally), and vaccines are perceived as very important (81%) and very safe (81.8%). Mothers are typically the decision-makers for child vaccination (89.8%), and trust in health workers is high (79.4%). However, 11.5% of mothers nationally require permission to take their child to the clinic, with the highest rates in Madhesh (17.6%).

Table 20:Behavior and social drivers of vaccination

	National	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim
Health worker or specialists gave suggestion for child to get vaccinated								
Yes	87.9	82.1	83.3	90.7	94.3	88.5	91.3	90.6
No	12.1	17.9	16.7	9.3	5.7	11.5	8.7	9.4
Reasons for the difficulty for receiving vaccine								
Nothing/not hard	95.6	93.6	97.1	96.9	97.8	97.6	93.3	93.1
Vax clinic too far away	3.0	4.1	1.7	1.9	1.3	.5	5.3	6.2
Vaccination timing inconvenient	.6	.5	.6	.4	.6	.8	1.2	.2
Clinic turns people away without vaccinating	.5	.6	1.0	.1	.3	.7	.0	.3
Wait time too long	.8	1.9	.6	.8	.3	1.2	.2	.5
Close family and friends want child to vaccinated								
Yes	93.1	97.6	89.9	95.8	95.8	90.7	90.4	95.3
No	6.9	2.4	10.1	4.2	4.2	9.3	9.6	4.7
Perception about importance of vaccines								
Not at all important	.6	.2	.3	.3	.5	.6	.4	1.5
Little important	1.2	3.3	.8	.8	.0	1.6	.9	.7
Moderately important	17.2	8.0	12.3	23.8	14.1	18.8	26.0	20.5
Very important	81.0	88.5	86.7	75.1	85.4	79.0	72.7	77.3
Perception about safety of vaccines								
Not at all safe	.2	.1	.2	.1	.1	.4	.1	.1
A little safe	1.2	2.7	.6	.8	-	1.6	.6	1.7
Moderately safe	16.8	9.0	9.0	22.2	16.5	17.5	23.2	25.4
Very safe	81.8	88.2	90.1	76.9	83.4	80.5	76.1	72.8
Desire for vaccines included in the RI schedule								
None of these vaccines	1.8	1.9	2.2	1.6	1.0	4.5	.7	.2
Some of these vaccines	4.7	3.6	3.3	5.5	1.9	7.1	5.9	5.5
All of these vaccines	93.5	94.5	94.5	92.9	97.1	88.4	93.4	94.3
Heard anything negative about routine immunization in the last one year								
Yes	6.9	8.7	2.5	9.7	4.4	5.3	3.1	16.9
No	93.1	91.3	97.5	90.3	95.6	94.7	96.9	83.1
Decision maker in family to vaccinate the child								
Mother	89.8	87.6	82.9	88.9	93.1	92.6	95.5	93.1
Father	6.8	7.9	11.6	7.9	3.9	5.2	3.3	4.2
Mother in-law	2.6	1.1	5.5	1.0	2.7	2.1	1.2	2.3
Other specify	.8	3.4	-	2.2	.3	.1	-	.4
Trust the health workers who give children vaccines								
Not at all trust	.3	.5	.3	.3	.3	.4	.2	.1

A little trust	1.4	2.7	.4	1.4	.1	1.8	.7	2.4
Moderately trust	18.9	12.8	10.9	26.4	19.8	18.7	23.7	26.9
Very trust	79.4	84.0	88.4	71.9	79.8	79.1	75.4	70.6
Perception that community leaders want children to get vaccinated								
Yes	57.4	52.4	68.7	60.7	78.8	60.8	46.6	35.0
No	3.8	1.9	.5	5.2	2.1	3.0	7.3	8.2
Don't know	38.8	45.7	30.8	34.1	19.1	36.2	46.1	56.8
Have been turned away when tried to get child vaccinated								
Yes	8.6	11.6	10.4	12.2	7.0	8.2	3.6	6.3
No	91.4	88.4	89.6	87.8	93.0	91.8	96.4	93.7
Ease of access to vaccination services								
Not at all easy	.8	1.0	.4	1.3	.5	.6	1.7	.6
A little easy	2.9	6.8	1.2	2.3	.7	2.9	3.6	3.3
Moderately easy	23.7	22.1	12.9	35.4	22.5	19.3	33.4	30.2
Very easy	72.6	70.2	85.5	61.0	76.3	77.2	61.3	65.9
Mother requires permission to take child to the clinic								
Yes	11.5	15.2	17.6	9.8	15.0	7.3	7.0	6.2
No	88.5	84.8	82.4	90.2	85.0	92.7	93.0	93.8
Total	**8501**	**1056**	**1917**	**1209**	**874**	**1315**	**1022**	**1108**


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CHAPTER IV: CONCLUSION AND RECOMMENDATIONS

TCV Campaign Coverage

The TCV campaign achieved a national coverage of 84.1%. At the time of the campaign, the children reached were almost equally split between the two age groups, 15 to 59 months (46.9%) and 60 to 179 months (53.1%). No significant disparities in the sex of the children at the time of the campaign were reported, although slightly less female children were reached (45.8% compared to 54.2% male children). Respondents for the survey were primarily mothers of eligible children (84.7%), aged 20 to 29 years (49.4%), had either no formal education (25.3%) or secondary education (24.8%), and used Facebook (53.9%).

The results indicate that TCV vaccination coverage differed across regions, with the highest coverage in Sudurpaschim (91.9%) and the lowest coverage in Lumbini (75.2%). Vaccination coverage also significantly differed by geographical location, degree of local government, age and education status, and media exposure of the mother/caregiver, age of the child at the time of the campaign, awareness of and reception of invitation card for campaign whether TCV was recommended by a health worker; vaccine knowledge and perception, including desire for vaccine; ease of access; and the presence of social support for vaccination. Notably, mothers/caregivers who were recommended to vaccinate their child by a health worker exhibited a higher coverage rate compared those who were not.

Previous reports found TCV coverage rates varying from just over 90% (Annual Health Report 2079/2080) to 99.7% (Family Welfare Division). Previous studies have indicated that primary immunization data may tend to be overestimated in official reports when scaled up from provider-level records,[14] suggesting that the PCCS estimation of 84.1% may offer a more robust estimate of the TCV coverage achieved by the campaign.

Awareness, sources of information, and key indicators

Nationally, 63.5% of the participants were aware of the TCV campaign. Notably, awareness significantly differed across regions. In Koshi, 86.9% of the participants were aware of the campaign, while in Madhesh, only 52.3% of the participants were aware of the TCV campaign. Nationally, FCHVs (73.7%), local health workers (46.9%), and school/teachers (41.3%) were found to be the most common sources of campaign knowledge, while mothers/caregivers and teachers were the primary sources of vaccine recommendations. However, the distribution of major sources of vaccine recommendations varied by region. Of the children who were vaccinated during the TCV campaign, the majority received a vaccination card during the campaign (89.6%) and were vaccinated at a school (87.5%).

FCHVs and schoolteachers played an important role in promoting campaign awareness, providing health recommendations, and serving as a source of information regarding vaccination

for the community. For future interventions, pre-campaign planning may consider incorporating trainings and orientations for schoolteachers in pre-campaign outreach and promotion. This may be particularly effective in provinces such as Bagmati, where schools and teachers were found to be major sources of information regarding the TCV campaign (63.0%). In regions where FCHVs are more influential, such as Madhesh (89.7%) and Karnali (75.4%), FCHVs should continue to be engaged and mobilized for pre-campaign advocacy, awareness, and community engagement activities, especially in hard-to-reach areas.

Additionally, regional differences in sources of campaign awareness and vaccine recommendations were reported. Awareness of the campaign was found to be significantly associated with TCV coverage. This may indicate that employing different approaches to promote campaign awareness for different regions may be more effective in increasing coverage. Utilizing multiple avenues, including secondary sources of information, such as radio, television, and social media, as well as activation techniques, such as opt-in text reminders, for reinforcement, may be helpful in promoting awareness. Notably, whether a participant had received an invitation card for the TCV campaign was significantly associated with coverage, providing strong support for the use of invitation cards in future campaigns.

