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POPULATION FOUNDATION OF INDIA

Investing in Adolescent Development

A Case for India

November 2021

Research conducted by

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INVESTING IN ADOLESCENT DEVELOPMENT

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Acknowledgements

This study, “Investing in Adolescent Development: A Case for India”, was undertaken to highlight the need to invest in Indian adolescents, estimate the investment gaps in key areas of their development and determine the approximate cost of filling those gaps.

The study explores several key areas—secondary education, nutrition, unmet need for family planning, mental health, and the issue of child marriage. It emphasizes the need to invest further in each of these facets to ensure the well-being of adolescents.

I thank Amit Kapoor, the lead author of the report, and his team at the Institute for Competitiveness—Chirag Yadav and Manisha Kapoor—for their efforts in completing this study.

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Poonam Muttreja
Executive Director
Population Foundation of India

Executive **Summary**

There are several reasons for investing in adolescents. Adolescence is a pivotal phase of human life connecting childhood with adulthood. Humans undergo numerous biological, psychological, and social changes during this period. But the case for investing in adolescents is even stronger for India.

India has the highest adolescent population in the world. Given that these adolescents are the adults of tomorrow, they hold the key to the country's future. Investing in their development and well-being will determine the trajectory that the nation will take in the coming decades, and these are crucial decades. Since 2018, India's working-age population has begun to grow larger than its dependent population. This phase typically provides a growth boost to nations–a phenomenon known as 'demographic dividend'. India is expected to maintain this bulge in its working population until 2055. But it can cash in on its 'demographic dividend' only when its working population is capable of participating in productive work.

This study, 'Investing in Adolescent Development', has been undertaken against this backdrop. In addition to building a case for adolescent investment, the study examined current interventions in the key aspects of adolescent development in India and assessed the costs and benefits of further investments. The broad objectives of the study were:

- To understand current investments, strategies and programmes in adolescent health, education, well-being, and development across various ministries.
- Identify the gaps in investments to achieve the desired targets in the major aspects of adolescent development such as health, education and child marriage.
- Determine the possible benefits to the country from investing in adolescent development in these aspects.
- Recommend measures for sustainable efforts at the national level to improve and prioritise the health, education, well-being, and development issues of adolescents.

Some of the main findings across key aspects of adolescent development were:

EDUCATION

- India's education policy needs to focus on achieving universal enrolment for secondary education as the returns are higher beyond the primary level.
- The total public expenditure per student for schooling beyond primary education was between INR 1,82,015 and INR 3,30,774. The individual benefits in terms of increase in lifetime wages were INR 14,94,591 after adjusting for opportunity costs.
- Each rupee spent towards these goals could result in a benefit of INR 4.5 to 8.2.

- However, the study also found that the benefits will not be spread uniformly across different sections of society. A targeted approach will be needed to ensure that the economically disadvantaged and female adolescents also benefit equally.

HEALTH

- There are significant investment gaps in programmes focused on adolescent health across the country.
- A programme to address iron deficiency among adolescents where iron and folic acid (IFA) tablets are provided to school-going adolescent boys and girls and out-of-school adolescent girls would cost over INR 3,000 crore per year.
- Likewise, an intervention to cover the current level of unmet needs for family planning among adolescents would cost INR 52 crore annually.
- The benefits from fulfilling the unmet needs of adolescents are manifold. The study estimated that this could avert about 3.4 million teenage pregnancies.
- An intervention to address the gaps in India's mental healthcare for adolescents would cost about INR 8,134 crore. Additionally, there is also a need to invest INR 2,745 crore each year to cover the treatment costs for adolescents.

HARMFUL SOCIAL PRACTICES

- The study delves into the issue of child marriages, which infringe on adolescent rights and adversely affect their development and well-being.
- There is little consensus on the best approach for programmes to reduce child marriage but ensuring community mobilisation along with providing economic incentives was found to be necessary.
- A conditional cash-transfer programme linked with school enrolment could lead to significant benefits for India in terms of averting child marriages, increasing enrolment rates and enhancing labour-force participation.
- A pan-India programme targeting girls aged 13–14 years upwards with a conditional cash-transfer scheme until the time they complete school education, will cost the country around INR 7,000 crore.
- By spending this amount which is equivalent to merely 0.035 percent of the gross domestic product (GDP), India could generate benefits worth more than INR 22,344 crores.

These are only some of the critical issues facing Indian adolescents. The study highlights the urgent need to shift the policy focus towards enabling adolescent development. It also emphasises that the benefits from any investment in adolescent well-being are significantly higher than the costs. However, policymakers should be mindful of the different impacts that each investment can have on different segments of the adolescent population and across different geographies.

RECOMMENDED ACTIONS

1. A key prerequisite to enabling adolescent development is to have a defined policy vision for it. Framing a vision document for adolescent development will help determine the short- and long-term goals for the country and also enable coordination across the concerned ministries and government bodies.

