Who benefits from government expenditure on early childhood development? A study of Indian states

Thesis submitted to Jadavpur University for the
Degree of Doctor of Philosophy in Arts (Economics)

by

Jyoti Singh

Under the supervision of

Dr. Vikas Dixit
Associate Professor

Department of Economics

Jadavpur University

Kolkata – 700032

West Bengal, India

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Dedicated to Aama and Baba!

Certified that the Thesis entitled

"Who benefits from government expenditure on early childhood development? A study of Indian states" submitted by me for the award of the Degree of Doctor of Philosophy in Arts at Jadavpur University is based upon my work carried out under the Supervision of Dr. Vikas Dixit, Associate Professor, Dept. of Economics, Jadavpur University. And that neither this thesis nor any part of it has been submitted before for any degree or diploma anywhere/elsewhere.

Candidate: Jyoti Singh

Dated: 21/8/2025

Countersigned by the

Supervisor: V Dixit

Dated: 21/8/2025

Associate Professor
Department of Economics
Jadavpur University
Kolkata-700032

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List of Abbreviations

AWC:	Anganwadi Centre
BCG:	Bacillus Calmette-Guérin vaccine
BE:	Budget Estimate
BIA:	Benefit Incidence Analysis
CAG:	Comptroller and Auditor General
CARA:	Central Adoption Resource Authority
CBGA:	Centre for Budget and Governance Accountability
COVID-19:	Coronavirus Disease of 2019
CP:	Country Profiles
CPS:	Child Protection Services
CSO:	Central Statistical Office
CSSS:	Centrally Sponsored Schemes
DHS:	Demographic and Health Surveys programme
DNI:	Direct Nutrition Intervention
DoHFW:	Department of Health and Family Welfare
ECCE:	Early Childhood Care and Education
ECD:	Early Childhood Development
ECDI:	Early Childhood Development Index
FC:	Finance Commission
FMG:	Financial Management Group
FY:	Financial Year
GDP:	Gross Domestic Product
GoI:	Government of India
GSDP:	Gross State Domestic Product
HAQ:	CRC: HAQ: Centre for Child's Rights
HDI:	Human Development Index
HIC:	High-Income Country
HIV:	Human Immunodeficiency Virus

HMIS:	Health Management Information System
ICDS:	Integrated Child Development Services
IMR:	Infant Mortality Rate
JSSK:	Janani-Shishu Suraksha Karyakram
JSY:	Janani Suraksha Yojana
LMIC:	Low- and Middle-Income Countries
MICS:	Multiple Indicator Cluster Surveys
MMR:	Maternal Mortality Ratio
MoHFW:	Ministry of Health and Family Welfare
MoSPI:	Ministry of Statistics and Programme Implementation
MoWCD:	Ministry of Women and Child Development
NEP:	National Education Policy
NFHS:	National Family Health Survey
NHM:	National Health Mission
NITI:	National Institution for Transforming India
NRHM:	National Rural Health Mission
NUHM:	National Urban Health Mission
PCE:	Per Child Expenditure
PCG:	Per-Capita Grant
PLM:	Pregnant and Lactating Mothers
PMMVY:	Pradhan Mantri Matru Vandana Yojana
POCSO:	Protection of Children from Sexual Offences
POSHAN:	Prime Minister's Overarching Scheme for Holistic Nutrition
PSE:	Pre-School Education
RCH:	Reproductive and Child Health
RMNCH:	Reproductive, Maternal, Newborn and Child Health
SES:	Socio-Economic status
SNP:	Supplementary Nutrition Programme
SRS:	Sample Registration System

THR:	Take-Home Ration
U5MR:	Under-five Mortality Rate
UNCRC:	United Nations Convention on the Rights of the Child
UNDP:	United Nations Development Programme
UNICEF:	United Nations Children's Fund
UN-SDG:	United Nations Sustainable Development Goals
WHO:	World Health Organisation

Preface

Early Childhood Development (ECD) is crucial for the achievement of full development potential not only of individual citizens but also for the all-round sustainable socio-economic development of nations and the world as a whole. India, home to one of the largest child populations in the world has reported improvement in some of the ECD indicators in recent years. However, meeting the Sustainable Development Goals (SDGs) relevant to ECD still remains a challenge. If funding is taken as an indicator of the government's prioritisation, ECD seems to be of lesser importance as the child development budgets are found to be persistently under-funded. Issues of fiscal marksmanship of government spending on social sector programmes are rampant and ECD schemes are no exception. Moreover, the fiscal restructuring brought about by the 14th Finance Commission recommendations reduced support in terms of fiscal transfers to the states for Centrally Sponsored Schemes (CSS) including ECD schemes. The assessment of the nature and benefit distribution of government expenditures on ECD among its beneficiary groups and across the states, becomes crucial. There is a dearth of literature exploring the benefit incidence of government expenditures on ECD and exploring the determinants of the benefit incidence. This study seeks to contribute towards filling that gap. In doing so, the two flagship schemes Integrated Child Development Services (ICDS) and National Health Mission (NHM) that have major bearing on ECD are considered. The study attempts to find answers to the following critical questions:

I. How do Central Government fiscal transfers to states affect their ECD expenditures?
II. How well targeted is ECD expenditure of the state governments?
III. How pro-poor is the coverage of ICDS and NHM?
IV. Which factors affect the targeting of government expenditure on ICDS and NHM?

The methodology employed for the analyses done in the study include review of relevant literature, the use of simple exploratory statistical techniques like descriptive statistics, correlation, tables and graphs. Sophisticated econometric techniques have also been used for further investigation and determinants analysis. The analyses are based on a variety of credible data sources. The study stands relevant in terms of its investigation and findings regarding crucial elements of the nature of government expenditure on ECD and the distribution of benefits of the expenditures among relevant beneficiary groups. However, the lack of data restricted a more comprehensive investigation considering the full range of expenditure on ECD. Data availability issues also restricted conventional benefit incidence analysis. Time and

resource constraints ruled out primary survey backed study. Limited data-set had to be relied on for the regression analyses especially of the fourth chapter.

The first chapter is the introduction to the study. The foundational aspects of the study dealt with such as the extensive review of relevant literature, discussions about the study's background, motivation, research questions, objectives and description of the methodology.

The second chapter focuses on the first research question (I). This question explores whether the states augment or substitute their own expenditures by the central grants on ICDS and NHM. Empirical exercises are conducted for the same. The chapter provides brief overviews of the NHM and ICDS, and their relevance for ECD. The chapter also looks at indicators of child nutrition and health vis-à-vis budget allocations and releases for ICDS and NHM, seeking to ascertain the broad relationship between indicators of child nutrition & health and ICDS & NHM funding.

The second and third research questions (II & III) are dealt with in the third chapter. It discusses the conceptual framework including theoretical underpinnings and literature review on Benefit Incidence Analysis. The chapter initially explores quintile-wise and location-wise (rural vs urban) coverage of the ECD supporting programmes, ICDS and Reproductive, Maternal, Newborn and Child Health (RMNCH) components under NHM across the states. Then the chapter proceeds to the Benefit incidence analysis considering the different sections of beneficiaries of Supplementary Nutrition Programme (SNP) and Pre-school Education (PSE) components of ICDS and NHM (RMNCH). The utilisation rates, coverage rates and targeting of the government expenditures at the sub-national level on these programme components are explored with regard to the respective beneficiary groups.

The fourth chapter concerns the fourth research question (IV). Determinants analysis is conducted to identify and empirically test the factors that influence the distribution of benefits of ECD initiatives (SNP and PSE under ICDS and RMNCH under NHM), among the respective beneficiary groups (especially the target groups) as found in the preceding chapter. The fifth chapter serves as the conclusion of the study. It comprises the summary of the findings of the study, limitations of the research, policy suggestions and future research agenda.

Chapter 1
Introduction

1.1 General background

1.1.1 Concept and global status of early childhood development

"The children of today will make the India of tomorrow. The way we bring them up will determine the future of the country." – Jawaharlal Nehru

"Let us sacrifice our today so that our children can have a better tomorrow." – A. P. J. Abdul Kalam

There are many such quotations put forward by great thinkers, not only from India, but also from elsewhere, emphasising the role of children in shaping our future. They also emphasize our responsibility towards children and their future. Child development is now internationally recognised as one of the most important prerequisites for overall development at the individual as well as collective levels. It is also believed as put forward by Enakshi Ganguly from the HAQ: Centre for Child Rights, that '…we need to invest in children NOW, not because "they are the future" as is often said, but because they are CITIZENS TODAY.'[1]

The United Nations Convention on the Rights of the Child (UNCRC), 1989 defines a child as any person under the age of 18 unless the child attains maturity earlier, as per the law applicable to the child. A child's early childhood phase covers many distinct stages: from 'conception to birth' and from 'birth to 3 years', with emphasis on the first 1000 days (from conception to 24 months), followed by the 'preschool and pre-primary years' (3 years to 5 or 6 years, or the age

[1] https://www.haqcrc.org/blog/budget-children-presentation-enakshi-ganguly/#:~:text=You%20will%20notice%20when%20government's,process%20and%20the%20gaps%20therein.

of school entry) and the age from 6 to 8 years[2,3]. UNICEF's Programme Guidance for early childhood development by the United Nations Children's Fund (UNICEF) Programme Division 2017 views early childhood development (ECD) as an outcome which takes into account the continuous process of acquiring skills and abilities during early childhood. The skills and abilities encompass cognition, language, motor, social and emotional development. They facilitate thinking, problem solving, communication, expression of emotions and forming relationships. They are also considered as key elements for health, learning, productivity, wellbeing and foundations for future human capital formation. The building of brains happens in a continuum beginning before birth and progresses into adulthood. However, toxic stress especially during early childhood such as that caused by relentless and extreme poverty, repeated abuse or severe maternal depression damages the developing brain thereby being a probable cause for learning and behavioural problems and physical and mental health issues extending through a person's lifetime (Center on the Developing Child, 2007).

ECD forms part of the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015. Sustainable Development Goal indicator 4.2.1 specifically monitors the government actions towards ensuring access to quality ECD and learning opportunities to all children. Related to the ideas and evidences discussed, the Nurturing Care Framework for ECD was developed by the World Health Organisation (WHO), UNICEF and World Bank along with other partners[4]. The framework comprises of a set of conditions that are required during early childhood for the child's body and brain to grow and develop

[2] See https://www.unicef.org/media/107616/file/UNICEF-Programme-%20Guidance-for-Early-Childhood-Development-2017.pdf for definition of UNICEF's Programme Guidance for early childhood development by the UNICEF Programme Division 2017

[3] See https://data.unicef.org/topic/early-childhood-development/overview/#:~:text=The%20formative%20early%20years%20of,overall%20developmental%20status%20of%20children

[4] Other partners: Partnership for Maternal, Newborn & Child Health (PMNCH) and the Early Childhood Development Action Network (ECDAN) (Details available at: https://ecdan.org/nurturing-care-framework-for-early-childhood-development/

optimally and for the child to reach full potential. The five components (conditions) are: good health, adequate nutrition, responsive caregiving, opportunities for early learning and safety and security.

ECD, a multidimensional phenomenon takes place in a series of stages. However, the pace of development varies from child to child. It's interesting to note that the concept of 'normal' development of a child also varies across social and geographical settings. To quantify this complex phenomenon, the Early Childhood Development Index (ECDI) was developed by UNICEF along with a technical advisory group and it has been used in over 70 countries since 2009 as an addition to the Multiple Indicator Cluster Surveys (MICS)[5]. Early childhood development has been included in the UN Sustainable Development Goals (SDGs) with a dedicated target 4.2 and indicator 4.2.1. EDCI has been used as a proxy measure for SDG indicator 4.2.1. UNICEF as the custodian of 4.2.1 was required to develop a new universal measure of ECD better aligned with SDG 4.2.1 and it came up with ECDI2030[6] which covers three broad domains of ECD – health, learning and psycho-social wellbeing (UNICEF, 2023).

It is reported by UNICEF (2023) that the development status of children varies widely among countries. Considering the areas and countries of the world that could be observed through data, more than 50 percent of children were found to be on track in development status during early childhood. However, wide variation was observed in the development status of children across countries from 36 percent to 97 per cent as reported to be on track for Central African Republic and Serbia, respectively.

The Nurturing Care for Early Childhood Development website[7] hosted by the World Health Organisation, World Bank Group and UNICEF make available the "Country Profiles for Early

[5] More information on the development of MICS ECDI can be accessed at https://mics.unicef.org/sites/mics/files/MICS_Methodological_Paper_6.pdf
[6] More information on ECDI2030 can be accessed at https://www.unicef.cn/media/21141/file/ECDI2030%20
[7] Link to visit the website: https://nurturing-care.org/resources/country-profiles

Childhood Development". The ECD indicators as per Country Profiles for ECD-2023 and the ranks as per Human Development Index (HDI)-2025 of selected countries are presented in Table 1.1. HDI ranks of countries have been considered to contextualise the values taken by the indicators of ECD of a country (India in particular) with its HDI rank and also with values taken by the indicators of ECD of other countries that could be compared in terms of their HDI ranks. The data in the table correspond to India and three countries each that are top-ranking, middle-ranking and bottom-ranking in terms of HDI. The percentage value of children under 5 out of the total population in India is closer to the corresponding values in the top and middle ranking countries but much lower than the bottom ranking countries. Compared to the values of Under-five Mortality Rate (U5MR), Maternal Mortality Ratio (MMR) and Low birthweight of India, it can be seen that the corresponding values of the top-ranking countries as per HDI-2025 are much lower while that of the bottom ranking countries are much higher. With regard to the middle ranking countries, MMR and low-birth weight in India are much higher. U5MR in India is lower than that in Turkmenistan but higher than the other two middle-ranking countries. Child poverty rate in India was higher than in Algeria and much lower than in Central African Republic while corresponding data for other countries were not available. Under-5 stunting in India is comparatively more concerning than other indicators. It is much higher than that in the middle-ranking countries. Surprisingly, it is higher than in South Sudan and much higher than the under-5 stunting in Somalia, the two lowest ranked countries in terms of HDI-2025. Corresponding data for the top-ranking countries were not available.

Table: 1.1

ECD indicators as per Country Profiles-2023 and HDI-2025 (India and selected countries)

	Country Profiles for Early Childhood Development - 2023						HDI-2025 Rank
	Children under 5 (%)	U5MR (per 1000)	MMR (per 100000)	Low birthweight (%)	Child poverty (%)	Under-5 stunting (%)	
India	8	31	103	27	14	32	130
Top Ranking Countries as per HDI-2025							
Iceland	6	3	3	4	NA	NA	1
Norway	5	2	2	4	NA	NA	2
Switzerland	5	4	7	6	NA	NA	2
Middle Ranking Countries as per HDI-2025							
Turkmenistan	11	41	5	4	NA	7	95
Algeria	11	22	78	7	0	9	96
Cuba	5	5	39	7	NA	7	97
Bottom Ranking Countries as per HDI-2025							
Central African Republic	18	100	835	16	64	40	191
Somalia	19	112	621	NA	NA	18	192
South Sudan	13	99	1223	NA	NA	28	193

Source: Country Profiles for Early Childhood Development – 2023 by UNICEF and Countdown to 2030[8]; Human Development Report 2025 by UNDP[9].

Note: Children under 5 (%) is children under 5 years of age as the percentage of the country's population. HDI-2025 is the Human Development Index as per Human Development Report of 2025. NA is data not available.

Table: 1.2

ECD indicators as per Country Profiles-2023 and HDI-2025 (South Asia and China)

	Country Profiles for Early Childhood Development - 2023						HDI-2025 Rank
	Children under 5 (%)	U5MR (per 1000)	MMR (per 100000)	Low birthweight (%)	Child poverty (%)	Under-5 stunting (%)	
Afghanistan	16 (10)	56 (9)	620 (10)	NA	NA	33 (9)	181 (10)
Bangladesh	9 (7)	27 (5)	123 (7)	23	22	26 (6)	130 (6)
Bhutan	6 (2)	27 (5)	60 (5)	11	5	23 (5)	125 (5)
China	5 (1)	7 (2)	23 (2)	5	3	5 (1)	78 (2)

[8] The full report of 2023 is available through the weblink:
https://nurturing-care.org/wp-content/uploads/2023/10/ECD_Countdown2030_Global.pdf

[9] https://hdr.undp.org/data-center/country-insights#/ranks

India	8 (6)	31 (8)	103 (6)	27	14	32 (8)	130 (6)
Iran (Islamic Republic of)	7 (3)	13 (4)	22 (1)	NA	NA	5 (1)	75 (1)
Maldives	7 (3)	6 (1)	57 (4)	14	NA	14 (3)	93 (4)
Nepal	10 (8)	27 (5)	174 (9)	20	12	27 (7)	145 (8)
Pakistan	13 (9)	63 (10)	154 (8)	NA	9	34 (10)	168 (9)
Sri Lanka	7 (3)	7 (2)	29 (3)	18	NA	16 (4)	89 (3)
Summary statistics							
Mean	8	26	137	17	11	22	121
Max	13	63	620	27	22	34	181
Min	5	6	22	5	3	5	75
St. Dev	2	19	169	7	6	10	35
C.V. (%)	30	72	124	41	58	48	29

Source: Same as for Table 1.1

Note: Same as for Table 1.1 and figures in parentheses show the rank of a country as per the indicator in the column such that the lowest value gets the highest rank. For instance, country with the lowest U5MR gets rank 1. The order is maintained for all ranked columns for uniformity.

Table 1.2 presents the data for the ECD indicators as per Country Profiles for ECD-2023 and the ranks as per Human Development Index (HDI)-2025 for the nine South Asian countries and China. It also shows the summary statistics. Here the ten countries are also ranked among themselves based on their HDI-2025 Rank. The countries have diverse HDI-2025 rankings. Iran (Islamic Republic of) is ranked 75th, Afghanistan is ranked 181st while India is ranked 130th. Based on these rankings as per HDI-2025, they take 1st, 10th and 6th ranks, respectively among the ten countries. India is ranked the same as Bangladesh and higher than Nepal, Pakistan and Afghanistan in terms of HDI-2025. India is ranked 6th among the ten countries even for the percentage of children under 5 and MMR, higher than the same four countries, Bangladesh, Nepal, Pakistan and Afghanistan. However, with regard to U5MR and Under-5 stunting, India is doing better than only two countries, Afghanistan and Pakistan. Low birthweight data was not available for Afghanistan, Iran (Islamic Republic of) and Pakistan. India has the highest rate of low birthweight among the remaining seven countries. Child poverty data was not available for Afghanistan, Iran (Islamic Republic of), Maldives and Sri

Lanka. India has lower Child poverty rate than in Bangladesh but higher than in the remaining five countries.

1.1.2 Early childhood development in India

Some of the relevant information for India as per the Country Profiles for ECD of 2018 (CP-2018)[10] and Country Profiles for ECD of 2023 (CP-2023)8 are as follows:

Table 1.3

ECD Profile of India as per Country Profiles for Early Childhood Development

Indicators*	2018	2023
Demographics		
Population	1.324 billion	1.417 billion
Annual births	25 million	23 million
Children under 5	120 million (9%)	114 million (8%)
Under 5 mortality	43/1,000	31/1,000
Threats to Early Childhood Development		
Maternal mortality	174/100,000	103/100,000
Low birthweight	28%	27%
Under 5 stunting	39%	32%
Support and services for early childhood development: Nurturing care		
Health (%)		
Careseeking for child pneumonia	73	56
Antenatal care (4 or more visits)	51	59
Postnatal visits	62	82
Nutrition (%)		
Early initiation of breastfeeding	42	41
Exclusive breastfeeding	55	64
Minimum acceptable diet	10	11
Security and safety (%)		
Birth registration	72	89
Basic drinking water	88	93
Basic sanitation	44	78

Source: Country Profiles for Early Childhood Development – 2018 (by Countdown to 2030) & 2023 (by UNICEF & Countdown to 2030). *Definitions of indicators are available in the full reports.[10,8].

[10] The full report of 2018 is available through the weblink: https://nurturing-care.org/resources/2030-Countdown.pdf

Table 1.3 shows that the population of India has increased between CP-2018 and CP-2023 while the number of annual births has gone down from 25 million to 23 million, the proportion of children under 5 in the total population has reduced from 9 per cent to 8 per cent and under-5 mortality has reduced from 43 to 31 per 1,000 live births. Many of the indicators related to early childhood development in India have improved and that young children in the country are doing better with regard to the various indicators. However, as per CP-2023, more than a quarter of the infant population were under-weight and around one-third of the children under 5 were stunted. 14 per cent of under 5 children were reported to be facing poverty-related threats to ECD. Besides, CP-2023 also reports that a large proportion (45 per cent) of children were at the risk of poor development due to stunting or extreme poverty in 2015. Disparity between urban and rural areas with regard to the exposure to the risk can be seen as half of the children under 5 in rural areas were exposed to the risk of poor development due to stunting or extreme poverty while less than one-third of their urban counterparts faced that risk. The indicators of safety and security while not being very bad with 93 per cent of the population having access to basic drinking water, it needs to be recognised that everyone ought to be getting access to the necessity for survival. Close to 80 percent of the population had access to basic sanitation and close to 90 per cent of children's births were registered with the civil authority. With regard to Health indicators of Nurturing Care, a large proportion (80 per cent) of women aged 15-49 years received postnatal care. Yet, a substantial proportion (41 per cent) of women aged 15-49 years had not been visited at least 4 times during pregnancy by care provider as antenatal care. Moreover, less than half of the estimated number of pregnant women living with Human Immunodeficiency Virus received treatment for preventing mother-to-child transmission of the virus. In terms of nutrition indicators of Nurturing Care, while a major proportion (64 per cent) of children aged 0-5 months were fed exclusively with breast milk, less than half (41 per cent) of the total number of infants were breastfed within 1 hour of birth

(a practice which ensures that the baby receives colostrum, the first milk that is rich in protective factors and also nurses the baby's attachment needs and helps establish exclusive breastfeeding). A very poor situation is reported with regard to diet of children aged 6-23 months with only 11 per cent of them getting the minimum meal frequency and dietary diversity.

CP-2023 highlights that, besides being a signatory to the UNCRC-1989, India has also ratified other international agreements geared for providing facilitating environment such as the United Nations Convention on the Rights of Persons with Disabilities, 2006; CRC Optional Protocol on the Sale of Children, Child Prostitution and Child Pornography, 2000 and; Hague Convention on Protection of Children and Cooperation in Respect of Intercountry Adoption, 1993. India is also substantially aligned to the International Code of Marketing of Breastmilk Substitutes which prevents the marketing of breastmilk substitutes that threaten exclusive breastfeeding.

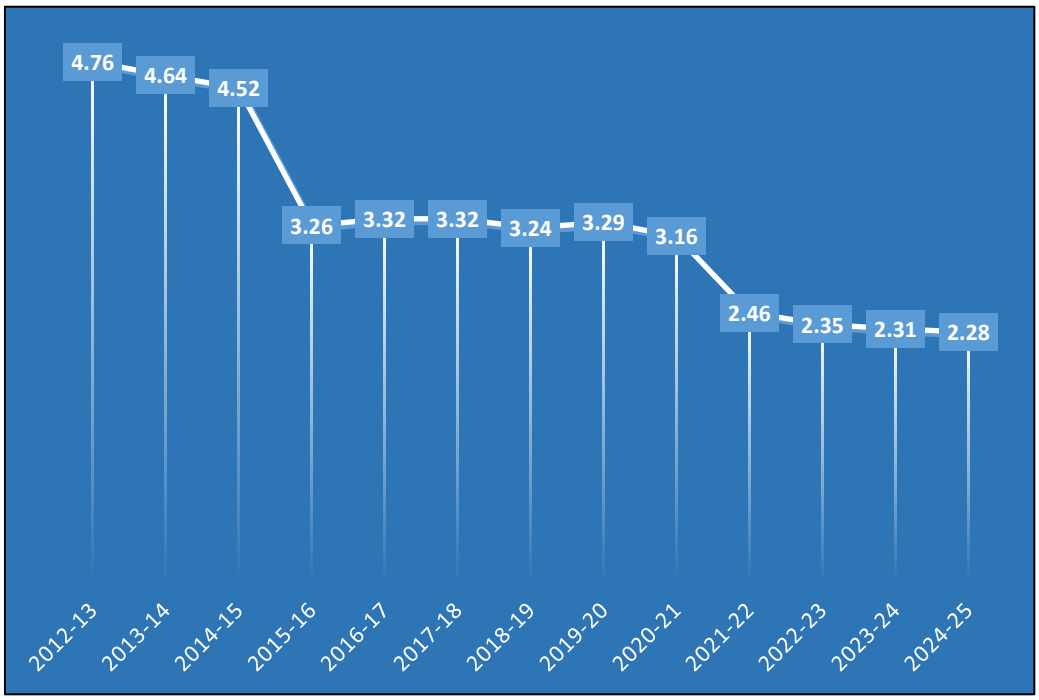
Many national policies, programmes and interventions with major focus on ECD have evolved in India, especially since the 1970s. Some policies with multi-dimensional and multi-sectoral bearing on ECD are: The National Policy for Children (1974), National Policy for Education (1986), National Nutrition Policy (1993). Policies with high impact on ECD have continued to evolve in India in the present millennium with policies such as the National Population Policy (2000), National Plan of Action for Children (2005), National Curriculum Framework (2005), National Food Security Act (2013), National Early Childhood Care and Education (ECCE) Policy (2013), National Plan of Action for Children (2016) and National Health Policy (2017). Provision of maternity leave up to 26 weeks and crèche facilities in all regular institutions providing employment was enforced by the Maternity Benefit Amendment Act of 2017. There are numerous programmes linked to various dimensions of the Nurturing Care Framework. Yet health and nutrition remain the core impetus of such schemes. The oldest and largest national

programme focused on ECD is the Integrated Child Development Services (ICDS) launched in the year 1975 (Chattopadhyay & Aneja, 2021). ICDS, Prime Minister's Overarching Scheme for Holistic Nutrition (POSHAN) Abhiyaan, Scheme for Adolescent Girls and National Crèche Scheme were restructured as Saksham Anganwadi and POSHAN 2.0 in the 15th Finance Commission. Samagra Shiksha Abhiyan, covering Early Childhood Education (ECE) in line with the National Education Policy, 2020 is also crucial for ECD.

The budget is considered as the most concrete representation of the government's intention, policies, priorities, decisions and performance (Thukral, 2013). The first child budget statement was published in India in 2008. Yet, Chakraborty (2022) points out that child budgets are yet to translate into desired outcomes of child development for a large proportion of children in the country and there exists wide variability in the performance of the states with regard to various indicators of child development. Child budgeting is criticised to have turned out to be merely an accounting exercise by governments at the Centre as well as in the states (Bhattacharya, 2022; Chakraborty, 2022). The National Plan of Action for Children, 2016 of the Ministry of Women and Child Development recommends a minimum expenditure of 5 per cent of the Union Budget on schemes and programmes directly related to child. Yet, the most crucial child development budgeting issue marked across various studies of child development expenditures in India is of inadequate funding. As per the analysis of Budget for Children 2024-25 by HAQ: Centre for Child's Rights (HAQ: CRC, 2024), the year's share of children in the full-fledged Union Budget was the lowest in the last 13 years at 2.28 per cent (2.30 per cent in the interim budget), as can be seen in Figure 1.1.

Figure 1.1

Share of budget for children in union budget (per cent)



Source: HAQ:CRC (2024)

Actual allocation for children for the year 2024-25 was Rs.1,09,920.95 crore marking an increase of 5.51 per cent over that in 2023-24 even though the share of children decreased as compared to that in the Union Budget 2023-24. Moreover, the increase (5.51 per cent) in Budget for children in 2024-25 over the previous year was lower than the corresponding increase (7.05 per cent) in the Union Budget. The analysis also notes that the number of programmes for children along with the supporting ministries increased over the years to 140 in 2024-25 supported by 26 ministries/departments while the share of children in the Union Budget has shown a declining trend.

No priority of Early Childhood Care and Education (ECCE) is reflected by the Union Budgets with meagre increases in allocations for Samagra Shiksha Abhiyan in 2023-24 and 2024-25 over their previous years' allocations (HAQ-CRC, 2024; Centre for Budget and Governance Accountability [CBGA], 2024). Saksham Anganwadi and Poshan 2.0 also got a small increase of 1.42 per cent in the Union Budget of 2023-24 over its previous year's allocation and 3 per

cent increase in 2024-25 compared to 2023-24 budget estimates (BE) but the allocation in 2024-25 declined when compared to the Revised Estimates of the previous year. The reorganisation of Saksham Anganwadi and Mission Poshan 2.0 in the 15th Finance Commission accorded high priority to child health and nutrition. However, Save the Children-India (2022) points out that after ICDS, POSHAN Abhiyaan, Scheme for Adolescent Girls and National Crèche Scheme were restructured as Saksham Anganwadi and POSHAN 2.0, the budget allocated for the latter was lower than the sum of its individual components from the previous year. Poshan Tracker data shows that in November 2023, 37.51 per cent out of the 7.44 crore children under 6 years who were measured, were found to be stunted. The levels of underweight and wasting at 17.43 per cent and 6 per cent are much less than that indicated by the 2019-21 National Family Health Survey (NFHS-5) (HAQ-CRC, 2024). It is confounding though that the allocations do not match the priority accorded to health and nutrition of children. Even if Census 2011 figure of the total number of children (0-6 years) is taken, 34.7 per cent are not covered by Supplementary Nutrition Programme (SNP) and Preschool Education (PSE) under ICDS. Out of the children left out by Saksham Anganwadi and Poshan 2.0, a large number are those of seasonal migrant workers such as those working in plantations, sugarcane and brick kiln industry. Malnutrition is a critical issue affecting children of such seasonal migrant workers (HAQ-CRC, 2023). Allocation of Rs. 4,154 crore in 2024-25 for the 'Flexible Pool for Reproductive and Child Health (RCH) and Health System Strengthening, National Health Programme and National Urban Health Mission' is larger by 19 per cent compared to that in 2022-23. Yet, the share of health is only 4.1 per cent in the child budget of 2024-25. Full immunisation for at least 90 per cent children in the country by 2020 had been targeted by Intensified Mission Indradhanush (IMI), a flagship programme of the Ministry of Health and Family Welfare (MoHFW). Yet, only 76 percent of children (12-23 months) had been fully vaccinated as per NFHS-5 data. In 2023, IMI 5.0 was initiated in 2023 to cover all

children upto 5 years in all districts of the country but the quantum of funds allocated for the same in 2024-25 is not clear. Allocations for manufacturing of BCG vaccines was Rs. 125 crore in 2024 (BE) which is a decline of 18.5 per cent compared to the actual expenditure in 2022-23 (CBGA, 2024). Increase in prevalence of anaemia among children (of 6-59 months) was indicated by NFHS-5. Anaemia Mukt Bharat was launched under the POSHAN Abhiyaan aimed to reduce anaemia by 3 per cent every year. Yet HAQ-CRC (2023) reports that there was no budget head reflecting the allocation for the scheme in the Union Budget of 2023-24.

PMMVY and National Creche Scheme have been included in the scheme 'Samarthya'. However, it is concerning with regard to women welfare and child care that allocations for Samarthya was substantially reduced at RE stage in 2022-23 by 53 per cent compared to the Budget estimates. Such reduction was also seen at RE stage in 2023-24 of around 28 per cent compared to the Budget Estimates (Purewal 2023; Singh, 2024; HAQ-CRC, 2024).

CBGA (2024) notes that there are 30 million orphaned and abandoned children in India. However, only 0.4 per cent of this vulnerable population are covered by Child Care Institutions (CCIs) or family-based alternative care. The report also mentions that in the last five years allocation and expenditures have improved under Mission Vatsalya, a key centrally sponsored programme for child protection which also encourages and supports non-institutional family-based child protection options. However, child protection has traditionally been neglected and substantial increase in the allocations for the scheme is required. CBGA (2024) further reports that during the last five years, 1.4 lakh child labourers have been rescued, rehabilitated and mainstreamed under the National Child Labour Project (NCLP). However, fund utilisation in 2023-24 was only Rs. 6 crore as per RE as against the allotted Rs. 20 crores as per BE in 2023-24 probably caused by the laying off of teachers after the NCLP was subsumed under Samagra Shiksha in 2021. All institutions playing key roles for child protection namely, National Commission for Protection of Child Rights (NCPCR), National Institute of Public Cooperation

and Child Development (NIPCCD), and Central Adoption Resource Authority (CARA) received increased allocations in the Union Budget 2024-25 (BE) compared to the previous year. However, child protection receives the lowest share of the Union and the child budgets even in the face of increased concerns about crimes against children and huge pendency of such cases in the police stations and courts (HAQ-CRC, 2023; 2024). As noted by CBGA (2024), budget allocation for proceeding with pending cases under rape and the POCSO Act has remained stagnant at Rs. 200 crore since 2022-23 and in 2024-25 decline of 56 per cent in the outlay towards 'Cyber Crime Prevention against Women and Children and Miscellaneous Schemes' was found compared to last year's BE. This appears to go against sound reasons considering greater need for child protection interventions.

While budgetary allocations for children reduced from 3.3 per cent to 2.3 per cent during 2017-18 to 2023-24 (BE), the budgetary allocations for women increased from 4.3 per cent to 5.0 per cent during the same period. The decline in the allocations for children is seen even though a substantial part of the expenditures for children is borne by the states particularly after recommendations of the 14th Finance Commission (FC) as discussed earlier. The contrasting trends over the years observed in children and gender budgets cause concern as development programmes for children and women have strong interlinkages (UNICEF, 2023).

1.2 Review of literature

Early Childhood Development, its intrinsic value and its socio-economic bearings were discussed in the preceding section. The importance of investments in ECD along with enabling policies and practices, interventions and infrastructure were highlighted and the present status on ECD at the international level and in India were discussed along with an analysis of the child budgets in India. It came out from the deliberations in the preceding section that child development is crucial at the global level with various national and international forums advocating for issues related to ECD and it is also included in the UN Sustainable Development

Goals 2030. Disparities were observed in terms of performance with regard to different elements of ECD across various global regions. At the sub-national level too, wide disparities have been noted in India in terms of ECD interventions, funding capacities, allocations and expenditures. ECD being multidimensional and multisectoral requires a wide variety of initiatives and a large gamut of investments. This section seeks to survey and review relevant literature on key aspects related to ECD (focusing on initiatives and their efficacies), including theoretical and empirical studies, international or specific to India.