However, although awareness of the TCV campaign was higher in Lumbini (61.6%) than in Madhesh (52.3%), TCV vaccination coverage was lower (75.2% and 80.6%, respectively). This could be due to differences in other major indicators associated with increased TCV coverage. While awareness of the TCV campaign was lower in Madhesh, in Madhesh, a higher percentage of those surveyed had received an invitation card for the TCV campaign, found it easy to access vaccination services, and wanted all the recommended vaccines in the NIP schedule. Additionally, fewer respondents in Madhesh had heard something negative about immunization in the past year than in Lumbini. While awareness was found to be significantly associated with campaign coverage, the significance of other indicators suggests that multiple behavioral and social factors influence vaccination uptake for individuals. Thus, emphasis should continue to be placed on strategies that target multiple domains that influence vaccine uptake simultaneously.

Reasons for not receiving TCV

Nationally, of the 1,488 children who did not receive TCV through the campaign, the majority were unaware of the campaign and therefore were not vaccinated (80.5%). Other reasons for non-vaccination during the campaign included the child's parent/guardian being absent during the campaign (12.3%), awareness of the campaign but lack of information regarding the time and location (12.1%), and lack of knowledge regarding the need for vaccination (6.6%). These findings highlight key areas for campaign awareness and promotion, including the need for national-scale awareness programming that emphasizes the importance of TCV and TCV vaccine safety. Pre-campaign programming should also be more robust, disseminating the time and location of vaccination sessions in advance and deploying volunteers and health workers to areas that are difficult to reach to spread awareness. This could be done by distributing vaccination cards with a map of the nearest vaccination centers, visualized using local landmarks and markings. As TCV was only recently introduced in the RI schedule, health promotion efforts should focus on training health workers and FCHVs specifically regarding TCV and its introduction in the RI schedule prior to future campaigns.

▶ SIA RI Linkage

Distribution of TCV campaign invitation card

The distribution of respondents who received TCV campaign invitation cards varied across province, degree of local government, and ethnic group, religion, and media exposure of mother/caregiver. While many respondents were able to obtain information regarding the vaccine date/duration (87.8%) and vaccination center (87.0%), fewer respondents obtained critical information regarding RIs from the cards, such as age of eligibility for TCV (65.2%) and the RI schedule (39.1%). This may indicate that distributing cards with the RI schedule alone may not be sufficient to increase RI coverage and should continue to be implemented in concert with other SIAs for future campaigns.

Multiple communication activities were carried out during the TCV campaign in addition to the distribution of invitation cards. During the campaign, participants were informed of the importance of routine vaccination (63.5%) and asked about their RI status (67.1%) by campaign workers. Of those who were informed that their child had a missed immunization dose during the campaign (24.9%), 96.2% received the missed dose. In Koshi, Gandaki, and Karnali, all children of the respondents who were informed of a missed MR dose received the missed dose after being informed.

This finding highlights the success of the SIA-RI linkage activities while emphasizing the importance of the knowledge and skills of health workers regarding RI and vaccination counseling during campaigns. As most of the children who had a missed RI dose received that dose after being informed during the campaign, these campaigns serve as effective sources of information regarding RIs. Training programs for future campaigns should continue to emphasize the importance of providing information regarding opportunities or locations where the missed dose(s) can be received and foster strong counseling skills. Health workers should be able to effectively communicate the necessary information as they are particularly influential in promoting vaccination and are typically highly trusted.

RI coverage

RI coverage for children aged 12-35 months was generally high across all routine vaccinations, with some variation across regions. Nationally, the vaccines with the lowest coverage were MR2 (92.6%) and JE (93.3%). Notably, while RI coverage in Madhesh was comparable to other regions across most vaccines, MR2 and JE coverage was noticeably lower (86.6% and 89.0%, respectively). This may indicate the need for educational campaigning in Madhesh targeting awareness of MR2 and JE. Ensuring local health workers, FCHVs, and schools/teachers can communicate and emphasize the importance of the two vaccines and are also able to provide information regarding opportunities for vaccination may help increase coverage. Public awareness campaigns through social media platforms such as Facebook and Emo may also be effective in promoting vaccination. Expanding access by partnering with private clinics and healthcare centers to offer special vaccination hours or events for MR and JE may improve accessibility and promote vaccination uptake as well.

Comparison of RI coverage across previous surveys

Previous surveys, including PCCSs conducted for other vaccination campaigns, also assessed coverage of RI among children. The findings of the TCV PCCS for the RIs assessed are compared to data from the 2022 NDHS[15], the 2021/2022 DoHS Annual Report[16], the 2021/2022 MR PCCS[17], and the 2019 UNICEF MICS[18].

- **Bacillus Calmette-Guérin (BCG)**

  This survey estimates national coverage of BCG to be over 99% for children aged 12 to 35 months. The findings are similar to the 2021/2022 DoHS Annual Report, which estimated 104% national coverage.

  The 2022 NDHS reported a slightly lower national coverage estimated for BCG (95%) for children aged 12 to 23 months. Compared to estimates from the 2019 UNICEF MICS, BCG coverage has remained relatively the same among 12 to 23 months children (95.7%).

- **Fractional-dose inactivated polio vaccine (fIPV)**

  The current survey reports fIPV coverage among children aged 12 to 35 months to be 98.3% and 97.5% for fIPV-1 and fIPV-2, respectively. The 2021/2022 DoHS Annual Report reported slightly lower coverage rates for children under 12 months for fIPV-1 (96%) and fIPV-2 (93%).

  The 2022 NDHS reported even lower estimates of fIPV coverage for fIPV-1 (92%) and fIPV-2 (85%). However, compared to 2019 findings from UNICEF MICS, coverage has increased significantly for fIPV-1 (39.2%).

- **Rotavirus**

  The current survey estimates national coverage of Rota-1 and Rota-2 to be 97.9% and 96.9%, respectively, among children aged 12 to 35 months. The 2021/2022 DoHS Annual Report reported slightly lower coverage rates for children under 12 months, with 94% coverage of Rota-1 and 91% coverage of Rota-2. However, the 2022 NDHS reported lower Rota-1 (78%) and Rota-2 (72%) coverages among children aged 12 to 23 months.

- **Oral polio vaccine (OPV)**

  The current survey reports over 98.5% coverage for all three doses of OPV among children aged 12 to 35 months, nationally. The 2021/2022 DoHS Annual Report also reported high coverage rates for children under 12 months, with coverage for all three doses exceeding 95%.

  The 2022 NDHS reported slighter lower coverage for children aged 12 to 23 months, ranging from 95% (OPV1) to 86% (OPV3). Compared to the coverage reported in 2019 by UNICEF MICS, coverage has increased overall, from 93.9% for OPV1 and 80.7% for OPV3. Across all surveys, coverage is lowest for OPV3, but high for OPV1 and OPV2.

- **Pneumococcal conjugate vaccine (PCV)**

  The current survey reports over 97% coverage of PCV for all three doses, nationally, for children aged 12 to 35 months. The 2021/2022 DoHS Annual Report reported similar coverage rates of over 94% for all three doses of PCV for children under 12 months.

The 2022 NDHS reported slighter lower coverage for children aged 12 to 23 months, ranging from 93% (PCV1) to 81% (PCV3). Compared to the coverage reported in 2019 by UNICEF MICS, coverage has increased overall, from 81.4% for PCV1 and 70.4% for PCV3. Across all surveys, coverage is lowest for PCV3, but high for PCV1 and PCV2.

- **Diphtheria-pertussis-tetanus (DPT)**

  The current survey assessed national DPT coverage, reporting over 98% for all doses of DPT for children aged 12 to 35 months. The 2021/2022 MR PCCS reported similar coverage for DPT; for children aged nine to 59 months, 99.9% DPT coverage was achieved for DPT 1 and DPT 2, with 94.6% coverage for DPT 3. The 2021/2022 DoHS Annual Report reported a coverage rate of over 95% for all three doses of DPT for children under 12 months.