2. The study makes a case for achieving universal enrolment of adolescents in secondary education. However, it also points out that the returns to education are not always equitable. So any investment towards bettering education enrolment has to target vulnerable groups. A failure to do so can yield unequal outcomes.

3. There are significant gaps in adolescent healthcare investment, which have been highlighted in the study. The current projects fail to meet programme agendas and commitments aimed at addressing anaemia, mental health or adolescents' unmet needs for family planning. The government needs to reassess and revisit its adolescent health budgets over the next decade. The study also highlights investment gaps in the Weekly Iron and Folic Acid Supplementation (WIFS) Programme, the Ministry of Health and Family Welfare's budget for contraceptives, and the mental health budgetary allocation. However, there is a need to identify further gaps beyond these critical health issues as well.

4. Among harmful social practices, the study focuses on the issue of child marriage and proposes an intervention. It is also recommended that community awareness be built around the problems with early marriages.

5. A notable learning from the study was that there is an extreme paucity of data related to adolescents. There is a need to capture high-quality, updated data on the key areas of adolescent development. The availability of such data can significantly aid evidence-based policymaking and drive better governance outcomes.

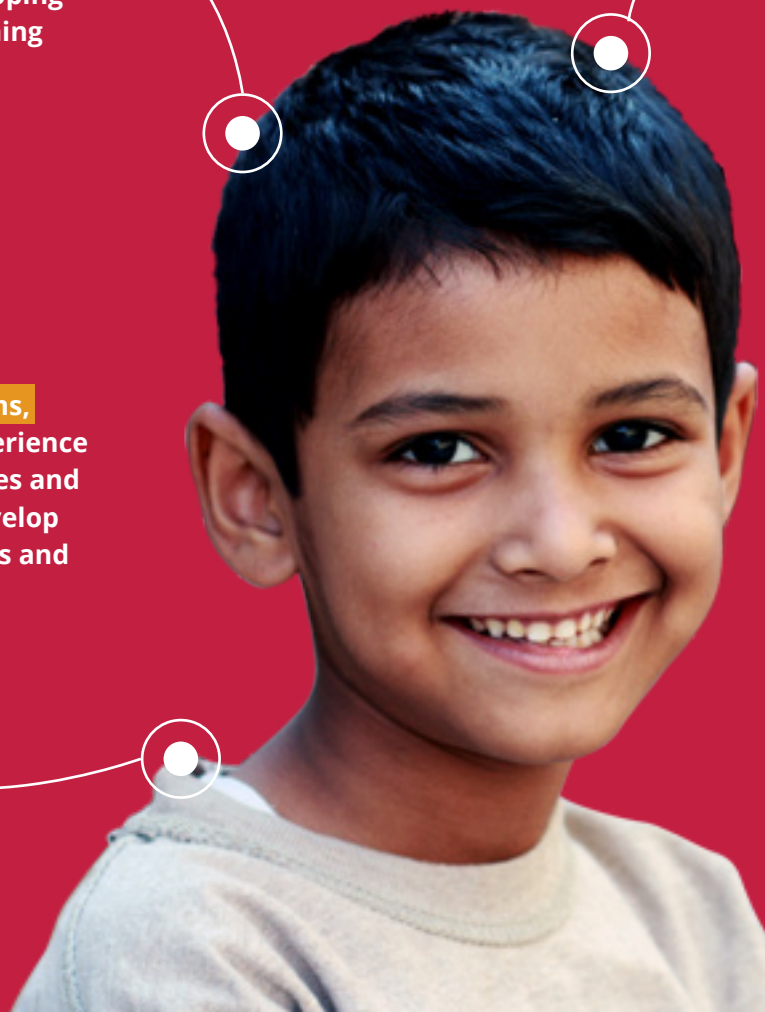
Contents

01 Introduction

Adolescence is a critical phase of human development that involves rapid and formative changes, which define the transition from childhood to adulthood. The period encompasses several multidimensional changes that are biological, psychological, and social.

Psychologically, they undergo cognitive growth by developing advanced reasoning skills.

Adolescents also experience social changes through transformations in their roles vis-à-vis the family and the community, which are led by the onset of employment and family formation.



In biological terms, adolescents experience hormonal changes and puberty, and develop sexual awareness and gender identity.

On the one hand, the physical, cognitive, emotional, and social capabilities acquired during this period augment the developmental gains made in children's first decade of life. On the other hand, it sets them on a path to achieve their full potential as productive adults who can contribute positively to society. Achieving these gains is especially instrumental for India to a mass its demographic dividend – the period of growth potential that arises when an economy's working-age population grows larger than its dependent population.