1.2.1 Theoretical base for Early Childhood Development

The works relevant as theoretical foundations for ECD can be analysed from the demand-side and the supply side perspectives. Theories related to ECD may sometimes span the perspectives of both demand and supply and strict categorisation into one perspective may not always be practicable. Yet, in general the former primarily comprises elements of needs and preferences related to ECD at individual, family and collective levels while the latter relates mainly to initiatives, investments, policies, interventions and infrastructure for ECD.

Early Childhood Development – Demand Side Perspective

The intrinsic nature of providing protection, care and support to one's young especially in their most vulnerable stages of development is observed across various species of living creatures. Humans through the course of their existence and civilisation, as intelligent and innovative creatures, have been providing protection, care and support to their children and have refined their approaches in doing so. With the advent of sophistication of inquiry, thought and theorisations, various approaches and theories for child development and ECD have been formulated. The concept of development in children being subjective, varies along with the practices related to ECD across socioeconomic and geographical settings. Even the pace of development during early childhood varies across individuals. What follows is that different theories of ECD touch upon different aspects and may sometimes not sit in line with each other.

Some recent and impactful theories related to ECD have been elaborated upon by Saracho (2021). The centrality of the hereditary framework in shaping a child's developmental progression through the involved biological processes is the focus of Maturationist theory. Constructivist theorists Piaget and Vygotsky were in agreement that children widen their knowledge base by their experiences and social interactions aid their cognitive development. However, the former vouched for independent progress of the child while the latter held that adult assistance was advantageous for the child. Behaviourist theorists opined that child behaviour is modified by external stimulus such as rewards, encouragement, repetition, feedback and reinforcement. Psychoanalytic theory helps understand the influence of the unconscious motivations on human thoughts, feelings and behaviour. Ecological theory however, gives central attention to the view that child development involves a complex system of relationships moulded by home and school settings as well as by broad socio-cultural environments. As per Bowlby's Attachment Theory, individual relations with caregivers during early childhood are crucial not only for development during that stage but also for social relationships throughout life. Consistent care and support by early caregivers most likely help an individual in fostering secure attachments during the person's course of life (Simpson & Beckes, 2017).

These theories and many others point towards the multifaceted nature of child development. With advances in scientific and evidence-based enquiry and exploration of ECD, more definitive approaches and recommendations for optimal ECD have come to the forefront of socio-economic and political agenda worldwide.

Center on the Developing Child (2007) has noted that in the first few years of human life, more than 1 million new neural connections are formed every second. The development of the basic architecture of the brain begins before birth and continues into adulthood. Early experiences of the child have huge bearings on that process. Sensitive and responsive care given to children

during early childhood provide essential elements of the early experiences that have beneficial impacts on ECD. “Serve and return” relationships between children and their caregivers (usually parents) have been described in the source as being reciprocative to the child’s smile, cry, babble or gestures. Like in a game of badminton, ping-pong or tennis, the caregiver responds with a hug, eye contact or words. This kind of sensitive and responsive care of the child helps build neural connections, beneficial for further learning and social skills. On the flipside, chronic and persistent stress related to adversities like extreme poverty, prolonged or repeated abuse or severe maternal depression could be toxic to the developing brain. Hence a balanced approach to all-round development of the child, supportive relationships with parents or caregivers and specialised early interventions to prevent and protect the child from toxic stress are required for optimal ECD.

Globally, much progress has been made over time with regard to indicators like under 5 mortality rates and stunting (see section 1.1). Yet, a large section of under 5 children suffer from malnutrition, inadequate stimulation, care and parenting and are at risk of not meeting their development potential. Inequitable development and humanitarian crises leave behind a large number of children. Urbanisation and modernisation have their boons (such as better access to healthcare in urban areas) and banes (pollution with debilitating effects on the developing brain of a child) that affect optimal ECD. Disparities exist in the status of ECD across international regions. In India too, although progress has been made much ground needs to be covered towards optimal ECD for all children (see section 1.2).

Early Childhood Development – Supply-side Perspective

Contributions by Brofenbrenner to the Ecological approach to ECD through Ecological Systems Theory lays down the concepts that child development involves the interplay between different elements and aspects of the child’s maturing biology and the immediate family, community and societal environment including work environment. These elements may

sometimes be conflicting. Hence, keeping child development centre stage, the ideal public policy would ease work-family conflict prioritising the role that parent's play in their child's development (Guy-Evans, 2024). Muangwichian and Congkrarian (2023) in their study of the Asian countries – China, Japan, South Korea and Thailand – with regard to the government support for ECD find that evidences of varying levels of access to child care services, government support to parents and encouragement and incentives to employers for supporting working parents, across the four countries.

A large body of research has developed related to human capital based on Becker's (1964) seminal work which linked human capital, inequalities, intergenerational mobility and growth of individual income. The emanating researches revealed how ECD effects development at later stages and the acquiring of skills and capabilities towards adulthood. A crucial angle that has been emphasized is the importance of acceptance of development interventions by the targeted community suggesting the necessity of demand and supply synthesis. The appropriate period and combinations of interventions for effectiveness have also been discussed by the related research along with the suitability of the intervention design for the ultrapoor and the less deprived suggesting towards the inappropriateness of one size fits all approach. These aspects of human capital approach related to ECD are discussed by Attanasio et. al. (2022). Knowledge, perception and attitudinal barriers to adequate implementation of programmes focused on youngest children in South Africa was studied by Richter et. al (2019). One of their key findings was 'age up' practice among the participants that focused more on pre-school years caused the youngest children during their first 1000 days to be less focused upon. Similarly, another case of demand- and supply-side mismatch is brought out by Bronteng et. al. (2019) find that National Literacy Acceleration Programme (NALAP) is not viewed positively in Ghana. English only medium of instruction is preferred over the mother-tongue based bilingual medium of instruction under NALAP, because of reasons like the lack of

information, educational resources and teacher training in the local languages. The authors of both studies recommend making the supply-side of provisioning more relevant by raising awareness, generating public support for ECD. Newman & Okeng'o (2019) recommend consultations with stakeholders for successful implementation of ECD programmes and universal approach to the programmes with provisions for ensured access to marginalised sections of beneficiaries. Attanasio et. al. (2022) also contend that improvement of child development among the poor poses a key challenge for breaking the cycle of poverty. Yet policies related to human capital can form just one part of the concerted cross-sectoral policy environment required for growth and poverty alleviation that would aid in improving ECD.

Underwood et. al. (2012) elaborate Sen's Capability Approach as an examination of community development through economic and political activity. Quoting Sen's words, "…A country that guarantees health care and education to all can actually achieve remarkable results", the author's note that human development activities including those related to ECD when integrated with inclusive practices promote community development. The Capability Approach provides theoretical grounding also to face new challenges related to issues of child well-being such as the COVID-19 pandemic towards children being able to actively and genuinely enact the rights guaranteed to them (Dominguez-Serrano and Moral-Espin, 2022). Hart and Brando (2018) have elaborated on the agency and capabilities of children arguing for their participatory rights from the earliest possible age rather than the off-hand dismissal of minors assuming their inability to exercise freedoms. National education policies and curricula, across countries, are increasingly aligning towards the notions of human development and the Capability Approach and facilitating children to acquire capabilities including through life-skills based (teaching and learning) to reach their full potential (Hoffman, 2006). Yet, it is also worth noting as pointed out by Black and Hurley (2016) child development programmes are essentially multi-sectoral in nature and this tends to expose the programmes to risks of

inconsistent implementation across sectors and not being incorporated into sustainable systems or national policies.

At the international level collective initiatives for ECD are made binding on countries by convention and protocols. ECD also forms part of the 2030 Agenda for Sustainable Development adopted in 2015 by all Member States of the United Nations. It is to be ensured by the Member States that by 2030, quality ECD and early learning opportunities are accessible to all children. There are several other international initiatives related to ECD. The Nurturing Care Framework was developed by the World Health Organisation, aimed at wholesome and optimal ECD (see section 1.1).

With special focus on the low- and middle-income countries (LMICs), Neuman & Okeng'o (2019) elaborate that there are various networks at the global and regional levels that have been formed for concerted focus and action on ECD. Yet, there are large disparities between high-income countries (HICs) and LMICs with regard to indicators of ECD such as enrolment in pre-primary education and that the children in LMICs are drastically (about 7 times) less likely to participate in early education that their counterparts in HICs. They add that LMICs face implementation challenges like shortages of funding, human resources and cross-sectoral coordination. Decentralized governance and high rates of private sector involvement create additional issues that influence ECD.

The articles in Early Years, Volume 39, Issue 3 (2019) edited by Neuman & Okeng'o deal with LMICs' issues, challenges and opportunities related to ECD. Spier et. al (2019) show how expansion of early education in many of the LMICs under pressure and due to lack of resources, could worsen the service delivery in terms of quality. They emphasize on four inter-related elements for facilitating scaling up quality pre-primary education in LMICs in terms of a consensus on the quality of education and the collective will for its provision, efficiency and

motivation in the service providers, adequate educational infrastructure and reliable finance. Baum et. al. (2019) find that ECD related policies at the global and national level lack focused and clear strategies for addressing inequalities and present the need for appropriately targeted approach (including young children) to policy formulation and implementation. When resource-constraints operate such as that of man-power and financial shortages faced by LMICs, Desmond et. al. (2019) emphasize the need to prioritize among major initiatives for ECD or the components of such initiatives,

The Lancet (2016) highlights the key roles of the government in design, financing and implementation along with skilled human resources for quality ECD interventions. For averting severe supply side constraints in ECD interventions, the study recommends provisioning based on the existing service systems that support ECD such as health, education and child protection.

Sharma et. al. (2008) present a brief historical perspective of the early childhood educational and developmental approaches and practices in the country from ancient times till Independence. They further report that a new era dawned with the country's Independence as the responsibility of providing for children was taken up by the state and note that various provisions in the Indian Constitution (Fundamental Duties and Directive Principles have been relevant for ECD. They remark that a negative development happened with 86th Amendment of the Constitution in 2002 with regard to ECD when providing ECD services for children of ages 0 to 6 was left as a directive policy (non-justiciable) and effectively the Government was under no obligation to provide ECD services to young children. Pandey & Rai (2022) point out that the status of ECD in the constitutional provisions changed with the enactment of the Right of Children to Free and Compulsory Education Act 2009 (RTE Act) which made State provision of Early Childhood Care and Education (ECCE) an enforceable duty and a statutory right for citizens. Sharma et. al. (2008) also track the evolution of approach towards planning strategies for ECD during the Five-Year Plan (5YP) period in India, from being of 'welfare' to

'development' to 'rights' oriented, presented briefly as follows: The first four 5YPs approached ED from the 'welfare' perspective. The National Policy for Children, 1974 adopted during the fourth 5YP defined the role of the State for child development. From the fifth 5YP the plan approach related to ECD changed to 'development'. This resulted in the launching of the Integrated Child Development Services (ICDS) programme in 1975 as the flagship programme aimed at holistic ECD. ICDS currently has the recognition of being the world's largest public policy for ECD (Ganimian, 2024). Sharma et. al. (2008) report that Early Child Care and Education (ECCE) was hailed as a key input for child development in the National Policy on Education during the later phase of the sixth FYP. The evolution from 'development' to 'rights'-based approach for ECD happened during the Ninth and Tenth FYPs. This development was not unique to India but was part of the phenomenon of global discourse, declarations and conventions on ECD through the prism of child rights. Some of the major developments concerning ECD (largely driven by the rights-based approach) during the Ninth and Tenth FYPs were: enactment of National Health Policy, 2002; adoption of the National Charter for Children, 2003; formulation of the National Plan of Action for Children, 2005 and setting up of the Commission for the Protection of Child Rights Act, 2005. Besides, ICDS was universalised during the tenth FYP for ensuring coverage of all children of the country by 2012.

As noted in section 1.2, some of the latest developments in ECD related policy landscape in India have been the National Early Childhood Care and Education (ECCE) Policy (2013), India Newborn Action Plan (2014). National Health Policy (2017) and the Maternity Benefit Amendment Act of 2017 (Chattopadhyay & Aneja, 2021). The ICDS scheme has undergone major changes aimed towards making the programme more integrated and wide-reaching. Early Childhood Care and Education finds substantive space in the National Education Policy (NEP), 2020. Yet, unless the relevant provisions are legislated, public authorities cannot be held accountable for enforcement of such provisions related to ECCE (Pandey & Rai, 2022).

1.2.2 Empirical studies on early childhood development

This part of the literature survey looks at empirical works related to the association between ECD interventions and outcomes along with the role of the factors mediating the relationship. Empirical literature focused on issues of finance for ECD have also been reviewed. With regard to compilation of country and cross-country data towards establishing global monitoring and accountability framework for ECD, Richter et. al. (2020) point out that major challenges persist as data on key ECD indicators are not available for many countries. Variations in definitions, indicators and questionnaires used for collection of relevant data across countries create major challenges for international comparisons of data. Yet, encouraging initiatives have been taken by global institutions (such as the WHO, UNICEF and the World Bank) and multidisciplinary experts towards collection of relevant data and refining the measures. The revised ECD Index 2020 and the ECD country profiles have been recognised as tools for the required data collection and analysis. Data availability has improved with the inclusion of various aspects of ECD in standardised household survey programmes. Demographic and Health Surveys (DHS) & Multiple Indicator Cluster Surveys (MICS) since their inception in 1984 and 1995 respectively, have collected data in more than 120 LMICs and MICS is the largest source of internationally comparable ECD data.

Short-run impacts of ECD interventions

Dulay et. al. (2018) found that socio-economic status (SES) of the Filipino families to which children belong, is related to the children's early language and literacy skills as a distal factor, through the relationship of preschool attendance as a proximal factor related to the vocabulary skills among 3- and 4-year-old children. Their findings which can be contextualised in terms of LMICs, suggest that in general SES is directly associated with home learning environment (HLE), parental self-efficacy and preschool attendance and children's skills. The Su et. al. (2020) study suggests that even after education being a policy priority since 2010 in China,

younger children, children of mothers with relatively lower levels of education, children form lower-income families and those from less economically developed regions still were less probable than other children to attend preschools. Studies also find that socioeconomic gradient and ECD disparities caused by SES can be positively influenced by promoting parent-child engagement at home (Sun et. al.,2018; Allel et. al., 2021) along with quality of teaching and facilities at kindergarten (Ip et. al.; 2018).

Substantial positive impacts of early childhood education (ECE) on various aspects of ECD have been evidenced by many single country or multi-country studies such as Dulay et. al. (2018), Barnett (1995) and others that have been mentioned here. Chen et. al. (2019) found that even though children under the One Village One Preschool (OVOP) programme scored lower than children who had attended well-resourced public township ECE centres in elementary grades, their scores were higher than children with no ECE or who had attended private township ECE. The results of a study by Bago et. al. (2019) indicated enhancement of early development in children of Ghana by attending ECE programme and also by mother's education, father's involvement and living in urban area. Even short-term interventions such as the 20-week story-based, relatively low-cost and low-intensity, language and emergent literacy intervention (SPELL) for 4-6 year old children in Denmark showed significant gains in emergent literacy for children of immigrant status as well as Danish children (Dale et al., 2018). ECE complements other elements such as income status and home stimulation that are positively associated with ECD. Quality ECE also helps in tackling developmental disparity among young children (Allel et. al., 2021; P. Ip et al., 2015). Gove et. al. (2017) present the impact assessments of early learning programmes in six African countries: Ethiopia, Kenya, Liberia, Malawi, Tanzania and Uganda. They found that in the countries with completed impact evaluations the learning gains were significant and important (between 0.2 and 2.57 SD in

effect size). A large increase was affected in the proportions of students reaching grade-level reading proficiency in one case, from 12 per cent to 47 per cent.

Adequate stimulation at home, parental self-efficacy, parental engagement and caregiving environment along with other factors are closely associated to improvements in ECD (Allel et. al., 2021; Sun et. al., 2018; Dulay et. al., 2018). The study of Black and Hurley (2016) shows positive association of ECDI scores with activities (such as reading, playing, listening to stories, singing, travelling outside of home) performed jointly by care-giver and child. Elder et. al. (2014), Yousafzai et. al. (2014) and Yousafzai et. al. (2016) find convincing evidence that favourable changes in caregiver behaviour towards ECD can be successfully implemented by health-workers.

Long-run impacts of ECD interventions

A study of intergenerational impacts of stunting on development of children by Walker et. al. (2015) found that children born to a stunted parent had lower Development Quotients, lower cognitive subscale scores and lower height for age while another study by Campbell et. al. (2014) present the long-term health impacts of the Carolina Abecedarian Project by analysing their biomedical data. They report that among the children of 0-5 years of age, randomly assigned to the treatment group, the prevalence of risk factors for cardiovascular and metabolic diseases during their mid-30s, was significantly lower.

Long-term effects of preschool education were found by Campbell et. al. (2002) through their follow-up study of the Carolina Abecedarian Project be higher scores on intellectual and academic measures and more years of total education and lower teenage pregnancy among young adults (21 years) in the preschool treatment group, compared to the pre-school controls. Similar findings were reported by Barnett (1995) and the researchers at UNC-FPG Child Development Institute (2007). The latter found that interventions such as the Head Start,

Chicago Child-Parent Center Program, Infant Health and Development Program and Perry Preschool Program in the United States have been associated with the treated individuals gaining in many ways including enhanced academic and intellectual performance, health, employment and income and lower chances of involvement in crimes later in life. Likewise, meta-analysis conducted by McCoy et. al. (2017) considering 22 high-quality experimental and quasi-experimental studies spanning the period 1960 to 2016 reports similar findings also indicating the utility of ECE in terms of reduction of education-related expenditures and promotion of child well-being. Cappelen et. al. (2020) find strong causal impact of ECE on social preferences of children. However, UNC-FPG Child Development Institute (2007) also reports the findings of the Consortium of Longitudinal Studies which included researchers from various early childhood programmes also since the 1960s found that the intellectual and academic gains of ECD programme participants were eroded or largely gone by five to six years after the programme whereas Suna and Ozer (2024) found correlation of ECE attendance with medium- and long-term academic indicators while observing the medium-term correlation to be particularly robust.

Progressive elements of ECD interventions

It was observed by studies such as Suna and Ozer (2024), Bai et. al. (2020) and Engle et. al. (2011) that ECD interventions that are of high quality and for those with low SES (particularly the most vulnerable) have greater potential effects in the long-term. Major findings of Yousafzai et. al. (2016) add to the increasing pool of proof that ECD programmes intervene to benefit the development of children even in adverse settings such as the poverty induced chronic stress of care-giver, food insecurity and persistent child undernutrition. Engle et. al. (2011) report that depending on preschool enrolment rate and discount rate, increase of preschool enrolment to 25 per cent or 50 per cent in LMICs showed a benefit-to-cost ratio ranging from 6.4 to 17.6 and that effective investments in ECD could reduce inequalities related

to poverty, poor nutrition and inadequate learning opportunities. Gertler et. al. (2021) assess the labour market effect at age 31, of the Jamaica Early Childhood Stimulation intervention and find that hourly wages and earnings of the treated group were 43 percent and 37 percent (respectively) higher than that of the control group which was much higher compared to 25 percent increase in earnings observed for treatment effect estimated for age 22. It is conversely pointed out by The Lancet (2016) that where preschool services are fewer and a larger proportion of children are at risk of poor development, the cost of inaction of not improving childhood development through preschool and home visits, rises sharply.

Belfield et. al. (2018) calculated substantial economic losses when families of children under 3 years of age are deprived of adequate child care support in the US. Less time at work, lower productive work and less career opportunities are reported by such families. In the long run, aggregate annual burden across the 11 million parents was calculated to be on average, $98bn. At the aggregate, lower income tax and sales tax from working parents reduced tax revenues on average by $25bn and burden on businesses was on average $16bn, accounted for by reduced revenue and extra recruitment costs.

1.2.3 Financial aspects of ECD interventions

Barnett (1995) points out that all ECD interventions do not necessarily produce long-term benefits probably because of differences in quality and funding across the interventions. Sustainability of ECD interventions is also found to be related to reallocation of resource as found by Hasan et. al. (2019) that sustained centers for ECD in rural Indonesia had conducted strategic reallocation of resources towards teacher salaries and away from supplementary food. For ECD in member countries of the Organisation for Economic Co-operation and Development (OECD), OECD countries, Dougherty and Morabito (2023) had found intergovernmental fiscal co-operation to be necessary along with policy interventions that enhance public spending, ensure equity in fiscal governance and improve affordability and

monitoring systems. UNESCO (2016) in their regional study on financing ECCE (including 10 Asian countries), recommended increasing public expenditure in ECCE, promoting enabling governance and capacity development and exploring innovative financing mechanisms and partnerships. The Results for Development (2016) study focused mainly on LMICs had noted that advocacy based on contextually-relevant evidence can generate increased ECD investments as done by the Mother Child Education Foundation's "7 is too late" campaign in Turkey. National Academies of Sciences, Engineering, and Medicine in their 2018 consensus study report titled Transforming the Financing of Early Care and Education produced an illustrative estimate of the total cost of providing high-quality early care and education in the United States of America (US) being equivalent to about 0.75 per cent of the US Gross Domestic Product (GDP) or a little less than the then prevalent average of 0.8 per cent of GDP allocated to ECCE for OECD countries. The report also recommended, setting consistent standards of high quality across all ECCE programmes and linking funding receipts to achieve and sustain the quality standards; universal access by children and families to affordable high-quality ECCE; establishing a progressive payment structure where payments are required for the ECCE services exempting families at the lowest income level; coalition of public and private funders for supporting the development and implementation of plans for high-quality ECCE; funding of education, research, knowledge and skill upgradation aligned towards high-quality ECCE and streamlining data collection across funding streams.

The Lancet (2016) reports the estimated additional costs, as per Richter et. al. (2016), required for the inclusion of two interventions that intend to support nurturing care of children in the Global Investment Framework for Women's and Children's Health. The average additional investment is estimated at half a dollar per capita in the year 2030 with a minimum of US$0.2 in low-income countries and US$0.7 in upper middle-income countries. This amounts to an additional investment of 10 percent over investment estimates published for a comprehensive

set of women's and children's health and nutrition services. The Lancet (2016) also emphasizes that the cost of inaction towards addressing the problems of stunting and developing delays amounts to several times more than the current spending of some countries on health or education, respectively.

1.2.4 India-specific studies on early childhood development

Health and nutrition interventions and ECD outcomes

Christopher et. al. (2023) notes that 90 per cent coverage by nutrition and health interventions targeted at women and children during the first 1000 days can facilitate 20 per cent reduction in stunting and lower wasting by 61 per cent. Most of these interventions are delivered pan-India by the ICDS and NHM along with National Nutrition Mission (NNM). Coverage of most of the interventions improved between 2016 and 2021 while mixed improvements were observed in Infant, Young and Child Feeding (IYCF) practices at the national level and wide variability in IYCF practices at the subnational level (Ray, 2023). Even though Iron-Folic Acid supplementation and deworming coverage improved among children in most states and 90 per cent of women received Iron-Folic Acid supplementation during pregnancy in 2019-21 (while two-thirds of women were not covered by deworming), Gune et. al. (2023) found increase in prevalence of anaemia in children driven by moderate anaemia between 2015-16 and 2019-21 in India. During the same period, while the proportion of stunted and underweight children reduced overall to 35 per cent and 31 per cent respectively and also in most states, the proportion of wasted children at the national level stagnated at 20 per cent while it decreased in most states. Overweight/obesity although being low at <5 per cent at the national level, increased in most of the states (Kapoor, 2023). Increase in weight of preschool children in India assisted with iron supplementation and deworming drugs was also reported by Bobonis et. al. (2006) and association between early-life nutritional supplementation and cardiometabolic benefits in the undernourished population of Hyderabad was found by Kinra et. al. (2014).

As per analysis of Chakrabarti et. al. (2019) based on NFHS data, the mean proportion of respondents using ICDS programme services increased between 2006 and 2016 and largest positive associations with use of services were seen with wealth, maternal education and caste. Singh et. al. (2024) found meaningful contribution of ICDS towards reducing undernutrition in young children. 9 per cent-12 per cent of the observed decline in underweight prevalence among children between 2016 and 2021 was explained by improvements in ICDS. However, there was wide variance in the association between the two across the states and across socioeconomic and demographic groups. Dixit et. al (2018) observed 12.3 per cent higher institutional delivery among rural women who received health education and nutrition from ICDS as compared to their counterparts who did not receive those services and suggested that improvement of environmental hygiene and child feeding practices be given more emphasis than supplementary feeding. However, Rahman and Pingali (2024) have noted that mortality risks arising from low levels of institutional delivery in the country not being adequately addressed by ICDS. The authors also point out that the programme does not ensure adequate consumption of protein and micronutrients by the beneficiaries while Take-home-ration (THR) meant for lactating mothers are often shared among the members in the household.

Rahman and Pingali (2024) have also indicated that empirical studies point out the greater use of primary and community health centres as the driver of the success of the Janani Suraksha Yojana (JSY). Health services vary substantially across the states and the benefits of JSY in terms of health outcomes have been concentrated in regions where the institutional capacity and programme implementation are better. High mortality rate regions are where JSY is found to perform the worst and maternal mortality has reduced four times faster in well-off regions than the poorest regions. The limited success of Pradhan Mantri Matru Vandana Yojana (PMMVY) has been mainly due to issues related to low administrative capacity and service

delivery. The benefits of the scheme to the mothers apply only for the first living child with cumbersome application process (hindering timely payments).

Indirect influencers of health and nutrition of young children

Pathak and Macours (2017) find that political reservation for women improved the health and nutrition environment in utero and during the early years of children which could be a factor impacting children's learning in the long term. Their results are consistent with the major constraints for children's human capital (which may differ from one Gram Panchayat to another) being prioritised by female leaders.

The significance of physical infrastructure for ECD is brought out by Dasgupta et. al. (2024). The authors show that local roads support access to health care facilities and increase immunisation rates which helps in reducing infant mortality. They find that investment in children improves with increased access to paved roads at the district level in rural India and such access also leads to lowering of fertility and infant mortality.

Impact of policy decisions (that affect the general economic environment) on ECD is also seen in the literature. Evidence of adverse trends in terms of infant mortality decline was found by Drèze et. al. (2021) in many regions of India in 2017 and 2018. Poorer states of Chhattisgarh, Jharkhand, Madhya Pradesh and Uttar Pradesh saw overall rise in infant mortality. The authors cite the adverse effect of the demonetisation experiment in 2016 and subsequent economic downturn on child health as a possible interpretation of the poor performance in terms of child mortality.

Early learning interventions and ECD outcomes

Benefits of augmenting staff for ECD are found to be significantly higher than the costs involved in it and hiring additional personnel is found to be more-cost effective (considering the positive benefits on ECD) than increasing the remunerations of existing workers by

Ganimian et. al (2024). The authors find that preschool instructional time got doubled as a result of adding a worker in ICDS and increase in test scores were observed for math and language by 0.28 and 0.46 standard deviations, respectively after 18 months for children who remained enrolled in the instructional programme. The corresponding increases were 0.13 and 0.10 standard deviations for all baseline enrolled children. For better school readiness among children, Centre for Early Childhood Education and Development & ASER Centre (2015) recommend viewing early and primary education along a continuum in terms of both access and quality. The study emphasizes that children's learning outcomes in early grades are improved through better cognitive, preliteracy and prenumeracy skills of children during the pre-primary years. The study reports strong association of classroom planning, teaching process and physical infrastructure as some of the characteristics of preschools that are strongly associated with better school readiness and emphasizes that quality preschooling can compensate even disadvantageous home environments for ECE. The study finds increasing participation of private schools in preschool education in India with clear gender differences in terms of a larger proportion of boys being sent to private preschools. Kaul et. al. (2017) also emphasize that high quality preschools facilitate better school readiness and lead to higher outcomes in early grades. Likewise, significant association between exposure of children to structured ECE showed increase in IQ, better school readiness and higher cognition even at 9 years was found by Meghir et. al (2023) and Koshy et. al (2024). The results of the study by Pathak and Macours (2017) suggest that improvements in learning outcomes in primary school could be targeted better by early childhood interventions in addition to those that are targeted directly at primary school children. However, Kaul et. al. (2017) emphasize that the school readiness levels of most children at 5 years in India are way below expectations. The public preschool education at 'multi-tasked' AWCs and private preschool instructional system being 'demand-driven', offer ECE that is not developmentally appropriate for children.

Kapur (1994) indicated closer association between psychosocial development of children and stimulating child rearing practices than between the former and macro-environmental factors such as residence, education level and income of parents. Chattopadhyay and Aneja (2021) note that in spite of various efforts, all the components of nurturing care framework for optimal ECD have not comprehensively been made part of the ECD services offered in India. ICDS can be considered as the indicator of efficacy of interventions for improving ECD as it is the flagship scheme for the same. Many studies mentioned in this section, have focused on ICDS and its efficacy for improving ECD and have found that in the overall performance of ICDS and use of programme services has improved over the years with substantial benefits accruing to the marginalised social groups such as disadvantaged castes and tribes. However, its coverage varied at the sub-national level and with regard to the poorest of the poor and also with regard to the poorer and largest states (that carry the highest burden of undernutrition and are most in need of ECD assistance) is still lagging behind.

ECD financing issues

Evaluation of ICDS Scheme by NITI Aayog (2020) noted the requirement of proactive role of ICDS Financial Management Group (FMG) for efficient management of funds and resources and developing uniformity in various aspects of state-level financial management along with improving remuneration to the programme employees and functionaries.

Motkuri (2020) points out that with regard to the changes brought about by 14th FC, the Union Budget statement had mentioned that the increased share of the states in the central taxes would compensate for the reductions in central allocations, thereby, preventing any decline in the total allocation of the centre and states towards the welfare of children. Yet, the study refers to the finding of Singh et. al. (2018) observing decline in priority towards child budgeting and social sectors despite increase in total transfers and the States' total expenditures. The states on their

part did not use the fiscal autonomy (afforded to them by the 14th FC recommendations) to step up nutrition spending.

Sethi et. al. (2017) report some of the operational challenges faced while collating and reporting nutrition budget outlays as follows: A standard set of Direct Nutrition Interventions (DNIs) and Nutrition-Specific Interventions (NSIs) at the national level and across the states, is absent. Nutrition interventions being multisectoral in nature are spread across sectors. Nutritionists and budget experts seem to understand 'Nutrition' in differing ways, most nutrition allocations are not available in budget books and weightage applied to NSIs lack clarity. These factors hinder smooth data collection and reporting and the authors recommend a common framework for multisector budget analysis agreed by experts and budgets and nutrition. Despite such challenges, the share of DNI budget was found to be < 2 per cent per cent of the budgets, post 14 FC recommendations (2014-15 to 2016-17) of four states (Bihar, Chhattisgarh and Odisha and Uttar Pradesh). The share of DNI budgets in the budgets of the four states either decreased or stagnated during the period (Shrivastava et. al., 2017). Likewise, Acharya et. al. (2017) find that the share of NSI budgets either stagnated or declined in the budgets of the Centre as well as of Odisha and Uttar Pradesh. Kapur et. al. (2020) estimate expenditure requirement during 2019-20 and beyond of at least Rs. 38,571 crore by Central and State governments for a core set of DNIs. From the total amount, the authors estimate expenditure of Rs. 20,796 crore on ICDS, SNP, Interventions for adolescent girls out-of-school, pregnant and lactating women, children aged 6 months to three years and malnourished children. Expenditure of Rs. 9,260 crore is estimated for PMMVY and JSY. The authors mark that the delivery costs vary across states, influenced by state capacity, geographical features and supply constraints and determining local state-wise unit costs should be focused on. Chakrabarti et. al. (2017) estimated the total cost of delivering nutrition-specific interventions in India at Rs. 43,000 crore

(with divisions for three crucial periods ranging from pregnancy to the period after the child reaches six months) with considerable variability across states.

Vij (2017) elucidates that Maternity Benefit Programme since its launch in 2010 has seen setbacks including benefit restriction to cover only the first live birth. The author also notes the insufficiency of state budgets to cover even firstborns and implementation challenges of the Programme last renamed as Prime Minister Matru Vandana Yojana (PMMVY). Amore recent evaluation of the programme by Drèze and Khera (2023) points out that even though a right to maternity benefits was given by the National Food Security Act, 2013 they were implemented through the PMMVY at a curtailed level (to be given in instalments) only in 2017. The authors stress that even though pregnancy and child birth are harrowing for millions the coverage of PMMVY is low and it declined from 96 lakh women in 2019-20 to 61 lakh in 2021-22. The third instalment eludes most women with only 35 lakh receiving the same in 2021-22 (covering only about 13 per cent per cent of annual number of births). During the period, coverage declined in most states except Kerala and Jammu-Kashmir while coming to a virtual standstill in several states.

Rao et. al. (2015) found varying fiscal capacity across states with regard to their potential to spend on health and interestingly they also found that despite lower overall spending on health, Bihar utilised a substantial share of NRHM funds. The authors note that NRHM did not meet its expenditure targets even though it boosted state health budgets by 10 per cent per cent annually. They recommended public investment in healthcare infrastructure and services, even more in rural and marginalised areas for improving healthcare utilisation and outcomes and emphasized that improved fiscal capacity could facilitate such investments.

Child Protection Services (CPS) scheme was restructured and renamed as Mission Vatsalaya and the allocations at Rs. 1,472 crore in 2022-23 was a 77 per cent per cent increase compared

to CPS scheme. With regard to the increase, Kapur and Bordoloi (2022) point to the broadened scope of the scheme and possible reductions in the revised estimates of the budgets and actual expenditures for the scheme. In fact, the actual expenditure for 2022-23 was lower at Rs. 1042.91 crores. In 2024-25 (BE), the Scheme was allotted Rs. 1472.17 crores. The analysis notes that the guidelines under Mission Vatsalya suggest important changes including the strengthening of fund-flows. Yet, the effectiveness of the suggestions would depend on proper operationalisation and efficient implementation towards ensuring children's right to survival, development, participation and protection.