  According to the 2019 UNICEF MICS, DPT coverage ranged from 81.4% to 88.8% for children aged 12 to 23 months. The 2022 NDHS reported coverages of 95% (DPT 1), 93% (DPT 2), and 89% (DPT 3), indicating an increase in coverage. All reports corroborate the finding that coverage of DPT is generally high for the first and second dose, with decreased coverage of DPT 3.

- **Measles-rubella (MR) vaccine**

  According to the PCCS conducted in 2021/22 following the national MR vaccination catch-up campaign, the MR campaign achieved 84% coverage, nationally. Routine MR coverage was found to be 99% (MR1) and 96% (MR2) for routine MR immunization. The TCV PCCS findings report slightly lower coverages of 97.1% (MR1) and 92.6% (MR2). Differences in coverage may be due to the difference between the age range of the samples—the MR PCCS assessed coverage among children aged nine to 59 months, while the current PCCS assessed coverage among children aged 12 to 35 months—or may reflect a decrease in vaccination coverage over time (the MR PCCS was conducted in 2021/22, while the TCV PCCS was conducted in 2023). The 2021/2022 DoHS Annual Report further states a coverage rate of 95% for MR1 for children under 12 months and a coverage of 95% for MR2 for children aged 15 months.

  According to the NDHS 2022, MR coverage among children aged 12 to 23 months was 89%, while UNICEF MICS 2019 reported 87.1% coverage of MR1 for the same age group, showing an increase in coverage between 2019 and 2022.

- **Japanese encephalitis (JE)**

  The current findings indicate that the national coverage of JE is 93.3% for children aged 12 to 35 months. For children aged 12 months, the 2021/2022 DoHS Annual Report reported a coverage rate of 96%.

  According to the NDHS 2022, JE coverage among children aged 12 to 23 months was 81%, while UNICEF MICS 2019 reported 54.1% coverage of JE for the same age group, showing a large increase in coverage between 2019 and 2022.

RI card retention (12-35 months)

This survey also identified retention of RI vaccination cards for children aged 12 to 35 months old. Of the children included in the survey, 69.4% had received a vaccination card, while 66.6% of those who had a received a card were able to produce the card. Perceived importance and safety of vaccines and trust of health workers significantly influenced card retention. To improve card retention rates, it is key to emphasize the importance and safety of vaccines to the caregivers. Campaign workers should be trained in communicating this effectively to promote trust and knowledge. In addition, healthcare workers and FCHVs should be able to communicate to caregivers' the importance of card retention.

RI card retention was also assessed by region. The national card retention was 69.4%, with higher rates in Koshi (82.1%) and Lumbini (78.7%) and the lowest retention in Karnali (56.6%). Lack of retention was primarily attributable to sharing the card with someone else (55.0%) and loss (35.4%). Nationally, the retention rate was lowest than for children aged 24-35 months.

Missed children in routine immunization (partially or never immunized)

While RI coverage was overall high, nationally, 13.9 % of children have missed routine vaccinations. Rates of missed vaccination differed by region, urban status, level of education of the caregiver, and media exposure. Multiple factors were associated with missed immunization status, including the age of the child, province, geographical location, degree of local government, demographic characteristics of the primary caregiver, vaccine knowledge and perception, and access to vaccination services. Reasons for non-vaccination included ineligibility due to age (46.1%), unawareness of vaccination locations (18.7%), and absence of the child's caregiver (14.4%), and varied by region.

According to these findings, promoting knowledge of vaccine safety, necessity, and increasing accessibility is key to decreasing rates of partial immunization. The primary caregiver's perception of the importance and safety of and desire for vaccines for their child was found to significantly influence missed immunizations. Information may be disseminated through local health workers and FCHVs as they were reported as the main sources of information regarding routine immunizations, and recommendations by and trust in health workers significantly influences RI vaccine uptake.

Additionally, ease of access to vaccination centers and having been turned away were significantly associated with partial immunization status. In regions where accessibility is a major barrier, such as regions where average time to reach the nearest vaccination center is higher (e.g., Karnali) it may be beneficial to offer special timings, clinics, and catch-up events. These events should be widely advertised to ensure that target populations are aware of vaccination opportunities. This can be done through volunteers, community centers, and coordination with local stakeholders. Advertising vaccination opportunities in conjunction with informational programming well in advance may help mitigate accessibility issues. For those who are turned away for vaccination, follow-up information should be consistently provided, including information regarding how to obtain the vaccine later.

Conclusion

While the TCV campaign was able to achieve significant coverage across Nepal, coverage and awareness of vaccination opportunities and vaccination knowledge varies across regions and by various key indicators. Importantly, behavioral and social drivers of vaccination significantly influenced vaccine uptake, especially the attitudes and knowledge of the primary caregivers. Accessibility is also a critical issue for improving RI coverage. Strategies to include coverage include educational programming, mass campaigning, and coordination with local and private healthcare institutions to offer more accessible vaccination opportunities. Additionally, for RIs, the survey reported lower coverage for subsequent doses of a vaccine series (e.g., lower MR2 coverage compared to MR1; OPV3 versus OPV1/OPV2), highlighting vaccine series completion as an important target for future interventions.

References

1. Hancuh M. Typhoid Fever Surveillance, Incidence Estimates, and Progress Toward Typhoid Conjugate Vaccine Introduction — Worldwide, 2018–2022. MMWR Morb Mortal Wkly Rep. 2023;72. doi:10.15585/mmwr.mm7207a2
2. Typhoid. Accessed July 1, 2024. https://www.who.int/news-room/fact-sheets/detail/typhoid
3. Stanaway JD, Reiner RC, Blacker BF, et al. The global burden of typhoid and paratyphoid fevers: a systematic analysis for the Global Burden of Disease Study 2017. The Lancet Infectious Diseases. 2019;19(4):369-381. doi:10.1016/S1473-3099(18)30685-6
4. Garrett DO, Longley AT, Aiemjoy K, et al. Incidence of typhoid and paratyphoid fever in Bangladesh, Nepal, and Pakistan: results of the Surveillance for Enteric Fever in Asia Project. The Lancet Global Health. 2022;10(7):e978-e988. doi:10.1016/S2214-109X(22)00119-X
5. Foundation MG, Reinders S. TYPHOID CASES IN NEPAL BY AGE (2019).
6. Meiring JE, Shakya M, Khanam F, et al. Burden of enteric fever at three urban sites in Africa and Asia: a multicentre population-based study. The Lancet Global Health. 2021;9(12):e1688-e1696. doi:10.1016/S2214-109X(21)00370-3
7. Basnyat B. Tackling typhoid fever burden in south Asia. The Lancet Global Health. 2022;10(7):e932-e933. doi:10.1016/S2214-109X(22)00210-8
8. Saha SK, Tabassum N, Saha S. Typhoid Conjugate Vaccine: An Urgent Tool to Combat Typhoid and Tackle Antimicrobial Resistance. J Infect Dis. 2021;224(Suppl 7):S788-S791. doi:10.1093/infdis/jiab443
9. Recommendations to assure the quality, safety and efficacy of typhoid conjugate vaccines, Annex 2, TRS No 1030. Accessed July 1, 2024. https://www.who.int/publications/m/item/tcv71-recommendations
10. Patel PD, Liang Y, Meiring JE, et al. Efficacy of typhoid conjugate vaccine: final analysis of a 4-year, phase 3, randomised controlled trial in Malawian children. Lancet. 2024;403(10425):459-468. doi:10.1016/S0140-6736(23)02031-7
11. WUENIC Trends. (n.d.). Retrieved July 1, 2024, from https://worldhealthorg.shinyapps.io/wuenic-trends-2023/
12. Post Campaign Coverage Survey of Measles Rubella Supplementary Immunization Activity 2021 in Nepal – Final Report - New ERA. (n.d.). Retrieved July 1, 2024, from https://www.newera.com.np/report/post-campaign-coverage-survey-of-measles-rubella-supplementary-immunization-activity-2021-in-nepal-final-report/
13. Chakrabarti A, Grépin KA, Helleringer S. The impact of supplementary immunization activities on routine vaccination coverage: An instrumental variable analysis in five low-

income countries. PLoS One. 2019;14(2):e0212049. Published 2019 Feb 14. doi:10.1371/journal.pone.0212049