Due to the crucial nature of adolescent development, there is a need to provide adequate attention to the issue in national development policies and programmes. The fact that nearly two-thirds of premature deaths and about one-third of the total disease burden among adults can be traced back to conditions or behaviours from their adolescent and early adult years highlights the importance of intervention at this stage of human development.[1] Clearly, neglect of adolescent development can have adverse long-term consequences not only at an individual level but also for families and communities.

Investment towards adolescent well-being is crucial to achieving the 17 Sustainable Development Goals (SDGs) and their 169 targets by 2030 – specifically Goals 3, 4, 5, and 8. These targets, which include reducing poverty, ensuring healthy lives, achieving equitable access to education, and promoting well-being, are intricately tied with the state of adolescent development. Adolescents are central to the achievement of the SDGs because, as the 2016 Lancet Commission on adolescent health and well-being pointed out, investing in them can yield 'a triple dividend of benefits'[2] for adolescents in their current state, their future adult selves, and the next generation.

While there is no universally accepted definition of the adolescent age group, the United Nations Population Fund (UNFPA) and the Government of India in its decadal Census statistics considers adolescents to include persons aged 10–19 years.[3] Under this population sub-group, there are over 1.2 billion adolescents globally, which accounts for about 16 percent of the world's population.[4]

More than half of the world's adolescent population lives in Asia. According to India's 2011 Census, the country is home to over 250 million adolescents, which is higher than any other country in the world. To place this figure in context, it exceeds the total population of 18 major Middle Eastern countries.[5] Thus, the importance of adolescent development for India and its inter-connectedness with the country's overall development cannot be overstated.

However, ensuring adolescent well-being is a complex policy issue due to the nature of the demographic. Within the age group of 10–19 years, the disease-burden profile is significantly different for younger and older adolescents. For instance, in the early adolescent years, schooling is a significant concern, but beyond the legal working age of 14 years, skilling and employability take precedence.

[1] World Health Organization. (2011). Young people: Health risks and solutions. WHO Fact sheet No. 345.
[2] Patton GC, Sawyer SM, Santell JS, et al. (2016). Our future: A Lancet commission on adolescent health and well-being. Lancet 2016; 387: 2423–78.
[3] Report of the Expert Group Meeting on Adolescents, Youth and Development UN-DESA (ESA/P/WP/225). Retrieved from: https://www.unfpa.org/sites/default/files/resource-pdf/One%20pager%20on%20youth%20demographics%20GF.pdf
[4] UNICEF data. Retrieved from https://data.unicef.org/topic/adolescents/demographics/
[5] This includes Armenia, Azerbaijan, Bahrain, Cyprus, Georgia, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, State of Palestine, Syrian Arab Republic, Turkey, United Arab Emirates, and Yemen. Retrieved from: http://censusindia.gov.in/2011-Documents/PPT_World_Population/Size_Growth_and_Composition_of_Adolescent_and_Youth_Population_in_India.pptx

Nevertheless, education remains a matter of concern for adolescents who want to pursue higher studies.

Adolescence is also the time when gender roles diverge sharply driven by social expectations. While this phase is a time of rapid changes for both adolescent boys and girls, their experiences vary significantly. Decisions related to education, work, and marriage among adolescents are much more restricted for girls on average. For instance, **a report published by the National Commission for Protection of Child Rights (NCPCR) in 2018 showed that about 65 percent of girls who drop out of school and college do so to engage in household chores or to beg while only 33.4 percent of boys who drop out are 'non-workers'.**[6]

Similar disparities in outcomes are witnessed along caste and religious lines.

In short, the policy response to ensure the holistic development of adolescents in India requires a multipronged approach to cater to the demography's various cross-sections and address their diverse needs. The second Lancet series on adolescent health concluded that a "Failure to invest in the health of the largest generation of adolescents in the world's history jeopardises earlier investments in maternal and child health, erodes future quality and length of life, and escalates suffering, inequality, and social instability".[7]

The issue of adolescent development has become even more pertinent given the COVID-19 pandemic. Children and adolescents will not only lose a year of education due to school closures but dropout rates are also expected to increase as the economic consequences of the pandemic may compel a large cohort of children and adolescents to join the workforce early. As per estimations by the United Nations, approximately 24 million children may not return to school in the next session.[8] Such an outcome is especially concerning for adolescent girls who are at a greater risk of being married early. According to a recent UNICEF study, 10 million additional child marriages might occur globally due to COVID-19.[9]

Thus, adolescence is a crucial age group that requires focussed policy intervention across myriad aspects of development. It is necessary to highlight the benefits to adolescents and the country itself by investing in their well-being.