Investments in ECD in India are not sufficient, efficient or equitable enough to support the policy commitments. Although ICDS is also the most popular government scheme for ECCE, a large and unregulated market for ECCE also exists in India. This has contributed to unequal access to ECCE in terms of socioeconomic factors (Ghatak et. al., 2022a; 2022b). It is reported by Jha et. al. (2019, 2020) that costing norms for public services including ECCE, in India are highly centralised and homogeneous that overlook diversity and contextual relevance in terms of location, culture, practices or requirements. Quality parameters and the frameworks that follow flexible costing norms along with a set of principles, quality standards and accountability practices need to be considered for estimating cost for public service delivery. The authors estimate the public expenditure required for effective ECCE services, somewhere close to at least US$ 200 – US$ 220 per annum per child. The amount being two to twelve times higher than the present expenditure of the states (Delhi, Odisha, Telangana, Bihar and Tamil Nadu) considered in Jha et. al. (2020). The gap being higher for states having low per child expenditure. The authors extrapolate the estimated expenditure amount to cover the entire relevant population covered by ECCE services and find that India would need to increase the corresponding expenditure at least by three to five times the current level. Kundu et. al. (2021) provide cost estimates that cover not just pre-school education but the full spectrum of ECCE

interventions – nutrition, education, health, sanitation and safety of children. They analyse three models of ECE provision – NGO, government and private entities and find that the NGO models incorporate several elements such as balanced curriculum and intensive in-service training of teachers, that contribute towards effective service delivery. The authors also find that AWCs under ICDS report the lowest operational cost and lowest cost per child among the three models of ECE also on account of not reporting any expenditures for several elements such as safety, furniture and equipment and low expenditure on components such as salaries and rent. Hence, the low cost indicates inadequate financing of ICDS and its association with comparatively lower quality ECE in AWCs. The authors projected average cost per child per year for quality ECE services to be in the range of Rs. 32,531 (feasible cost) – Rs. 56,327 (optimal cost) depending on the type of ECE model. They estimate the total budget allocation for universal quality ECE to children in the age group 3-6 years, to be in the range of 1.5 per cent to 2.2 per cent of GDP. The authors suggest funding the increase in expenditure on ECE through an increase in direct tax-to-GDP ratio or deficit financing through debt. However, in the short-term they recommend funding the same through measures such as financing through unutilised cess, unspent balance under different programmes and Corporate Social Responsibility together with implementation of the 15th Finance Commission recommendations for improving ECE such as 41 per cent share for States out of central taxes for the period 2021-26.

A high correlation (r=0.89) between public spending on children and child development outcomes was found by Jha et. al. (2019) which indicated that larger public investments are required for better child development. However, the authors report under-investment for children of age group 0-6 (as they receive a relatively lower share of TCE) and recommend higher investment in all states. It was seen that states having a large share (nearly 28 per cent) of their child population (0-18 age group) in the 0-6 age group, such as Andhra Pradesh,

Chhattisgarh, Maharashtra, Rajasthan and West Bengal spend less than 5 per cent of total expenditure on children of 0-6 age group. The study revealed that poorer states with historical underinvestment related to child development are the states with lower economic capacities and higher share of child population. These states are not able to enhance their per child expenditure (PCE) in real terms. They spend a larger share of their Gross State Domestic Products (GSDPs) and total expenditure on children but these expenditures, limited by the small size of their economies, do not get translated to higher PCE. The authors suggest a differential approach for monitoring or encouraging states in terms of their economic capacities and performance related to child development.

1.2.5 Concluding observations on the literature

Various dimensions of the multisectoral aspects of ECD and the interventions for improving the same have been reviewed in this section. Evolution of the concepts of ECD and nature of interventions to rights-based approach in present times has been traced through the literature including the adoption of Nurturing Care Framework for ECD globally and also in India. Empirical studies to ascertain and analyse the status of ECD and impacts of interventions in the short- as well as the long-term have been reviewed. The progressive impacts of interventions in terms of reducing various forms of inequalities in ECD have been studied. India specific literature on the impacts of interventions related to child health and nutrition, early childhood care and education and protection along with their limitations have been looked at. Financial aspects and issues related to ECD both at the global and at the national and sub-national levels have been reviewed through available literature along with the impacts of public expenditure on childhood development in general at the sub-national level. It is found that the significance of investments geared for optimal ECD is recognised and initiatives have been taken for the same at the global, national and sub-national levels and wide-ranging literature is found to examine various aspects of ECD and the relevant interventions. However, there is a

dearth of studies related to understanding the impacts of interventions for early childhood development on different groups of the beneficiaries in India at the sub-national level. Most benefit incidence analyses found in the surveyed literature deal with government expenditures on broad categories of health and education. Hardly any study has been done to assess the distribution of benefits (and its determinants) of public expenditures on ECD at the subnational level in India. This study seeks to fill that gap by not only examining the distribution of benefits of the expenditures of the state governments on ICDS and NHM but also assessing the determinants of the benefit incidence outcomes of these expenditures. The present study seeks to contribute its findings related to that aspect of ECD in the context of the changed fiscal structure of India post 14th FC recommendations.

1.3 Motivation for the present study and specific research questions

From the background discussion it becomes clear that ECD is crucial for the achievement of full development potential not only of individual citizens but also for the all-round sustainable socio-economic development of nations and the world as a whole. Various international forums have come together to develop the multi-sectoral Nurturing Care Framework for ECD and there are many international and national conventions and policies focused on the development of young children. ECD is also an integral component of the United Nations 2030 Agenda for Sustainable Development adopted by all member states in 2015.

At the international level, progress has been made with regard to indicators like under 5 mortality rates and stunting. However, the world faces challenges to ECD on many fronts. For instance, a large number of under 5 children have not met their development goals and many young children are facing malnutrition and also the lack of proper and adequate care and support. Vulnerable children such as those of the younger ages, those at the bottom wealth quintiles and with disabilities remain at most risk of deprivations. Disparities can be observed between geographical regions of the world with regard to achievement in terms of various indicators of Nurturing Care for ECD. These disparities are not only inter-regional but also

intra-regional and inter-generational, considering young children in the top and bottom of the wealth hierarchy.

Status of early childhood development in India when observed through achievements in terms of the indicators of Nurturing Care for ECD shows that progress is being made with regard to many of the indicators. However, large proportions of the country's under-5 child population face early childhood development challenges including those of being under-weight, stunting and of poverty related threats. Substantial improvements for major proportions of under 5 children in India are required also in terms of Health and Nutrition indicators of Nurturing Care.

India is home to one of the largest child populations in the world. For fair and sustainable development, investing for ECD is considered to be one of the most cost-efficient, powerful and smartest strategies a country or even the world as a whole can make for its future. The most important indicator of a country's commitment towards child development is the investment that it makes towards fulling the relevant goals. Child development budgeting in India is plagued by some issues such as those of inadequate funding and issues related to sectoral break-up of resource allocation and fiscal marksmanship.

The recommendations of the 14th FC sought to increase the share of the states in the central taxes to compensate for the reductions in central allocations for Centrally Sponsored Schemes. Thereby also enhancing fiscal autonomy of the states related to expenditure on priorities such as ECD. However, studies have reported decline in priority towards child budgeting and social sectors. The gravity of the situation considering the development of the most vulnerable section (young children) of the nation's population and the wide-ranging and far-reaching impacts of the same is the main motivation of the present study.

To explore key aspects of government expenditures for ECD in India and the resultant incidence of benefits on different sections of beneficiaries at the sub-national level, this research will focus on two major schemes geared for ECD, the Integrated Child Development Services (ICDS) and the National Health Mission (NHM), with special focus on its Reproductive, Maternal, Newborn and Child Health (RMNCH) component, to answer the research questions specified as follows:

I. How do Central Government fiscal transfers to states affect their expenditures on early childhood development? This question is focused on exploring whether the states augment or substitute their own expenditures by the central grants on ICDS and NHM.

II. How well targeted is state governments' expenditure on early childhood development? This broadly seeks to assess the patterns of proportional utilisation of the expenditures of state governments on ICDS and NHM by the respective beneficiary groups. It also looks at targeting in terms of orientation of the coverage of a specific programme towards its most vulnerable and neediest beneficiary group.

III. How pro-poor is the coverage of ICDS and NHM? The question deals with observing the concentration of coverage of ICDS and NHM among respective beneficiary groups. The categorisation of the groups done separately in terms of wealth quintiles and also location (rural vs urban).

IV. Which factors affect the targeting of govt. exp. On ICDS and NHM? This seeks to ascertain the determinants of benefit distribution proportions among the respective beneficiary groups (including the most vulnerable groups) of ICDS and NHM.

1.4 Objectives and testable hypotheses

For finding the possible answers to the questions as listed above the objectives of this research are:

1. Assessment of the impact of central govt. transfers on expenditure by states towards NHM and ICDS.
2. Assessment of the distribution of benefits of government exp. by states on ICDS and NHM (using Benefit Incidence Analysis) among the groups of beneficiaries.
3. Identification and testing (through empirical methods) of major determinants of the benefit incidence outcomes of government expenditure on ICDS and NHM by states.

The hypotheses that will be tested to support the objectives are as follows:

(1) Central Government fiscal transfers complement spending by states on early childhood development.

(2) States with greater fiscal autonomy and better fiscal absorptive capacity tend to have better targeted government spending on ICDS and NHM.

(3) States with more educated women and having greater access to information tend to exhibit better targeting of government spending on ICDS and NHM.

1.5 Methodology and data sources

The methodology used in the different chapters of the thesis are discussed in detail in the corresponding chapters along with the sources of various types of data used for the analyses. A brief summary of the same is provided here:

- In the introduction itself a review of the relevant literature is done and the gaps in the existing literature are identified. The gaps that the present study would try to fill are defined therein.

- Chapter-2 at the outset, attempts are made to find out if there's any association between child health and nutrition indicators and government funding of ICDS and NHM at the level of the states. This is done through a simple correlation exercise. Thereafter, the impact of Central Government transfers on the expenditure of the states on RCH and NHM are examined through panel fixed-effects OLS regressions and on ICDS through random-effects regression. The data used in the correlation and regression analyses have been sourced from NFHS-IV & V, websites of OpenBudgetsIndia, the Ministry of Statistics and Programme Implementation, MoWCD and MoHFW (also through RTIs), respective state budgets, Comptroller and Auditor General (CAG)-Finance Accounts of the states and Reserve Bank of India's (RBI's) estates database, Parliamentary questions & answers, Population Projections for India and states 2011-2036, Health Management Information System (HMIS) of NHM, and the web-portals for ICDS and NHM.
- In Chapter-3, the preliminary quintile-wise and location-wise (rural vs urban) coverage analyses of ICDS and NHM are fully based on unit-level data of NFHS-IV & V. Some of the major sources of data for the Benefit Incidence Analyses area: Parliamentary questions and answers, unit-level NFHS data and Pop. Projections for India and States 2011-2036, MoHFW, Finance Accounts of the CAG and HMIS of NHM.
- For estimating the benefit incidence of the expenditures on ICDS and NHM services, the coverage rates and utilisation rates have been calculated with regard to the various beneficiary groups under the ICDS-SNP & -PSE and NHM (RMNCH). The results of the analyses are also interpreted in terms of targeting vis-à-vis the coverage rate. Targeting being considered as the extent of orientation of the programme coverage towards the most vulnerable group among the eligible population who have responded.

- In Chapter-4, beta regression analyses are done for identification of major determinants of benefit incidence of state govt. exp. on ICDS and NHM. Benefit incidence coefficients derived in chapter-3 and data from E-states database of RBI on state government finances, State Audit Reports of CAG, NFHS-IV and -V have been used.

1.6 Major limitations of the present study

ECD is a multidimensional and multistage phenomenon, precise measurement of the same is still elusive. Moreover, the varying pace of ECD between children and the variety of concepts and practices related to ECD prevalent across different social and geographical settings makes conclusive interpersonal and intergroup comparisons of ECD unwieldy. The multisectoral character of the expenditures for ECD being wide and layered and the lack of uniform budget reporting practices of the states made it impracticable for a single-researcher to collect and examine the whole gamut of expenditures related to ECD. Primary survey backed deeper analysis of many aspects of ECD such as utilisation and impact analysis at the sub-state regional levels were not feasible due to constraints of time and resources. Conventional Benefit Incidence Analysis was not possible due to issues of data availability issues. Estimations had to be relied on, due to lack of concrete data, for some of the inputs required for the benefit incidence analysis carried out considering beneficiary groups. Regression analyses especially of the fourth chapter were done with the limited data-set that was available. Notwithstanding these limitations, the present study attempts to analyse key aspects of government expenditures on ECD, mainly through ICDS and NHM. This study tries to make refined and robust assessments of the incidence of benefits of these expenditures and their determinants at the subnational level using reliable data sources and techniques. The findings enable policy suggestions and would aid in improving the initiatives of and benefits to the stakeholders (direct and indirect) of ECD.

1.7 Plan of the study

Chapter 1 introduces the broad area of the research by providing the background, motivation, research questions, hypotheses, methodology and data sources, limitations of the study and the introductory review of literature. Broad relationship between indicators of child health & nutrition and ICDS & NHM funding are assessed in Chapter 2 and the chapter examines the impact of central government grants on the own expenditures of the states on ECD. Benefit Incidence Analyses of the expenditures of the State Governments on ICDS and NHM (with regard to different sections of the beneficiaries) are done in Chapter 3. The analysis for identification of determinants of the benefit incidence of state government expenditures for ICDS and NHM is carried out in Chapter 4. The conclusion along with a summary of findings and suggestions for policy are presented in Chapter 5.

Chapter 2

Impact of union fiscal transfers on early childhood development expenditures of the states

2.1 Introduction

Centrally Sponsored Schemes (CSS) as part of specific purpose transfers of the union government cater to the provision of critical social services and merit goods. The grants related to such schemes also aim at fiscal equalisation rendering states with differing fiscal needs and capacities to be on equal footing for providing crucial services and merit goods. Major changes in the fiscal federal architecture came about after 2014-15 as per the recommendations of the 14th FC. The share of the states in the divisible pool of central taxes was increased substantially from 32 per cent in the 13th Finance Commission to 42 per cent in the 14th FC. Not only the criteria for vertical tax devolution but even the horizontal tax sharing criteria between the states were changed[11]. Being aware of the limited fiscal space available with the Centre and given its responsibility to maintain macroeconomic stability, the 14th FC recommended a commensurate reduction in specific purpose grants to states.

Pursuant to the recommendations of the 14th FC as well as the recommendations made by a sub-group of chief ministers (NITI Aayog, 2015), the specific purpose transfers (CSS in particular) underwent a significant restructuring and rationalisation in terms of regrouping of schemes with discontinuation of central support for some of the schemes while reduced support for some others. As a result, many CSS of social sector had to be continued by states with reduced central support from 2015-16. These changes also altered cost-sharing formulas: for instance, most CSS (including those for health and child development) shifted from a 75:25 Centre-State funding split to 60:40 for general category states, increasing the states'

[11] Please see the report by Accountability Initiative available at: https://accountabilityindia.in/sites/default/files/ai-main_fc_recommendations_note_2.pdf

contribution (Janakiraman & Kapur, 2016). More specifically, the Supplementary Nutrition Programme (SNP) under ICDS funding is now shared equally between the Centre and the States. Salaries under ICDS are shared in the ratio 25:75 and for other components the fund sharing ratio is 60:40. For the 8 North Eastern and 3 Himalayan States the ratio is 90:10.[12][13] NHM funding is shared in the ratio 60:40 between the Centre and the State (the ratio being 90:10 for the 8 North Eastern and 3 Himalayan States).13[14]

The intent was that with more untied tax transfers, states' fiscal capacity and autonomy would be enhanced. Thereby, states could fund their own priority schemes, while a fewer number of focused CSS would address national development targets in a spirit of "co-operative federalism" (Government of India [GoI], 2016). This raised serious concerns over the adequacy of fund allocation for some of the crucial social sector schemes such as child development, as states were already experiencing stress on their finances. On one hand, greater devolution was expected to empower states to allocate additional funds to social sectors like health, nutrition, and education as per local needs. On the other hand, policymakers worried that states might divert some of the extra untied funds to other areas (e.g. infrastructure or power supply) at the cost of social expenditures (NITI Aayog, 2015). Some state governments even argued that the 14th FC did "more harm than good," claiming that the increase in devolution did not fully compensate for the reduction in tied grants for welfare schemes, potentially leaving them with fewer total resources for schemes like child nutrition and health (NITI Aayog, 2015). These concerns were not unfounded – initial analysis suggested that the net gain for states was modest once new responsibilities were accounted for. In fact, one study found that in FY 2015-16, the average additional revenue a group of states received from higher tax devolution (about 0.71

[12] https://accountabilityindia.in/publication/saksham-anganwadi-budget-briefs-2022-accountability-initiative-centre-for-policy-research/
[13] https://www.pib.gov.in/newsite/PrintRelease.aspx?relid=148299
[14] https://sansad.in/getFile/loksabhaquestions/annex/184/AU5632_0CywF8.pdf?source=pqals

per cent of their combined GSDP) was almost entirely offset by the extra burden of funding schemes due to reduced central assistance (about 0.69 per cent of GSDP) (Amarnath and Singh, 2019). In the following year, the difference was even smaller, calling into question the narrative that states now had plenty of "free" resources to spend at will (Amarnath and Singh, 2019). Research by Choudhury et al. (2016) on the first year of the 14th FC award similarly found that while aggregate transfers to states increased, many states did not significantly boost social sector spending as a share of GSDP; in fact, social services expenditure (as percent of GSDP) was likely to be lower in a number of states when comparing 2015-16 to the prior year, and most states gave higher priority to economic services over social services in that year (Choudhury et al., 2016) . This evidence suggests that simply increasing untied transfers did not automatically translate into proportionate increases in social spending in all states. The dynamics observed relate to a well-studied phenomenon in public finance known as the flypaper effect – the idea that money "sticks where it hits." In other words, an external grant to a state tends to stimulate public spending more than an equivalent increase in the state's own income or revenue – implying that conditional or unconditional transfers from above lead to higher expenditures at the subnational level than the state might have spent if it had raised the funds itself. The flypaper effect has been documented in India: for example, an empirical study by Lalvani (2002) confirmed that increases in central grants to states had a greater positive impact on states' total and developmental expenditures than similar increases in states' own revenues. This suggests that fiscal transfers can "stick" to public expenditure — often in the sector they are meant for if tied, or to government spending generally if untied. Classical theory would predict that an untied rupee from the Centre should be no different from a rupee of the state's own revenue, but in practice, states tend to spend more when they receive external grants, rather than using them to simply substitute their own spending. One implication is that conditional transfers (like specific purpose grants) may especially boost spending in the

targeted sectors (since the grant is available only for that purpose), whereas unconditional transfers increase overall spending but leave the allocation across sectors to states' political priorities.

In sum, the purpose of Union fiscal transfers in India is two-fold: to fill fiscal gaps and equalize resources across states, and to influence states' spending towards national developmental priorities. The post-2015 shift toward greater tax devolution was aimed at enhancing states' fiscal capacity and autonomy. However, early evidence and scholarly assessments highlight that the impact on social sector and child development spending is not straightforward. While states did get more untied funds, many did not markedly increase the budget share for social sectors like child health, nutrition, and education (Choudhury et al., 2016). The flypaper effect indicates that intergovernmental transfers do spur higher state expenditure, but the composition of that spending in the absence of conditions can diverge from the Union's intentions. This introduces a puzzle: even after a significant restructuring of fiscal federal transfers – with more unconditional money and a rationalized set of schemes – certain longstanding issues persist in Centre–State fiscal relations. Key among these is ensuring adequate child development expenditure: How do we guarantee that additional resources to states translate into better outcomes for children? Does increasing states' fiscal autonomy necessarily lead to higher priority for social sectors, or do tied-grants and oversight remain essential?

The literature reviewed are relevant for assessing the broad fallout on the social sector expenditure and on sectors such as education and health, of the landmark changes in India's fiscal architecture which took effect since 2015-16. The focus of the present study is early childhood development which is the most critical part of overall child development, a crucial sub-sector of the social sector. This chapter of the study mainly seeks to understand the impact of the Central grants that the states receive for the flagship schemes ICDS and NHM (influencing ECD) on the states' own expenditures for the schemes. Sections 2.2 and 2.4 of this

chapter provide brief overviews of the NHM and ICDS, respectively and their relevance for early childhood development. Sections 2.3 and 2.5 juxtapose indicators of child health (IMR and U5MR) and nutrition (Underweight and Stunting) with the budget allocation and releases for NHM and ICDS respectively, to see if patterns of allocations and releases are attuned to the patterns of child health and nutrition status. In Section 2.6, the states' own expenditures on ICDS, NHM and Reproductive and Child Health (RCH) are regressed on the grants that they receive from the Centre for the schemes along with other factors that influence the state's own expenditures on the schemes. The findings are discussed in terms of the impact of the central grants on the state's own expenditures for these ECD schemes. Section 2.7 concludes the chapter with a summary of the findings and their implications.

2.2 National Health Mission and early childhood development

2.2.1 An overview of NHM and its relevance to ECD

The National Rural Health Mission (NRHM) was launched in the year 2005. Its purpose was to provide "accessible, affordable and quality health care" to the rural population, especially the vulnerable among them[15]. NRHM had initially been started in rural areas of 18 states with the worst health indicators and low standards of health infrastructure. The Mission's encouraging performance in rural areas led to the expansion of similar services to other states and urban areas. The programme was renamed National Health Mission (NHM) (Bango & Ghosh, 2022). The National Urban Health Mission (NUHM) was approved by the Cabinet in 2013[16]. The health urban poor living in slums (listed and unlisted) were also to be addressed by the scheme. NHM thus has two sub-missions – NRHM and NUHM. The mission calls for inter-sectoral convergence to address the wide-ranging determinants of health. The five-key components of NHM are: (i) The NRHM – Reproductive and Child Health (NRHM-RCH)

[15] https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=969&lid=49
[16] https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=970&lid=137

Flexible Pool under which financial assistance is provided to Reproductive, Maternal, New-born, Child and Adolescent (RMNCH+A) services and to Health System Strengthening covering infrastructure, human resources, programme management and patient transport services, (ii) NUHM, (iii) Control of communicable diseases, (iv) Control of non-communicable diseases and (v) Infrastructure maintenance assistance to states meet the salary on Family Welfare Schemes (Rao, 2015). NHM also comprises Janani Suraksha Yojana (JSY) and Janani-Shishu Suraksha Karyakram (JSSK) which are critical for maternal and child health. JSY is a cash incentive scheme for mothers (who are economically weaker) for their first or second delivery in a public health centre. Under JSSK, pregnant women who are economically needy can deliver at a public health facility at no cost and their infant can avail free treatment for a year. (Bango & Ghosh, 2022) note significant impact of JSY on increasing natal care and of JSSK on improvements in institutional delivery rates. They also observe that extensive improvements are suggested by the trends in IMR and U5MR after the introduction of NHM.

The Ministry of Health and Family Welfare (MoHFW, 2025) reports that "The National Health Mission (NHM) has significantly contributed to improving India's public health outcomes through its relentless efforts in expanding human resources, addressing critical health issues, and fostering an integrated response to health emergencies. Over the last three years, the NHM has driven substantial progress in multiple areas, including maternal and child health, disease elimination, and healthcare infrastructure. …" It has been reported by the MoHFW that under NHM, 12 lakh Additional Healthcare Workers were engaged, 220 crore vaccinations for COVID-19 were done across the nation, the incidence of TB reduced from 237 per 1 lakh population in 2015 to 195 per 1 lakh population in 2023 with the fall in TB mortality rate from 28 to 22 in the same period besides substantial contributions related to screening under National Sickle Cell Anaemia Elimination Mission, coverage of Measles-Rubella Vaccination Campaign, malaria control efforts, Kala Azar elimination efforts and Pradhan Mantri National

Dialysis Programme. The details of Central releases under NHM from 2014-15 to 2024-25 and expenditure incurred by the Department of Health & Family Welfare (DoHFW) are given in Table 2.1.

Table 2.1

Central releases under NHM and expenditure incurred by Dept. of Health & Family Welfare

Financial Year	Central Release (Rs. in crore)	Expenditure (Rs. in crore)	Release as percentage of Exp.
2014-15	18,039.26	30626.31	58.90
2015-16	18,971.49	33121.39	57.28
2016-17	20,916.63	37671.30	55.52
2017-18	26,842.22	51381.89	52.24
2018-19	26,363.24	52953.94	49.79
2019-20	30,836.88	62397.08	49.42
2020-21	31,278.84	77569.33	40.32

Source: Lok Sabha, unstarred question no. 3847 (to be answered on 11th Aug, 2023) & 1097 (to be answered on 25th July, 2025), MoHFW, GoI

Table 2.2

Child health indicators between 2014 and 2020 (as per SRS of RGI)

Indicator / Year	2014	2020
Infant Mortality Rate (IMR) (per 1000 live births)	39	28
Neonatal Mortality Rate (NMR) (per 1000 live births)	26	20
Under-5 Mortality Rate (per 1000 live births)	45	32

Source: PIB, MoHFW, GoI (18th March 2025)[17]

It can be seen from Table 2.1 that while central releases for NHM increased during the period 2014-15 to 2020-21 from Rs. 18,039 crore to Rs. 31,279 crore, the release amounts as percentage of the expenditures of the DoHFW gradually reduced from 59 per cent in 2014-15 to 40 per cent in 2020-21. Notwithstanding the decline in percentage share of release for NHM out of total expenditures of DoHFW, child and maternal health indicators have shown improvements over time. MoHFW notified the update that as per the Sample Registration System (SRS) released by the Registrar General of India (RGI), there was significant decline

[17] https://www.pib.gov.in/PressReleasePage.aspx?PRID=2112476

(33 points) in the MMR of India from 130 in 2014-16 to 97 in 2018-20 per lakh live births[17]. As presented in Table 2.2, improvements in child health indicators were also noted where decline in IMR, NMR and U5MR can be seen between 2014 and 2020.

2.2.2 Child health status vis-à-vis NHM budget allocation and releases in the states

Tables 2.3 and 2.4 present two of the indicators of child health status (IMR and U5MR) alongside the NHM budget allocation and release amounts of the seventeen general category states for two time periods 2015-16 and 2019-21 corresponding to NFHS-IV and -V, respectively. The budget approved and release amounts are in per-capita terms.

Table 2.3
Child health vis-à-vis NHM budget allocation / release (2015-16)

State	IMR (per 1000 live births)	U5MR (per 1000 live births)	Budget Approved (In Rs.)	GoI Fund Released (In Rs.)	Release (% of Budget Approved)
Andhra Pradesh	34.9 (10)	40.8 (8)	260.09 (9)	128.29 (7)	49.32 (8)
Bihar	48.1 (14)	58.1 (14)	234.06 (10)	111.20 (13)	47.51 (10)
Chhattisgarh	54 (16)	64.3 (15)	440.71 (1)	153.53 (2)	34.84 (16)
Gujarat	34.2 (9)	43.5 (10)	224.96 (12)	109.64 (14)	48.74 (9)
Haryana	32.8 (8)	41.1 (9)	228.58 (11)	115.90 (11)	50.70 (7)
Jharkhand	43.8 (13)	54.3 (13)	366.43 (2)	118.42 (10)	32.32 (17)
Karnataka	26.9 (4)	31.5 (4)	214.51 (14)	120.22 (9)	56.04 (3)
Kerala	5.6 (1)	7.1 (1)	164.62 (17)	91.20 (17)	55.4 (4)
Madhya Pradesh	51.2 (15)	64.6 (16)	311.07 (5)	146.81 (5)	47.19 (11)
Maharashtra	23.7 (3)	28.7 (3)	206.36 (15)	96.24 (16)	46.64 (12)
Odisha	39.6 (11)	48.1 (11)	298.83 (6)	152.34 (3)	50.98 (6)
Punjab	29.2 (7)	33.2 (7)	263.54 (8)	105.00 (15)	39.84 (15)
Rajasthan	41.3 (12)	50.7 (12)	338.70 (3)	179.08 (1)	52.87 (5)
Tamil Nadu	20.2 (2)	26.8 (2)	203.48 (16)	148.77 (4)	73.11 (1)
Telangana	27.7 (6)	31.7 (5)	216.29 (13)	123.00 (8)	56.87 (2)
Uttar Pradesh	63.5 (17)	78.1 (17)	328.95 (4)	137.21 (6)	41.71 (13)

West Bengal	27.5 (5)	31.8 (6)	270.44 (7)	111.66 (12)	41.29 (14)
Summary statistics					
Minimum	5.6	7.1	164.62	91.20	32.32
Maximum	63.5	78.1	440.71	179.08	73.11
Average	35.5	43.2	268.92	126.38	48.55
St. Dev.	13.6	16.9	68.54	22.73	9.20
CV (%)	38.4	39.1	25.49	17.98	18.95
Spearman's rank corr. coeff. of child health indicators and NHM budget allocation/release					
IMR			-0.85	-0.50	0.51
U5MR			-0.84	-0.46	0.53

Source: NFHS-IV; OpenBudgetsIndia

Note: Figures in parentheses indicate ranking of the states for respective columns. In case of child health indicators, rankings are assigned in ascending order; Rank 1 corresponds to the lowest IMR/U5MR while Rank 17 corresponds to the highest IMR/U5MR. However, in case of budget indicators (approved/release/release as % of budget approved) rankings are done in such a manner that the highest budget approved/release/release as % of budget approved is ranked 1 whereas Rank 17 is assigned to the lowest figures corresponding to these indicators.

Table 2.4

Child health vis-à-vis NHM budget allocation / release (2019-21)

State	IMR (per 1000 live births)	U5MR (per 1000 live births)	Budget Approved (In Rs.)	GoI Fund Released (In Rs.)	Release (% of Budget Approved)
Andhra Pradesh	30.3 (8)	35.2 (8)	475.18 (7)	208.53 (6)	43.88 (7)
Bihar	46.8 (16)	56.4 (16)	352.47 (15)	148.51 (15)	42.13 (8)
Chhattisgarh	44.3 (15)	50.4 (15)	620.03 (1)	334.26 (2)	53.91 (4)
Gujarat	31.2 (10)	37.6 (9)	371.58 (13)	145.06 (17)	39.04 (14)
Haryana	33.3 (11)	38.7 (11)	439.58 (12)	181.52 (11)	41.29 (10)
Jharkhand	37.9 (13)	45.4 (13)	456.52 (8)	157.78 (14)	34.56 (17)
Karnataka	25.4 (5)	29.5 (6)	448.57 (10)	185.06 (10)	41.25 (11)
Kerala	4.4 (1)	5.2 (1)	584.31 (2)	222.67 (5)	38.11 (15)
Madhya Pradesh	41.3 (14)	49.2 (14)	560.48 (3)	283.18 (3)	50.52 (5)
Maharashtra	23.2 (4)	28.0 (4)	353.33 (14)	148.03 (16)	41.90 (9)
Odisha	36.3 (12)	41.1 (12)	478.63 (6)	355.34 (1)	74.24 (1)
Punjab	28.0 (7)	32.7 (7)	317.19 (17)	188.01 (9)	59.27 (2)
Rajasthan	30.3 (8)	37.6 (9)	503.62 (5)	253.95 (4)	50.43 (6)

Tamil Nadu	18.6 (2)	22.3 (2)	504.04 (4)	199.76 (7)	39.63 (13)
Telangana	26.4 (6)	29.4 (5)	440.67 (11)	178.70 (12)	40.55 (12)
Uttar Pradesh	50.4 (17)	59.8 (17)	455.39 (9)	164.45 (13)	36.11 (16)
West Bengal	22.0 (3)	25.4 (3)	350.90 (16)	193.72 (8)	55.21 (3)
Summary statistics					
Minimum	4.4	5.2	317.19	145.06	34.56
Maximum	50.4	59.8	620.03	355.34	74.24
Average	31.2	36.7	453.68	208.74	46.00
St. Dev.	11.0	13.0	83.63	61.31	9.86
CV (%)	35.3	35.5	18.43	29.37	21.43
Spearman's rank corr. coeff. of child health indicators and NHM budget allocation/release					
IMR			-0.09	0.04	-0.06
U5MR			-0.11	0.02	-0.08

Source: NFHS-V; OpenBudgetsIndia
Note: Same as for Table 2.3

It may be seen from tables 2.3 and 2.4, that during 2015-16, there was high negative correlation between the ranks of the states in terms of the child health indicators and the budget approvals (-0.85 and -0.84 for IMR and U5MR, respectively) and moderate negative correlation between the former and GoI releases (-0.50 and -0.46 for IMR and U5MR, respectively) for NHM indicating that states with high IMR and U5MR tend to have higher allocations and releases for NHM. However, high negative correlation between the rank of the states in terms of child health indicators and Budget Approvals become low to negligible (-0.11 for U5MR and -0.09 for IMR) and moderate negative correlation between the rank of the states in terms of child health indicators and GoI releases, observed during 2015-16 becomes positive but of negligible strength (0.04 and 0.02 for IMR and U5MR, respectively) during 2019-21. These trends seem to indicate the fact that central grants were made more or less in line with the health status of the states i.e. states having better health status were given lower budget approvals and releases as compared to states with poor health status. This relationship was more pronounced during 2015-16 as compared to 2019-21. This may be attributed to reduced central support for many

of the social sector schemes post 2015-16. For instance, Tables 2.3 and 2.4 show that during 2015-16, states like Kerala and Maharashtra having low IMR and U5MR account for low budget approved & released amounts while during 2019-21 Kerala which still had the lowest IMR among the states had the second largest budget approved amount and fifth largest amount released. Maharashtra which had a low IMR showed low budget approved and released amounts. Tamil Nadu, another state that had low IMR and U5MR in both periods had small budget approved amounts during the former period while having large budget approval during the latter period. Similarly, states with high IMR and U5MR such as UP, Chhattisgarh and MP during 2015-16 had high budget approvals and releases while during 2019-21, UP which had the highest IMR and U5MR had the ninth highest budget approved amount with low releases, Chhattisgarh which had the third highest IMR and U5MR had the highest budget approved amount and the second highest releases, while Bihar which had the second highest IMR and U5MR had the third lowest budget approved and released amounts.

Actual release of funds was lower than the originally approved budgets for all of the states during both periods suggesting that the allocations and releases for NHM do not seem to help in ensuring minimum standards of ECD services in the states. The lowest rates of release as percentage of budget approved were observed in Jharkhand during both the periods at 32.32 per cent and 34.56 per cent for 2015-16 and 2019-21, respectively. The highest rates of release were found to be in Tamil Nadu (73.11 per cent) during the former period and in Odisha (74.24 per cent) during the latter period (Refer Tables 2.3 and 2.4).