14. Onta SR, Sabroe S, Hansen EH. The quality of immunization data from routine primary health care reports: a case from Nepal. Health Policy Plan. 1998;13(2):131-139. doi:10.1093/heapol/13.2.131
15. Ministry of Health and Population [Nepal], New ERA, and ICF. 2023. Nepal Demographic and Health Survey 2022. Kathmandu, Nepal: Ministry of Health and Population [Nepal].
16. Department of Health Services [Nepal]. 2024. Annual Report 2078/79 (2021/2022). Kathmandu, Nepal: Department of Health Services [Nepal].
17. Ministry of Health and Population, Department of Health Services. 2022. Post Campaign Coverage Survey of Measles Rubella Supplementary Immunization Activity 201 in Nepal). Kathmandu, Nepal: Government of Nepal.
18. Central Bureau of Statistics (CBS), 2020. Nepal Multiple Indicator Cluster Survey 2019, Survey Findings Report. Kathmandu, Nepal: Central Bureau of Statistics and UNICEF Nepal.

ANNEXURE

Annex 1: Detail sample size calculation table

Table 21: Detailed sample size

Province	# Number of sub wards	Sub wards sampled		# of HH sample/ listed	Households have eligible target population		# of household sampled for TCV1	Household eligible for TCV1 target population		# of household sampled for TCV2	Households eligible for TCV2 target population		Household eligible for RI target population
	N	N	%	N	N	%	N	N	%	N	N	%	N
Koshi	3990	164	4.1	10004	2184	21.8	2460	533	20.7	1640	723	44.1	1056
Madhesh	3939	164	4.2	10004	3355	33.5	2460	921	35.3	1640	903	55.1	1917
Bagmati	5056	164	3.2	10004	2372	23.7	2460	528	19.8	1640	772	47.1	1209
Gandaki	2290	164	7.2	10004	2016	20.2	2460	511	19.7	1640	743	45.3	874
Lumbini	3765	164	4.4	10004	2602	26.0	2460	697	26.8	1640	793	48.4	1315
Karnali*	1410	163	11.6	9943	2187	22.0	2445	587	22.3	1630	754	46.3	1022
Sudurpaschim*	2007	163	8.1	9943	2204	22.2	2445	557	21.9	1630	713	43.7	1108
National	**22457**	**1146**	**5.1**	**69906**	**16920**	**24.2**	**17190**	**4334**	**23.8**	**11460**	**5401**	**47.1**	**8501**

**Survey team could not reach cluster number 821 and 993 of Dolpa and Bajhang respectively*

Annex 2: Detail data weight calculation method

The following notations were used for data weight calculation:

P1hi: first-stage sampling probability of the i th cluster in stratum h

P2hi: second-stage sampling probability within the i th cluster (household selection)

Let nh be the number of clusters selected in stratum h, Mhi the number of households according to the sampling frame in the i th cluster, and $\sum$ M hi the total number of households in the stratum. The probability of selecting the i th cluster in the PCCS for TCV Campaign-2022 in Nepal sample is calculated as follows:

$$\frac{nh\ M\ hi}{\sum M\ hi}$$

Let shi be the proportion of households in the selected segment relative to the total number of households in sub-ward i in stratum h if the sub-ward is segmented; otherwise, shi =1. Then the probability of selecting cluster i in stratum h in the sample is:

$$P1hi = \frac{nhM\ hi\ X\ Shi}{\sum Mhi}$$

Let Lhi be the number of households listed in the household listing operation in cluster i in stratum h, and let mhi be the number of households selected in the cluster. The second stage's selection probability for each household in the cluster is calculated as follows:

$$P2hi = \frac{Mhi}{Lhi}$$

The overall selection probability of each household in cluster i of stratum h is therefore the product of the two-stage selection probabilities:

$$Phi = P1hi \times P2hi$$

The sampling weight for each household in cluster i of stratum h is the inverse of its overall selection probability:

$$Whi = \frac{1}{Phi}$$

A spreadsheet containing all sampling parameters and selection probabilities was prepared to facilitate the calculation of design weights. Design weights were adjusted for household nonresponse and for individual nonresponse to obtain the sampling weights for households and for children, respectively.

The final sampling weights were normalized so that the total number of unweighted cases was equal to the total number of weighted cases at the national level for both household weights and individual weights. Two sets of weights were calculated:

- one set for all TCV-eligible households selected for the survey
- one set for all RI-eligible households selected for the survey

It is important to note that normalized weights are relative weights that are valid for estimating means, proportions, and ratios but not valid for estimating population totals or for pooled data. Also, the number of weighted cases using the normalized weight has no direct relation with survey precision, where the number of weighted cases is much smaller than the number of unweighted cases and only the latter are directly related to survey precision.

Annex 3: Informed Consent Form

Typhoid Vaccination Campaign (TCV) Survey Consent

Namaste! My Name is _____. We are here on behalf of....., a research organization in Kathmandu. We are conducting a nationwide Post campaign coverage survey research on Typhoid Vaccination Campaign (TCV) covering all 77 districts of Nepal. Your household was selected by random sampling to participate in the survey. The objective of this study is to evaluate to what extent Typhoid Vaccination Campaign (TCV) has reached the target population. I will be asking you questions on Typhoid Vaccination Campaign along with routine immunization activity. We request you to participate in this survey. Information provided by you will be highly important to us in order to help National Immunization Program to effectively implement coverage survey at national level in future. This interview is going to take approximately 45 minutes and we would like to assure you that you will experience no inconvenience, discomfort or harm by participating in this study. To participate or not to participate in this study is completely voluntary. You may refuse to answer any question or choose to stop the interview at any given time. Information provided by you will be kept confidential and your name will not be included in any data set or report.

Risks

When participating in the interview, the main risk is the loss of confidentiality, that is, the risk that the information you give us will be improperly disclosed. However, interviewers will be reminded that everything said in the interview will be kept confidential. There is also a risk that you may share some personal or confidential information by chance, or that you may feel uncomfortable talking about some of the topics. Nevertheless, we do not wish for this to happen. You do not have to answer any question or take part in the interview if you feel the question(s) are too personal or if talking about them makes you uncomfortable.

Our project team members have been trained in ethical issues related to conducting interviews.

Benefits

There will be no direct benefit to you, but your participation is likely to help us gather data which will serve as a guidance for formulating strategies and devise innovative intervention to reach the unreached through campaigns and through routine programs.

Right to Refuse or Withdraw

You do not have to take part in this project if you do not wish to do so and choosing to participate will not affect you in any way. You may stop participating in the interview at any time that you wish without affecting you in any way.

Who to Contact?

If you have any question regarding the survey, you can contact:

- Dr. Sameer Mani Dixit: sameer@cmdn.org; Tel: 01-5352897, 01-5351590, 01-5361652
- Kavya Sharma: kavya.sharma1@iqvia.com; Tel: +91 984 464 4528
- Namita Ghimire (NHRC): meetnamitag@gmail.com ; Tel.: +977 - 4254220 (Ext no 125)

We highly appreciate your participation in the survey.