[6] NCPCR. (2018). Vocational & Life Skills Training of Out-of-School Adolescent Girls in the Age Group 15-18 years. National Commission for Protection of Child Rights.
[7] Resnick, M., Catalano, R., Sawyer , S., Viner , R., & Patton, G. (2012). Seizing the opportunities of adolescent health. Lancet 379, 1564–67.
[8] United Nations. (2020). Education during COVID-19 and beyond. United Nations Policy Brief
[9] United Nations Children's Fund. (2021). COVID-19: A threat to progress against child marriage, UNICEF, New York. Link: https://data.unicef.org/resources/covid-19-a-threat-to-progress-against-child-marriage/

Why invest in **adolescents?**

A critical and overarching rationale for investing in adolescents is that, like all sections of the population, they have fundamental rights to life, personal liberty, the highest achievable standards of health and education, and equitable access to health and education services, among other things.[10] These rights are supported by global human rights instruments, which almost all countries including India have agreed upon.

Furthermore, it has become increasingly evident that promoting adolescent development will lead to a triple dividend in benefits:

- **For adolescents now:** Improved and equitable access to developmental opportunities (education, health, employment), prevention and timely treatment of problems (sexually transmitted infections, mental-health management, substance-abuse issues), and elimination of harmful social practices (child marriage, child trafficking, sexual exploitation) can benefit adolescents immediately.

- **For adolescents' future as adults:** Promotion of improved development outcomes for adolescents (education, health), establishing healthy behaviour patterns (physical activity, and if sexually active; contraceptive use), and reduction in harmful exposure to conditions and behaviour (air pollution, alcohol, and tobacco usage) can reduce morbidity and mortality rates in adulthood.

- **For the next generation:** Ensuring emotional well-being and health of adolescents (good nutrition, conflict management, appropriate vaccination) and addressing risk factors and burdens (early pregnancy, substance abuse, interpersonal violence) can help protect the health of their offspring.

Given the multi-faceted nature of adolescent development, the literature on arguments for investing in adolescents is equally vast. This section presents a few key arguments in favour of shifting the policy focus onto adolescents and their well-being.

Adolescence as a time of opportunity in human development

Adolescence is a period of life when rapid development of the brain, body, and behaviour takes place. This provides a crucial window of opportunity for interventions that may have lifelong benefits. The onset of puberty initiates rapid growth in all body systems including changes in brain function and cognitive development.[11] There is strong evidence to suggest that a higher body mass index (BMI) accelerates puberty among adolescents.[12]

[10]All adolescents have rights in relation to health and development that are protected under the Convention on the Rights of the Child and other relevant human rights treaties CRC Art. 24 (paragraph 1); ICESCR Art. 10, Art. 12 & Art. 13; UDHR Art. 25 & 26; CRPD Art.24 & Art. 25; CEDAW Art. 5; ICMW Art. 30 & Art. 45
[11]Patton, G., & Viner, R. (2007). Pubertal transitions in health. The Lancet, 369(9567), 1130-1139.
[12]Solorzano, C., & McCartney, C. (2010). Obesity and the pubertal transition in girls and boys. Reproduction (Cambridge, England), 140(3), 399.

But early puberty could result in higher fat accumulation over an individual's lifetime.[13] It is also associated with higher cardiovascular risks, diabetes, blood pressure and increased risk of cancer.[14]

Additionally, the brain undergoes significant developments during adolescence. The period is associated with advancements in higher-order cognitive functions such as reasoning, interpersonal interactions and the regulation of behaviour and emotion. Cognitive functioning capabilities also continue to develop, which facilitate self-regulation of thoughts, actions and emotions. These developments are necessary to support information processing and build the capacity for abstract and hypothetical thinking.[15]

Adolescents as an economic and social investment

The implications for underinvestment in adolescent growth and well-being are not only limited to them personally. For instance, improved health prospects of adolescents bring larger economic and societal benefits in terms of productivity.[16] This section highlights the economic and social reasons for allocating sufficient public resources in the development of adolescents.

ECONOMIC: The growth and competitiveness of a nation is intricately linked to the health and education outcomes of its adolescents

Adolescents with poor nutritional profiles, i.e., with a high risk of micronutrient deficiencies or obesity, are less productive. These lower productivity levels lead to lower lifetime earnings for them and losses in GDP for the economy.

The situation is even more complex for adolescent girls. In conjunction with the Indian pattern of early marriage, malnutrition in a girl has a cascading impact of health problems across generations. Childbearing can cause nutritional deficiencies in the womb at an early age and raise the risk of mortality.[17] In a nutshell, low investment in health impacts the current generation and future generations, thereby influencing the economy's future level of human capital.

At times, healthcare issues translate into poor educational outcomes such as high dropout rates from schools.[18] It has also been proven that individuals with nutritional deficiencies show lower activity levels in schools and have a low attention span. These factors negatively impact the quality of the workforce entering the labour market, which is a major factor in determining the competitiveness of a nation.