2.3 Integrated Child Development Services and early childhood development

2.3.1 An overview of ICDS and its relevance to ECD

The Integrated Child Development Services (ICDS) was launched in the year 1975 as the flagship programme of the Government of India (GoI) aimed at providing basic education, health, and nutrition services for early childhood development. These objectives are met through a package of six services - Supplementary Nutrition Programme (SNP), Non-formal Pre-School Education (PSE), nutrition and health education, immunisation, health check-ups and Referral Services. The first three services are provided by the Ministry of Women and Child Development (MoWCD), and the remaining three are delivered by the Ministry of Health and Family Welfare (MoHFW) through the NHM & Health System. GoI renamed and restructured ICDS into the Umbrella ICDS in Financial Year (FY) 2016-17. The number of sub-schemes under Umbrella ICDS was further increased in 2017, with the re-establishment of the National Nutrition Mission (NNM) – an apex body for all nutrition related activities and the launch of the Pradhan Mantri Matru Vandana Yojana (PMMVY) (Kapur & Shukla, 2020). Again, in the Financial Year (FY) 2021-22, the Government of India (GoI) restructured the Integrated Child Development Services (ICDS) and POSHAN (Prime Minister's Overarching Scheme for Holistic Nourishment) Abhiyaan into Saksham Anganwadi and POSHAN 2.0. The sub-schemes of the restructured scheme are – ICDS, POSHAN Abhiyaan, Scheme for Adolescent Girls (SAG) and National Creche Scheme (Kapur & Shukla, 2022).

Budget allocation and expenditure details of Anganwadi Services (under ICDS), the largest scheme run by MoWCD during 2016-17 to 2020-21 are presented in Table 2.5.

Table 2.5

Anganwadi services budget allocation and expenditures

Sl. No.	Years	Budget Estimates (in Rs. Crore)	Revised Estimates (in Rs. Crore)	Expenditure (in Rs. Crore)	Exp. Percentage w.r.t. RE
1.	2016-17	14,000.00	14,560.60	14,430.31	99.11%
2.	2017-18	15,245.19	15,245.19	15,155.34	99.41%
3.	2018-19	16,334.88	17,890.00	16,811.71	94.03%
4.	2019-20	19,834.37	17,704.50	16,891.99	95.41%
5.	2020-21	20,532.38	17,252.31	15,784.39	91.49%

Source: Report No. 338, Dept.-related Parliamentary Standing Committee on Education, Women, Children, Youth and Sports, Rajya Sabha[18].

It can be seen from Table 2.5 that the absolute amounts of budget estimates, revised estimates and expenditures have mostly increased during the years 2016-17 to 2020-21, except for 2020-21. However, Kapur & Shukla (2022) point out that allocations for Anganwadi Services as the share of total MoWCD budget decreased year on year. The share of the scheme decreased from 89 per cent in FY 2014-15 to 68 per cent in FY 2019-20. The allocation for the scheme was Rs. 17,705 crore in FY 2019-20 and Rs. 17,252 crore in FY 2020-21 and accounted for 68 per cent of MoWCD budget in both the years.

Under SNP, typically Take-Home Ration (THR) is provided to children (6-36 months) and for Pregnant and Lactating Mothers (PLM). Snacks/Hot-cooked Meals are given to children (3-6) years. However, THR is also provided for severely malnourished children (3-6 years) and out-of-school adolescent girl (11-14 years) (GoI, 2019). PSE covers children (3-6 years). Table 2.6 presents the trends in beneficiary coverage of Anganwadi Centres (AWCs) in terms of the beneficiaries of SNP and PSE.

[18]https://sansad.in/getFile/rsnew/Committee_site/Committee_File/ReportFile/16/162/338_2024_6_11.pdf?source=rajyasabha

Table 2.6

Trends in coverage of SNP and PSE under ICDS

Year	Operational AWCs	Number of Beneficiaries (In Lakh)	
		Supplementary Nutrition Programme	Pre-School Education
2015-16	13,49,563	1021.31	350.35
2016-17	13,54,916	983.42	340.52
2017-18	13,63,021	892.77	325.91
2018-19	13,72,872	875.61	301.92
2019-20	13,81,376	855.05	245.04
2020-21	13,87,432	831.83	230.38

Source: Annual Reports of 2020-21[19] & 2021-22[20] of MoWCD, GoI

Over the years, decrease in the number of eligible people availing both SNP and PSE services is observed. ICDS Management Information System shows that during the period March 2016 to March 2021, there was a decrease of 18 per cent in the number of beneficiaries of SNP from 1,021 lakh to 832 lakh and the number of beneficiaries of PSE reduced by 34 per cent from 350 to 230 lakh. Some of the causes of this declining trend in the number of beneficiaries could be the corresponding decline in the number of children under 6 years of age and improvements in data reporting and updating of beneficiaries (reflecting closer to actual number of beneficiaries).

Despite the fall in absolute numbers of beneficiaries of SNP and PSE, Singh et. al. (2024) note their findings as follows: At the national level, utilization of ICDS services among children aged 6–59 months increased from 58 per cent to 71 per cent during 2015-16 to 2019-21, respectively. The programme's progress was substantial in urban areas across the states. The authors report that there was 5 percentage point decline in underweight among children between the two periods of time. 9 - 12 per cent of that decline was explained by improvements

[19] https://wcd.gov.in/documents/uploaded/1705991585.pdf
[20] https://wcd.gov.in/documents/uploaded/1705991476.pdf

in coverage and service delivery of ICDS between 2015-16 to 2020-21. They observe that their findings suggest that childhood underweight reduction in India could be affected by optimising intervention quality under ICDS.

2.3.2 Child nutritional status vis-à-vis ICDS budget allocation and releases in the states

Between 2015-16 and 2019-21, ICDS as a scheme evolved over the years in terms of its structure and components turning into Umbrella ICDS with the inclusion of other sub-schemes. Therefore, as shown in Table 2.7, for issues of comparability only the last round of NFHS i.e. NFHS-V (2019-21) has been considered along with relevant years' budget data (budget approvals & releases in per capita terms for ICDS-SNP and ICDS-General for 2020-21) of different states for the purpose of analysis in this section.

Table 2.7
Child nutrition vis-à-vis ICDS budget allocation / release (2019-21)

State	Stunting (%)	Underweight (%)	Budget Approved (In Rs.)	GoI Fund Released (In Rs.)	Release (% of Budget Approved)
Andhra Pradesh	31.20 (6)	29.60 (6)	228.07 (6)	204.29 (4)	89.57 (1)
Bihar	42.90 (17)	41.00 (17)	219.13 (7)	168.82 (6)	77.04 (11)
Chhattisgarh	34.60 (10)	31.30 (8)	355.63 (1)	269.06 (2)	75.66 (12)
Gujarat	39.00 (14)	39.70 (16)	163.04 (13)	139.80 (12)	85.74 (7)
Haryana	27.50 (4)	21.50 (3)	139.69 (16)	96.47 (16)	69.06 (14)
Jharkhand	39.60 (15)	39.40 (15)	257.70 (4)	191.38 (5)	74.26 (13)
Karnataka	35.40 (12)	32.90 (12)	234.34 (5)	160.61 (9)	68.54 (15)
Kerala	23.40 (1)	19.70 (2)	170.58 (11)	150.55 (11)	88.26 (3)
Madhya Pradesh	35.70 (13)	33.00 (13)	258.91 (3)	227.41 (3)	87.83 (5)
Maharashtra	35.20 (11)	36.10 (14)	170.49 (12)	151.77 (10)	89.02 (2)
Odisha	31.00 (5)	29.70 (7)	331.31 (2)	291.37 (1)	87.94 (4)
Punjab	24.50 (2)	16.90 (1)	133.42 (17)	88.55 (17)	66.37 (17)
Rajasthan	31.80 (7)	27.60 (5)	155.23 (14)	125.57 (15)	80.89 (9)
Tamil Nadu	25.00 (3)	22.00 (4)	149.03 (15)	125.98 (14)	84.53 (8)

Telangana	33.10 (8)	31.80 (9)	188.56 (10)	162.12 (8)	85.98 (6)
Uttar Pradesh	39.70 (16)	32.10 (10)	200.23 (9)	134.34 (13)	67.09 (16)
West Bengal	33.80 (9)	32.20 (11)	211.19 (8)	165.45 (7)	78.34 (10)
Summary statistics					
Minimum	23.40	16.90	133.42	88.55	66.37
Maximum	42.90	41.00	355.63	291.37	89.57
Average	33.14	30.38	209.80	167.86	79.77
St. Dev.	5.48	6.82	61.83	53.36	8.12
CV (%)	16.54	22.43	29.47	31.79	10.18
Spearman's rank corr. coeff. of child health indicators and ICDS budget allocation/release					
Stunting			-0.44	-0.33	0.22
Underweight			-0.44	-0.43	-0.03

Source: NFHS-IV; OpenBudgetsIndia

Figures in parentheses indicate ranking of the states for respective column

Note: Figures in parentheses indicate ranking of the states for respective columns. In case of child nutrition indicators, rankings are assigned in ascending order; Rank 1 corresponds to the lowest IMR/U5MR while Rank 17 corresponds to the highest Stunting/Underweight. However, in case of budget indicators (approved/release/release as % of budget approved) rankings are done in such a manner that the highest budget approved/release/release as % of budget approved is ranked 1 whereas Rank 17 is assigned to the lowest figures corresponding to these indicators.

Table 2.7 suggests moderate negative correlation between the child nutrition indicators and budget approvals (-0.44 for both stunting and underweight) indicating that states with higher rates of stunting and underweight tend to have higher ICDS budget approvals. However, the strength of the correlation is not strong. Weaker positive correlation between funds released for ICDS and stunting (-0.33) & underweight (-0.43) is seen. Kerala which has the lowest stunting and second lowest underweight rates among the states ranked 11th out of 17 states in terms of the ICDS funds approved and released, respectively. Punjab with the lowest underweight and 2nd lowest stunting rates ranked last in terms of ICDS fund approvals and releases, respectively while for Tamil Nadu which had the 3rd lowest stunting rate among the states, ICDS funds approved were 3rd lowest while fund released were 4th lowest among the states. Fund release was 2nd lowest in Haryana which had the 3rd lowest underweight rate among the seventeen states. Highest rates of stunting and underweight were found in Bihar while its budget

allocation and release were 7th and 6th highest respectively. The 2nd highest stunting rate were observed for Uttar Pradesh with 9th highest budget approval but 5th lowest fund release. Underweight rate was 2nd highest in Gujarat where the budget approval was 5th lowest and releases were sixth lowest. 3rd highest rate of stunting and also of underweight was found in Jharkhand where the budget allocations and releases were 4th and 5th highest, respectively.

The correlation between stunting and 'fund releases as percentage of budget approvals for ICDS' is positive (0.22) indicating that ICDS 'funds released as a share of the budget approvals' tend to be lower for states with high stunting while the correlation between underweight and 'fund releases as percentage of budget approvals' for ICDS is negative (-0.03) indicating that ICDS funds released as a share of the budget approvals' tend to be higher for states with high underweight rates. However, these correlations are weak. The most crucial issue of ECD budgeting marked across the relevant reports and literature is insufficient funds. Hence, lower share of fund releases out of budget approvals for states with higher incidences of stunting and the share of releases out of allocations not being in tandem with the child nutrition indicators bodes greater challenges for the states for ECD.

As it was seen in the case of NHM budgeting, for ICDS too actual release of funds was lower than the original approved budgets for all of the states. The lowest rates of release as percentage of budget approved were observed in Punjab (66.37 per cent), Uttar Pradesh (67.09 per cent) and Karnataka (68.54 per cent) while the highest rates of release were in Andhra Pradesh (89.57 per cent), Maharashtra (89.02 per cent) and Kerala (88.26 per cent). Rao (2015) points out that among the reasons for actual releases being less than the original allocations are the non-submission of utilisation certificates and non-compliance of other norms in time. The Centre's funds allocated to states not fulfilling the compliances are reallocated to other states that comply with the norms. This overlooks the difficulties that some needy states may be facing with regard to low fiscal absorptive capacity and other such limitations that render such states

unable to fulfil the compliances in time. It defeats the purpose of equalisation, that is to mitigate the differences among subnational governments in terms of their fiscal capacities and expenditure needs. Hence, such reallocation practices create more disparities. Rao (2015) recommends building capacity in the states that are non-compliant, easing the norms and introducing multi-year budgeting to enable states to better utilise their allocated funds. These recommendations stand relevant in the context of budget allocations and releases for ICDS as well as NHM.

2.4 Impact of union fiscal transfer on ECD expenditure of the states: Determinants analysis

The econometric analyses carried out in this section seeks to ascertain the impact of union fiscal transfers on the states' own expenditures on NHM and ICDS. The analysis is conducted for 17 major states namely Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh and West Bengal for the 8-year time period from 2014-15 to 2021-22. Thus, with a balanced panel of 136 observations the model is specified as under:

$$SOEXP_{it} = \beta_0 + \beta_1(PCG)_{it} + \beta_2(PCOR)_{it} + \beta_3(PCTD)_{it} + \beta_4(GHP)_{it} + \beta_5(RPNSDP)_{it} + \alpha(\text{State Dum.}) + \lambda(\text{Year Dum.}) + E_{it} \ldots\ldots\ldots\ldots (1)$$

In the regression model specified above, subscripts i and t represent state (i=1…17) and time (t=1…8), respectively.

SOEXP is a state's own per-capita expenditure on a particular service (RCH, NHM or ICDS). PCG stands for per-capita grant to the state on a particular service (RCH, NHM or ICDS), PCOR represents per-capita own revenues of the state and PCTD represents per-capita tax devolution to the state. GHP stands for health priority of the state government, measured as the share of its expenditure on medical and public health in its aggregate expenditure and RPNSDP represents real per-capita net state domestic product (2011 series) of the state. This regression

model therefore considers a combination of both, variable of interest namely PCG as well as controlled variables namely PCOR representing a state's own revenue base, PCTD representing the state's share of general-purpose transfers, GHP representing the state's health priority and RPNSDP representing the state's level of development. It may be noted that a state's own expenditure on a particular scheme is derived by subtracting central share on that scheme from total expenditure of the state (including central share) on that scheme. It requires mentioning that, ideally for ICDS, instead of GHP, state priority for early childhood development ought to be considered, which would be the ratio of ECD expenditure of a state to its total expenditure for our sample period from 2015-16 to 2019-21. However, constrained by the availability of data on state-wise ECD expenditure we are compelled to rely on GHP as the proxy for early childhood development priority of the state.

In light of the above discussion, three specifications of the regression model in eq. (1) have been estimated using robust Ordinary least squares technique in a panel framework. These specifications differ in terms of the dependent variable (per-capita own expenditure on RCH denoted as PCOERCH, per capita own expenditure on NHM denoted as PCOENHM and per-capita own-expenditure on ICDS denoted as PCOEICDS) and the variable of interest, per-capita grants (per-capita grant for RCH denoted as PCGRCH, per-capita grant for NHM denoted as PCGNHM and per-capita grant for ICDS denoted as PCGICDS).

The data source for all expenditure series corresponding to RCH, NHM and ICDS is primarily the Finance Accounts of respective states released by the CAG. The grant component of these three schemes is generally compiled from parliament question and answers as well as Health Management Information System (HMIS) of NHM. The data on other fiscal indicators namely (own revenues, tax devolution, expenditure on medical and public health and aggregate expenditure has been compiled from RBI database on State Finances: A Study of Budgets. Central Statistical Office (CSO), Ministry of Statistics and Programme Implementation has

been relied upon for per-capita NSDP series. Population Projections for India and states 2011-2036 has been used for state-wise projected total population of various years used to compute expenditures, revenues and grants in per-capita terms.

Before we proceed to estimate our panel regression models, it is imperative to choose the type of panel regression i.e. fixed-effect or random-effect. For this purpose, we conducted the Hausman Test, the results of which are reported in Table 2.8. The Hausman Test supports the estimation of two-way fixed effects models corresponding to PCOERCH and PCOENHM as the dependent variables while estimation of a two-way random effects model is supported by the test when PCOEICDS is the dependent variable.

Table 2.8

Correlated Random Effects - Hausman Test

Dependent variable	Cross-section random	Period random	Cross-section and period random
PCOERCH	11.15 **	0 #	7.45
PCOENHM	0 #	0 #	118.14***
PCOEICDS	0 #	0 #	0 #

Note: 1) The relevant Hausman Test statistic is Chi-Sq. statistic with 5 d.f. in each case. 2) *** and ** indicate level of significance at 1 percent and 5 percent level, respectively, 3) # implies that the test is invalid and Hausman Test statistic is set to 0.
Source: Author's computation using E-views 11

Guided by the Hausman Test results of Table 2.8, Table 2.9 summarizes the regression estimation results.

Table 2.9

Regression estimation results

Dependent Variable: PCOERCH A				
Variable	Coefficient	Robust Std. Error	t-statistic	Prob.
C	59.18	92.66	0.64	0.52
PCGRCH	0.33	0.25	1.34	0.18
PCOR	0.01	0.004	3.17	0.00
PCTD	0.005	0.007	0.64	0.52
GHP	-17.18	8.96	-1.92	0.06
RPNSDP	-0.0006	0.0007	-0.78	0.44
R-squared	0.73			
Adjusted R-squared	0.66			
F-statistic	10.19			
Prob(F-statistic)	0			
Dependent Variable: PCOENHM A				
Variable	Coefficient	Robust Std. Error	t-statistic	Prob.
C	19.22	73.02	0.26	0.79
PCGNHM	-0.58	0.12	-4.86	0.00
PCOR	0.014	0.003	5.19	0.00
PCTD	0.02	0.006	3.73	0.00
GHP	-8.92	7.06	-1.26	0.21
RPNSDP	-0.0003	0.0006	-0.48	0.64
R-squared	0.73			
Adjusted R-squared	0.67			
F-statistic	10.59			
Prob(F-statistic)	0			
Dependent Variable: PCOEICDS B				
Variable	Coefficient	Robust Std. Error	t-statistic	Prob.
C	-4.59	43.62	-0.11	0.916
PCGICDS	0.37	0.14	2.73	0.007
PCOR	-0.006	0.003	-1.92	0.057
PCTD	0.012	0.006	2.08	0.04
GHP	-7.02	7.15	-0.98	0.328
RPNSDP	0.0008	0.0004	1.97	0.051
R-squared	0.14			
Adjusted R-squared	0.11			
F-statistic	4.26			
Prob(F-statistic)	0.001			

Note: A stands for two-way fixed effects model while B indicates two-way random effects model.
Source: Author's computation using E-views 11

Table 2.9 shows the regression results related to the three dependent variables as specified above. The findings presented therein indicate positive association of per capita grants with per capita own expenditure on RCH suggesting that the states augment their own expenditure on the scheme by the grants received from the centre. This observed association between per capita

RCH grants and per capita own expenditure of states on RCH is however not statistically significant for our data. Every rupee of per capita grants on RCH tends to increase states' per capita own expenditure on the scheme by 0.33 paise. Per capita own revenue of the state and government health priority (GHP) are significant at 1 per cent and 10 per cent level of significance. We see positive association between per capita own revenue of the state and per capita own expenditure on RCH. However, a negative association is observed between GHP and the dependent variable. This could perhaps reflect state government's focus on health services other than RCH, thereby suggesting less priority accorded to RCH or due to the state authority's perception of being satisfied with its provision of RCH services. Per capita tax devolution and real per capita net state domestic product show positive and negative associations, respectively with the dependent variable but they are not significant at any reasonable level. It may be inferred that states with greater fiscal autonomy tend to prioritise RCH expenditure. Yet, higher incomes of the states do not necessarily ensure higher expenditure for RCH and increase in income levels tend to be associated with reallocation of funds away from RCH.

It may further be seen from Table 2.9 that per capita NHM grants to the state seems to negatively impact per capita own expenditure of the states on NHM and it is significant at 1 per cent level. Similar findings about the substitutionary effect of central grants for NHM on the state's own expenditures for the scheme have been reported by Rao and Choudhury (2012) and Srinath et al. (2018). Every rupee of per capita central grants for NHM to the states tends to reduce the spending of the states by 0.58 paise thereby indicating that the states do substitute a substantial portion of their own expenditure on NHM by the grants that they receive from the centre for NHM, by reducing non-aided portion of their health expenditures. Per capita own revenues and per capita tax devolution to the states are both positively associated with the dependent variable and they are significant at 1 per cent level. Real per capita net state domestic

product and government health priority turn out to be negatively associated with the state's real per capita own expenditure on NHM but they are not significant. This suggest that states with higher fiscal autonomy tend to prioritise NHM for fund allocation. However, with higher levels of development and when the states' raise their own expenditure on health, competing priorities take lead and the states tend to allocate funds away from NHM.

Table 2.9 shows that per capita union grants for ICDS seem to exert a highly significant (at 1 per cent level) positive influence on the states own expenditure on ICDS. A rupee of per-capita ICDS grants is associated with increase in the states' own spending on the scheme by 0.37 paise. This indicates that the states do not substitute their own spending on ICDS but follow the norm associated with central grants by augmenting their own expenditure on ICDS with the central grants for the scheme. States' per capita own revenues significant at 10 per cent level and Government health priority although insignificant, are negatively associated with the dependent variable thereby suggesting that increases in the states' own revenues and increases in the share of the states' medical and health expenditure out of the total expenditure tend to reduce the states' own spending on ICDS. Perhaps, the states on an average find themselves encouraged to spend more on ICDS only when they get central grants for the same while they would generally be directing own revenues and expenditures on health, elsewhere. Per-capita tax devolution (statistically significant) and real per-capita net state domestic product (marginally significant) appear to be positively associated with the dependent variable. They seem to show respectively the association of greater fiscal autonomy and better economic status with increased own spending of the states on ICDS. However, the small magnitudes of the associations suggest that PCTD and RPNSDP do not exert strong influence on PCOEICDS possibly due to competing expenditure demands and varying priorities across the states. This perhaps reflects that the states tend to spend on priorities other than ICDS.

With regard to the influence of the variable of interest (per-capita grants on specific schemes) on the states' own expenditures on specific schemes, it is seen that the state governments tend to augment their own expenditures on RCH and ICDS by the central government grants. However, with regard to NHM, they tend to substitute their own expenditures on the scheme by central government grants. This seems to reflect that, conditionalities associated with specific purpose grants on RCH and ICDS encourage states to spend more on child development while they could be having other priorities for the health sector in general such as secondary and tertiary health care.

2.5 Conclusion

In the context of inadequate funding being one of the crucial issues plaguing child budgeting in India, it is important to note the findings that the correlation exercise between indicators of child nutrition and health and budget approvals and releases brought out. The findings indicated a favourable scenario during 2015-16 when higher budgetary approvals and releases seemed to be associated with the states having low levels of child health. Larger funding to such states is expected to help them in improving their child health status. However, these associations fizzle out during 2019-21 showing only moderate to low correlation between the indicators of child nutrition and health and budget approvals for ICDS and NHM. It may possibly be due to the lowered central support for CSS to the states. It was also seen that releases are persistently lower than the budget approvals for the two early childhood development interventions. This makes it important to allocate funds and release the approved budgets more in tandem with the requirement of the states in terms of their prevailing status of early childhood development. Moreover, increasing the share of releases out of the approved budgets for all states is imperative. The increases should be done by creating enabling conditions for efficient utilisation of funds, even for those states that seem to be non-compliant to some of the norms, due to their fiscal limitations such as lower absorptive capacity. This would help in ensuring

optimum utilisation of allocated budgets for early childhood development. It would also aid in moving towards the goal of fiscal equalisation providing further help in achieving balanced early childhood development across the states. Findings of the regression analyses indicate that the states augment their own expenditures on RCH and ICDS by the central grants for these schemes. It could be the result of states being encouraged and even bound by the conditionalities of specific purpose transfers for RCH and ICDS to increase spending for early childhood development. However, states on an average, adopt the undesirable practice of substituting their own expenditures on NHM by central transfers. The practice deviates from the norms and the purpose of central grants, that are meant to serve as support or additives for the states to prioritise crucial social services by making adequate own-expenditures for such services. Perhaps the autonomous priorities of states in terms of general health may be areas other than early childhood development, such as secondary and tertiary health. This requires correction so that states augment their own expenditures by central grants for all social services including those that are crucial for early childhood development, such as NHM. Post fourteenth finance commission, central support to states was reduced in terms of lower specific purpose transfers. Hence, sufficient own expenditure by states for all schemes related to early childhood development becomes even more crucial.

Chapter 3

Benefit Incidence Analysis of early childhood development expenditures of the states

3.1 Introduction

The findings of chapter-2 indicate a favourable scenario where states augment their own expenditures on schemes and services that have full bearing on ECD such as RCH and ICDS by the central grants on these services. Yet, the findings also reveal that the states in general could have priorities other than child health such as secondary and tertiary health care. Moreover, central releases are found to be persistently lower than the already insufficient budget approvals for these schemes, crucial for early childhood development. Hence, it becomes imperative for the ECD expenditures (in such fiscally constrained scenario) of the states, to be assessed in terms of the distribution of benefits of the expenditure and utilisation of these ECD services. Out of the various effects of public expenditures on the relevant population, such as, the macroeconomic effects, primary-income generating effects and transfer effects. Benefit incidence analysis is mainly concerned with the third one and specifically the in-kind transfers rather than the cash or monetary transfers affected by government expenditures. The in-kind transfers create transfer effects or benefit incidence that affect the short-run well-being as well as the long-run income generating capacities of beneficiaries. Benefit Incidence Analysis in general seeks to assess, who benefits from government expenditures on merit goods such as health, education and infrastructure (Demery, 2000). In line with the concept of benefit incidence analysis, this chapter deals with the question of 'who benefits from government expenditure on early childhood development?' It seeks to assess if the coverage of ICDS and NHM differ with regard to beneficiaries grouped in terms of wealth quintiles or location (rural & urban). However, the focus of this chapter is the distribution of benefits or the benefit incidence of public expenditure on ICDS and NHM upon

its various beneficiary categories such as children and women. The benefit incidence analysis is done by examining the service utilisation patterns of ICDS and NHM to ascertain if the state government expenditures on these services are efficiently targeted towards the vulnerable and needy groups of beneficiaries. The following section (3.2) discusses the conceptual framework of benefit incidence analysis along with a review of literature, methodology and data sources for the analysis done in this chapter. The next section (3.3) analyses the patterns in the coverage of ECD initiatives of the states. This quintile-wise and location-wise (rural vs urban) coverage analysis of ICDS and NHM is done in terms of select indicators crucial for early childhood development. This is followed by the presentation of the results and findings of the benefit incidence analysis by groups of beneficiaries in Section 3.4. BIA is done in terms of ICDS-SNP and -PSE and NHM (RMNCH) utilisation proportions of various beneficiary groups and the targeting of public expenditures towards the most vulnerable beneficiary group. The last section (3.5) concludes the chapter with the summary of findings.

3.2 Conceptual framework of benefit incidence analysis

The in-kind transfers (rather than the cash or monetary transfers) to the beneficiary population generated by public expenditures on merit goods is focused upon by benefit incidence analysis (BIA). Subsidised services such as health, education and infrastructure comprise in-kind transfers and they have short- and long-run bearings on the well-being and income-earning capacities of the beneficiaries. The current and capital transfers to the recipients, created by public expenditures on merit goods, are termed as ‘transfers effects’ or ‘benefit incidence’ of such expenditures (Demery, 2000). The analysis done here focuses on these transfer effects, to assess the distribution of benefits from the in-kind transfers resulting from public expenditure on early childhood development.

3.2.1 Theoretical underpinnings of benefit incidence

Distributional impact analysis of public expenditure on social services including early childhood development services can be done based on two theoretical approaches, by using benefit incidence or behavioural approaches. The latter rests on the notion that the individual's own valuation of a publicly provided good is to be used for its evaluation. This approach requires information on the underlying demand functions and the willingness to pay, of households/individuals and renders its less practicable.[21] The former is relatively simple and practicable in its method making it popular for analysing the distributional impact of government expenditure on publicly provided goods. This approach requires computing unit cost in relation to individual utilisation rates of public services and assesses the extent of targeting of public expenditures on social services to specific groups of the beneficiary population such as those in terms of income quintiles, location or gender (Chakraborty et al., 2016).

The analysis presented here uses the benefit incidence approach and is based on the theoretical framework and conceptual grounding provided by Davoodi, Tiongson, and Asawanuchit (2003). Many other benefit incidence studies of various public expenditures, such as those done by Chakraborty et al. (2013), Bhadra (2015), Chakraborty et. al. (2016) and Kaur et al (2020), are also based on the conceptual framework of Davoodi, Tiongson, and Asawanuchit (2003). These studies use concentration curves (or Lorenz curves) to analyse benefit incidence and targeting of public expenditure on merit/social goods. The basic steps for calculating benefit incidence of public expenditure in line with studies such as Demery (2000) and others mentioned in this paragraph, can be listed as follows:

[21] For a summary of these two methods of benefit incidence analysis, one may refer to Selden and Wasylenko (1992), Sahn and Young (1999), Young (1999, 2003), Demery (2000), Davoodi et al. (2003), Akram and Khan (2007), McIntyre and Ataguba (2010), amongst others.

Step-1: Estimating the unit cost – The government expenditure for provision of the public service is divided by the total number of beneficiaries of the service. This may also be taken to be the average benefit.

Step-2: Identifying users – The user population (individuals or households) of the public service is identified from household surveys usually categorising the user population into poor and non-poor, male or female headed households, location (rural and urban), etc.

Step-3: Grouping of users – Usually, the user population (individuals or households) is ranked with regard to per-capita income or consumption expenditure and grouped by deciles or percentiles from poorest to richest. Yet, the grouping may also be done based on other categories such as location (rural vs urban) and gender.

Step-4: Calculating the benefit incidence (distribution of benefits) – The unit cost (or average benefit) estimated earlier is multiplied by the user population (number of users/households) of the service in each user group (categorised in terms of income or other criteria). The above states can be mathematically represented as under:

$$X_j \equiv \Sigma_i U_{ij}(S_i/U_i) \equiv \Sigma_i (U_{ij}/U_i)S_i \equiv \Sigma_i e_{ij} S_i$$

Where

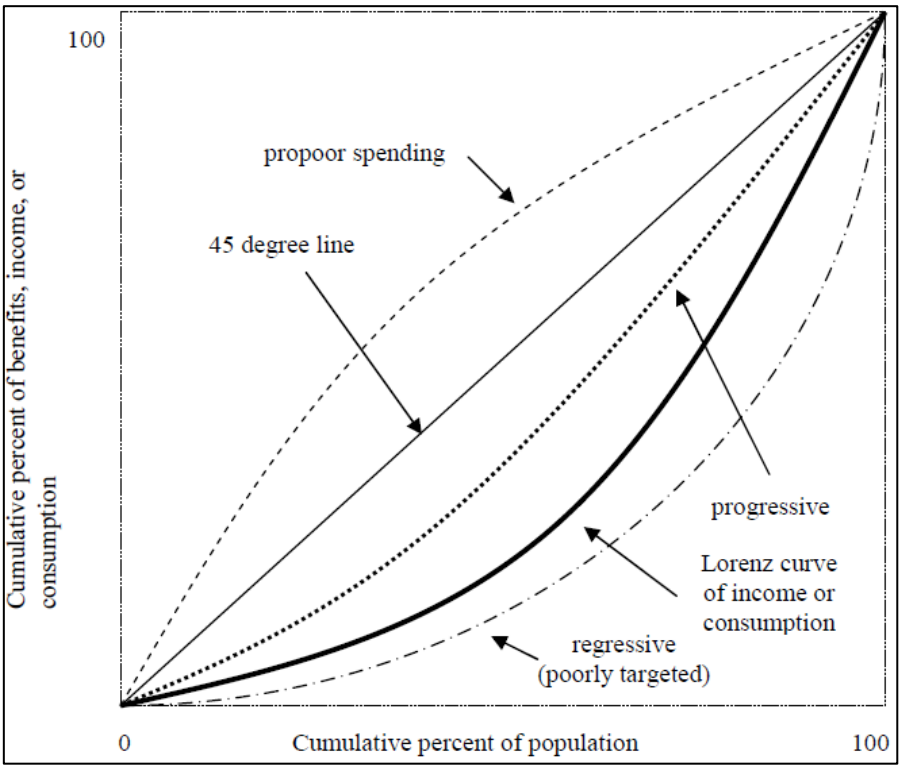
- X_j = sector specific subsidy enjoyed by group j
- U_{ij} = utilisation of service i by group j
- U_i = utilisation of service i by all groups combined
- S_i = government net expenditure on service i
- e_{ij} = group j's share of utilisation of service i

Typically, the benefit of publicly provided merit goods in cumulative percent is plotted on the y-axis against the per capita income/per capita consumption expenditure in cumulative precent grouped and ordered in terms of quintiles or deciles, on the x-axis to get the concentration curve

as done in the Figure 3.1 presented below. Two other lines as reference for comparisons need to be plotted. A 45-degree diagonal line as the line of equality and a Lorenz curve. The benefit concentration curve is compared to these two lines (curves) to ascertain whether the public expenditure on the merit good is progressive or otherwise. When a benefit concentration curve is situated between the two other lines, the public expenditure is acknowledged as progressive (a larger share of the benefits from public expenditure go to the lower-income groups than the share of income/consumption accruing to them). A benefit concentration curve lying below the Lorenz cure is understood to indicate regressive or pro-rich government expenditure on the publicly provided good. The convex shaped benefit concentration curve situated above the line of equality indicates pro-poor public expenditure on the merit good interpreted that the bottom-quintile is disproportionately benefitted in absolute terms and with regard to their share in the population (Davoodi, Tiongson, and Asawanuchit, 2003; Chakraborty, 2013; Bhadra, 2015).

Figure 3.1

Benefit concentration curves for government spending and benchmark curves



Source: Davoodi, Tiongson, and Asawanuchit (2003)

The standard approach to the assessment of Benefit Incidence using concentration curves is simpler and popular and have been used often to examine the distributional impacts of government expenditure on public provision of social goods. Yet they are not always practicable as the data required quintile wise or as per other required categories may not always be available.