Do you want to participate? 1. Yes 2. No End Interview

May I begin the interview? 1. Yes 2. No End Interview

Signature of respondent_____

Signature of witness (if the respondent is illiterate): _____

Signature of interviewer's: _____

_____ / _____ / 2080

Date: DD / MM / YYYY

Start Time: ☐☐☐☐

Typhoid Vaccination Campaign (TCV) Survey Consent

नमस्ते! मेरो नाम _____। हामी यहाँ काठमाडौको_____ एउटा अनुसन्धान संस्थाको तर्फबाट यहाँ छौं। हामीले टाइफाइड खोप अभियान (TCV) मा नेपालका सबै ७७ जिल्लालाई समेटेर राष्ट्रव्यापी पोस्ट अभियान कभरेज सर्वेक्षण अनुसन्धान गरिरहेका छौं। सर्वेक्षणमा भाग लिनको लागि नमूना छनोट विधिद्वारा तपाईंको घरपरिवार चयन गरिएको थियो।

यस अध्ययनको उद्देश्य टाइफाइड खोप अभियान (TCV) लक्षित जनसङ्ख्यामा कति जनसंख्यासम्म पुगेको छ भन्ने मूल्याङ्कन गर्नु हो। म तपाईलाई नियमित खोप गतिविधि संगै टाइफाइड खोप अभियान बारे प्रश्न सोध्ने छु। हामी तपाईंलाई यस सर्वेक्षणमा सहभागी हुन अनुरोध गर्दछौं। भविष्यमा राष्ट्रिय स्तरमा कभरेज सर्वेक्षणलाई प्रभावकारी रूपमा कार्यान्वयन गर्न राष्ट्रिय खोप कार्यक्रमलाई मद्दत गर्न तपाईले प्रदान गर्नुभएको जानकारी हाम्रो लागि अत्यन्त महत्त्वपूर्ण हुनेछ।

यो अन्तर्वार्ता लगभग ४५ मिनेट लाग्ने छ र यस अध्ययनमा भाग लिएर तपाईले कुनै जोखिम, असुविधा वा हानिको अनुभव गर्नुहुने छैन भनी हामी आश्वस्त पार्न चाहन्छौं। यस अध्ययनमा भाग लिनु वा नलिनु पूर्णतया स्वैच्छिक हो। तपाईंले कुनै पनि प्रश्नको जवाफ दिन अस्वीकार गर्न सक्नुहुन्छ वा कुनै पनि समयमा अन्तर्वार्ता रोक्न सक्नुहुन्छ। तपाईंले प्रदान गर्नुभएको जानकारी गोप्य राखिनेछ र तपाईंको नाम कुनै पनि डाटा सेट वा रिपोर्टमा समावेश गरिने छैन।

जोखिमहरू

अन्तर्वार्तामा लिँदा मुख्य जोखिम भनेको गोपनीयताको भङ्ग हुनु हो, अर्थात्, तपाईंले हामीलाई दिनुभएको जानकारी अनुचित रूपमा खुलासा हुने जोखिम हो। यद्यपि, अन्तर्वार्ता लिनेहरूलाई अन्तर्वार्तामा भनिएका सबै कुरा गोप्य राखिनेछ भनी सम्झाइनेछ। तपाईंले संयोगवश केही व्यक्तिगत वा गोप्य जानकारी साझा गर्न सक्नुहुन्छ, वा केही विषयहरूको बारेमा कुरा गर्न असहज महसुस गर्न सक्नुहुन्छ भन्ने जोखिम पनि छ। तैपनि, हामी यो हुन चाहँदैनौं। तपाईंले कुनै पनि प्रश्नको जवाफ दिन वा अन्तर्वार्तामा भाग लिनु पर्दैन यदि तपाईंलाई प्रश्न(हरू) धेरै व्यक्तिगत छन् वा तिनीहरूको बारेमा कुरा गर्दा तपाईंलाई असहज महसुस हुन्छ सक्छ त्यसैले हाम्रो परियोजना टोलीका सदस्यहरूलाई अन्तर्वार्ता सञ्चालन गर्न सम्बन्धित नैतिक मुद्दाहरूमा तालिम दिइएको छ।

फाइदाहरू

यस बाट तपाईलाई कुनै प्रत्यक्ष फाइदा हुने छैन, तर तपाईको सहभागिताले हामीलाई डेटा सङ्कलन गर्न मद्दत पुग्ने छ जसले रणनीतिहरू तर्जुमा गर्न मार्गनिर्देशनको रूपमा काम गर्नेछ र नियमित कार्यक्रमहरू मार्फत पहुँच नपुगेकाहरूसम्म पुग्नको लागि योजना निर्माण गर्न सहयोग पुग्दछ।

अस्वीकार गर्ने वा छोडने अधिकार

यदि तपाइँ त्यसो गर्न चाहनुहुन्न भने तपाइँले यस परियोजनामा भाग लिनु पर्दैन र भाग लिन छनौट गर्दा तपाइँलाई कुनै पनि हिसाबले असर गर्दैन। तपाईंले कुनै पनि तरिकाले तपाईलाई असर नगरी आफूले चाहेको कुनै पनि समयमा अन्तर्वार्ता छोडन सक्नुहुन्छ।

कसलाई सम्पर्क गर्ने?

- Dr. Sameer Mani Dixit: sameer@cmdn.org; Tel: 01-5352897, 01-5351590, 01-5361652
- Kavya Sharma: kavya.sharma1@iqvia.com; Tel: +91 984 464 4528
- Namita Ghimire (NHRC): meetnamitag@gmail.com ; Tel.: +977 - 4254220 (Ext no 125)

सर्वेक्षणमा तपाईको सहभागिताको हामी उच्च कदर गर्दछौं।

के तपाई सर्भेक्षणमा भाग लिन चाहनु हुन्छ?

1. चाहन्छु 2. चाहन्न अन्तुवार्ता अन्त्य गर्नुहोस्।

के म अन्तर्वार्ता सुरु गर्न सक्छु?

1. सक्नुहुन्छ 2. सक्नु हुन्न

उत्तरदाताको हस्ताक्षर _____

साक्षीको हस्ताक्षर (यदि उत्तरदाता निरक्षर छ भने): _____

अन्तरवार्ताकारको हस्ताक्षर:

_____ / _____ / 2080

Date: DD / MM / YYYY

अन्तरवार्ता सुरु ☐☐☐☐ समय:

Annex 4: Data Collection Forms

Typhoid Vaccination Campaign (TCV) Survey Consent

Do you want to participate? 1. Yes 2. No End Interview

May I begin the interview? 1. Yes 2. No End Interview

Signature of respondent_____

Signature of witness (if the respondent is illiterate): _____

Signature of interviewer's: _____

_____ / _____ / 2080

Date: DD / MM / YYYY

☐☐☐☐ Start Time:

Household Information	
001S. Interview date in BS.....	D D M M Y Y Y Y
001C. TCV date in BS (please record the date from provided TCV schedule of the cluster/district)	D D M M Y Y Y Y
002 Province name and number _____	☐
003 District name and number _____	☐☐
004 Local level (municipality/RM) name and number _____	☐
005 Ward number.....	☐☐
006 Cluster number.....	☐☐☐
007 Household ID.....	☐☐
008 Name of household head _____ 008.1Sex of household head: Male=1 Female=2	008.2. Age of household head in complete years: ☐☐
009 Name of respondent _____	☐☐
010 Name of interviewer and code _____	☐☐
011 Supervisor's name code _____	☐☐
013 Interview visits:	☐☐

Visit:	1	2	3
Date:			
Time (24 hours):			
Result (take code from Q012)			

012 Result of Interview: 1. Begin interview not completed 2. Completed interview 3. No family member available at the time of visit 4. Eligible respondent not available 5. Respondent incapacitated (deaf, mentally sick,) 6. Refused 9. Other (Specify) _____	

Retrieve GPS coordinates while standing outside the front door of the house under a clear sky when possible.