SOCIAL: Early investments are more efficient in preventing social problems than investing later on to resolve them

[13] Prentice, P., & Viner, R. (2013). Pubertal timing and adult obesity and cardiometabolic risk in women and men: a systematic review and meta-analysis. International Journal of Obesity, 37(8), 1036-1043.
[14] Viner, R., Allen, N., & Patton, G. (2017). Puberty, Developmental Processes, and Health Interventions. In: Disease Control Priorities (third edition): Volume 8, Child and Adolescent Health and Development
[15] Steinberg, L. (2005). Cognitive and affective development in adolescence. Trends in cognitive sciences, 9(2), 69-74.
[16] W.H.O. (2020). Maternal, newborn, child and adolescent health. Retrieved from World Health Organisation: https://www.who.int/maternal_child_adolescent/topics/adolescence/why-invest/en/
[17] U.N. (2000). The World Nutrition Situation: Nutrition throughout the Life Cycle. United Nations.
[18] U.N. (2013). Youth as a Smart Investment. United Nations.

The multistage investment strategy in the adolescents of the country, spanning areas such as education, healthcare, and employment will not only generate economic benefits in the form of improved productivity but also increase social benefits. Early investments in these areas are crucial to avoid the development of problems at a later stage, especially with regard to a vulnerable population.[19] For instance, a lack of investment in education, healthcare and employment opportunities could lead to high unemployment rates. A medium-term consequence of high unemployment could be an increase in crime and conflict in society. A long-term consequence could be the requirement for increased government investment at a later stage in the form of pension and healthcare facilities etc., for the vulnerable groups. Therefore, a strategic shift from cure to prevention will help in enabling sustainable societal development and help the government make better use of public funds.

Achieving the SDGs

Adolescents are not only the beneficiaries of development initiatives but are also the future drivers of development. Many of the targets laid out under the 2030 Agenda for Sustainable Development are related to the development of youth and adolescents. This makes policy focus on youth and adolescents critical for achieving the Sustainable Development Goals (SDGs).

Four of the 17 SDGs are particularly relevant for adolescents: SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), SDG 5 (Gender Equality), and SDG 8 (Decent Work and Economic Growth).

[19] ibid
[20] Srivastava, P. (2018). "Crime, Unemployment and Society in India: Insights from Rape Data. Undergraduate Economic Review, Vol 15: Iss 1, Article 17.
Wadsworth, T. P. (2002). Employment, Crime, and Context: A Multi-Level Analysis of the Relationship between Work and Crime.

More importantly, the SDGs are strongly aligned with India's development priorities and goals. Any progress towards achieving the SDGs by investing in adolescent development can significantly enable the country's progress on its developmental agenda. With one-sixth of the world's population and the largest adolescent population residing in India, our contribution to achievement of the SDGs is significant, and investing in adolescents is the key to it.

Study **objectives**

Against this backdrop, the Population Foundation of India (PFI) collaborated with the Institute for Competitiveness (IFC) to highlight the urgency of investing in adolescents; identify any investment gaps in the various aspects of adolescent development; and estimate the benefits from fulfilling those gaps.

Broadly, the study had the following objectives:

- To understand the current investments, strategies and programmes in adolescent health, education, well-being and development, across various ministries such as health, education and child development among others.
- To identify the gaps in investments that prevent achievement of desirable targets on major aspects of adolescent development such as health, education, and child marriage.
- To determine the benefits that can accrue to the country from investment in adolescent development.
- To recommend measures for sustainable efforts at the national level, including designing policies, programmes and schemes that impact adolescents and prioritise and improve their health, education, well-being and development.

02

Scope and Methodology of the Study

Ensuring adolescent development involves addressing a wide range of parameters including:

- Education
- Physical Health
- Mental Health
- Sexual Health
- Skilling
- Road Injuries
- Violence
- Harmful Social Practices

This study focuses on three areas of adolescent development:

- EDUCATION
- HEALTH
- CHILD MARRIAGE

The focus on education and health was driven by their essential role in enhancing the capabilities and well-being of adolescents and improving their transition to adulthood. The key educational level for this study was secondary education, which included all grades beyond primary - classes VI to XII. Under health, the study covered three action areas: nutrition, sexual and reproductive health, and mental health. Finally, the study analysed the issue of child marriage, which serves as a proxy to demonstrate the impact of harmful social practices on adolescent well-being. The prevalence of child marriage in India and its infringement on adolescents' rights to make their own life choices made it a crucial indicator to explore. This list is by no means exhaustive. It is an attempt to highlight the leading issues faced by adolescents in India.

Exhibit 2.1. highlights the manifold impacts of having a policy focus on these areas.
It also enumerates the specific interventions examined during this study.

FIRST, UNDER SECONDARY EDUCATION, a cost-benefit analysis was undertaken for the goal of achieving universal enrolment for all adolescents.

SECOND, UNDER THE THREE ACTION AREAS OF HEALTH, the scope was limited to one intervention each.