The concentration curve approach of BIA does not ensure a full-proof method of analysis. Some of the limitations of the approach as discussed by Davoodi, Tiongson, and Asawanuchit (2003) are as follows. It has a weak conceptual framework in terms of not considering any model of underlying behaviour of either households or governments as done by behavioural studies. The approach assumes quite strongly that benefits attached to government services by users provide good approximations of the costs of provision of the services. Moreover, the whole cost of public service provision such as cost of tax administration, pecuniary and non-pecuniary costs are not covered by BIA. The approach is used for static analysis whereas dynamic BIA (considering changes over time) would be more meaningful. However, this study uses two time periods in analysis. The BIA approach also limits itself to studying average incidence of benefits thereby not being able to elaborate on the impact on beneficiaries when government expenditure changes while studies using marginal incidence analysis tend to overcome that limitation.

As an alternative, the demand-function (behavioural) approach to the BIA is based on the idea of 'willingness to pay'. Under this approach, first of all, the demand function for a given social service is estimated. Then the compensated variations derived from the estimates are used to value that social service to the user. In this approach, the compensating variation is equivalent to the unit cost of the standard BIA approach. Younger (1999) applies this approach to measure the benefit incidence of public subsidies on education and health services in Ecuador. The author estimated a nested multinomial logit to model the demands for both services as discrete

choices between no service, public service, and private service. Indirect utility conditional on making a choice j is an additive function of consumption net the cost of the service and the quality of the service received:

$V_j = a*\ln(Y - P_j) + H_j(X) + e_j$,

where Y is household permanent income (proxied by household expenditures); P_j is the price of option j; e_j is the error, which can be correlated across options within a branch; and H_j is the quality of option j, which is a linear function of household characteristics X. H_0 is normalized to zero.

With respect to variation in the value of a given service to different users, a demand function approach for estimating the benefit incidence is more appropriate, but as noted above, it is computationally complex and data-intensive.

3.2.2 Literature Review of Benefit Incidence

The BIA in its earliest forms were done on Canada and the United States by Gillespie (1964) and Gillespie (1965), respectively. Major works on BIA have been done from the International Monetary Fund (IMF) and the World Bank. Some of the important studies on benefit incidence of public incidence on merit goods such as health, education and water are of Lanjouw and Ravallion (1998), Castro-Leal et. al. (1999), Demery (2000) and Davoodi, Tiongson and Asawanuchit (2003). A major part of the benefit incidence analysis studies is related to developing countries. The study on Colombia by Selowsky (1979) showed the progressive nature of primary education expenditure while it found higher education expenditure to be regressive. Primary education expenditure in Malaysia was also found to be progressive by Meerman (1979). Similarly, Demery and Verghis (1994), Castro-Leal et. al. (1999) and Asghar and Zahra (2012) found progressive public spending on primary education but find it to be regressive for secondary and higher education.

Expenditure on merit goods – education, health, water supply, sanitation and other infrastructure in Indonesia, Côte d'Ivoire and Colombia were analysed for their benefit incidence by Demery (2000). Among its findings were that more of the benefits of public expenditure on education went to males than to females. Another surprising finding was that even though a larger share of the total education subsidies went to primary education in Indonesia compared to that in Colombia, a larger share of the total education subsidy in Colombia accrued to the poorest quintiles compared to that in Indonesia. The difference in household behaviour in the two countries was marked by the author as the main reason for the differences in the quintile shares of the subsidy at different levels of education.

Davoodi, Tiongson and Asawanuchit (2003) and Davoodi, Tiongson and Asawanuchit (2012) cover 56 countries during 1960 to 2000 in their study. They find poor targeting of overall public expenditure on education and health with disproportionate shares of benefits on primary education going to the mid-quintiles, especially in heavily indebted poor countries (HIPCs), sub-Saharan Africa and transition economies. Yet, the study notes that targeting improved in the 1990s. The study also finds correlations between factors suggesting that countries where the benefit incidence of public spending on the merit goods of education and health are more pro-poor tend to appear as those with better outcomes of education and health and high per capita income. Wider accessibility to information and good governance also generally tend to prevail in such countries.

Manasan, Cuenca and Villanueva (2007) found progressive distribution of benefits of elementary and secondary education but regressive at the intermediate and college-level, in terms of national averages in Philippines. They found that at the subnational (local government units (LGUs) level, the benefits tend to accrue more towards the urban areas vis-à-vis the rural areas. Their findings also indicate the crucial role of decentralisation of public management and its crucial role in fiscal management and prioritising the social sector. Lustig (2015) found

pro-poor public expenditure on pre-school, primary and secondary education and progressive tertiary education expenditure in majority of the developing countries considered in the study. Health spending was found to be progressive in eight and pro-poor in five of the countries. The author also noted the decline in inequality and redistribution from poor to rich caused by expenditure on health and education. Studies such as Gemmell (1985); Li, Steele and Glewwe (1999) and Heltberg, Simler and Tarp (2001) find that higher income quintiles receive more benefits from government expenditure on education. Other studies such as Son (2006) find government expenditure to benefit the poor more than the rich and Hakro and Akram (2007) find public education expenditure to be progressive. Lanjouw and Ravallion (1994) point out that when the welfare measure is total household expenditure per capita and when households are considered for defining quintiles, usually the number of individuals in poorer households will be more than in richer households. This misrepresents the results, and makes it look as though poorer quintiles benefit more than the rich.

Mahal et. al. (2001) remarked that the best way for providing critical health services in India is through public provision of such services. Lanjouw and Ravallion (1999) reveal that the poorest quintiles in rural India would make higher marginal gains in terms of larger shares of additional public spending on primary education than the benefit that would accrue to them from existing spending. Sankar (2009) finds public spending on elementary and secondary education to be highly regressive (pro-rich) and skewed in favour of males in Bihar but pro-poor with greater gender parity in Kerala. The benefit incidence analysis of public spending on ICDS-SNP in Gujarat, done by Kaur et. al. (2020) suggest that the funds are better targeted at its rightful, most vulnerable group of beneficiaries (children of age 6 months to 3 years). Bhadra (2015) reports the same gender and regional differentials in the benefit incidence of public health expenditure in West Bengal and lower regional differential in Bihar between the two latest rounds of NSS. In Kerala the poor voted with their feet to exit from the public sector

towards the private sector. The state showed more pro-rich targeting of public expenditure. Chakraborty et. al. (2013) finds “seemingly” more equitable public health system in a few states and regressive pattern of public health-care utilisation in other states. The authors caution that underdeveloped private inpatient health care in some of the states could have caused more utilisation of public health facilities making them appear to be more equitable. Yet, patients choosing better private inpatient health care when available and their exit from utilising public health provision, termed as “voting with their feet” was found to be more common only in the higher quintiles. The authors also find government expenditure to be not well targeted to the poor in many states and the access to public and private healthcare seems to be influenced by gender wise behavioural differences. Chakraborty et. al. (2016) highlights the issue of increasing out-of-pocket health expenditures for the lower quintiles, effectively reducing the benefit from public health expenditure. The authors also bring to notice that the exit option taken by the higher quintiles thought to be benefitting the poor (Castro-Leal et. al.,1999), may not be so effective as the voice that more often seeks accountability for service delivery would be weakened. The results of the benefit incidence analysis of subnational Government health expenditure in India reveal wide variations among States in terms of public health system being more equitable in a few States, while regressivity in the pattern of public health-care utilisation is observed in others (Chakraborty et al., 2013). In a study on healthcare utilisation and health facilities in India (Bowser et al., 2019), it is found that Government spending on public health care has not resulted in significantly pro-poor services. While some progress has been made relative to deliveries and outpatient services, inpatient stays are not pro-poor. In addition, national results mask significant disparities across Indian states.

It is seen that benefit incidence analysis to assess the distribution of public expenditure related to merit goods though not rare, internationally as well as in India or even at the sub-national levels has mostly been done with regard to overall health and education. The analysis presented

in this chapter is focused around early childhood development, mainly on the expenditures at the sub-national level on ICDS and NHM.

3.3 Coverage of ICDS and NHM (RMNCH): Some preliminary insights from NHFS

Coverage of ICDS and NHM (RMNCH) in terms of selected indicators have been investigated in this section. The indicators have been chosen so as to construct coverage indices for both ICDS and NHM using the unit level data of NFHS-IV and -V. The definitions of the indicators given in Appendix 1 and Appendix 2 are based on those used in the study of Chakrabarti et. al. (2019) and Panda et. al. (2020) for ICDS and NHM, respectively. A simple average of the percentage utilisation of select services (indicators) under ICDS are used to construct the coverage index of ICDS. The construction of coverage indices for NHM (RMNCH) services are based on indicators used in the Coverage Gap Index constructed by Panda et. al. (2020). Here, the coverage index (CI) for NHM (RMNCH) is the weighted average of eight preventive interventions for maternal and child care as follows:

$$CI = (¼\times(FP+(ORT+ARI)/2+(SBA+ANC)/2+(MSL+2\times DPT3+BCG)/4))$$

Where,

FP – Need for family planning satisfied
ORT – Oral rehydration therapy
ARI – Treatment of acute respiratory infection (PNCM) (ARI)
SBA – Skilled birth attendant
ANC – Antenatal Care coverage
MSL – Measles vaccination
DPT3 – Diphtheria, pertussis and tetanus vaccination
BCG – BCG vaccination

Cross-sectional comparison as well as comparison between the two rounds of the NFHS (2015-16 and 2019-21) of the services under the two schemes have been done with regard to their quintile-wise and location-wise (rural vs urban) coverage at the sub-national level in India.

Here it is to be noted that the unit-level NFHS data has been sourced so as to obtain the quintile-wise and location-wise (rural vs urban) distribution of coverage of beneficiaries of ICDS and NHM (RMNCH) services for each of the seventeen states. This implies that the coverage of beneficiaries by wealth quintile for both services is done irrespective of their location. Similar is the case when the distribution of beneficiaries of ICDS and NHM is done by location which is irrespective of their wealth quintile. While this approach does not take into account the location vs wealth relation of the beneficiaries, it is sufficient to provide an aggregate picture of the concentration of ICDS and NHM (RMNCH) beneficiaries by location and by wealth quintile. The cumulative coverage proportions of the quintiles add up to 1 (or 100 per cent) and the location wise (rural and urban) coverage shares also add up to 1 (or 100 per cent) for each of the states.

3.3.1 Quintile-wise coverage of ICDS

Quintile-wise distribution of coverage of the services under ICDS as indicated by the coverage indices for the seventeen states for NFHS-IV and -V corresponding to the years 2015-16 and 2019-21, have been shown in Table 3.1 and Table 3.2, respectively. The Tables show wide variation during both periods, in the quintile-wise distribution of the coverage of ICDS, among the states. Yet, considering the averages of the quintile-wise ICDS coverage percentages across the states, we see that out of the aggregate beneficiary coverage of ICDS the highest proportion was of the middle quintile (22.77 per cent) and of the poorest quintile (22.60 per cent) during 2015-16 and 2019-21, respectively. The lowest proportion of beneficiaries covered on an average were of the richest quintile during both periods at 13.63 per cent and 14.25 per cent during 2015-16 and 2019-21, respectively. The tables also show that among the states, out of the total beneficiaries covered by ICDS the proportion of those of the bottom quintiles (1 and 2) were highest and the proportion of those of the top quintiles were lowest in states like Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh and West Bengal. On the

contrary, the proportion of those of bottom quintiles were lowest and of those of top quintiles were the highest, out of the total beneficiaries covered by ICDS in states like Haryana, Kerala and Punjab. Such coverage patterns remained mostly consistent during both time periods.

Table 3.1

Quintile-wise coverage (in %) of ICDS across states during NFHS-IV (2015-16)

States	Quintile-1 Poorest (Q1)	Quintile-2 Poorer (Q2)	Quintile-3 Middle (Q3)	Quintile-4 Richer (Q4)	Quintile-5 Richest (Q5)
Andhra Pradesh	5.60 (5)	19.22 (3)	38.66 (1)	26.69 (2)	9.81 (4)
Bihar	58.28 (1)	25.91 (2)	10.57 (3)	4.45 (4)	0.77 (5)
Chhattisgarh	40.41 (1)	25.04 (2)	15.95 (3)	11.05 (4)	7.5 (5)
Gujarat	14.69 (4)	26.14 (2)	27.42 (1)	20.96 (3)	10.79 (5)
Haryana	1.11 (5)	6.89 (4)	21.65 (3)	29.29 (2)	41.07 (1)
Jharkhand	53.77 (1)	24.27 (2)	13.62 (3)	5.95 (4)	2.40 (5)
Karnataka	8.28 (4)	26.96 (2)	34.71 (1)	23.49 (3)	6.52 (5)
Kerala	0.66 (5)	5.17 (4)	16.72 (3)	41.45 (1)	36.01 (2)
Madhya Pradesh	33.51 (1)	25.33 (2)	17.11 (3)	14.52 (4)	9.59 (5)
Maharashtra	13.71 (4)	24.95 (2)	27.95 (1)	23.24 (3)	10.15 (5)
Odisha	42.15 (1)	26.96 (2)	18.34 (3)	9.14 (4)	3.40 (5)
Punjab	0.53 (5)	5.01 (4)	16.54 (3)	26.39 (2)	51.56 (1)
Rajasthan	22.45 (2)	27.79 (1)	21.84 (3)	16.87 (4)	11.05 (5)
Tamil Nadu	3.87 (5)	18.89 (3)	34.83 (1)	31.01 (2)	11.39 (4)
Telangana	8.63 (5)	23.3 (3)	31.41 (1)	27.36 (2)	9.31 (4)
Uttar Pradesh	31.25 (1)	26.74 (2)	20.05 (3)	13.64 (4)	8.31 (5)
West Bengal	30.59 (2)	37.73 (1)	19.74 (3)	9.90 (4)	2.07 (5)
Summary Statistics					
Mean	21.73 (3)	22.14 (2)	22.77 (1)	19.73 (4)	13.63 (5)
Min.	0.53	5.01	10.57	4.45	0.77
Max.	58.28	37.73	38.65	41.45	51.56
Std. Dev.	18.47	8.53	8.00	9.85	14.18
CV (%)	84.99	38.56	35.13	49.92	104.09

Figures in parentheses are the quintile ranks in the corresponding NFHS round.
Source: author's computation using NFHS-IV data.

Table 3.2

Quintile-wise coverage (in %) of ICDS across states during NFHS-V (2019-21)

States	Quintile-1 Poorest (Q1)	Quintile-2 Poorer (Q2)	Quintile-3 Middle (Q3)	Quintile-4 Richer (Q4)	Quintile-5 Richest (Q5)
Andhra Pradesh	5.21 (5)	22.04 (3)	35.82 (1)	26.72 (2)	10.22 (4)
Bihar	50.34 (1)	28.41 (2)	13.52 (3)	6.24 (4)	1.45 (5)
Chhattisgarh	43.15 (1)	23.09 (2)	17.02 (3)	11.72 (4)	5.03 (5)
Gujarat	19.92 (4)	24.59 (1)	23.69 (2)	20.16 (3)	11.60 (5)
Haryana	2.54 (5)	10.42 (4)	18.34 (3)	28.61 (2)	40.12 (1)
Jharkhand	57.75 (1)	22.85 (2)	11.92 (3)	5.77 (4)	1.65 (5)
Karnataka	8.85 (5)	22.55 (3)	32.95 (1)	25.46 (2)	10.21 (4)
Kerala	1.31 (5)	4.45 (4)	19.15 (3)	39.79 (1)	35.30 (2)
Madhya Pradesh	38.99 (1)	23.85 (2)	16.09 (3)	12.74 (4)	8.39 (5)
Maharashtra	13.65 (4)	21.98 (3)	28.24 (1)	25.79 (2)	10.33 (5)
Odisha	41.99 (1)	25.89 (2)	16.90 (3)	10.49 (4)	4.72 (5)
Punjab	1.49 (5)	6.95 (4)	14.34 (3)	26.15 (2)	51.10 (1)
Rajasthan	18.95 (4)	24.91 (1)	23.35 (2)	19.72 (3)	13.05 (5)
Tamil Nadu	3.65 (5)	15.8 (3)	32.97 (1)	31.87 (2)	15.61 (4)
Telangana	5.63 (5)	20.01 (3)	33.80 (1)	29.39 (2)	11.16 (4)
Uttar Pradesh	29.14 (1)	27.78 (2)	19.07 (3)	13.63 (4)	10.38 (5)
West Bengal	41.7 (1)	31.30 (2)	17.29 (3)	7.64 (4)	2.05 (5)
Summary Statistics					
Mean	22.60 (1)	21.00 (3)	22.03 (2)	20.11 (4)	14.25 (5)
Min.	1.31	4.45	11.92	5.77	1.45
Max.	57.75	31.30	35.82	39.79	51.10
Std. Dev.	18.82	7.24	7.61	9.82	13.80
CV (%)	83.26	34.46	34.54	48.81	96.78

Figures in parentheses are the quintile ranks in the corresponding NFHS round.
Source: author's computation using NFHS-V data.

Comparisons of ICDS coverage rates with regard to Q1 and Q5 are made in Table 3.3. It can be seen that the gap (Q5-Q1) and the ratio between the proportion of beneficiaries of richest and poorest quintiles out of the total beneficiary coverage was highest in Punjab followed by Haryana and Kerala during both periods. During 2015-16, that gap was the smallest in Bihar, followed by Jharkhand and Odisha. In 2019-21, smallest gaps between the two quintiles were

seen in Jharkhand, Bihar and West Bengal in descending order. The difference Q5-Q1 was negative and large for states like Bihar, Jharkhand, Odisha and West Bengal. The differences indicated that the proportion of beneficiaries of the poorest quintile was much higher than that of the richest quintile among the total beneficiaries covered by ICDS in these states.

Table 3.3

Comparison of coverage of ICDS between Q5 and Q1 across states for NFHS-IV (2015-16) and NFHS-V (2019-21)

States	Difference (Q5-Q1) (% points)		Richest/Poorest (Ratio of %)	
	2015-16	2019-21	2015-16	2019-21
Andhra Pradesh	4.21	5.02	1.75	1.96
Bihar	-57.51	-48.88	0.01	0.03
Chhattisgarh	-32.91	-38.12	0.19	0.12
Gujarat	-3.91	-8.32	0.73	0.58
Haryana	39.96	37.58	37.08	15.80
Jharkhand	-51.37	-56.11	0.04	0.03
Karnataka	-1.76	1.36	0.79	1.15
Kerala	35.35	33.99	54.43	26.99
Madhya Pradesh	-23.92	-30.65	0.29	0.21
Maharashtra	-3.55	-3.32	0.74	0.76
Odisha	-38.75	-37.28	0.08	0.11
Punjab	51.03	49.62	97.14	34.42
Rajasthan	-11.41	-5.89	0.49	0.69
Tamil Nadu	7.52	11.96	2.94	4.28
Telangana	0.68	5.53	1.08	1.98
Uttar Pradesh	-22.94	-18.76	0.27	0.36
West Bengal	-28.52	-39.65	0.07	0.05

Source: Same as for Tables 3.1 and 3.2

3.3.2 Location-wise (rural vs urban) coverage of ICDS

Coverage of ICDS in terms of the utilisation in rural vs urban areas, across the seventeen states during 2015-16 and 2019-21 corresponding to NHFS-IV and -V, respectively is shown in Table

3.4. It can be seen that out of the total coverage of ICDS, beneficiaries of rural areas were proportionately more than those of urban areas. This is seen to apply across the states and for both periods 2015-16 and 2019-21. It can also be observed that in Tamil Nadu, Kerala and Karnataka the urban beneficiary proportions were the highest and conversely (since we are comparing rural vs urban coverage) the rural beneficiary proportions were lowest among the seventeen states during both periods. In Bihar, Jharkhand, Odisha and Uttar Pradesh, the rural beneficiary proportions were highest and conversely the urban beneficiary proportions were lowest, during both periods. The rural vs urban proportional beneficiary coverage showed considerable variation across the states during both periods.

Table 3.4

Coverage (in %) of ICDS in rural and urban areas across states during NFHS-IV (2015-16) and NFHS-V (2019-21)

States	Urban (U)		Rural (R)		Difference (R-U)		R/U Ratio	
NFHS	IV	V	IV	V	IV	V	IV	V
Andhra Pradesh	21.65	22.43	78.35	77.57	56.71	55.14	3.62	3.46
Bihar	8.11	7.75	91.89	92.25	83.78	84.49	11.33	11.90
Chhattisgarh	18.61	12.67	81.39	87.33	62.78	74.66	4.37	6.89
Gujarat	24.55	20.51	75.45	79.49	50.89	58.98	3.07	3.88
Haryana	23.18	20.22	76.82	79.78	53.63	59.57	3.31	3.95
Jharkhand	12.82	9.82	87.18	90.18	74.37	80.37	6.80	9.19
Karnataka	26.53	25.82	73.47	74.18	46.94	48.37	2.77	2.87
Kerala	35.22	39.53	64.78	60.47	29.55	20.94	1.84	1.53
Madhya Pradesh	23.35	16.02	76.65	83.98	53.29	67.95	3.28	5.24
Maharashtra	19.03	18.15	80.97	81.85	61.94	63.69	4.25	4.51
Odisha	13.48	9.98	86.52	90.02	73.03	80.05	6.42	9.02
Punjab	25.06	20.83	74.94	79.17	49.88	58.34	2.99	3.80
Rajasthan	14.20	14.08	85.80	85.92	71.60	71.83	6.04	6.10
Tamil Nadu	35.44	35.35	64.56	64.65	29.12	29.29	1.82	1.83
Telangana	23.67	23.32	76.33	76.68	52.66	53.35	3.22	3.29
Uttar Pradesh	13.48	12.06	86.52	87.94	73.03	75.88	6.42	7.29
West Bengal	16.38	17.27	83.62	82.73	67.25	65.46	5.11	4.79

Summary statistics								
Mean	20.87	19.17	79.13	80.83	58.26	61.67	4.51	5.27
Min.	8.11	7.75	64.56	60.47	29.12	20.94	1.82	1.53
Max.	35.44	39.53	91.89	92.25	83.78	84.49	11.33	11.90
Std. Dev.	7.32	8.37	7.32	8.37	14.64	16.73	2.29	2.72
CV (%)	35.09	9.25	43.65	10.35	25.13	27.13	50.74	51.74

Source: Same as for Tables 3.1 and 3.2

3.3.3 Quintile-wise coverage of NHM (RMNCH)

Table 3.5 and Table 3.6 show the quintile-wise distribution of the coverage of NHM (RMNCH) services across the seventeen states for NFHS-IV and NFHS-V respectively. Coverage Indices for each of the states are constructed as weighted average of the selected indicators of RMNCH (**see section 3.3**). The quintile-wise proportional distribution of beneficiaries covered has been reported as percentages for each of the seventeen states. It can be seen from the tables that, there is wide variation among the states in the quintile-wise distribution of NHM (RMNCH) services during 2015-16 as well as in 2019-21. However, on an average across the states out of the aggregate coverage of beneficiaries of NHM (RMNCH) the beneficiary proportion was highest (21.90 per cent in 2015-16 and 21.36 per cent in 2019-21) of the middle quintile (Q3) and lowest (18.57 per cent in 2015-16 and 17.14 per cent in 2019-21) of the richest quintile (Q5), during both periods. The average proportion of poorest quintile (Q1) beneficiaries in the total beneficiary coverage increased from 18.58 per cent to 20.46 per cent between the two periods. Findings similar to that of quintile-wise coverage of ICDS are revealed here. It can be observed that among the states, out of the total beneficiaries covered, the proportions of bottom quintiles' (Q1 and Q2) beneficiaries were highest and that of the top quintiles' (Q4 and Q5) were lowest in states like Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh and West Bengal. However, the proportion of bottom-quintile beneficiaries were lowest and of the top-quintile beneficiaries were highest, out of the total beneficiary coverage

in states like Haryana, Kerala and Punjab. Roughly common patterns of coverage were observed during the two time periods.

Table 3.5

Quintile-wise coverage (%) of NHM (RMNCH) services across states during NFHS-IV (2015-16)

States	Quintile-1 Poorest (Q1)	Quintile-2 Poorer (Q2)	Quintile-3 Middle (Q3)	Quintile-4 Richer (Q4)	Quintile-5 Richest (Q5)
Andhra Pradesh	4.94 (5)	17.22 (3)	35.56 (1)	27.45 (2)	14.85 (4)
Bihar	51.93 (1)	25.15 (2)	13.01 (3)	7.50 (4)	2.39 (5)
Chhattisgarh	32.13 (1)	23.79 (2)	17.63 (3)	12.87 (5)	13.60 (4)
Gujarat	11.99 (5)	21.78 (3)	24.08 (1)	22.71 (2)	19.44 (4)
Haryana	1.85 (5)	6.86 (4)	18.75 (3)	26.89 (2)	45.68 (1)
Jharkhand	44.20 (1)	22.98 (2)	15.59 (3)	10.64 (4)	6.53 (5)
Karnataka	8.03 (5)	22.38 (3)	32.01 (1)	26.43 (2)	11.18 (4)
Kerala	0.34 (5)	3.13 (4)	16.38 (3)	41.05 (1)	39.11 (2)
Madhya Pradesh	30.57 (1)	24.33 (2)	17.02 (3)	14.77 (4)	13.35 (5)
Maharashtra	10.65 (5)	20.46 (3)	26.16 (1)	25.25 (2)	17.49 (4)
Odisha	38.44 (1)	25.99 (2)	19.79 (3)	10.43 (4)	5.33 (5)
Punjab	0.76 (5)	4.36 (4)	13.91 (3)	25.11 (2)	55.82 (1)
Rajasthan	17.81 (5)	22.98 (1)	21.56 (2)	18.96 (3)	18.66 (4)
Tamil Nadu	3.47 (5)	16.79 (3)	31.91 (2)	32.07 (1)	15.69 (4)
Telangana	7.01 (5)	21.70 (3)	28.26 (1)	27.35 (2)	15.72 (4)
Uttar Pradesh	24.97 (1)	23.32 (2)	19.29 (3)	16.78 (4)	15.64 (5)
West Bengal	26.75 (2)	32.53 (1)	21.39 (3)	14.19 (4)	5.15 (5)
Summary Statistics					
Mean	18.58 (4)	19.75 (3)	21.90 (1)	21.20 (2)	18.57 (5)
Min.	0.34	3.13	13.01	7.50	2.39
Max.	51.93	32.53	35.56	41.05	55.82
St. Dev.	15.89	7.72	6.55	8.69	14.25
CV (%)	85.55	39.07	29.91	40.96	76.77

Figures in parentheses are the quintile ranks in the corresponding NFHS round.
Source: author's computation using NFHS-IV data.

Table 3.6

Quintile-wise coverage (%) of NHM (RMNCH) services across states during NFHS-V (2019-21)

States	Quintile-1 Poorest (Q1)	Quintile-2 Poorer (Q2)	Quintile-3 Middle (Q3)	Quintile-4 Richer (Q4)	Quintile-5 Richest (Q5)
Andhra Pradesh	4.09 (5)	21.11 (3)	34.99 (1)	27.41 (2)	12.44 (4)
Bihar	47.71 (1)	27.91 (2)	13.70 (3)	7.89 (4)	2.86 (5)
Chhattisgarh	38.96 (1)	22.91 (2)	17.67 (3)	13.03 (4)	7.41 (5)
Gujarat	17.98 (4)	22.86 (1)	21.88 (2)	20.85 (3)	16.44 (5)
Haryana	2.36 (5)	8.71 (4)	15.63 (3)	28.61 (2)	44.69 (1)
Jharkhand	51.61 (1)	23.13 (2)	13.38 (3)	7.98 (4)	3.88 (5)
Karnataka	9.02 (5)	22.61 (3)	31.96 (1)	25.65 (2)	10.73 (4)
Kerala	1.94 (5)	4.39 (4)	17.26 (3)	38.00 (2)	38.41 (1)
Madhya Pradesh	35.34 (1)	23.64 (2)	16.91 (3)	14.14 (4)	9.96 (5)
Maharashtra	10.86 (5)	20.31 (3)	25.47 (2)	27.33 (1)	16.03 (4)
Odisha	37.49 (1)	26.36 (2)	18.28 (3)	11.87 (4)	5.94 (5)
Punjab	1.14 (5)	6.31 (4)	13.49 (3)	22.76 (2)	56.25 (1)
Rajasthan	16.63 (4)	23.50 (1)	22.47 (2)	21.11 (3)	16.29 (5)
Tamil Nadu	3.50 (5)	15.98 (4)	29.63 (2)	33.21 (1)	17.70 (3)
Telangana	4.56 (5)	18.31 (3)	32.99 (1)	29.73 (2)	14.45 (4)
Uttar Pradesh	25.63 (2)	26.44 (1)	18.99 (3)	15.30 (4)	13.65 (5)
West Bengal	38.99 (1)	28.35 (2)	18.37 (3)	9.98 (4)	4.29 (5)
Summary Statistics					
Mean	20.46 (3)	20.17 (4)	21.36 (1)	20.87 (2)	17.14 (5)
Min.	1.14	4.39	13.38	7.89	2.86
Max.	51.61	28.35	34.99	38.00	56.25
St. Dev.	17.20	7.08	6.91	8.97	14.64
CV (%)	84.09	35.10	32.36	42.97	85.40

Figures in parentheses are the quintile ranks in the corresponding NFHS round.
Source: author's computation using NFHS-V data.

NHM (RMNCH) coverage rates with regard to Q1 and Q5 are presented in Table 3.7 for comparison for both rounds of NFHS. The comparative analysis of the coverage rates of the services reveals a coverage pattern for Q1 and Q5 similar to that of ICDS observed in Table 3.5 and Table 3.6. The gap (Q5-Q1) and the ratio (Q5/Q1) between the proportion of beneficiaries of richest and poorest quintiles out of the total NHM (RMNCH) beneficiary

coverage was highest in Punjab followed by Haryana and Kerala during both the periods. Smallest gaps were the seen in Bihar, followed by Jharkhand and Odisha during 2015-16 and in Jharkhand, Bihar and West Bengal in descending order during 2019-21. The differences (Q5-Q1) for states like Bihar, Jharkhand, Odisha and West Bengal are found to be negative and large. The differences indicate that the proportion of beneficiaries of the poorest quintile was much higher than that of the richest quintile among the total beneficiaries covered in these states.

Table 3.7

Comparison of coverage of NHM (RMNCH) between Q5 and Q1 across states for NFHS-IV (2015-16) and NFHS-V (2019-21)

States	Difference (Q5-Q1) (% points)		Richest/Poorest (Ratio of %)	
	2015-16	2019-21	2015-16	2019-21
Andhra Pradesh	9.91	8.34	3.00	3.04
Bihar	-49.54	-44.85	0.05	0.06
Chhattisgarh	-18.53	-31.55	0.42	0.19
Gujarat	7.44	-1.54	1.62	0.91
Haryana	43.83	42.33	24.69	18.92
Jharkhand	-37.68	-47.73	0.15	0.08
Karnataka	3.16	1.71	1.39	1.19
Kerala	38.78	36.46	115.89	19.76
Madhya Pradesh	-17.22	-25.38	0.44	0.28
Maharashtra	6.84	5.17	1.64	1.48
Odisha	-33.11	-31.56	0.14	0.16
Punjab	55.06	55.11	73.20	49.18
Rajasthan	0.86	-0.34	1.05	0.98
Tamil Nadu	12.23	14.20	4.52	5.06
Telangana	8.71	9.89	2.24	3.17
Uttar Pradesh	-9.33	-11.98	0.63	0.53
West Bengal	-21.60	-34.71	0.19	0.11

Source: Same as for Tables 3.5 and 3.6

3.3.4 Location-wise (rural vs urban) coverage of NHM (RMNCH)

Table 3.8

Coverage (in %) of NHM (RMNCH) in rural and urban areas across states during NFHS-IV (2015-16) and NFHS-V (2019-21)

States	Urban (U)		Rural (R)		Difference (R-U)		R/U Ratio	
NFHS	IV	V	IV	V	IV	V	IV	V
Andhra Pradesh	26.71	25.63	73.29	74.38	46.58	48.75	2.74	2.90
Bihar	11.23	9.03	88.78	90.97	77.55	81.94	7.91	10.07
Chhattisgarh	26.72	16.11	73.28	83.89	46.56	67.79	2.74	5.21
Gujarat	33.79	26.073	66.21	73.98	32.43	47.95	1.96	2.84
Haryana	30.46	25.25	69.54	74.75	39.08	49.50	2.28	2.96
Jharkhand	22.14	14.53	77.86	85.48	55.73	70.95	3.52	5.88
Karnataka	32.83	27.65	67.18	72.35	34.35	44.70	2.05	2.62
Kerala	34.55	42.45	65.45	57.55	30.90	15.10	1.89	1.36
Madhya Pradesh	26.93	18.79	73.08	81.21	46.15	62.43	2.71	4.32
Maharashtra	32.14	28.99	67.86	71.01	35.71	42.01	2.11	2.45
Odisha	16.06	11.44	83.94	88.56	67.89	77.11	5.23	7.74
Punjab	36.91	30.54	63.09	69.46	26.18	38.91	1.71	2.27
Rajasthan	25.28	17.84	74.72	82.16	49.44	64.31	2.96	4.60
Tamil Nadu	41.80	37.68	58.20	62.32	16.40	24.64	1.39	1.65
Telangana	35.12	27.25	64.88	72.75	29.76	45.50	1.85	2.67
Uttar Pradesh	25.08	15.92	74.93	84.08	49.85	68.16	2.99	5.28
West Bengal	23.97	23.84	76.03	76.16	52.06	52.31	3.17	3.19
Summary Statistics								
Average	28.34	23.47	71.66	76.53	43.33	53.06	2.89	4.00
Min.	11.23	9.03	58.20	57.55	16.40	15.10	1.39	1.36
Max.	41.80	42.45	88.78	90.97	77.55	81.94	7.91	10.07
St. Dev.	7.42	8.70	7.42	8.70	14.85	17.40	1.52	2.22
CV (%)	26.20	37.07	10.36	11.37	34.26	32.79	52.64	55.49

Source: Same as for Tables 3.6 and 3.7

The coverage of NHM (RMNCH) services (in percentages) with regard to urban and rural areas across states over the two periods covered by NFHS-IV (2015-16) and NFHS-V (2019-21) can be observed through Table 3.8. The proportion of rural beneficiaries are seen to be more than that of urban beneficiaries out of the total beneficiaries covered by the services across states

and for both time periods. The proportion of rural beneficiaries among the total beneficiaries covered by the services, was highest (and conversely that of urban beneficiaries was lowest) in Bihar followed by Odisha and Jharkhand during both periods. Coverage of urban beneficiaries as a share of the total coverage was highest (and that of rural beneficiaries was lowest) in Tamil Nadu followed by Telangana and Punjab during 2015-16 and in Kerala followed by Tamil Nadu and Punjab during 2019-21.