Household GPS Coordinates		
GPS 01	Latitude	
GPS 02	Longitude	
Alt 03	Altitude (m)	

Section 1: Household Roster

Total number of family members in the household ☐☐

Total number of children below 17 years in the household ☐

(RI 12- 24 – 35 and TCV cohort (27 months to 17 years) in the household)

LN	101: Name of child	102. Sex Gender Of Child (Name) Male =1 Female=2 Other = 3	DOB1. Please tellme date of birth child (Name)? Don't know day and month(know only year)=0 Know day and Year (d=1 know day,month and year-2	103. Date of Birth (DDMMYYYY) Eligible only if the age hh members is below 17 years ate the time Of Survey If respondent know only years, put 1 in birth day birth month	105. Complete age of child (In Month) at survey day Q103-Q001S CAPI will generate automatically	106. Complete age of child (In Month) at TCV day (Q103-Q001C) CAPI will generate automatically	107. Eligible children for RI survey (Age of child 12 to 35 Months at the time of survey) yes=1 no= 2 CAPI will generate automatically	108 Eligible child for Typhoid campaign: RI SIA linkage (age 15-59 months) the time of survey yes=1 no= 2 CAPI will generate automatically	109 Eligible children for Typhoid campaign: RI SIA linkage (age 60-179 months) at the time of survey yes=1 no= 2 CAPI will generate automatically

Section 2: Filter Questionnaire

From the above table, if there is more than one eligible child, use RANDOM method to select one child for TCV and every eligible child for RI. Then go to the mother/caregiver questionnaire to know the detail of Typhoid vaccine of the selected child. Then check column Q.107 and Q108 and Q109 to confirm whether the child is eligible or not for the interview (15-59 month for expected every fifth household interval and 60 -179 months for every sixth household interval).

If not any one child found eligible, then end the interview here

111. Total RI eligible child age (12 to 35) month in the household at the time of survey (for all 61 household) ☐

112 Total eligible child age (15 to 59 months) at TCV campaign day for every fifth household interval ☐

112a. Total eligible child age (60 to 179 months) at TCV campaign day for every fifth household interval ☐

(*Note: if there is no any eligible member for the survey then terminate the interview)*

Section 2: Selected child details

Q.No.	Questionnaire	Coding	Skip
201	Select survey type	Sample child for RI age(12-35)months at time of survey ---------1 Sample child for every fifth household age(15-59) month at the TCV campaign day----------2 Sample child for every sixth household age (60-179) months at TCV Campaign-day----------3	
202	Serial number of Child from HH roster (show the roster and put the serial number)		
203	Name of the selected child (From household roster)		
204	Age of the child during Survey (Copy Q. No. 105)	☐☐	
205	Age of the child during Typhoid Vaccination Campaign (TCV) (Copy Q. No. 106)		
206	What is the name of mother /care giver of selected child? Record Name Mother	_____	
207	Age of mother /care giver of selected child(Name)?	☐☐	
208	Where did mother give birth to selected (NAME)?	Home----------1 Govt. Hospital/clinic----------2 Phc center----------3 Health post ----------4 other ngo facilitie----------5 Pvt. Hospital/nursing home----------6 Medical collegeOther spec----------96	

Section 3: Background Profile of Mother/Caregiver of Selected Child

Q.No.	Questionnaire	Coding	Skip
301	Relation of respondent with child	Mother……1 Grandmother----------2 Father----------3 Grandfather----------4 Uncle----------5 Aunty----------6 Other specify 96_	

Q.No.	Questionnaire	Coding		Skip
302	What is the ethnicity of mother/caregiver? (Review the code list)	Dalit……..……..……1 Disadvantaged Janajatis……2 Disadvantaged non-dalitTerai caste groups…….……3 Religious Minorities…….……4 Relatively advantaged Janajatis……5 Upper caste groups……6 Don't know…… …98 No response……..……99		
303	What is the education level of mother/caregiver?	Illiterate…….0 Informal learning……..19 Grade 1……..1 Grade 2……..2 Grade 3……..3 Grade 4……..4 Grade 5……..5 Grade 6……..6 Grade 7……..7 Grade 8……..8 Grade 9……..9 Grade 10……10 +2 Education or relevant education….12 Graduate…….15 Post Graduate……..17		
304	What is the religion of mother/caregiver?	Hindu.....1 Buddhist.....2 Islam.....3 Kirant.....4 Christian.....5 Other (Specify)_____96		
305	Occupation of mother/caregiver?	Business/ technical sector workers----------1 Clerical----------2 Sales and services ----------3 Skilled manual----------4 Unskilled manual----------5 Agriculture----------6 Student----------7 House wife----------8 Other specify----------96 Don't know----------98		
306	Which of the following media do you use? (Multiple choice)	Facebook	A	
		Instagram	B	
		TikTok	C	
		Twitter	D	
		YouTube	E	
		Emo	F	
		Snapchat	G	
		Viber	H	
		WhatsApp	I	
		Local FM	J	
		TV	K	
		Newspaper/magazine	L	
		Other(Specify)	X	
307	Among the social media applications mentioned above, which applications do you use the most? (single choice)	Facebook	1	
		Instagram	2	
		TikTok	3	
		Twitter	4	
		YouTube	5	
		Emo	6	
		Snapchat	7	
		Viber	8	

		WhatsApp	9	
		Google search	10	
		Local FM	11	
		TV	12	
		Newspaper/magazine	13	
		Other specify _____	96	

Section 4: Typhoid Vaccination Campaign (TCV)

Q.No	Questionnaire	Coding	Skip
401	Did you(respondent) know about the Typhoid Vaccination Campaign (TCV) in your district conducted between 30/12/2078(8April to 1 May 2022)_ and18/01/2079? (Interviewer: please explain respondents about the campaign in brief)	Yes..... 1 No..... 2	Q403
402	If yes, from whom and how did you(respondent) know about the campaign? Choose 3 main responses	FCHV.....A Local health worker.....B Radio/FM..... C TV .....D Newspaper..... E Invitation card.....F Neighbor .....G Miking.....H SMS.....I Poster.....J Social Media/internet.....-----.....K Community/village/municipality people.....L School/teacher..... M Caller ring back tone in mobile----------N Other (Specify)_____.....X	
403	Has(Name) receive vaccine in TCV campaign?	Yes.....1 No..... 2	Skip408
404	Has (Name's) vaccination card given at the campaign?	Yes,.....----------.....1 No, ----------.....2	Skip406
405	If TCV campaign card received, May I see the TCV card?	TCV Card seen.....1 TCV Card not seen, ...2	Skip407
406	What is the reason for not having TCV campaign card of (Name) in the household?	Torn ....1 Card lost ....2 With someone else---------- ....---------3 Other specify..... 96	
407	If Typhoid vaccine received during campaign, who suggested your child(Name) to get vaccine? Multiple answer possible	Child's mother/caregiver.....A Family members..... B Neighbor..... C Volunteer/FCHV .....D Teachers..... E Health Workers.....F Others (Specify) _____.....X	Skip to next section
407a	If TCV vaccine received where did (Name) received the vaccine?	Government hospital/health post . . . . 1 School..... 2 Own home..... .....-..... . . . .3 Other specify..... 96	
408	If not vaccinated during the TCV, then ask why was the child(Name) not vaccinated? Choose 3 main responses. Code number of priority 1 ☐☐	Unaware of campaign .....A Aware of campaign but did not know about time and location .....B Childs' parent/guardian not present during campaign .....C Unaware of need for vaccination.....D	

Q.No	Questionnaire	Coding	Skip
	Code number of priority 2 ☐☐ Code number of priority 3 ☐☐	Child sick and parent/guardian unwilling to get child vaccinated..... E Fear of pain from injection.....F Fear of side effects of vaccine.....G Mothers/guardians too busy.....H Campaign site too far away .....I Child taken to vaccination site but not vaccinated.....J Child sick and health worker unwilling to vaccinate the child.....K Inconvenient session timing.....L Long waiting time.....M Vaccinator's behavior not friendly.....N Vaccination team ran out of vaccine at session site.....O Vaccinator did not come to appointed site.....P Not vaccinated due to inappropriate age.....Q known severe allergy to any drug food or medicine ...--.R Religious reasons ----------S Confusion on target group/eligibility----------T Thinking vaccine is for trial----------U Vaccine is not safe----------V Vaccine is not effective ----------W Other (Specify)_____ .....X Don't know .....Z	