Nutrition, for instance, is a multi-dimensional aspect of adolescent development but the study concentrated on addressing the issue of anaemia through the distribution of iron and folic acid (IFA) tablets.

Adolescents' unmet need for family planning was the focus under sexual and reproductive health and distribution of contraceptives was explored as an intervention. Under mental health, counselling and drugs were considered as possible interventions.

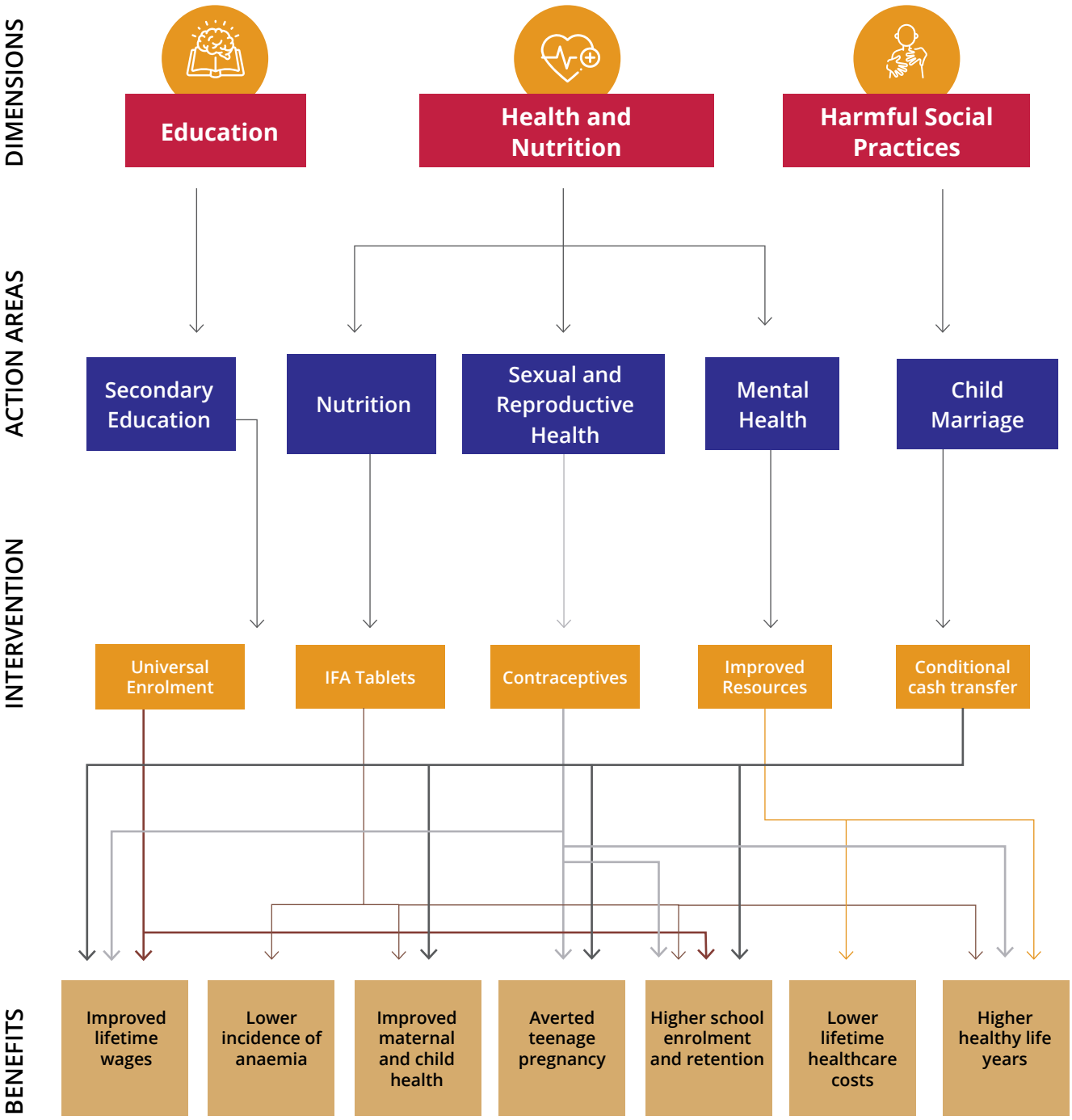
THIRD, THE ISSUE OF CHILD MARRIAGE was addressed through the lens of a programme involving conditional cash transfers to families of girl children.

The analyses were aimed at providing an estimate of the costs of addressing the key issues of adolescent development. The costs were then compared against their benefits. Exhibit 2.1 provides an idea about the benefits that can accrue from such policy interventions. There is no one-to-one correspondence from each action area to the impact across society. For instance, universal enrolment of adolescents in secondary education will increase school enrolment and retention and can improve their lifetime wages. Meanwhile, addressing anaemia through the provision of IFA tablets can also increase school enrolment and retention due to better health outcomes.