3.4 Benefit Incidence Analysis of government expenditure on ICDS and NHM (RMNCH) by groups of beneficiaries

3.4.1 Approach

This study does not make direct use of the benefit incidence approach as discussed in section 3.2.1 of this chapter. This is primarily due to the fact that the present analysis is concerned with government expenditure data, which is not available at disaggregated level by households, individuals or even by location (urban and rural areas). Therefore, we adopt a slightly different approach for the computation of per-unit cost and per-unit utilisation of ICDS and NHM (RMNCH) services. In contrast to conventional BIA which focuses on the concentration of benefit by income, wealth, location, social groups, etc, the present approach considers different groups of beneficiaries availing a particular service. The analyses done in this chapter estimate the per unit utilisation of government expenditure on ICDS-SNP & -PSE and NHM (MNRCH) by different groups of beneficiaries. The beneficiaries of ICDS-SNP are children of age 6 months to 6 years and Pregnant & Lactating Mothers (PLM). The group of children beneficiaries of ICDS is sub-divided depending upon the type of service and the extent of vulnerability. For ICDS-SNP the children (6m-6y) are grouped into children of age six months to 3 years (6m-3y) and 3 to 6 years (3-6y). Likewise, PSE beneficiaries who fall in the age group 3 to 6 years (3-6y) are categorised as boys and girls. The beneficiaries for NHM (RMNCH) considered in this study are children under 5 years (0-59m) and women of the age

15 years to 49 years (15-49y). Our analysis attempts to see which of the groups/sub-groups utilises more of the government expenditure on a particular service. It is hypothesized that more vulnerable groups of beneficiaries will utilise more of the government expenditure as compared to the less vulnerable group. It is reasonable to assume that under ICDS-SNP the more vulnerable group is that of children (6m-6y) as compared to PLM. Even among the child beneficiaries, children (6m-3y) may be considered to be more vulnerable than children (3-6y). Among PSE beneficiaries, girls are assumed to be more vulnerable than boys. Likewise, children (0-59m) are considered to be more vulnerable than women (15-49y) among the beneficiaries of NHM (RMNCH) services.

The estimation of per-unit utilisation of government expenditure on ICDS-SNP and -PSE is based on the actual number of beneficiaries as reported in parliamentary questions and answers. For NHM (RMNCH), the estimation of per unit utilisation of government expenditure is based on the unit-level NFHS data, as the actual number of beneficiaries was not found in the public domain. The sources of the data used for the analysis are listed in Table 3.9.

Table 3.9
Data used and their sources for the BIA

Data	Source
Beneficiaries of ICDS-SNP & -PSE (total and beneficiary groups)	Parliamentary questions and answers
Beneficiaries of NHM (RMNCH) (total and beneficiary groups)	Estimated using coverage index, unit-level NFHS data and Pop. Projections for India and States 2011-2036, MoHFW*
Eligible populations for ICDS and NHM (RMNCH) services	For ICDS – Estimated using NFHS data and Lok Sabha Questions[#]. For NHM (RMNCH) – Estimated using Pop. Projections for India and States 2011-2036, MoHFW
ICDS expenditure amounts	Finance Accounts of the CAG
RMNCH expenditure amounts	HMIS of NHM
Relevant population figures	Population projections for India and States 2011-2036, MoHFW

* In order to obtain the number of beneficiaries of NHM (RMNCH) service we applied the total coverage rate (coverage index – see section 3.3 of this chapter) computed for the corresponding beneficiaries and their sample sizes in the unit-level NHFS data to the total projected population for the eligible beneficiary group.

The female population in the age group 15-49 years, projected in this study, eligible to get ICDS services is based on their status of being pregnant and lactating. This is thus bound to be less than the entire population of females in the age group 15-49 years which also includes non-pregnant and non-lactating females. Using the same procedure we have also estimated the child population in the age group 0-6 years eligible to get ICDS-SNP and child population in the age group 3-6 years eligible to get ICDS-PSE services. This procedure had to be adopted due to the non-availability of data of total children for 0-6 years & 3-6 years separately to compute respective coverages for ICDS-SNP and -PSE services for the required time periods. The eligible age group whether for female or for children is therefore defined in this study as the group consisting of those who are getting the benefit of any ICDS service and those who are not getting any benefit despite being eligible for it.

For estimating the benefit incidence of the expenditures on ICDS and NHM services, the coverage rates and utilisation rates have been calculated with regard to the various beneficiary groups under the ICDS-SNP & -PSE and NHM (RMNCH). The utilisation rate by a specific beneficiary group is calculated as the percentage of the number of beneficiaries in that specific group to the total number of beneficiaries of the service. The coverage rate is calculated as the percentage of the number of beneficiaries in a specific group to the total eligible population of that group with regard to the service provided.

The results of the analysis are also to be interpreted in terms of targeting vis-à-vis the coverage rate. Coverage rate being the percentage participation in the programme (or percentage of

beneficiaries to total eligible population for the service) while targeting is understood to be the extent to which the programme coverage is oriented towards the most vulnerable and neediest group among the eligible population who have responded (Kaur et. al., 2020). The coverage rates for ICDS-SNP have been calculated for Children (6m-6y) and PLM while that for NHM (RMNCH) have been calculated for Children (0-59m) and Women (15-49y). Coverage rates for other groups/sub-groups of beneficiaries have not been calculated on account of limitations of data availability related to the total eligible populations for each of the groups/sub-groups of beneficiaries. As stated earlier, the actual number of beneficiaries of NHM (RMNCH) was not found in the public domain. Hence, the coverage of NHM (RMNCH) is in terms of coverage index (See section 3.3 of this chapter) for each state based on unit-level NFHS data.

3.4.2 Benefit incidence of expenditures of the states on ICDS

Coverage rate of SNP beneficiaries for 2015-16 and 2019-21 is presented in Table 3.10 and the SNP units utilised by the various beneficiary groups under ICDS along with their proportional share (benefit incidence coefficients) in the total units utilised of the service are shown in Table 3.11 and Table 3.12 for the period 2015-16 and 2019-21, respectively. The targeting of the public expenditure on ICDS-SNP can be analysed from these tables.

It can be observed from Table 3.10 that the coverage rate (defined as the percentage of the number of beneficiaries in a specific group to the total eligible population of that group), on an average across the states, for the year 2015-16 was 22.93 per cent for children 0-6 years. It was lower than the coverage rate of PLM at 23.06 per cent while the coverage rate of the composite group children (0-6y) & PLM was lower at 22.77 per cent. The coverage rates of all the three groups on an average across the states during 2019-21 was lower than in 2015-16 at 19.93 per cent, 18.97 per cent and 19.6 per cent for children (0-6y), PLM and the composite group of children (0-6y) & PLM, respectively. During the latter period, the coverage rate of children (0-6y) was lower than that for PLM.

From Table 3.11 and Table 3.12, it can be seen that during 2015-16, on an average across the states Rs. 269.32 crore was spent on ICDS-SNP out of which the largest share (47 per cent) of the amount of Rs. 124.89 crore was utilised by 6m-3y children. Rs.92.41 crore (34 per cent) of the total average expenditure was utilised by 3-6y children. It also means that out of Rs. 217.30 crores utilised by 6m-6y children on average across the states, 57.47 per cent went to the younger group of children (6m-3y). Similarly, during 2019-21, on an average across the states Rs. 247.90 crore was spent on ICDS-SNP out of which the largest share (44 per cent) of the amount of Rs. 109.82 crore was utilised by 6m-3y children. Rs.91.38 crore (37 per cent) of the total average expenditure was utilised by 3-6y children. So, out of Rs. 201.20 crores utilised by 6m-6y children on average across the states, 54.58 per cent went to the younger group of children (6m-3y). During both time periods, 6m-6y children utilised the larger share (81 per cent) of ICDS-SNP expenditure of the states on an average while PLM utilised the lower share (19 per cent) of the states' average expenditure at Rs. 52.01 crore during 2015-16 and Rs. 46.70 crores during 2019-21.

From Table 3.10 and Table 3.11 we see that on average across the states during 2015-16, 81 per cent (Rs. 217.30 crore) of the total unit utilisation (Rs. 269.32 crore) of ICDS-SNP went to 22.93 per cent (coverage rate out of the total eligible population under six years) of the more vulnerable and needy eligible beneficiaries of age six months to six years. So, the targeting of average government spending taken across the seventeen states is efficient with regard to children (6m-6y). However, while 23.06 per cent of PLM were covered by ICDS-SNP, a lower proportion, 19 per cent (Rs. 52.01 crore) of the total spending on ICDS-SNP was utilised by PLM. Also considering Table 3.12, it is observed during 2019-21 too, that on an average across the states, public expenditure for ICDS-SNP was efficiently targeted towards the more vulnerable beneficiary group, 6m-6y children. We see that 16.47 per cent of the total eligible population of children under six years was covered by the service, while again a much larger

share, Rs. 201.20 crore (81 per cent) of the total unit utilisation of Rs. 247.90, under the programme accrued to the more vulnerable and needier beneficiary group of children (6m-6y). We also see that 17.27 per cent of PLM were covered by ICDS-SNP, while a larger proportion 19 per cent (Rs. 46.70 crore) of the total units utilised accrued to PLM. Hence, even though the coverage of PLM reduced, targeting with regard to the beneficiary group improved and it was observed to be efficient during 2019-21.

Considering both time periods, we see that the incidence of benefits of public spending on SNP seems to be skewed towards children. The analysis reveals that on an average the largest share of SNP benefits went to the neediest and most vulnerable eligible beneficiaries, 6m-3y children. In this sense, on an average the state governments seem to be going in the right direction, in terms of targeting, with greater degree of utilisation among the neediest of the beneficiaries covered.

The utilisation proportions and units utilised (Rs. Crore) by each of the beneficiary groups vary widely among the states and also between the two time periods. Yet, we see that during 2015-16, the share of the neediest and most vulnerable group, 6m-3y children in the total expenditure or units utilised for SNP was highest among all of the beneficiary groups, across the states. However, during 2019-21, the share of 6m-3y children was highest amongst all beneficiary groups across all states but two, Jharkhand and Maharashtra where the share of 3-6y children was highest.

Comparing the ICDS-SNP utilisation and coverage rates of the states, it can be observed from Table 3.10, Table 3.11, Table 3.12 and corresponding figures 3.2 and 3.3, that targeting with regard to children (6m-6y) was efficient for all of the states during 2015-16 as well as in 2019-21 with the proportion of units utilised being greater than the coverage rate of children under 6 years, in all of states during both time periods. With regard to PLM, we find efficient targeting

only in 3 states (Andhra Pradesh, Chhattisgarh and Odisha) with utilisation proportion of ICDS-SNP being greater than the coverage rate of the beneficiary group during 2015-16. However, targeting for PLM is observed to be efficient in 10 states during 2019-21 as the proportion of utilisation of funds spent for ICDS-SNP by PLM was higher than their coverage rates. These states were Karnataka, Madhya Pradesh, Tamil Nadu, Telangana, Andhra Pradesh, Chhattisgarh, Odisha and also in Rajasthan, Uttar Pradesh and West Bengal, though the utilisation rates were only marginally higher than coverage rates in the latter.

Looking at the utilisation of SNP funding among the states we see that for 6m-3y children, the highest proportional utilisation was in Tamil Nadu in both periods while the lowest was in West Bengal in 2015-16 and in Jharkhand during 2019-21. During 2015-16, Rs. 214.76 crore was spent on SNP in Tamil Nadu out of which Rs. 123.37 crore (57 per cent), Rs. 46.10 crore (21 per cent) and Rs. 45.29 crore (21 per cent) was utilised by 6m-3y children, 3-6y children and PLM, respectively. This means 72.79 per cent of Rs. 169.47 crores spent on children went to the most vulnerable group of 6m-3y olds. Similarly, in 2019-21, 71.67 per cent of Rs. 137.76 crore spent on children (6m – 6y) went to 6m-3y children. During 2015-16, Rs. 269.34 crore was spent on SNP in West Bengal out of which Rs. 114.35 crore (42 per cent), Rs. 109.88 crore (41 per cent) and Rs. 45.10 crore (17 per cent) was utilised by 6m-3y children, 3-6y children and PLM, respectively. This means 51 per cent of Rs. 224.23 crore spent on children (6m-6y) was utilised by 6m-3y children. During 2019-21, out of Rs. 129.46 crore spent on SNP in Jharkhand, Rs. 28.95 crore (22 per cent), Rs. 86.56 crore (67 per cent) and Rs. 13.95 crore (11 per cent) was utilised by children of age 6m-3y, 3-6y and PLM, respectively. This means only 25 per cent of Rs. 115.50 crore spent on children (6m-6y) was utilised by 6m-3y children. We see that during 2015–16, SNP expenditure was shared almost equally between the two beneficiary groups of children of age 6m-3y and 3-6y in West Bengal. During 2019-21 in

Jharkhand, SNP utilisation was skewed towards 3-6y children and away from the most vulnerable beneficiary group, children (6m-3y).

Table 3.10

Coverage rate of SNP Beneficiaries

State	2015-16			2019-21		
	Children (0-6y)	P&L Mothers (PLM)	Children (0-6y) & PLM	Children (0-6y)	P&L Mothers (PLM)	Children (0-6y) & PLM
Andhra Pradesh	20.80	15.01	19.19	16.99	11.74	15.51
Bihar	24.98	34.58	26.02	24.84	37.36	26.47
Chhattisgarh	17.60	10.61	15.61	15.94	12.43	15.23
Gujarat	23.86	24.76	24.03	21.54	20.00	21.28
Haryana	24.69	22.50	24.16	21.50	24.35	22.06
Jharkhand	24.75	32.83	25.91	22.47	18.87	22.02
Karnataka	23.94	24.05	23.96	15.14	14.67	15.05
Kerala	24.99	19.83	24.01	24.56	24.01	24.43
Madhya Pradesh	23.20	21.53	22.83	15.51	12.44	14.88
Maharashtra	25.00	24.32	24.89	24.58	24.92	24.63
Odisha	17.05	11.70	15.82	9.79	4.41	8.11
Punjab	24.12	24.54	24.21	24.94	24.90	24.93
Rajasthan	23.70	24.26	23.83	24.10	23.24	23.88
Tamil Nadu	23.75	23.50	23.69	18.14	13.88	17.03
Telangana	24.54	24.04	24.43	20.29	15.81	19.14
Uttar Pradesh	23.75	33.87	25.30	21.94	22.16	21.99
West Bengal	19.05	20.08	19.21	16.47	17.27	16.61
Summary Statistics						
Minimum	17.05	10.61	15.61	9.79	4.41	8.11
Maximum	25.00	34.58	26.02	24.94	37.36	26.47
Mean	22.93	23.06	22.77	19.93	18.97	19.6
St. Dev.	2.54	6.53	3.16	4.27	7.28	4.79
CV (%)	11.08	28.34	13.87	21.44	38.36	24.42

Source: own calculations based on various sources (Ref. Table 3.9)

Table 3.11

ICDS-SNP utilisation – units and proportion (benefit incidence coefficient) of beneficiary groups (2015-16)

	Children (6m - 3y)		Children (3y - 6y)		Children (6m - 6y)		P&L Mothers (PLM)		Children (6m - 6y) & PLM	
State	Units utilised	Prop.	Units utilised	Prop.	Units utilised	Prop.	Units utilised	Prop.	Units utilised	Prop.
AP	113.06	0.50	62.74	0.28	175.81	0.78	48.64	0.22	224.45	1
BH	180.46	0.44	174.19	0.42	354.65	0.86	59.59	0.14	414.24	1
CH	50.88	0.46	37.77	0.34	88.65	0.81	21.30	0.19	109.95	1
GJ	97.16	0.44	77.90	0.36	175.06	0.80	43.33	0.20	218.39	1
HY	39.38	0.52	19.13	0.25	58.51	0.78	16.89	0.22	75.40	1
JH	70.46	0.43	63.28	0.39	133.74	0.82	29.82	0.18	163.56	1
KR	166.32	0.46	124.71	0.34	291.03	0.80	72.36	0.20	363.39	1
KA	53.83	0.43	51.70	0.41	105.54	0.84	19.61	0.16	125.15	1
MP	176.60	0.43	150.44	0.36	327.04	0.79	87.01	0.21	414.05	1
MH	136.84	0.43	130.43	0.41	267.27	0.84	49.74	0.16	317.01	1
OD	73.70	0.42	72.60	0.41	146.30	0.83	30.07	0.17	176.37	1
PB	28.37	0.49	16.67	0.29	45.04	0.78	12.35	0.22	57.39	1
RN	113.73	0.50	59.69	0.26	173.43	0.76	54.96	0.24	228.38	1
TN	123.37	0.57	46.10	0.21	169.47	0.79	45.29	0.21	214.76	1
TA	68.67	0.51	37.41	0.28	106.08	0.79	28.27	0.21	134.34	1
UP	515.97	0.48	336.32	0.31	852.30	0.79	219.90	0.21	1072.20	1
WB	114.35	0.42	109.88	0.41	224.23	0.83	45.10	0.17	269.34	1
Summary Statistics										
Min	28.37	0.42	16.67	0.21	45.04	0.76	12.35	0.14	57.39	1
Max	515.97	0.57	336.32	0.42	852.30	0.86	219.90	0.24	1072.20	1
Mean	124.89	0.47	92.41	0.34	217.30	0.81	52.01	0.19	269.32	1
St. Dev.	107.82	0.04	75.41	0.06	181.20	0.03	46.28	0.03	226.70	0
CV (%)	86.33	9.16	81.60	18.92	83.39	3.26	88.98	13.51	84.18	0

Note: State abbreviations – Andhra Pradesh (AP), Bihar (BH), Chhattisgarh (CH), Gujarat (GJ), Haryana (HY), Jharkhand (JH), Karnataka (KR), Kerala (KA), Madhya Pradesh (MP), Maharashtra (MH), Odisha (OD), Punjab (PB), Rajasthan (RN), Tamil Nadu (TN), Telangana (TA), Uttar Pradesh (UP), West Bengal (WB).
Units utilised are in Rs. crore
Prop.: Proportion to total unit utilisation or the Benefit Incidence Coefficient
Source: own calculations based on various sources (Ref. Table 3.9)

Table 3.12

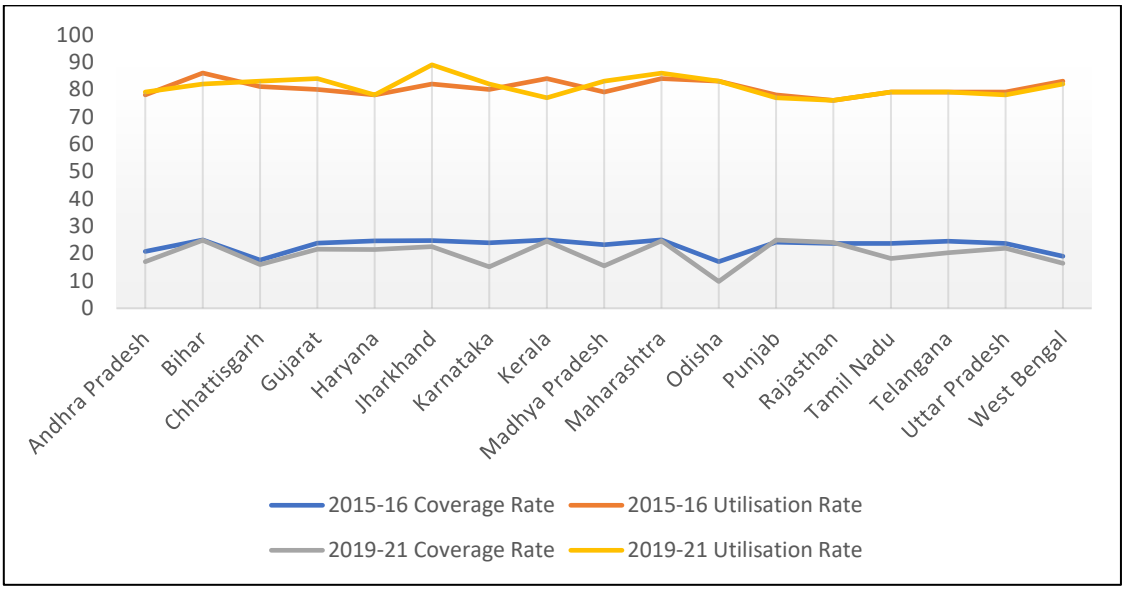
ICDS-SNP utilisation – units and proportion (benefit incidence coefficient) of beneficiary groups (2019-21)

	Children (6 m - 3 y)		Children (3y - 6 y)		Children (6 m - 6 y)		P&L Mothers (PLM)		Children (6 m - 6 y) & PLM	
State	Units utilised	Prop.	Units utilised	Prop.	Units utilised	Prop.	Units utilised	Prop.	Units utilised	Prop.
AP	83.58	0.48	54.22	0.31	137.81	0.79	37.40	0.21	175.21	1
BH	237.94	0.43	209.26	0.38	447.20	0.82	100.55	0.18	547.75	1
CH	54.31	0.44	48.93	0.40	103.24	0.83	20.47	0.17	123.71	1
GJ	109.77	0.44	102.17	0.41	211.93	0.84	40.02	0.16	251.95	1
HY	27.15	0.48	17.37	0.31	44.51	0.78	12.21	0.22	56.72	1
JH	28.95	0.22	86.56	0.67	115.50	0.89	13.95	0.11	129.46	1
KR	88.11	0.43	77.84	0.38	165.94	0.82	36.84	0.18	202.78	1
KA	53.55	0.43	42.44	0.34	95.99	0.77	29.24	0.23	125.23	1
MP	118.45	0.42	113.51	0.40	231.97	0.83	48.50	0.17	280.47	1
MH	221.23	0.39	263.25	0.47	484.49	0.86	80.43	0.14	564.92	1
OD	45.99	0.43	42.91	0.40	88.90	0.83	18.14	0.17	107.05	1
PB	32.59	0.48	20.17	0.29	52.77	0.77	15.63	0.23	68.40	1
RN	108.54	0.46	69.29	0.30	177.83	0.76	56.13	0.24	233.96	1
TN	98.73	0.56	39.03	0.22	137.76	0.79	37.05	0.21	174.81	1
TA	62.66	0.48	40.78	0.31	103.45	0.79	27.85	0.21	131.30	1
UP	373.10	0.50	206.60	0.28	579.70	0.78	166.92	0.22	746.61	1
WB	122.31	0.42	119.05	0.41	241.35	0.82	52.56	0.18	293.91	1
Summary Statistics										
Min	27.15	0.22	17.37	0.22	44.51	0.76	12.21	0.11	56.72	1
Max	373.10	0.56	263.25	0.67	579.70	0.89	166.92	0.24	746.61	1
Mean	109.82	0.44	91.38	0.37	201.20	0.81	46.70	0.19	247.90	1
St. Dev.	87.96	0.07	69.69	0.10	152.10	0.03	37.83	0.03	188.16	0
CV (%)	80.10	15.14	76.26	26.11	75.60	4.31	81.01	18.32	75.90	0

Note: State abbreviations – Same as for Table 3.11
Units utilised are in Rs. crore
Prop.: Proportion to total unit utilisation or the Benefit Incidence Coefficient
Source: own calculations based on various sources (Ref. Table 3.9)

Figure 3.2

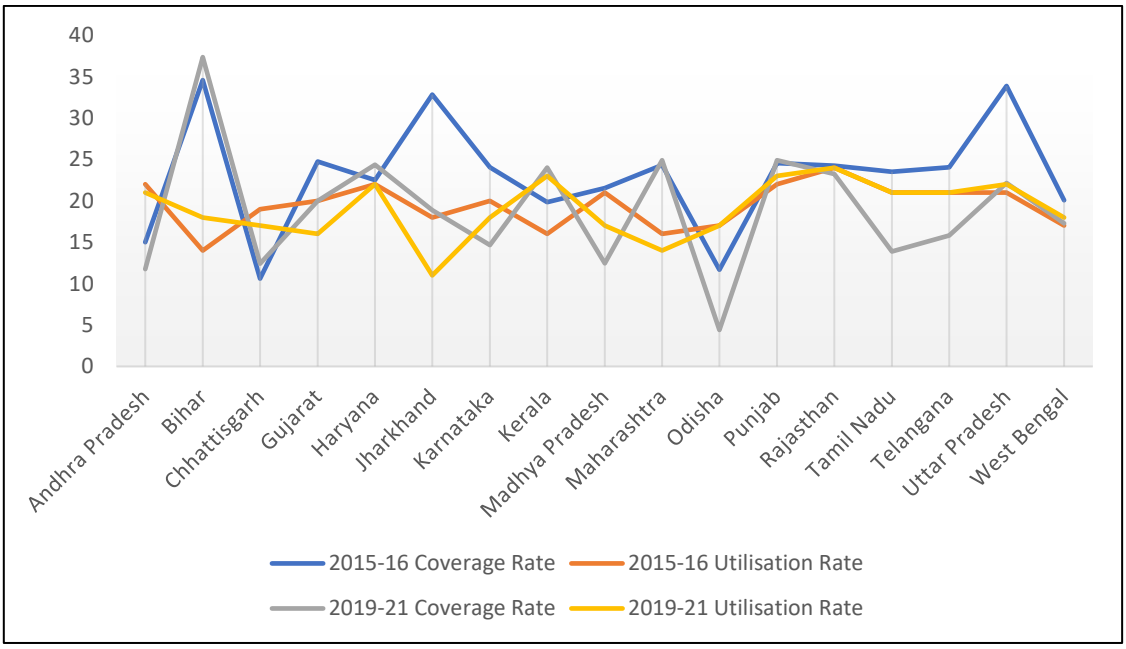
Coverage rate vs utilisation rate of ICDS-SNP for Children (6m-6y)



Source: Same as for Tables 3.10, 3.11 and 3.12

Figure 3.3

Coverage rate vs utilisation rate of ICDS-SNP for PLM



Source: Same as for Tables 3.10, 3.11 and 3.12

The results of the benefit incidence analysis of Pre-school Education (PSE) component of ICDS are presented and discussed as follows. Table 3.13 and Table 3.14 show the units utilised along with the benefit incidence coefficients (or proportional unit utilisation with respect to the total

unit utilisation of PSE) of the sub-groups of beneficiaries of PSE for the years 2015-16 and 2019-21. The table also shows the coverage rate of PSE for two time periods. The units utilised, benefit incidence coefficients and coverage rates are given in the tables for each of the seventeen states.

From Table 3.13 and Table 3.14, it can be seen that on an average across the states, 22.41 per cent and 20.96 per cent of the eligible population (i.e. children of age 3-6 years) during 2015-16 and 2019-21, respectively were covered by PSE service. Among the two beneficiary groups for PSE under ICDS, Boys (3-6y) and Girls (3-6y), Boys utilised 53 per cent while Girls utilised 47 per cent of the service.[22] However, during 2019-21 the utilisation was balanced as both groups utilised equal share of the service.[23] The average unit utilised during 2015-16 taken over the seventeen states was Rs. 249.51 out of which Boys utilised Rs. 129.63 crores while Girls utilised Rs. 119.87 crores. During 2019-21, out of the average unit utilised for PSE at Rs. 265.70 crore, Boys utilised Rs. 131.75 crore while Girls utilised Rs. 133.95 crore. It is also observed that ICDS-PSE coverage was 22.41 per cent during 2015-16 which reduced to 20.96 per cent of the children (3-6y) during 2019-21.

It is observed that the incidence of benefits of public spending on PSE seemed to be skewed towards boys during 2015-16 but was balanced between boys and girls during 2019-21. So, we

[22] It needs to be mentioned here that as per the available data in (Annexure-II (C) - Statement Referred to Reply to part (b) of Reply Lok Sabha Un-Starred Question No.2440 for 09.03.2018), the PSE utilisation proportion of Telangana is unusually imbalanced during 2015-16. Utilisation share of boys was 91% while that of girls was 9%. No reason is given therein for such a scenario.

[23] As per Annexure II-D, Statement referred to in reply to Part (a) of Lok Sabha Un-Starred Question No.3068 for 06.08.2021 titled Anganwadi Centres Sanctioned and Operational under Anganwadi Services Scheme Quarter Ending 31 March, 2021, PSE utilisation data was not available for Andhra Pradesh, Telangana and West Bengal. So, the data available for all states is taken from RAJYA SABHA UNSTARRED QUESTION NO: 2877, TO BE ANSWERED ON 22.12.2021, titled Anganwadi Centres Sanctioned and Operational, SNP & PSE Beneficiaries under Anganwadi Services Scheme Quarter Ending 30 June, 2021. Still, the distribution of utilisation between boys and girls was not available for West Bengal for the year. So, a 50:50 distribution is considered for the state.

find that the PSE utilisation has improved in favour of girls, the more vulnerable of the two groups of beneficiaries, between the two periods.

Looking at the utilisation of PSE funding among the states we see that for girls, the highest proportional utilisation was in Jharkhand during 2015-16 and in Andhra Pradesh during 2019-21. The lowest proportional utilisation was in Telangana during 2015-16 and in Bihar, Karnataka and Punjab during 2019-21. During 2015-16, Rs. 153.24 crore was spent on PSE in Jharkhand out of which Rs. 81.30 crore (53 per cent) was utilised by girls. During 2019-21, out of Rs. 206.65 crore spent on PSE, Rs. 145.12 crore (70 per cent) was utilised by girls in Andhra Pradesh. During 2015-16, only Rs. 12.65 crore (9 per cent) out of Rs. 137.47 crore spent on PSE in Telangana was utilised by girls. During 2019-21, out of the different amounts spent on PSE in Bihar, Karnataka and Punjab, 47 per cent was utilised by girls. It is observed that during 2015-16, besides Telangana, PSE utilisation was skewed away from girls with utilisation less than 50 per cent in Gujarat, Punjab, Uttar Pradesh, Maharashtra and Tamil Nadu and balanced or skewed in favour of girls in the other states. During 2019-21, besides Andhra Pradesh, PSE utilisation was balanced or skewed in favour of girls with utilisation 50 per cent and above in Chhattisgarh, Uttar Pradesh, Maharashtra, West Bengal and Jharkhand and skewed away from girls in the others.

Table 3.13

ICDS-PSE utilisation – units and proportion (benefit incidence coefficient) of beneficiary groups and coverage rate (%) (2015-16)

	Boys (3-6y)		Girls (3-6y)		Children (3-6y)		Children (3-6y)
State	Units utilised	Prop.	Units utilised	Prop.	Units utilised	Prop.	Coverage rate (%)
AP	129.61	0.49	132.41	0.51	262.02	1	22.41
BH	137.27	0.49	144.65	0.51	281.92	1	17.71
CH	61.00	0.50	62.20	0.50	123.20	1	17.49
GJ	112.18	0.51	109.64	0.49	221.82	1	24.41
HY	37.85	0.50	37.11	0.50	74.96	1	24.02

JH	71.94	0.47	81.30	0.53	153.24	1	24.28
KR	188.24	0.50	188.37	0.50	376.61	1	24.83
KA	64.50	0.50	63.95	0.50	128.45	1	24.64
MP	221.79	0.50	220.57	0.50	442.36	1	24.39
MH	165.00	0.52	151.50	0.48	316.51	1	24.85
OD	105.65	0.50	105.66	0.50	211.31	1	18.95
PB	29.83	0.51	28.80	0.49	58.63	1	24.73
RN	97.95	0.50	96.50	0.50	194.45	1	20.29
TN	121.42	0.55	98.65	0.45	220.06	1	24.28
TA	124.82	0.91	12.65	0.09	137.47	1	25.00
UP	385.27	0.52	356.16	0.48	741.43	1	17.49
WB	149.45	0.50	147.71	0.50	297.16	1	21.20
Summary Statistics							
Min	29.83	0.47	12.65	0.09	58.63	1	17.49
Max	385.27	0.91	356.16	0.53	741.43	1	25.00
Mean	129.63	0.53	119.87	0.47	249.51	1	22.41
St. Dev.	81.03	0.10	80.11	0.10	158.81	0	2.82
CV (%)	62.51	18.25	66.83	20.42	63.65	0	12.56

Note: State abbreviations – Same as for Table 3.11
Units utilised are in Rs. crore
Prop.: Proportion to total unit utilisation or the Benefit Incidence Coefficient
Source: own calculations based on various sources (Ref. Table 3.9)

Table 3.14

ICDS-PSE utilisation – units and proportion (benefit incidence coefficient) of beneficiary groups and coverage rate (%) (2019-21)

	Boys (3-6y)		Girls (3-6y)		Children (3-6y)		Children (3-6y)
State	Units utilised	Prop.	Units utilised	Prop.	Units utilised	Prop.	Coverage rate (%)
AP	61.53	0.30	145.12	0.70	206.65	1	18.29
BH	250.18	0.53	221.85	0.47	472.03	1	22.81
CH	64.55	0.48	69.75	0.52	134.31	1	16.53
GJ	129.88	0.51	124.27	0.49	254.14	1	21.47
HY	29.88	0.51	28.93	0.49	58.81	1	22.87
JH	72.33	0.50	72.09	0.50	144.42	1	24.56
KR	129.45	0.53	112.74	0.47	242.19	1	17.98
KA	65.04	0.51	63.03	0.49	128.07	1	24.99

MP	164.86	0.51	160.75	0.49	325.60	1	17.27
MH	284.74	0.50	285.27	0.50	570.01	1	24.85
OD	72.73	0.51	70.60	0.49	143.33	1	10.86
PB	35.29	0.53	30.78	0.47	66.07	1	24.08
RN	124.89	0.51	119.99	0.49	244.88	1	25.00
TN	103.35	0.51	99.91	0.49	203.26	1	19.80
TA	72.02	0.51	69.80	0.49	141.82	1	20.67
UP	403.04	0.49	426.30	0.51	829.34	1	24.42
WB	175.99	0.50	175.99	0.50	351.98	1	19.89
Summary Statistics							
Min	29.88	0.30	28.93	0.47	58.81	1	10.86
Max	403.04	0.53	426.30	0.70	829.34	1	25.00
Mean	131.75	0.50	133.95	0.50	265.70	1	20.96
St. Dev.	96.74	0.05	98.03	0.05	193.47	0	3.78
CV (%)	73.43	10.38	73.19	10.21	72.81	0	18.05

Note: State abbreviations – Same as for Table 3.11
Units utilised are in Rs. crore
Prop.: Proportion to total unit utilisation or the Benefit Incidence Coefficient
Source: own calculations based on various sources (Ref. Table 3.9)

3.4.3 Benefit incidence of expenditures of the states on NHM (RMNCH)

Under NHM, the coverage rate (per cent) of RMNCH beneficiaries are presented in Table 3.15. The units utilised along with the proportion to total utilisation (benefit incidence coefficients) of beneficiary groups of RMNCH services are given for the year 2015-16 and 2019-21 in Table 3.16 and Table 3.17, respectively. Analysis of the targeting of the public expenditure on NHM (RMNCH) can be done through these tables and the corresponding Figure 3.4 and Figure 3.5.