Section 5: SIA RI linkage

Q.No	Questionnaire	Coding	Skip
501	Did you(respondent) receive an invitation card for bringing child (name) to the nearest Typhoid Vaccine campaign?	Yes.....1 No..... 2	Skip Q503
502	What did you learn from the card? (Multiple response possible)	Vaccination date/duration.....A Vaccination center .....B Age of the child for vaccination.....C Routine immunization schedule..... .....D Other specify_____-X	
	If child (Name) is 15-23 months at the time TCV ask 503-508)		
503	When (Name) received the Typhoid vaccination during campaign, did the vaccination campaign workers inform about the importance of routine vaccination?	Yes.....1 No.....2	
504	Did anyone ask about child's routine immunization status at the campaign?	Yes.....1 No.....2	
505	Record the details of Measles vaccination status as mentioned in the Campaign card whether the child has received routine immunization?	Received MR vaccine in 9 months----------A Received MR vaccine in 15 months. ----------....B Received none of MR vaccine ...--..... C Not recorded in the card ----------D	
506	Ask all: Did anyone inform during the campaign that (Name's) had missed routine immunization dose ?	Yes.....1 No.....2	skip next section
507	If yes, where the (Name)was told to come to for missed dose?	Come to the same place .....----------.....1 Go to Public Hospital/health post/health facility.....----------....2 Go to private health facility.....----------...3 Contact FCHV.....4 Others specify----------96	
508	Did (Name) receive missed routine vaccine ?	Yes.....1 No.....2	

Section 6: Routine Immunization (12-35 months at the time of survey)

Q.No	Questionnaire	Coding	Skip
601	Does (Name) has routine vaccination card?	Yes..... 1 No .....---------..... 2	If 2 skip 601.2
601.0	**(Ask the respondent for (Name) routine immunization card)** Can I see the card?	RI Card seen.....1 → RI Card not seen, ...2	skip tp Q601.1
601.1	If respondent has routine vaccination card, please take photo of the card		
601.2	What is the reason for not having routine vaccination card of (Name) with you/your household?	Torn ....1 Card lost ....2 With someone else---------- ....---------3 Not given----------4 Other specify..... 96	skip 607

Now, I will ask (child name)'s immunization status. If the child has immunization card, please show it to me. Record information from the vaccination card

Please ask the question as per above National vaccine immunization schedule and record accordingly

Visit	602. Vaccine	603. Vaccine given/ not given given = 1 not given=2	604. Vaccine given but date not recorded Recorded = 1 Not-recorded =2 If 2 Skip to 607	605. Date (DD/MM/YYYY) (If year not known then record 9998 and (if month not known then record 98 and if day not known then record 44) DAY MONTH YEAR	606.Location where vaccine taken Source** a) Outreach session --------1 b) HP/ PHC/ Hospital-----2 c) Private health facility----------3 others
1	BCG				
2	fIPV1[2]				
	ROTA-1				
	ORAL POLIO VACCINE (OPV) -1				
	PCV-1				
	DPT-Hep B-Hib -1				
3	ROTA-2				
	ORAL POLIO VACCINE (OPV)-2				
	PCV-2				
	DPT-Hep.B-Hib- 2				
4	ORAL POLIO VACCINE (OPV)-3				
	fIPV 2(Note)				
	DPT-Hep.B-Hib- 3				
5	fIPV-2				
	PCV-3				

[2] fIPV 6 weeks and 14 weeks scheduled changed to 14 weeks and 9 months from November 2022. Children born after August 2022 will fall under later schedule of fIPV.

	MR-1				
6	JE				
7	MR-2				

Q.No	Questionnaire	Coding	Skip
	If vaccination card not available, then on respondent recall (**Interviewer: please mentioned all vaccines in Routine Immunization)**		
607	Has (Name) ever received a BCG vaccination against tuberculosis, that is, an injection in the arm or shoulder that usually causes a scar?	Yes.....1 No.....2 Don't Know.....98	
608	Has (Name) ever received oral polio vaccine, that is, about two drops in the mouth to prevent polio given in 6 weeks?	Yes.....1 No.....2 Don't Know.....98	
609	Has (Name) ever received oral polio vaccine, that is, about two drops in the mouth to prevent polio given in 10 weeks?	Yes.....1 No.....2 Don't Know.....98	
610	Has (Name) ever received oral polio vaccine, that is, about two drops in the mouth to prevent polio given in 14 weeks?	Yes.....1 No.....2 Don't Know.....98	
611	Did (Name) get an fIPV injection in the right upper arm to protect against polio given in 6 weeks?	Yes.....1 No.....2 Don't Know.....98	
613	Did (Name) get an fIPV injection in the right upper arm to protect against polio given in 14 weeks?	Yes.....1 No.....2 Don't Know.....98	
614	Did (Name) get a fIPV injection in the right upper arm to protect against polio given in 9 months?	Yes.....1 No.....2 Don't Know.....98	
612	Did (Name) get an DPT-Hep B-Hib -1 injection in the right upper arm to protect against diphtheria, tetanus, whooping cough given in 6 weeks?	Yes.....1 No.....2 Don't Know.....98	
612A	Did (Name) get an DPT-Hep B-Hib -2 injection in the right upper arm to protect against diphtheria, tetanus, whooping cough given in 10 weeks?	Yes.....1 No.....2 Don't Know.....98	
612B	Did (Name) get an DPT-Hep B-Hib -3 injection in the right upper arm to protect against diphtheria, tetanus, whooping cough given in 10 weeks?	Yes.....1 No.....2 Don't Know.....98	
615	Has (Name) ever received a pneumococcal vaccination(PCV), that is, an injection in right thigh to prevent pneumonia given in 6 weeks?	Yes.....1 No.....2 Don't Know.....98	
616	Has (Name) ever received a pneumococcal vaccination(PCV), that is, an injection in right thigh to prevent pneumonia given in 10 weeks?	Yes.....1 No.....2 Don't Know.....98	
617	Has (Name) ever received a pneumococcal vaccine(PCV), that is, an injection in right thigh to prevent pneumonia given in 9 months?	Yes.....1 No.....2 Don't Know.....98	
618	Has (Name) ever received a rotavirus vaccine that is, drop in the mouth to prevent diarrhea given in 6 weeks?	Yes.....1 No.....2 Don't Know.....98	
619	Has (Name) ever received a rotavirus vaccine that is, drop in the mouth to prevent diarrhea given in 10 weeks	Yes.....1 No.....2 Don't Know.....98	

620	Has (Name) ever received a measles rubella vaccine, that is, an injection in the left arm to prevent measles given in 9 months?	Yes.....1 No.....2 Don't Know.....98	
621	Has (Name) ever received a measles rubella vaccine, that is, an injection in the left arm to prevent measles given in 15 months?	Yes.....1 No.....2 Don't Know.....98	
623	Has (Name) ever received a JE vaccine, that is, an injection in the right thigh to prevent JE given in 12 months?	Yes.....1 No.....2 Don't Know.....98	
624	Where did (Name) receive most of his/her vaccine? Probe to identify the type of source. If unable to determine if public, private, or NGO sector, record '96' and write the name of the place	Government hospital/health post . . . . . 1 outreach clinic..... 2 Mobile clinic .... .3 Private hospital/clinic . . . . .4 NGO..... 5 Other source [vaccination campaign]..... 6 Other (specify).....96	
625a	Missed doze of immunization (auto coding from CAPI)	partially or never immunized.....1 Fully immunized.....2	
625	If the child (name) is partially or never immunized in routine immunization ask: "Why was the (Name) not vaccinated with any vaccine?" circle all reasons reported by the respondent. Do not read the responses. Multiple responses possible.	Unaware of vaccination site .....A Aware of vaccination site but did not know about time and location .....B Childs' parent/guardian not present during vaccination day..... .C Unaware of need for vaccination.....D Child sick and parent/guardian unwilling to get child vaccinated.....E Fear of pain from injection.....F Fear of side effects of vaccine.....G Mothers/guardians too busy.....H vaccination site too far away .....I Child taken to vaccination site but not vaccinated.....J Child sick and health worker unwilling to vaccinate the child.....K Inconvenient session timing.....L Long waiting time.....M Vaccinator's behavior not friendly.....N Vaccination team ran out of vaccine at session site...O Vaccinator did not come to appointed site.....P Not vaccinated due to inappropriate age.....Q known severe allergy to any drug food or medicine .....R Religious reasons ----------.-----S Confusion on target group/eligibility----------.-----T Thinking vaccine is for trial----------.----U Vaccine is not safe----------.----V Vaccine is not effective ----------.----W Other (Specify)_____X Don't know .....Z	
627	How long does it take for you to reach nearest immunization center from your house? In minutes (walking distance)	Minutes____	
628	From where do you receive information about routine immunization? **(Circle all answers if applicable)**	Health worker..... A FCHV.....B Neighbor.....C Village head.....--.....D Other (Specify)_____X	