Similarly, addressing unmet family planning needs through contraceptives can reduce the incidence of teenage pregnancies, increase school enrollment, and lead to higher healthy life years lived. The former will also eventually lead to higher lifetime wages. Meanwhile, ensuring better mental health outcomes can also lead to higher healthy life years and lower lifetime healthcare costs. Finally, reducing incidences of child marriage can have multiple benefits for the adolescent girl. Delayed marriage can allow a girl to stay in school longer and avert teenage pregnancy. These outcomes can improve lifetime wages and maternal and child health as well.

Thus, the benefits of investing in adolescent well-being are manifold and spill over across sectors and generations.

Exhibit 2.1. Framework of the Study



Education

The first step for the cost-benefit analysis of education was to obtain the returns from each year of education. Returns to education were estimated according to the Mincer equation (1974), which provides the additional income earned on an average for each year of schooling.[21] The details of this procedure are explained in Appendix C. Data from the Periodic Labour Force Survey (PLFS) 2018-2019 was used. Accordingly, the returns to education at the secondary level were obtained.

The increase in lifetime earnings for adolescents who completed secondary education instead of just primary education were estimated using the returns obtained from the Mincer equation. Then the costs were obtained by assessing the public expenditure incurred per student at each level of education. Data from the Annual Reports of the Ministry of Human Resource Development was used to make these estimates.

Health

Three different methodologies were employed for each action area highlighted in the framework.

Nutrition

This study estimated the costs of addressing anaemia among adolescents. The benefits could not be calculated due to data challenges.

The costs were estimated for a programme to distribute iron and folic acid (IFA) tablets to all school-going adolescent girls and boys (VI–XII grade) and out-of-school adolescent girls every week.

First, the target adolescent population for the programme was estimated. This was done based on the population projections provided by the National Commission on Population.

Then, the number of IFA tablets required to provide the target adolescent population with one tablet per week was calculated. Instead of 52 weeks per year, the estimation was made for 45 weeks, which is the period over which schools remain open. Further details on the analysis are provided in Appendix D.

[21] Mincer, J. (1974). Schooling, Experience and Earnings. New York: National Bureau of Economic Research.

Sexual and Reproductive Health

Under sexual and reproductive health, a cost-benefit analysis was undertaken for fulfilling the unmet need for contraceptives among adolescents. The target beneficiaries of a programme to distribute contraceptives were estimated using the database of the National Family Health Survey 2015–2016 (NFHS-4) and the population-projection estimates by the National Commission on Population.

Two interventions for spacing were explored: condoms (for male adolescents) and oral contraceptive pills (for female adolescents).[22]

The costs were based on these interventions. The approximate number of beneficiaries was estimated in the age group of 15–19 years based on NFHS data for unmet needs. The benefits of addressing these unmet needs are seen through the lens of averted teenage pregnancies.

Mental Health

This section highlights the state of mental healthcare for adolescents and the costs of addressing the gaps in human resources and infrastructure. The study estimated the costs at two levels based on the provisions of the Mental Healthcare Act (MHCA), 2017.

FIRST, the cost of achieving the internationally accepted standards for the number of mental healthcare professionals per lakh of the population by 2027 was assessed.

SECOND, as MHCA, 2017 states that the treatment costs for mental health should be borne by the state; the study also estimated the approximate budgetary expenses required to meet this commitment.

[22] The study chose only these two methods of contraception as intrauterine contraceptive devices (IUCDs) and injectables would be inadvisable for adolescent use.

Child **Marriage**

Child marriage is a practice that infringes on the rights and capabilities of adolescents.

Besides curtailing adolescents' ability to explore livelihood opportunities, child marriages also have several adverse social outcomes. For instance, early pregnancies due to early marriage result in poor maternal and child health. The study explored the extent of the effects of child marriage on future generations to establish the impact of this harmful social practice. For the cost-benefit analysis, the study explored a programme of cash transfers over four years to families with girls aged 13–18 years, which is conditional to their regular school attendance and remaining unmarried. The programme costs were then mapped against the typical cost-to-benefit ratio found in the literature.

Limitations of the Study

Given the broad nature of adolescent development, any study on the topic is bound to have certain limitations. Some limitations of this study were:

- The interventions mentioned here are not aimed to be an exhaustive coverage of issues facing adolescent development. However, the areas considered can make a notable improvement in the overall development and well-being of adolescents.
- The availability of data for adolescents in India is challenging on multiple fronts. Several helpful tools and databases were explored to conduct the assessments, but most could not be considered due to lack of adequate data. These tools and their explorations are outlined in Appendix A. Future analysis on these issues can be made if and when data becomes available.