Table 3.15 shows that on an average across the states, during 2015-16, NHM (RMNCH) services covered 52.53 per cent of children (0-59m), 28.94 per cent of women (15-49y) and 32.64 per cent of the composite group, i.e. children (0-59m) & women (15-49y). A little higher coverage rates of the three beneficiary groups were noted for 2019-21 at 54.84 per cent, 30.96 per cent and 34.47 per cent for children (0-59m), women (15-49y) and the composite group, i.e. children (0-59m) & women (15-49y), respectively.

Table 3.16 and Table 3.17 indicate that on an average across the states, during 2015-16, among the two main beneficiary groups under NHM, children (0-59m) and women (15-49y), children utilised Rs. 71.08 crore (26 per cent) while women utilised Rs. 196.40 crore (74 per cent) out of the total NHM (RMNCH) spending on children and PLM, of Rs. 267.47 crore. A scenario quite the same for 2019-21 is seen as, on an average across the states, out of the total NHM (RMNCH) spending of Rs. 489.07 crore, 0-59m children utilise Rs. 120.40 crore (23 per cent) while women (15-49y) utilise Rs. 368.87 crore (77 per cent) of the total NHM (RMNCH) expenditure.

It can also be seen from the tables and figures that the utilisation of public spending on NHM is skewed towards women and away from children during both periods. This can also be viewed in the context of the coverage of NHM (RMNCH) services with regard to Children (0-59m) and Women (15-49y). During 2015-16, on an average across the 17 states, it is seen that Rs. 71.08 crore (25.54 per cent) of the total spending, Rs. 267.47 crore on (RMNCH) is utilised by 52.53 per cent of children (0-59m) covered by RMNCH services while Rs. 196.40 crore (45.52 per cent) of the total units utilised goes to 28.94 per cent of Women (15-49y) covered by the services. During 2019-21, on the average across the states, Rs. 120.40 crores (23.45 per cent) of the total units utilised (Rs. 489.07 crore) of RMNCH is utilised by 54.84 per cent of the children (0-59 months) covered by the services while Rs. 368.67 crore (76.55 per cent) of the total spending on (RMNCH) is utilised by 30.96 per cent of Women (15-49 y) covered by the RMNCH services. So, we see that the targeting of public expenditure for (RMNCH) is efficient with respect to Women (15-49y) while the utilisation rate is lower than the coverage rate of the services with regard to children of age 0-59 months (the more vulnerable among the beneficiary groups, in both years.

Looking at the targeting of NHM (RMNCH) funding among the states, by comparing the utilisation rate and coverage rate of NHM (RMNCH), it can be observed that targeting is

efficient with regard to Women (15-49 years) for all other the states. The utilisation rate is higher than the coverage rate of this beneficiary group in all of the states during both periods. However, for children (0-59 months) we see that the unit utilisation proportion of NHM (RMNCH) services is lower than the coverage rate of children (0-59 months) in all of the states during both periods. For this beneficiary group, the highest proportional utilisation was in Bihar during both periods (36 per cent in the first and 33 per cent in the second period) while the lowest was in Kerala (18 per cent) during 2015-16 and in Kerala and Tamil Nadu (20 per cent for both states) during 2019-21. The lower fertility rates in Kerala and Tamil Nadu as compared to Bihar could be one of the reasons for the lower utilisation rates in the former than in the latter.

During 2015-16, Rs. 371.20 crore was spent on NHM (RMNCH) in Bihar out of which Rs. 132.52 crore (36 per cent) was utilised by children under 5 years. During 2019-21, Rs. 752.23 crore was spent on the services in Bihar from which Rs. 249.15 crore (33 per cent) was utilised by children under 5 years. During 2015-16, out of Rs. 90.69 crore spent on the services in Kerala, Rs. 16.55 (18 per cent) was utilised by children (0-59 m). During 2019, out of Rs. 203.87 crore spent on NHM (RMNCH) in Kerala, Rs. 40.68 crore (20 per cent) was utilised by children under 5 years and out of Rs. 459.04 crore spent on the same in Tamil Nadu, Rs. 92.78 (20 per cent) was utilised by children under 5 years. Notwithstanding the differences in shares of total NHM (RMNCH) funding utilised by children in different states, we see that utilisation of NHM funding across the states and for both time periods, is skewed away from children, the more vulnerable group of beneficiaries.

Table 3.15

Coverage rate (per cent) of NHM (RMNCH) Beneficiaries

State	2015-16			2019-21		
	Children (0-59m)	Women (15-49y)	Children (0-59m) & Women (15-49y)	Children (0-59m)	Women (15-49y)	Children (0-59m) & Women (15-49y)
AP	60.57	30.21	34.16	55.61	29.97	33.10
BH	50.27	26.80	32.16	63.10	32.16	38.40
CH	50.01	30.37	33.96	44.02	30.23	32.58
GJ	45.18	25.55	28.70	49.89	30.50	33.47
HY	54.51	28.44	32.60	55.26	30.63	34.30
JH	49.39	27.20	31.37	55.63	30.29	34.62
KR	50.07	27.89	31.03	56.03	30.34	33.67
KA	42.66	30.62	32.29	50.44	31.37	33.92
MP	43.37	27.12	30.32	47.58	31.43	34.36
MH	57.77	28.43	32.41	58.78	30.03	33.65
OD	57.19	30.84	34.82	59.07	33.10	36.88
PB	58.73	32.57	35.95	55.42	29.48	32.61
RN	48.40	29.05	32.80	52.23	32.69	36.13
TN	54.28	29.10	32.34	57.89	30.94	34.15
TA	63.46	30.24	34.65	57.10	30.59	33.89
UP	44.91	26.52	30.23	51.55	30.28	34.19
WB	62.24	31.02	35.10	62.71	32.37	35.99
Summary Statistics						
Min.	42.66	25.55	28.70	44.02	29.48	32.58
Max.	63.46	32.57	35.95	63.10	33.10	38.40
Mean	52.53	28.94	32.64	54.84	30.96	34.47
St. Dev.	6.47	1.87	1.90	4.93	1.02	1.50
CV (%)	12.31	6.45	5.82	8.98	3.30	4.36

Note: State abbreviations – Same as for Table 3.11
Source: own calculations based on various sources (Ref. Table 3.9)

Table 3.16

NHM (RMNCH) utilisation – units and proportion (benefit incidence coefficient) of beneficiary groups (2015-16)

	Children (0-59m)		Women (15-49y)		Children (0-59m) & Women (15-49y)	
State	Units utilised	Prop.	Units utilised	Prop.	Units utilised	Prop.
AP	53.82	0.23	179.41	0.77	233.22	1
BH	132.52	0.36	238.68	0.64	371.20	1
CH	39.78	0.27	107.86	0.73	147.64	1
GJ	49.54	0.25	146.98	0.75	196.52	1
HY	26.59	0.27	73.04	0.73	99.63	1
JH	38.30	0.30	91.15	0.70	129.45	1
KR	38.19	0.23	128.91	0.77	167.10	1
KA	16.55	0.18	74.15	0.82	90.69	1
MP	119.42	0.28	304.73	0.72	424.14	1
MH	87.88	0.24	275.40	0.76	363.28	1
OD	65.41	0.25	198.61	0.75	264.02	1
PB	26.56	0.21	99.21	0.79	125.77	1
RN	113.25	0.29	282.34	0.71	395.59	1
TN	84.74	0.22	308.27	0.78	393.01	1
TA	24.37	0.24	76.00	0.76	100.37	1
UP	217.24	0.30	508.15	0.70	725.39	1
WB	74.14	0.23	245.85	0.77	319.99	1
Summary Statistics						
Minimum	16.55	0.18	73.04	0.64	90.69	1
Maximum	217.24	0.36	508.15	0.82	725.39	1
Mean	71.08	0.26	196.40	0.74	267.47	1
St. Dev.	50.16	0.04	113.66	0.04	162.02	0
CV (%)	70.58	15.62	57.87	5.36	60.57	0

Note: State abbreviations – Same as for Table 3.11
Units utilised are in Rs. crore
Prop.: Proportion to total unit utilisation or the Benefit Incidence Coefficient
Source: own calculations based on various sources (Ref. Table 3.9)

Table 3.17

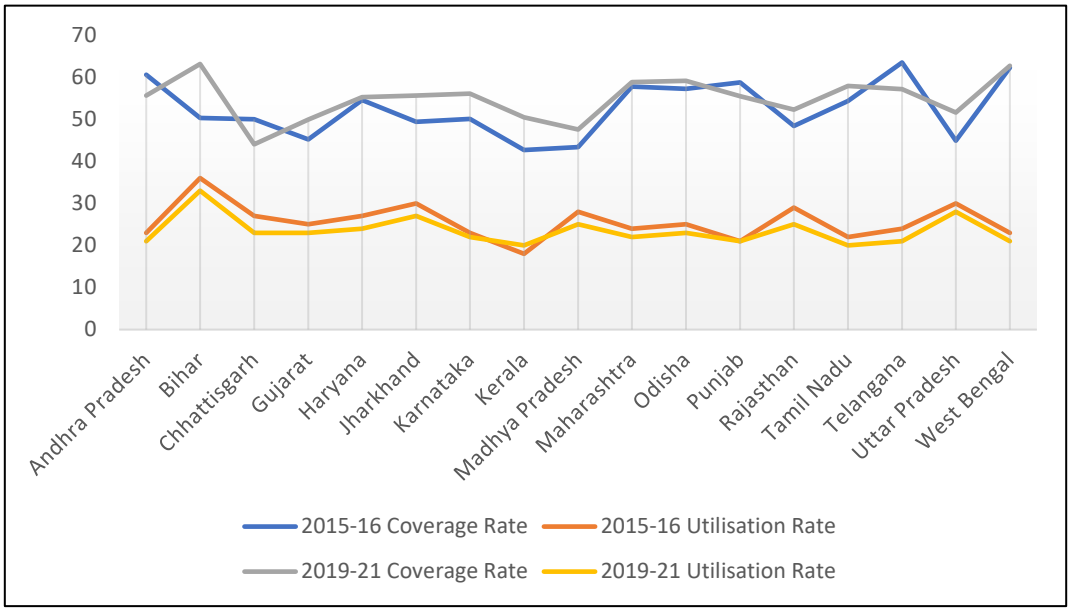
NHM (RMNCH) utilisation – units and proportion (benefit incidence coefficient) of beneficiary groups (2019-21)

	Children (0-59m)		Women (15-49y)		Children (0-59m) & Women (15-49y)	
State	Units utilised	Prop.	Units utilised	Prop.	Units utilised	Prop.
AP	79.19	0.21	306.78	0.79	385.97	1
BH	249.15	0.33	503.08	0.67	752.23	1
CH	68.30	0.23	228.39	0.77	296.69	1
GJ	75.03	0.23	253.51	0.77	328.53	1
HY	37.81	0.24	119.78	0.76	157.58	1
JH	76.12	0.27	200.74	0.73	276.86	1
KR	96.77	0.22	351.55	0.78	448.31	1
KA	40.68	0.20	163.19	0.80	203.87	1
MP	182.20	0.25	541.80	0.75	724.00	1
MH	136.48	0.22	483.92	0.78	620.40	1
OD	127.36	0.23	418.01	0.77	545.36	1
PB	39.62	0.21	153.59	0.79	193.21	1
RN	177.12	0.25	519.99	0.75	697.11	1
TN	92.78	0.20	366.25	0.80	459.04	1
TA	50.85	0.21	191.20	0.79	242.05	1
UP	418.94	0.28	1090.79	0.72	1509.73	1
WB	98.37	0.21	374.84	0.79	473.21	1
Summary Statistics						
Minimum	37.81	0.20	119.78	0.67	157.58	1
Maximum	418.94	0.33	1090.79	0.80	1509.73	1
Mean	120.40	0.23	368.67	0.77	489.07	1
St. Dev.	93.25	0.03	224.31	0.03	315.38	0
CV (%)	77.45	14.43	60.84	4.42	64.49	0

Note: State abbreviations – Same as for Table 3.11
Units utilised are in Rs. crore
Prop.: Proportion to total unit utilisation or the Benefit Incidence Coefficient
Source: own calculations based on various sources (Ref. Table 3.9)

Figure 3.4

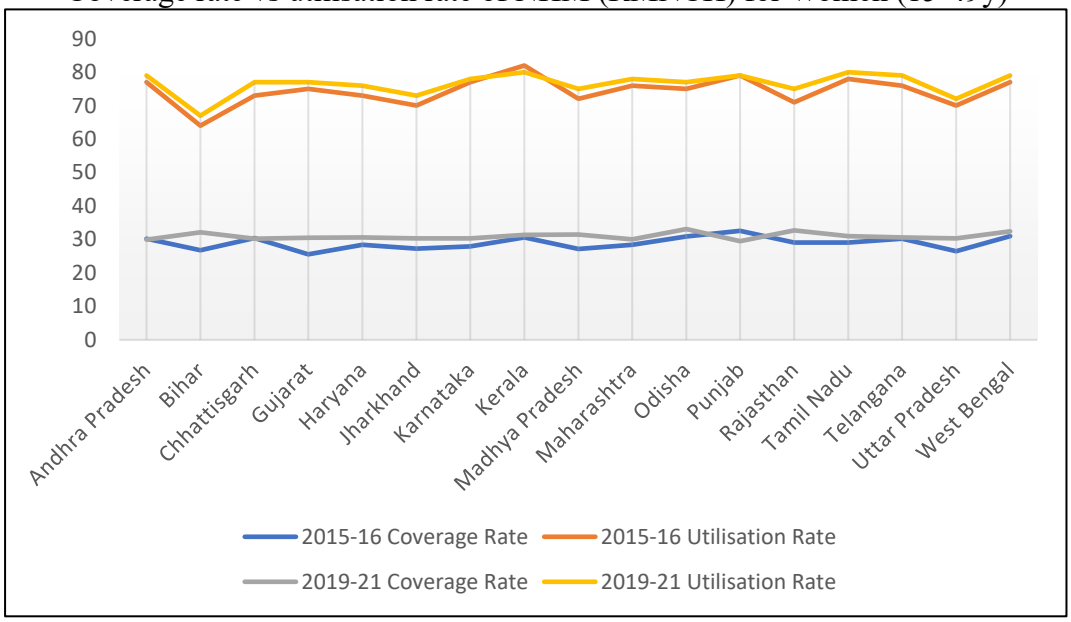
Coverage rate vs utilisation rate of NHM (RMNCH) for Children (0-59m)



Source: Same as for Tables 3.15, 3.16 and 3.17

Figure 3.5

Coverage rate vs utilisation rate of NHM (RMNCH) for Women (15-49y)



Source: Same as for Tables 3.15, 3.16 and 3.17

ECD service utilisation of beneficiary groups as proportions to total utilisation (or benefit incidence coefficients) of the ECD services – ICDS-SNP, ICDS-PSE and NHM (RMNCH) for the two time periods and across the states are presented in Table 3.18. The tabulation is done with regard to the most vulnerable group of the beneficiaries of each of the services.

Table 3.18

Proportion to total unit utilisation (benefit incidence coefficient) of most vulnerable beneficiary group of ECD service

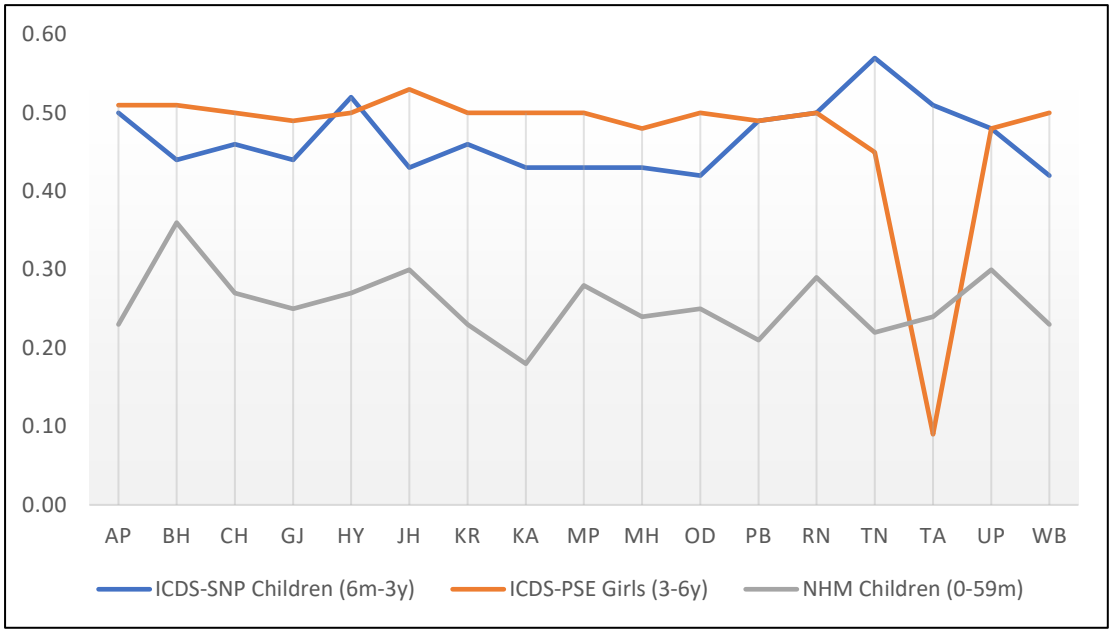
	ICDS-SNP Children (6m-3y)		ICDS-PSE Girls (3-6y)		NHM (RMNCH) Children (0-59m)	
States	2015-16	2019-21	2015-16	2019-21	2015-16	2019-21
AP	0.50	0.48	0.51	0.70	0.23	0.21
BH	0.44	0.43	0.51	0.47	0.36	0.33
CH	0.46	0.44	0.50	0.52	0.27	0.23
GJ	0.44	0.44	0.49	0.49	0.25	0.23
HY	0.52	0.48	0.50	0.49	0.27	0.24
JH	0.43	0.22	0.53	0.50	0.30	0.27
KR	0.46	0.43	0.50	0.47	0.23	0.22
KA	0.43	0.43	0.50	0.49	0.18	0.20
MP	0.43	0.42	0.50	0.49	0.28	0.25
MH	0.43	0.39	0.48	0.50	0.24	0.22
OD	0.42	0.43	0.50	0.49	0.25	0.23
PB	0.49	0.48	0.49	0.47	0.21	0.21
RN	0.50	0.46	0.50	0.49	0.29	0.25
TN	0.57	0.56	0.45	0.49	0.22	0.20
TA	0.51	0.48	0.09	0.49	0.24	0.21
UP	0.48	0.50	0.48	0.51	0.30	0.28
WB	0.42	0.42	0.50	0.50	0.23	0.21
Summary statistics						
Min.	0.42	0.22	0.09	0.47	0.18	0.20
Max.	0.57	0.56	0.53	0.70	0.36	0.33
Mean	0.47	0.44	0.47	0.50	0.26	0.23
S. D.	0.04	0.07	0.10	0.05	0.04	0.03
CV (%)	9.16	15.14	20.42	10.21	15.62	14.43

Note: State abbreviations – Same as for Table 3.11

Source: own calculations based on various sources (Ref. Table 3.9)

Figure 3.6

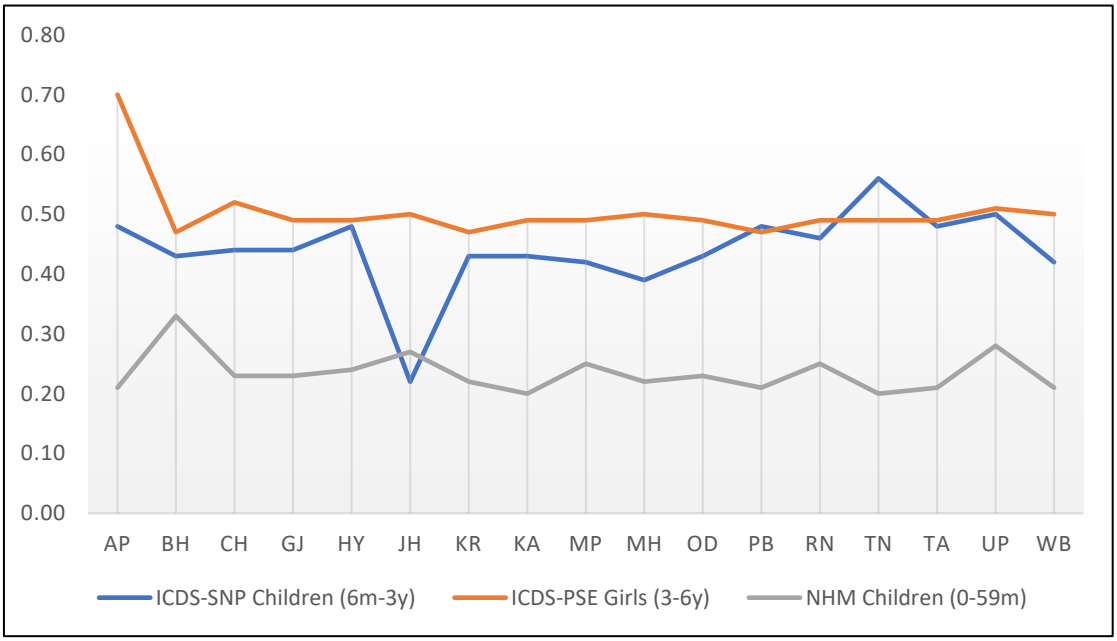
Proportion to total unit utilisation (benefit incidence coefficient) of most vulnerable beneficiary group of ECD service during 2015-16



Note: State abbreviations – Same as for Table 3.11
Source: own calculations based on various sources (Ref. Table 3.9)

Figure 3.7

Proportion to total unit utilisation (benefit incidence coefficient) of most vulnerable beneficiary group of ECD service during 2019-21



Note: State abbreviations – Same as for Table 3.11
Source: own calculations based on various sources (Ref. Table 3.9)

It can be observed from Table 3.18 and Figures 3.6 and 3.7 that the higher rate of unit utilisation of a particular service by the vulnerable group of beneficiaries in a state does not ensure that the ECD expenditure will be targeted towards the most vulnerable beneficiary group for all of the ECD services. For instance, ICDS-SNP utilisation proportion of children (6m-3y) was highest in Tamil Nadu during both periods, 2015-16 and 2019-21. Yet, during both periods, Tamil Nadu's utilisation proportions of ICDS-PSE by girls and NHM by children (0-59m) were below the average utilisation proportions (considering the 17 states). Odisha which had the lowest the utilisation proportion of ICDS-SNP by children (6m-3y) during 2015-16 fared much better during 2019-21. Odisha's utilisation proportion of ICDS-PSE by girls and NHM (RMNCH) by children (0-59m) were also closer to the average utilisation proportions of the 17 states during both periods. The proportional utilisation of ICDS (SNP) by 6m-3y children was lowest in Jharkhand during 2019-21. However, the state's utilisation proportion of ICDS-PSE by girls was the highest, during 2015-16 and equal to the average for the 17 states, during 2019-21. Jharkhand's proportional utilisation of NHM (RMNCH) services by children (0-59m) were much higher than the average of the 17 states, during both periods. On an average across the states, utilisation proportion of ICDS-SNP by children (6m-3y) & ICDS-PSE by girls was much higher than that of NHM (RMNCH) by children during both periods. For instance, during 2019-21, the average utilisation proportion of ICDS-SNP by children (6m-3y) & ICDS-PSE by girls was 0.44 and 0.50, respectively while that of NHM (RMNCH) by children (0-59m) was 0.23 suggesting ICDS-SNP utilisation skewed towards young children (6m-3y), balanced utilisation of ICDS-PSE between boys and girls and the utilisation of NHM (RMNCH) skewed away from children.

3.5 Conclusion

Through the assessment of the coverage of ICDS and NHM, this chapter finds wide variation in the quintile-wise coverage rates among the states. For ICDS on an average across the states during both periods, 2015-16 and 2019-21, the proportional coverage of the poorest quintile beneficiaries was more than the proportional coverage of the richest quintile beneficiaries. Yet, for NHM, out of the total beneficiaries covered, the proportion of the richest quintile beneficiaries was more than that of the poorest quintile beneficiaries on an average across the states, during both time periods. The rural coverage rates were higher, compared to urban coverage rates in some states while it was the other way round in some states. Yet in states like Kerala and Tamil Nadu, the rural vs urban coverage rates were more balanced for ICDS and NHM during both time periods.

From the Benefit Incidence Analysis, it is found that on an average across the states, the government expenditure for ICDS-SNP is efficiently targeted towards children of age 6 months to 6 years during both periods while targeting was efficient also for Pregnant and Lactating Mothers during 2019-21. With regard to public expenditure for NHM (RMNCH) , it was observed that on an average across the states and also for each of the states, the government expenditure on the service was efficiently targeted for Women of age 15 to 49 years during both periods of time. Comparison of the utilisation proportions or benefit incidence coefficients of ICDS-SNP, ICDS-PSE and NHM (RMNCH) reveals that the utilisation rates of the early childhood development services in the states of the most vulnerable and needy group of beneficiaries is not balanced across the three services. A higher utilisation rate of one of the ECD services by its most needy beneficiary group does not ensure similar utilisation pattern across all of the services. Utilisation proportions (or benefit incidence coefficients) of ICDS-SNP and -PSE were mostly found to be higher than that for NHM (RMNCH), across all of the states. The overall utilisation patterns suggest that ICDS-SNP utilisation is on-track, in terms

of the benefit distribution of state government expenditures going more towards the most vulnerable beneficiary group (children of age 6 months to 3 years). It was found that the benefit distribution of ICDS-PSE is balanced between the two beneficiary groups of boys and girls. Utilisation of NHM (RMNCH) is strongly skewed, away from children under 5 years of age. Perhaps, improving the quality as well as awareness of the services could improve the services' utilisation rates of children under 5 years of age.

Chapter 4

Determinants analysis of BIA outcomes of early childhood development expenditures by the states

4.1 Introduction

The distribution of benefits of government expenditure on early childhood development (ECD), on ICDS and NHM (specific to this study) widely varies at the sub-national level in India. As suggested by the analysis in the preceding chapter even in a single state the benefit incidence of public expenditure on ICDS and NHM do not necessarily show the same kind of pattern. Better targeting or higher proportional utilisation of ICDS by the most vulnerable and needy beneficiary group of the service does not ensure similar targeting or utilisation pattern of NHM and vice-versa. This chapter seeks to determine the factors that influence the targeting or proportional utilisation of state government expenditures on ICDS and NHM, towards the most vulnerable and needy groups of beneficiaries of the services, at the sub-national level.

The volume and nature of expenditure of the state governments on the wide range of social services, including the merit goods related to ECD (particularly services under ICDS and NHM) depend on several factors. The size and composition of central fiscal transfers to the states, financial health, fiscal absorptive capacity, quality of governance in the states, political will, awareness campaigns, NGO interventions, etc are only a few of the influencers of the magnitude and distributional direction of the expenditures on ECD at the sub-national level. While these factors may be attributed more as part of the supply side of the targeting dynamics, there are many other demand-side influencers. State-specific population distribution, educational level (especially of women), access to information, enrolment rates in ICDS & NHM programmes and malnutrition burden prevalent in the states are some of the demand-side factors that influence the distributional share of the needy groups of beneficiaries. Determining the critical factors that influence the benefit incidence of government expenditures

on ICDS and NHM is paramount towards meeting the objectives of these ECD programmes in alignment with the international Nurturing Care Framework and UN Sustainable Development Goals for ECD. The disparities in benefit incidence outcomes across the states makes it compelling to ascertain the influence of critical factors on the share of benefits going towards the most vulnerable and needy beneficiary groups of the ECD programmes (ICDS and NHM, in particular).

Empirical evidence on the association between benefit incidence (ratio of Q1 to Q5) and indicators of access, education and health outcomes and governance, among others are reported by Davoodi, Tiongson and Asawanuchit (2003). The authors elucidate that higher utilisation of health and education services by the poor, being associated with better access to information and communication is reflected by the positive and statistically significant correlation between the relevant indicators of utilisation and access. They also find empirical evidence suggesting the association between indicators of better governance such as rule of law, political stability and lower corruption and indicators of higher utilisation by the poor, of education and health spending. Higher incidence of benefits to the poor, of public expenditure on education and health is found by the authors to be negatively associated with indicators of illiteracy, malnutrition and mortality and to be positively correlated with access to facilities of safer water and sanitation. The authors also cite constraints of institutions and capacities in low-income countries as plausible reasons for pro-poor education and health spending being found to be positively associated with income levels of countries. Their findings that pro-poor nature of health and education expenditure becomes stronger with the time as countries progress along their development stages, gets support from the theoretical model of Ravallion (1999). Household behaviour (such as enrolment preferences at different levels of education) as a demand-side factor affect the different shares of benefit incidence of education subsidy going to the poorer quintiles as found in Columbia by (Demery, 2000). Between NFHS-3 and NFHS-

4, regional (rural vs urban) and gender differences of benefit incidence of public health expenditure varied across the states with Bihar reporting the same gender and regional differences. However, the level of income of individuals and lower supply of private health facilities in rural areas may have resulted in higher dependence on public health services (Bhadra, 2015). Bhadra (2015) supported Torres and Pachón (2013) in vouching for critical evaluation of the influence of decentralised governance on delivery of public health services. The population in the high-income quintiles often 'vote with their feet' and 'exit' from public to better private health care services (Chakraborty et. al., 2013). However, this could increase slackness of public health care provision due to the loss of lowering of 'voices' when the more demanding section of beneficiaries, 'exit' to private health facilities (Chakraborty et. al., 2016). This implicitly supports the role of factors such as literacy, education, information, communication and awareness, which are found to be more pronounced in the higher-quintile populations and facilitate 'voices' seeking greater accountability and quality in provision of merit goods. These factors tend to have significant bearing on the distribution of benefits of public expenditure on social services (including on ECD services). Benefit incidence analyses usually done with regard to social services, mostly focus on overall health and education expenditures, in India and elsewhere. Causal analysis related to BIA outcomes and related factors are scarce. Few BIA studies related to public expenditures for ECD have been done in India. While such studies infer about plausible explanations and discuss associations between BIA outcomes and factors, as discussed above, those exploring causal relationships are rare. This chapter adds to the existing body of relevant literature in a significant manner by studying the determinants of benefit incidence of public expenditure on ICDS and NHM resultant on the different groups of beneficiaries especially the most vulnerable and needy among them. The next section (4.2) discusses the methodology of the analyses of the chapter. It is followed by

section (4.3) on the results and discussion about the findings of the analyses. The chapter is concluded in section 4.4.

4.2 Methodology

Research question: The central issue of the discussion in the preceding section is to know which factors affect the incidence of benefits with regard to different groups of beneficiaries of the state government expenditures on early childhood development (on ICDS and NHM in particular) and to assess the nature of the effect.

Objective: Towards answering the issues as described above, this chapter seeks to identify and test empirically the factors of benefit incidence outcomes of the state government expenditures on ICDS and NHM (RMNCH).

Hypotheses: The two main hypotheses that will be tested in this chapter are –

- States with greater fiscal autonomy and better fiscal absorptive capacity tend to have better targeted spending on ICDS and NHM.
- States with more educated women and having greater access to information tend to exhibit better targeting of government expenditure on ICDS and NHM.

Beta regressions are run with different dependent variables (benefit incidence coefficients) in each of the models, as described below:

I. Supplementary Nutrition Programme (SNP) utilisation ratio of:
    i. Children of the age group from 6 months to 3 years, denoted as SNP_6-3.
    ii. Children of the age group from 3 years to 6 years, denoted as SNP_3-6.
    iii. Children of the age group from 6 months to 6 years, denoted as SNP_6-6.
    iv. Pregnant and lactating mothers, denoted as SNP_PLM.

II. Preschool Education (PSE) utilisation ratio of:
    i. Girls of the age group from 3 to 6 years, denoted as PSEG_3-6.

ii. Boys of the age group from 3 to 6 years, denoted as PSEB_3-6.

III. National Health Mission's reproductive, maternal, new-born and child health component, NHM (RMNCH) utilisation ratio of:

i. Children of the age group 0 to 59 months, denoted as NHM_0-59.

ii. Women of the age group 15-49 months, denoted as NHM_15-49.

The analyses in this chapter focus on the determinants of the benefit incidence outcomes (the utilisation rates), represented by the benefit incidence coefficients, of the most vulnerable and needy group of beneficiaries of each of the ECD services – youngest group of children for ICDS-SNP, girls for ICDS-PSE and children (0-59m) for NHM (RMNCH). However, the analyses are inherently related to distribution of benefits across the beneficiary groups and the results are discussed accordingly.

The independent variables described with regard to each of the states, are as follows:

WE – Women's education: women with 10 or more years of schooling as a percentage of the total women population of the state.

WI – Women's information: women having access to mobile/radio/television as a percentage of the total women population of the state. (Internet is not considered to preserve comparability as it figures only in NFHS-V).

WA – Women's awareness is the interaction variable created as the product of WE and WI.

SFA – State's fiscal autonomy is the interaction variable created as the product of the share of central fiscal transfers in total transfers received by a State (denoted as SFT) and the share of general-purpose transfers in total Union fiscal transfers received by a State (denoted as GFT).

FAC – Fiscal absorptive capacity is calculated as 100 minus the savings of a state, as a percentage of the state's budget provision in a financial year.

SFA is calculated using data from E-states database on state government finances of RBI and FAC is calculated using data sourced from State Financial Audit Reports of CAG. NFHS-IV and -V have been referred to for data on WE and WI.

Beta regression has been chosen for the analyses as the dependent variables are proportions and practically, they are strictly bounded between 0 and 1. Two time periods corresponding to the NFHS rounds IV and V of the years 2015-16 and 2019-21, respectively have been considered for the 17 states (as in the preceding chapters). Being aware of the limited sample size in hand, we confined this empirical exercise to limited relevant statistics.