Section 7: Behavior and social drivers of immunization (applicable for all both TCV and RI cohort)

Q.No	Questionnaire	Coding	Skip
701	Did any health worker or specialists give any suggestion for your child to get vaccinated?	Yes.....1 No.....2	
702	If your child has any difficulty in receiving vaccine, then what are the reasons for the difficulty? Check all that apply	Nothing/It's not hard..... A The vaccination clinic is too far away.....B The vaccination timing is inconvenient.....C The clinic sometimes turns people away without vaccinating...D The waiting time is too long.....E Others (Specify) _____ X	
703	Do you think your close family and friends want you to get your child vaccinated?	Yes.....1 No.....2	
704	How important do you think vaccines are for your child's health? Probe and ask	Not at all important.....1 A little important.....2 Moderately important.....3 Very important.....4	
705	How safe do you think vaccines are for your child? Probe and ask	Not at all safe.....1 A little safe.....2 Moderately safe.....3 Very safe.....4	
706	Nepal has a schedule of recommended vaccines for children. Do you want your child to get all the recommended vaccines in routine immunization? (please mentioned all vaccines in Routine Immunization)	None of these vaccines.....1 Some of these vaccines.....2 All of these vaccines.....3	
707	Have you heard anything negative about routine immunization in the last one year?	Yes.....1 No.....2	
708	Who makes the decision in your family to vaccinate the child?	Mother.....1 Father.....2 Mother in-law----------3 Other (Specify) _____. 96	
709	How much do you trust the health workers who give children vaccines?	Not at all trust.....1 A little trust..... .....2 Moderately trust.....3 Very trust.....4	
710	Do you think your community leaders want you to get your child vaccinated?	Yes.....1 No.....2 Don't Know.....98	
711	Have you ever been turned away when you tried to get your child vaccinated	Yes.....1 No.....2	
712	How easy is it to get vaccination services for your child?	Not at all easy.....1 A little easy.....2 Moderately easy.....3 Very easy--.....4	
714	would the mother need permission to take your child to the clinic	Yes.....1 No.....2	

Thank You

End time of the interview | | | | |

▶ Annex 5: Training Agenda

Post Campaign Coverage Survey for Typhoid Conjugate Vaccination Campaign-2022 in Nepal

Training Schedule for the Field Research/ Team Members

Objectives

The post campaign coverage survey is planned for evaluating achievements of national immunization program (NIP) in reaching children through typhoid campaign in each province.

Primary specific objectives:

- To estimate the proportion of children aged 15 months to < 15 years at the time of the campaign (national and provincial) who were vaccinated against typhoid during the national catch-up campaign conducted during April/May 2022
- To estimate the proportion of children aged 12-23 and 24-35 months at the time of the survey (national and provincial) who have reserved vaccination for each vaccine recommended in the national immunization schedule for Nepal (except TCV through RI).

Secondary objectives

- To assess awareness of the national typhoid vaccination campaign among the mothers/caretakers of the eligible children
- To assess behavioral and social drivers (BeSD) for vaccination and their relation with non-participation in national typhoid vaccination campaign among the mothers/caretakers of eligible children who did not receive the vaccines in the campaigns
- To assess the proportion of 15-35 months children who received zero dose or one dose of measles rubella vaccine in routine were identified during the national catch-up campaign conducted during April/May 2022 (among campaign card holders)
- To assess proportion of home-based vaccination card ownership and retention and assess the reasons for an absent home-based vaccination record among the mother/caretakers of the children aged 12-35 month at the time of delivery
- To assess vaccination timeliness with routine vaccines and other related indicators (such as missed opportunities for vaccination for selected vaccine-doses) among children with documented evidence of routine immunization
- To assess behavioral and social drivers (BeSD) for immunization and their relation with non-participation in routine immunization services among the care takers of children aged 12-35 months who have not received all vaccinations or missed any of the schedule doses in routine

Day One

Venue: Alfa Beta House, 4th Floor, New Baneshwor

Date: 21st August 2023

Session	Time	Topics	Facilitators (Resource Person)
Registration (Tea) 9:30 to 10:00			
First		**Opening Ceremony – Chair:** • Welcome and Introductions • Opening Remarks	CMDN/IQVIA
		• Brief overview of Post Campaign Coverage Survey for Typhoid Conjugate Vaccination Campaign	CMDN/IQVIA

	10:00-:11:30		Dr. Sameer/ Ms Kavya
		• Vaccination Situation in Nepal • Closing Remarks by Chair	FWD
Second	11:30-12:00	• TCV campaign, rationale of the study and its objectives	WHO
Third	12:00-13:00	**Overview of Methodology** • Survey Design • Eligibility • Survey sites • Same size • Time frame	WHO/CMDN
Lunch Break 13:00 to 13:30			
Fourth	13:30-14:30	• Discussion on sampling method (segmentation and Combined) • Household selections process. • Introduction to Random sampling • Sampling technique for households using Random sampling	WHO/CMDN
Fifth	14:30-15:00	• Detail on data collection/method and techniques • Introduction on Forms and Format	CMDN/PHRD
Tea Break 15:00 to 15:15			
Sixth	15:15-15:45	• Taking informed consent • Research Ethical Issues	CMDN/PHRD
Seventh	15:45-17:00	• Field work-Community, ward and cluster level coordination approach	CMDN/IQVIA/PHRD

Day Two

Venue: Alfa Beta House, 4th Floor, New Baneshwor

Date: 22nd August 2023

Training will be conduct in two batch in separate hall

Session	Time	Topics	Facilitators (Resource Person)
Tea Break 9:30 to 10:00			
First	10:00-11:00	**Introduction and Discussion on Questionnaire** • Presentation of Survey Question • Discussion: Context and Meaning of Questions • Introduction to Questionnaire • Structure of Survey Questionnaire	CMDN
Second	11:00-11:30	**Behavioral Interviews: Interview Process** • Preparing for the Interview • Welcome and Building Rapport with Survey Participants • Asking Questions • Probing • Reluctant Respondents • Closing the Interview	CMDN
Third	11:30-12:30	**Introduction of CAPI Questionnaire Tablet based (Android) Data Collection** • Discussion on CAPI question	CMDN
Lunch Break 12:30 to 13:00			
Fourth	13:00-14:30	**Mock Interview Exercise** • Mock Interview Exercise in Pairs • Large Group Reflection and Discussion	CMDN/IQVIA/PHRD
Tea Break 14:30 to 15:00			
Field Supervisors			
Fifth	15:00-17:00	• Roles and Responsibility • Supervisor Checklist • Data Management • Coordinate and Communications with the palika/ward/cluster.	IQVIA/PHRD

Piloting study

Day Three

Session	Time	Topics	Facilitators (Resource Person)
Tea 9:30 to10:00			
First	10:00-13:00	Travel to Pilot study sites.	CMDN/IQVIA/PHRD
Lunch Break 13:00 to 13:30			
Second	13:30-14:30	Pilot study	CMDN/IQVIA/PHRD
Third	14:30-15:30	Administrative works	CMDN/IQVIA/PHRD

Review

Day Four

Session	Time	Topics	Facilitators (Resource Person)
First	10:00- 13:00	Review of pilot study and CAPI practice	CMDN/IQVIA/PHRD
		Lunch Break 13:00 to 13:30	
Second	13:30-3:00	Discussion and incorporate feedback	CMDN/IQVIA/PHRD
Third	3:00- 5:00	Closing and field travel Plan	CMDN/IQVIA/PHRD

पूर्ण खोप, सुरक्षित भविष्य

Post Campaign Coverage Survey for TCV Campaign–2022 in Nepal