4.3 Results and Discussion

Table 4.1 presents the results of the Beta regression analysing the determinants of ICDS-SNP proportional utilisation of children (6m-3y). The results suggest that the strongest and statistically significant influence on the proportional utilisation of SNP by children (6m-3y) seems to be of Women's Education (WE). It can be seen that long-term education (especially women education) investments comparatively tend to have a much larger effect on the dependent variable than the marginally significant impact of women's access to information (WI). Surprisingly, the marginally significant interaction variable Women's Awareness (WA) shows up with a negative marginal coefficient. This suggests that educated women with access to information probably prefer nutritional alternatives other than Take-Home Rations (supplied to younger children of age 6 months to 3 years, under SNP) for the younger children. States' Fiscal Autonomy (SFA) is seen to have the weakest association with the dependent variable and it is not significant. One of the reasons could be that the states on an average prioritize beneficiary groups of SNP, other than children (6m-3y). Although it seems that Fiscal Absorptive Capacity (FAC) could have the strongest influence on the dependent variable, it is found to be insignificant. However, the direction and magnitude of the association of SFA and FAC with the dependent variable suggests that better administrative, infrastructural and

institutional quality of the states could raise their utilisation capacity of allocated funds for ICDS. Such states could even draw additional grants from the centre. These factors may substantially raise the share of funds flowing to the most vulnerable group of SNP beneficiaries. A flipped scenario with regard to children of age group 3 to 6 years is suggested by Table 4.2 with somewhat similar coefficients but having just the opposite signs. The results suggest that increases in SFA, FAC, WE and WI tend to divert proportional SNP utilisation away from children (3-6y). Of these FAC (marginally significant) seems to be the most influential. WE is significant and it also seems to show strong bearing on the dependent variable. Comparatively weaker influences are observed to be of WI (marginally significant) and SFA (insignificant). However, the coefficient of the marginally significant interaction variable WA suggests that larger values of WE and wider access to information by women are associated with higher utilisation of SNP for older children of age 3 to 6 years. Perhaps, snacks and hot cooked meals under SNP supplied to older children (3-6y) are perceived to be better than alternative sources of nutrition.

Table 4.1

Determinants of ICDS-SNP proportional unit utilisation of children (6m-3y)

Beta regression analysis results: Average marginal effects. Dep. Var.: ICDS-SNP proportional unit utilisation of children (6m-3y) or SNP_6-3				
Indep. Variable	Marginal coef.	Robust Std. Err.	z	P>|z|
SFA	0.02	0.02	0.92	0.355
FAC	0.18	0.11	1.56	0.119
WE	0.14	0.06	2.21	0.027
WI	0.06	0.03	1.90	0.057
WA	-0.09	0.04	-2.10	0.036

Source: Own computation using Stata 16

Table 4.2

Determinants of ICDS-SNP proportional unit utilisation of children (3-6y)

Beta regression analysis results: Average marginal effects. Dep. Var.: ICDS-SNP proportional unit utilisation of children (3-6y) or SNP_3-6				
Indep. Variable	Marginal coef.	Robust Std. Err.	z	P>|z|
SFA	-0.02	0.04	-0.64	0.521
FAC	-0.25	0.15	-1.69	0.090
WE	-0.15	0.08	-1.99	0.047
WI	-0.04	0.03	-1.70	0.089
WA	0.09	0.05	1.85	0.065

Source: Own computation using Stata 16

Table 4.3 shows the results related to the composite group of children of age 6 months to 6 years). Since children (6m-6y) and PLM are the two broad groups under SNP, their proportional utilisation rates are complementary and sum up to 1 (or 100 per cent). Hence, the results of regression analyses considering the two groups show exactly the same values of coefficients and z-scores but with opposite signs while the p-values are the same for both. The influence of SFA seems to be negligible and both SFA and FAC are statistically insignificant. Yet, the relationships show that higher SFA and greater FAC are associated with lower proportional utilisation of SNP by children (6m-6y) and conversely, higher proportional utilisation of SNP by PLM. This suggests that states on an average could be prioritizing expenditure on THRs more than on snacks/hot-cooked meals[24]. The former are utilised by children (6m-3y) and PLM while the latter by children (3-6y). Potential influences of WE (statistically insignificant) and WI (marginally significant) on the dependent variable are seen to be low but positive. This could probably be suggesting that on an average, educated women tend to prioritize child nutrition more than their own so do women with wider access to information. However, the combined effect of increase in WE and WI, captured by the interaction term WA (marginally

[24] https://cprindia.org/wp-content/uploads/2021/12/ICDS_2021_22.pdf

significant) is found to be negatively associated with the dependent variable. Perhaps, simultaneous increase in education and information access of women makes them aware of the importance of nutrition of women during pregnancy and lactation. Thereby, raising the SNP utilisation proportion of PLM (conversely reducing the proportional SNP utilisation of Children).

Table 4.3

Determinants of ICDS-SNP proportional unit utilisation of children (6m-6y)

Beta regression analysis results: Average marginal effects. Dep. Var.: ICDS-SNP proportional unit utilisation of children (6m-6y) or SNP_6-6				
Indep. Variable	Marginal coef.	Robust Std. Err.	z	P>|z|
SFA	-0.0009	0.02	-0.05	0.959
FAC	-0.11	0.07	-1.58	0.115
WE	0.004	0.00	1.63	0.104
WI	0.03	0.01	1.84	0.066
WA	-0.02	0.01	-1.71	0.087

Source: Own computation using Stata 16

Table 4.4 shows the results of the regression analysis of the effect of the independent variables (as discussed above) on the proportional unit utilisation of ICDS-PSE by girls of the age group from three to six years (PSEG_3-6). PSE for children of age group 3 to 6 years has two beneficiary groups, boys and girls. Hence, results and their implications with regard to boys gets flipped when considering girls. The respective regression results of the two beneficiary groups show coefficients and z-scores of same values with opposite signs while p-values remain the same.

Table 4.4

Determinants of ICDS-PSE proportional unit utilisation of girls (3-6y)

Beta regression analysis results: Average marginal effects. Dep. Var.: ICDS-PSE proportional unit utilisation of girls (3-6y) or PSEG_3-6				
Indep. Variable	Marginal coef.	Robust Std. Err.	z	P>|z|
SFA	0.005	0.03	0.16	0.875
FAC	0.16	0.27	0.58	0.565
WE	-0.12	0.07	-1.87	0.062
WI	-0.02	0.01	-1.41	0.158
WA	0.08	0.05	1.76	0.078

Source: Own computation using Stata 16

It can be observed from Table 4.4 that FAC of the states seem to have the strongest positive influence on the proportional utilisation of PSE by girls. However, the association is not statistically significant. It seems to reflect that girl children are prioritized in PSE initiatives by the government. This is also somewhat supported by the positive (though weak and insignificant) association of SFA with the dependent variable. Both WI (statistically insignificant) and WE (marginally significant) tend to have negative influence on the proportional PSE utilisation by girls. One of the plausible causes for WE to be negatively associated with PSEG_3-6 is that educated women would be gender neutral in enrolment of their children in private preschools. This gender-neutrality could reduce the larger share of enrolment of girls compared to boys in public preschool facilities.[25] However, increase in Women's Awareness due to higher WE and WI could mobilise women for seeking higher PSE quality and more accountability in PSE, instead of switching their children from public to private preschools. It can also be assumed that WA would encourage girl child education and possibly increase the proportional PSE utilisation by girls. It could also indicate positive

[25] https://img.asercentre.org/docs/ASER%202019/ASER2019%20report%20/aserreport2019earlyyearsfinal.pdf

association of WA and gender neutrality in fertility preferences thereby raising the proportion of girl population and their PSE enrolment and utilisation.

Table 4.5

Determinants of NHM (RMNCH) proportional unit utilisation of children (0-59m)

Beta regression analysis results: Average marginal effects. Dep. Var.: NHM (RMNCH) prop. unit utilisation of children (0-59m) (NHM_0-59)				
Indep. Variable	Marginal coef.	Robust Std. Err.	z	P>|z|
SFA	0.04	0.01	2.83	0.005
FAC	-0.16	0.05	-3.53	0.000
WE	-0.08	0.03	-2.77	0.006
WI	-0.06	0.03	-1.78	0.076
WA	0.03	0.03	1.12	0.265

Source: Own computation using Stata 16

Table 4.6

Determinants of NHM (RMNCH) proportional unit utilisation of women (15-49y)

Beta regression analysis results: Average marginal effects. Dep. Var.: NHM (RMNCH) prop. unit utilisation of women (15-49y) (NHM_15-49)				
Indep. Variable	Marginal coef.	Robust Std. Err.	z	P>|z|
SFA	-0.04	0.01	-2.83	0.005
FAC	0.16	0.05	3.53	0.000
WE	0.08	0.03	2.77	0.006
WI	0.06	0.03	1.78	0.076
WA	-0.03	0.03	-1.12	0.265

Source: Own computation using Stata 16

Table 4.5 shows the Beta regression results of the analysis of determinants of proportional unit utilisation of NHM (RMNCH) services by children (0-59m). Table 4.6 shows the results corresponding to women (15-49y). The proportional utilisation shares of two beneficiary groups children (0-59m) and women (15-49y) total up to 1 (or 100 per cent). Hence, the coefficients and z-scores in their respective regression results are the same but with opposite signs while the p-values are the same.

Positive and highly significant SFA indicates that states with higher fiscal autonomy on an average seem to prioritise health and nutrition of children (0-59m) over that of women (15-49y). However, the results also show that higher FAC of states (usually indicating better utilisation, financial, administrative and infrastructural capacities) on an average, tends to leverage funds away from children (0-59m) towards women (15-49y). Among the independent variables, FAC (highly significant) is seen to have the strongest negative association with the dependent variable. This could be indicating stronger focus of the programme on women in their reproductive age. Women's education (WE) and women's access to information (WI) are both negatively associated with the proportional NHM (RMNCH) utilisation of children of age group 0 to 59 months (NHM_0-59). The former appears to be highly significant and the latter marginally significant. This scenario could be reflecting that educated women and also women with greater access to information tend to prefer private health and nutrition services (presumed to be better) for their children over services under NHM (RMNCH). The negative association of WE and WI with NHM_0-59 could also suggest proportionally higher utilisation of NHM (RMNCH) by women (with education and access to information). Lower fertility preferences among educated and informed women could also be reflected in the reduced proportional utilisation of the services by children. Interestingly, interaction between WE and WI represented by the variable, Women's Awareness (WA) is found to be positively associated with the dependent variable. Even though WA is not statistically significant, one of the plausible explanations for the positive association, is that educated women with access to information are likely to demand accountability from public institutions and demand better quality services. It's likely that their awareness of the critical importance of health and nutrition during children's early years, increases the proportional enrolment and utilisation of NHM (RMNCH) services by children (0-59m) and conversely, lowers that of women (15-49y).

4.4 Concluding observations

Inter-state disparities and intra-state variation in the distribution of benefits of government expenditure on ICDS and NHM at the sub-national level in India was found in the results of the previous chapter. This chapter explored the supply-side and demand-side influencers of benefit incidence of ECD spending of the state governments. This was done with particular focus on the vulnerable and needy groups of beneficiaries of ICDS and NHM. The results of the analyses indicate (although the related variables are statistically insignificant) that higher fund utilisation capacity and fiscal autonomy enable and prioritize the distribution of SNP benefits in favour of children (6m-3y). Fund utilisation capacity and fiscal autonomy depend on various factors such as fiscal, administrative and infrastructural health of the state. Educated women with access to information seem to prefer nutritional alternatives other than THR as SNP for younger children (6m-3y) but they seem to prefer hot-cooked meals/snacks offered as SNP over other alternatives for older children (3-6y). Hence, improving the quality of THR and promoting its utility for younger children could perhaps encourage educated, informed and aware women to utilise THR more. It would increase the flow of benefits to the neediest group of SNP beneficiaries. FAC and SFA are insignificant even when considering proportional utilisation of SNP by children (6m-6y) vis-à-vis proportional SNP utilisation by PLM. Yet, their negative association with proportional utilisation of SNP by children suggest that states on an average could be prioritizing THR more than snacks/hot cooked meals. Children (6m-6y) utilise THR and snacks/hot cooked meals while PLM utilise only THR. Reprioritising the utilisation of snacks/hot cooked meals and THR by children would aid the flow of benefits towards children (6m-6y). It is also observed that child nutrition tends to be prioritised by women with education and also by those with access to information. Yet, it seems that women with both education and access to information become aware of paying attention to their own health and nutrition, as well. This seems to be reflected by the association of lower proportional

utilisation of SNP by children (and conversely with higher proportional utilisation of SNP by women) with higher levels of Women's Awareness. Hence, increasing information campaigns focused on child health, nutrition and well-being such as the criticality of the first 1000 days of a child could influence educated women with access to information to utilise more of SNP for children (6m-6y), thereby raising the SNP utilisation proportion of the more vulnerable beneficiary group. Results related to PSE suggest prioritization of girls under PSE. Yet, a combination of increases in women's education along with their access to information could raise the proportional utilisation of PSE by girls. Results related to NHM suggest prioritization of children by states with higher fiscal autonomy and of women by states with higher fiscal absorptive capacity. This indicates that NHM (RMNCH) could inherently be geared to benefit women more than children. The combined influence of women's education and their access to information seems to be beneficial for children in terms of their proportional utilisation of NHM (RMNCH) services. It suggests higher awareness among women tends to encourage them to seek improvements and increase utilisation of NHM (RMNCH) services for children. Hence, it stands reasonable to consider that health and nutrition of children (0-59m) need to be institutionally prioritised and the quality and service delivery of NHM (RMNCH) are required to be at least at par with those of competing alternatives, for directing NHM (RMNCH) benefit distribution towards the more vulnerable group of beneficiaries.

Chapter 5

Summary of major findings, limitations, and policy recommendations

5.1. Introduction

This thesis investigates the distribution of benefits of government expenditures on early childhood development (ECD) among various groups of beneficiaries. The study examines the nature of government expenditure on ICDS and NHM in terms of its determinants. The determining factors of benefit incidences of the two schemes are also studied. A large part of the child population of the world is in India. The status of ECD (as per some indicators) is observed to have improved in recent years in the country. Yet, a large number of children in the country are still at risk of not meeting their full development potential. The most vulnerable among children are such as those that belong to younger groups, those from poorer quintiles or those with disabilities. Large disparities across states and across beneficiary groups of ECD schemes exist. It is widely acknowledged that one of the most efficient and cost-effective strategies for sustainable development of nations is to invest in ECD. However, child development is found to be persistently underfunded in India and the lack of fiscal marksmanship of government spending on social sector schemes (including child development schemes), is rampant across the states. The prevailing scenario, post fiscal restructuring (based on the 14th FC recommendations) is challenging for ECD as central transfers to states for CSS (including ICDS and NHM) have reduced. Hence, it is crucial to examine the incidence of benefits (on various groups of beneficiaries) of government expenditure on ECD schemes at the sub-national level. Identification of the determinants of the distribution of benefits of such expenditures is also important to facilitate a more equitable development of children in their early years. Prioritization of early childhood development is necessary to meet the Sustainable Development Goals, especially Goal 4 (Target 4.2). The literature on early childhood development encompasses conceptual, theoretical, empirical and financial studies in

international, national and sub-national contexts. Most benefit incidence analyses found in the surveyed literature deal with government expenditures on broad categories of health and education. Studies that cover the determinants of benefit incidence outcomes are rare. Hardly any study has been done to assess the distribution of benefits of public expenditures on ECD at the subnational level in India. This study aimed to fill that gap by not only examining the distribution of benefits of the expenditures of the state governments on ICDS and NHM (RMNCH) but also assessing the determinants of the benefit incidence outcomes of the public expenditures on the two schemes related to ECD. The questions that were sought to be answered through this study are related to the effect of central government fiscal transfers on the early childhood development expenditures of the states; the distribution of benefits of ICDS and NHM (RMNCH) expenditures of the states among the different categories of beneficiaries; and the factors that determine the relative shares of benefits that the various beneficiary categories receive out of the ECD expenditures of the states. This chapter concludes the analysis by presenting a summary of this study's findings, by elaborating on the limitations of the study and by making some suggestions for policy and for further research agendas.

5.2. Summary of findings

Chapter 2 sought to assess the impact of the central government fiscal transfers on the expenditures of the state governments for ICDS and NHM. The chapter also includes a preliminary correlation exercise involving the indicators of child health/nutrition and the budget approvals/releases (for ICDS and NHM). Child development budgets in India suffer from low funding and the findings of the simple correlation exercise become important. They are described as follows:

- States with low levels of child health and nutrition are expected to receive larger budget approvals and releases to improve their ECD status. The correlation analysis suggests that a scenario similar to this prevailed during 2015-16 with regard to NHM. However,

the correlation between IMR/U5MR and budget approvals/releases (for ICDS and NHM) was only moderate to low during 2019-21. The reduced central support to states for Centrally Sponsored Schemes (CSS) since 2015-16 could be among the causes for the reduction in the correlation during the latter period.

- Substantial variation across the states was observed considering the actual releases as percentages of the approved budgets. However, the actual release of funds was lower than the originally approved budgets for all of the states during both periods. Similar scenario was found in case of ICDS during 2019-21. Releases being lower than budget approvals is a general social sector financing pattern of the government. Yet, the findings suggest that the allocations and releases for ICDS and NHM do not seem to be helping to ensure minimum standards of ECD services in the states.

The main focus of the chapter was to empirically assess the impact of fiscal transfers of the centre to the states on the state's own expenditures for ECD (particularly on ICDS, RCH and NHM expenditures). The regression analyses reveal that:

- States tend to augment their own expenditures on RCH and ICDS by the central grants that they receive for these schemes. This is in line with the norm and the states seem to be amenable to increase their own spending for the schemes focused on ECD. Yet, they could also have been bound by the conditionalities of tied-grants or specific purpose transfers related to RCH and ICDS.

- However, with regard to NHM, the states tend to deviate from the norm and substitute their own expenditures by the central government grants that they receive for the scheme. This undesirable practice could reflect that the priorities of the state in terms of health may be sectors other than ECD, such as secondary and tertiary health.

The third chapter focused on assessing the distribution of benefits of the government expenditures on ECD programmes among the various groups of beneficiaries. Prior to the benefit incidence analysis, a preliminary examination of the distribution of beneficiaries of ICDS and NHM (RMNCH) among different quintiles and location (rural vs urban) was done on the basis of the unit-level NFHS data of the two latest rounds. It was found that:

- Out of the total number of beneficiaries of ICDS and NHM (RMNCH) in the sample, the relative proportions of those belonging to different quintiles varied widely among the states. For ICDS, on an average across the states, it was found that the proportional coverage of the poorest quintile beneficiaries was more than that of the richest quintile beneficiaries, during both periods.
- However, for NHM (RMNCH) the scenario was found to be the other way round. Richest quintile beneficiaries were proportionately more than the poorest quintile beneficiaries on an average across the states during both the periods.
- The rural vs urban beneficiary proportions in the samples for ICDS and NHM (RMNCH) also varied across the states. The rural beneficiary proportions were larger. Yet, the rural vs urban proportions were more balanced in states like Kerala and Tamil Nadu during both time periods.

The benefit incidence analysis considers children (6m-6y) as the more vulnerable and needy group among the beneficiaries of ICDS-SNP. Within this group children (6m-3y) is considered more vulnerable. For ICDS-PSE, girls are considered to be the more vulnerable beneficiary group and for NHM (RMNCH), children (0-59m) are taken to be the more vulnerable group among the beneficiaries. The analysis revealed:

- Efficient targeting (utilisation rate compared to coverage rate) of government expenditure on ICDS-SNP towards children (6m-6y), on an average across the states, during both periods. Efficient targeting was also observed for PLM during 2019-21.

- The overall utilisation patterns suggest that ICDS-SNP utilisation is on-track, in terms of the benefit distribution of state government expenditures going more towards the most vulnerable beneficiary group (children of age 6 months to 3 years).

- Government expenditure for NHM (RMNCH) on an average and also for each of the states, was found to be efficiently targeted for women (15-49y) during both periods of time. However, the utilisation rate of the service was skewed away from children (0-59m).

- The utilisation rates of the services across the states were not balanced. Better utilisation rate of one of the three services by the more vulnerable and needier beneficiary group in a state was not found to imply similar utilisation pattern for all of the services in the state.

- The utilisation proportions (or benefit incidence coefficients) were mostly found to be higher for the two ICDS services than for NHM (RMNCH) across all states.

- On the whole, the benefit distribution of ICDS-SNP showed a favourable scenario with higher utilisation proportions of the younger group of children (6m-3y) in general. The ICDS-PSE utilisation proportions were mostly balanced between boys and girls. However, NHM (RMNCH) utilisation patterns strongly skewed away from children (0-59m) were observed.

The fourth chapter attempted a determinants analysis of the benefit incidence coefficients observed in Chapter 3. Supply-side and demand-side influencers of the benefit incidence

coefficients of expenditures on ICDS and NHM (RMNCH) were explored. The focus here was on the vulnerable and needy groups of beneficiaries of ICDS-SNP & -PSE and NHM (RMNCH). The findings of the empirical exercise suggest that:

- Nutritional alternatives other than Take-Home Rations (THRs) as SNP for children (6m-3y) are preferred by educated women with access to information. It was also found that such women tend to prefer hot-cooked meals/snacks over other alternatives for children.
- Fiscal absorptive capacity (FAC) and States' Fiscal Autonomy (SFA) are found to be insignificant with regard to proportional utilisation of SNP by children (6m-3y) and also by children (6m-6y). Yet, results suggest positive association of FAC and SFA with the benefit incidence coefficients of utilisation of SNP by children (6m-3y). The positive associations indicate that higher fund utilisation capacity and fiscal autonomy enable and prioritize the distribution of SNP benefits in favour of children (6m-3y). However, negative association of FAC and SFA with the proportional utilisation of SNP by children (6m-6y) suggest that states on an average could be prioritizing THR more than snacks/hot cooked meals. It is found that lower proportional utilisation of SNP by children (and conversely with higher proportional utilisation of SNP by women) is associated with higher levels of Women's Awareness. It seems to suggest that child nutrition tends to be prioritised by women with education and also by those with access to information. However, women with both education and access to information seem to become aware of the need to pay attention to their own health and nutrition, as well.
- Results related to PSE in general indicate prioritisation of girls under PSE. A combination of increases in women's education along with their access to information tends to raise the proportional utilisation of PSE by girls.

- For NHM (RMNCH), results suggest that states with higher fiscal autonomy tend to prioritize children while states with higher fiscal absorptive capacity tend to prioritise women. Perhaps, NHM (RMNCH) could inherently be geared to benefit women more than children. A combination of higher women's education and their access to information seems to raise the proportional utilisation of NHM (RMNCH) services by children. It indicates that women's awareness could encourage them to seek improvements in quality and accountability in the provision of services and also raise the proportional utilisation of NHM (RMNCH) services by children.

5.3. Limitations of the study

Budgets for children have persistently remained underfunded and fiscal rationalisation has shrunk the central support to state governments in terms of fiscal transfers for CSS (including ECD programmes). Hence, improvements in early childhood development at the pace required to meet the relevant commitments under the Sustainable Development Goals is challenging. The present study's contribution is relevant and significant in this scenario. However, the count and complexities of the issues involved are serious limitations for non-funded, time-bound and single-researcher based studies such as this one. Hence, this study be treated as a preliminary and illustrative attempt towards fulfilling its stated research objectives.

Early childhood development is a multidimensional and multistage phenomenon. Although attempts have been made at the national and international levels to describe, define and quantify ECD, precise measurement of the same has still remained elusive. Moreover, the pace of development of children especially in the early years varies from person to person. The prevalent concepts and practices of early childhood development also vary across different geographical and social settings. These factors thereby could make conclusive interpersonal and intergroup comparison of early childhood development, unwieldy. The definitions, concepts and stages of ECD generally considered at the international, national and sub-national levels have been adhered to for analyses in this study

Government expenditures on early childhood development are multi-sectoral in nature. The expenditures are widely spread across various departments and ministries. They are also layered in terms of multiple, sometimes overlapping schemes. Hence, gathering government funding data on ECD posed as one of the biggest challenges for the study. Not only this but there is also the lack of uniformity in budget reporting practices of the states. These serious challenges made it impracticable for a single-researcher to collect and examine, within stipulated time, the whole gamut of expenditures related to early childhood development. The

focus on this study is restricted primarily to the expenditures and beneficiaries of only two major schemes out of numerous national and sub-national government programmes and interventions related to early childhood development.

The conventional benefit incidence analysis could not be carried out primarily due to the fact that relevant government expenditure data was not available at the disaggregated level by household, individuals or even location (urban and rural areas). The number of beneficiaries and eligible populations were also not available for all of the beneficiary groups of the programmes considered and estimates had to be made in some of the cases for carrying out the analyses. Conventional BIA focuses on the concentration of benefits of government expenditure by income, wealth, location, social groups, etc. The present approach considers different groups of beneficiaries, such as children and its sub-groups and women (including PLMs), availing a particular service. The quintile-wise and location-wise coverage analysis is based only on the data available from unit-level NFHS and the samples of the beneficiary categories considered therein. Hence, drawing conclusions at scale from the analysis has its limitations.

The findings of the regression analyses, especially those in the fourth chapter, have to be looked at considering that the analyses were conducted with limited data. The variable representing women's access to information does not include internet (a crucial source of information these days). This was done to preserve comparability as the data regarding the same was not available for NFHS-4. Fiscal absorptive capacity variable is also narrowly defined. It would ideally include data to represent the level of governance in the states. Primary survey backed deeper analysis of many aspects of ECD such as utilisation and impact analysis at the sub-state regional levels although desirable for a well-rounded investigation, were not feasible due to constraints of time and resources.

5.4. Policy suggestions

The findings of the analysis of child health and nutrition and health status vis-à-vis ECD budget allocations and releases in the states in chapter 2 enable policy suggestions as follows:

- Sufficient funding of programmes such as ICDS and NHM is crucial to ensure minimum standards of ECD services in the states. Moreover, states with low levels of ECD indicated by factors such as high IMR and U5MR are expected to be supported by higher funding. Since ECD is chronically underfunded in the country, increasing the share of releases out of the approved budgets for all states is imperative. The increases should be done by creating enabling conditions for efficient utilisation of funds, even for those states that seem to be non-compliant to some of the norms, due to their limitations such as lower fiscal absorptive capacity. This would help in ensuring optimum utilisation of allocated budgets for early childhood development. It would also aid in moving towards the goal of fiscal equalisation, providing further help in achieving balanced early childhood development across the states.

The regression analyses of the 2nd chapter indicate that the states on an average tend to augment their own expenditures on ICDS and RCH by the central government grants. However, they tend to substitute their own expenditures on NHM by central grants. While the augmentative fiscal behaviour of the states needs to be encouraged the substitutionary tendencies of the states need correction through policy mechanisms.

The benefit incidence analyses of the 3rd chapter suggest that benefits of government expenditures on ICDS-SNP flows proportionately more towards the most vulnerable beneficiary group (children of age 6 months to 3 years). The benefit distribution of ICDS-PSE expenditures, in general were found to be balanced between the two beneficiary groups of boys

and girls. However, benefit distribution of NHM (RMNCH) expenditures is seen to be strongly skewed, away from children under 5 years of age.

- Hence, the prevailing policy prescriptions regarding ICDS appear to be relevant and effective and enhancing policy effectiveness towards improving the quality and awareness of NHM (RMNCH) services could raise the utilisation rates of the RMNCH services by children under the age of 5 years.

Determinants analyses of chapter 4 indicate that improving the quality of THR and promoting its utility for younger children could encourage educated, informed and aware women to utilise THR more for children (6m-3y). The analyses also indicate, though not significantly, that higher fiscal absorptive capacity and fiscal autonomy enable and prioritize the distribution of SNP benefits in favour of children (6m-3y).

- The two independent variables, FAC and SFA depend on factors such as fiscal, administrative and infrastructural health of the states. Hence improving those factors would require favourable policies that are cross-sectoral in nature.

With regard to proportional utilisation of SNP by children (6m-6y) vis-à-vis by PLM, the findings show negative association of FAC and SFA with the former. The analyses also show positive association of women's education and women's access to information with the proportional utilisation of SNP by children (6m-6y). However, a combination of the two independent variables tends to negatively influence the dependent variable. Hence,

- Institutionally reprioritising the utilisation of SNP by children would aid the flow of benefits towards children (6m-6y).
- Increasing awareness campaigns focused on child health, nutrition and well-being including the criticality of the first 1000 days of a child could influence educated women (with access to information) to utilise more of SNP for children (6m-6y).

With regard to PSE, the analyses suggest that initiatives to raise both women's educational levels and their access to information could raise the proportional utilisation of PSE by girls.

The analyses also indicate that NHM (RMNCH) as it is, could inherently be geared to benefit women more than children. However, higher awareness among women (through a combination of education and information) tends to raise the proportional utilisation of the services by children. Hence, policy suggestions would include:

- Enhancing the orientation of institutional mechanisms relevant to NHM (RMNCH) towards the health and nutrition of children.
- Strengthening policy environment to ensure that the quality and delivery of NHM (RMNCH) services are at least at par with competing alternatives is required so that the distribution of benefits are more in favour of children.

5.5. Future research agenda

Further studies on similar lines could consider examining more or all of the ECD programmes and most of government expenditures on early childhood development. Studies could also cover overall child development (for persons under the age of 18). Primary field survey-based studies on the area may also be of utility. They could provide comprehensive insights into the impacts/outcomes of child development expenditures on beneficiaries, grouped as per different criteria. Such studies could be focused on particular state(s)/region(s). Future studies could explore all possible ways to conduct conventional benefit incidence analyses (at least those using concentration curves). The regression analyses should be made richer with the use of larger data-sets wherever available.

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Appendices

Appendix 1

Definition of the selected indicators of ICDS coverage

Indicators	Definition	Numerator	Denominator
Mothers and children received food supplementation from an AWC			
Pregnancy	Percent of women who received food supplements at the Anganwadi centre during pregnancy	Number of women who received food supplements during pregnancy at the Anganwadi centre	Total number of women with children under 5 years preceding the survey
Lactation	Percent of women who received food supplements at the Anganwadi centre during lactation	Number of women who received food supplements during lactation at the Anganwadi centre	Total number of women with children under 5 years preceding the survey
Take home ration for children / Hot cook meal for children	Percent of children under 6-35 months who received food supplements at the Anganwadi centre in the last 12 months. Percent of children under 36-59 months who received hot cook meals at the Anganwadi centre in the last 12 months	Number of children 6-35 months who received food supplements in the last 12 months supplements at the Anganwadi centre. Number of children 36-59 months who received food supplements in the last 12 months supplements at the Anganwadi centre	Total number of children 6-35 months Total number of children 36-59 months
Mothers and children received health and nutrition education from an AWC			
Pregnancy	Percent of women who received health and nutrition education at the Anganwadi centre during pregnancy	Number of women who received health and nutrition education during pregnancy at the Anganwadi centre	Total number of women with children under 5 years preceding the survey
Lactation	Percent of women who received health and nutrition education at the Anganwadi centre during lactation	Number of women who received health and nutrition education during lactation at the Anganwadi centre	Total number of women with children under 5 years preceding the survey

Mother received counseling after child was weighed	Percent of mothers of under 5 children who received counseling after their children were weighed at the Anganwadi centre in the last 12 months	Number of mothers of under 5 y children who received counseling after their children were weighed at the Anganwadi centre in the last 12 months	Total number of children under 5 years preceding the survey
Mothers and children received health check-ups from an AWC			
Pregnancy	Percent of women who received health check- up at the Anganwadi centre during pregnancy	Number of women who received health check- up during pregnancy at the Anganwadi centre	Total number of women with children under 5 years preceding the survey
Lactation	Percent of women who received health check-up at the Anganwadi centre during lactation	Number of women who received health check-up during lactation at the Anganwadi centre	Total number of women with children under 5 years preceding the survey
Child	Percent of children under 5 years who received health check-ups at the Anganwadi centre in the last 12 months	Number of under 5 y children who received health check-up the Anganwadi centre in the last 12 months	Total number of children under 5 years preceding the survey
Children received immunization, pre-school care and weight measurement			
Immunizations	Percent of children under 5 y who received immunizations at the Anganwadi centre in the last 12 months	Number of under 5 y who immunizations at the Anganwadi centre in the last 12 months	Total number of children under 5 years preceding the survey
Early childhood care/ preschool	Percent of children under 5 years who received early childhood care or pre-school education at the Anganwadi centre in the last 12 months	Number of under 5 y children who received early childhood care or pre-school education the Anganwadi centre in the last 12 months	Total number of children under 5 years preceding the survey
Child were weighed	Percent of under 5 children who were weighed at the Anganwadi centre in the last 12 months	Number of under 5 y children who were weighed at the Anganwadi centre in the last 12 months	Total number of children under 5 years preceding the survey

Source: Chakrabarti et. al. (2019) (Supplementary Table 1)

Appendix 2

Definition of the selected indicators of NHM (RMNCH) coverage

Indicators	Definition
Need for family planning satisfied (FP)	Percentage of currently married women who say that they do not want any more children or that they want to wait 2 or more years before having another child, and are using contraception
Indicators for maternal and newborn care	
Skilled birth attendant (SBA)	Percentage of live births in the five years before the survey attended by skilled health personnel (doctor, nurse, midwife or auxiliary midwife)
Antenatal Care coverage (ANC)	Percentage of women who were attended to at least once during pregnancy by skilled health personnel for reasons related to the pregnancy in the five years before the survey
Indicator of Immunization	
Measles vaccination (MSL)	Percentage of children aged 12–23 months who are immunised against measles
Diphtheria, pertussis and tetanus vaccination (DPT3)	Percentage of children aged 12–23 months who received three doses of diphtheria, pertussis and tetanus
BCG vaccination (BCG)	Percentage of children aged 12–23 months currently vaccinated against BCG
Indicators for the treatment of sick children	
Oral rehydration therapy (ORT)	Percentage of children under five years with diarrhoea in the past two weeks who received oral rehydration therapy (packets of oral rehydration salts, recommended home solution or increased fluids) and continued feeding
Treatment of acute respiratory infection (PNCM)	Percentage of children aged 0–59 months with suspected pneumonia (cough and dyspnoea) who sought care from a health provider

Source: Panda et. al. (2020)

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