There are some section-specific limitations as well:

EDUCATION:

A key assumption of the cost-benefit analysis undertaken for education was that adolescents would wish to remain enrolled in secondary education. However, this might not be possible for a notable proportion of adolescents who want to join the workforce to support their families. So, government interventions will also be required to ensure that all adolescents to attend school till their secondary education is complete. Another assumption was that the job market would be able to assimilate all graduates. This might be heavily dependent on economic conditions in the future.

HEALTH:

i. The section on nutrition could not be supported with an estimation of benefits due to data challenges. It focused on anaemia to estimate the costs of a leading nutritional deficiency facing Indian adolescents. However, improving adolescent nutrition will require progress on other aspects of nutritional deficiencies.

ii. There are multiple sexual and reproductive health issues apart from unmet needs for family planning that need to be addressed. The study considered improving access to contraceptives as a means of addressing unmet needs. However, there are several behavioural challenges in the use of contraceptives, which might affect programme implementation

iii. Under mental health, there are several methods of intervention that are crucial to addressing the issue. These can include school-based and community-based interventions. So, the interventions studied are by no means exhaustive.

CHILD MARRIAGE:

The practice of child marriage is a social issue. While the study looks into a conditional cash transfer as an intervention, a problem of implementation will be addressing community behaviour. Building awareness and educating families will be crucial for the success of any programme on child marriage. However, since the costs of such interventions are difficult to impute, it was not a part of this study.

03

Education: Reaping the Right Returns

This section outlines the case for investing in adolescent education and skilling by estimating the returns to completing secondary and higher secondary education. It also delves into gender, caste, and income-based disparities in the returns to education and argues for a targeted approach to educating adolescents that can address such challenges of intersectionality.

KEY FINDINGS

An additional year of education in India increases the monthly income of individuals by about 7.02 percent on average.

The returns to education are higher for females than males. So the returns to investment in adolescent girls will be the highest.

The disparities imply that simply investing in education will not enable equitable benefits across society. There is a need to focus on educating adolescents from the vulnerable sections as they might not remain in schools.

The returns to education are lower for individuals from lower caste and poorer households. This implies that education is not equalising in India and if the country does not take a targeted approach, it might lead to increase in inequality.

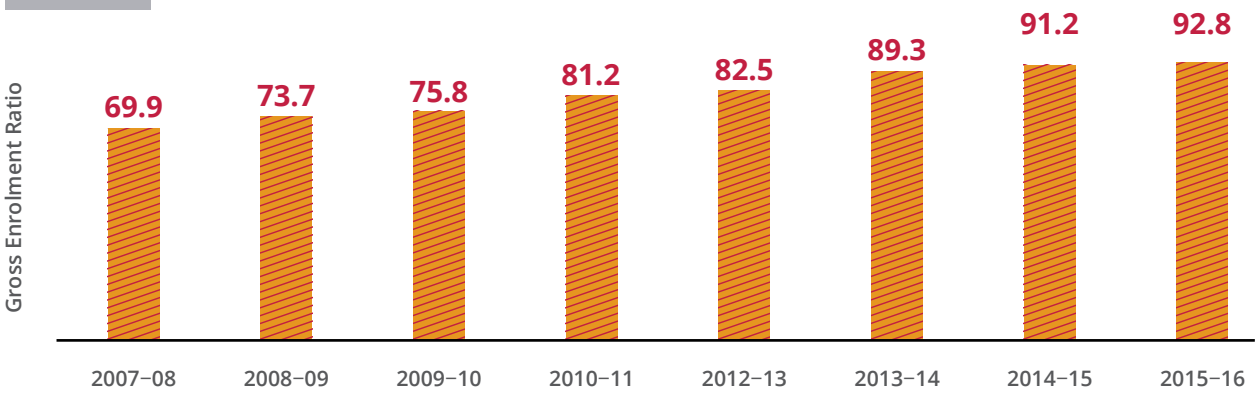
The total public expenditure per student for schooling beyond primary education lies between INR 1,82,015 to INR 3,30,774. The individual benefit in terms of increase in lifetime wages is INR 14,94,591 after adjusting for opportunity cost.

Thus, the benefit-to-cost ratio of investing in adolescent education is within the range of 4.51–8.21, implying that a rupee spent in providing secondary education (VI–XII) will result in private return of an amount within that interval.

Over the years, the Indian government has undertaken several measures to improve the educational landscape in the country. There are constitutional provisions for providing free and compulsory education targeting young adolescents (10–14 years); several policies including the National Policy on Education and the National Youth Policy focus on providing quality education to adolescents; there are also programmes focusing on the holistic development of adolescents and addressing the inequalities in education.[23]

The focus of most of the governmental policies and programmes has been on young adolescents. The results of these measures are reflected in the gross enrolment ratio (GER) at the upper primary education level. Exhibit 3.1 depicts the trends for the period between 2007–2008 to 2015–2016. The GER in this period has increased from 69.9 to 92.8.

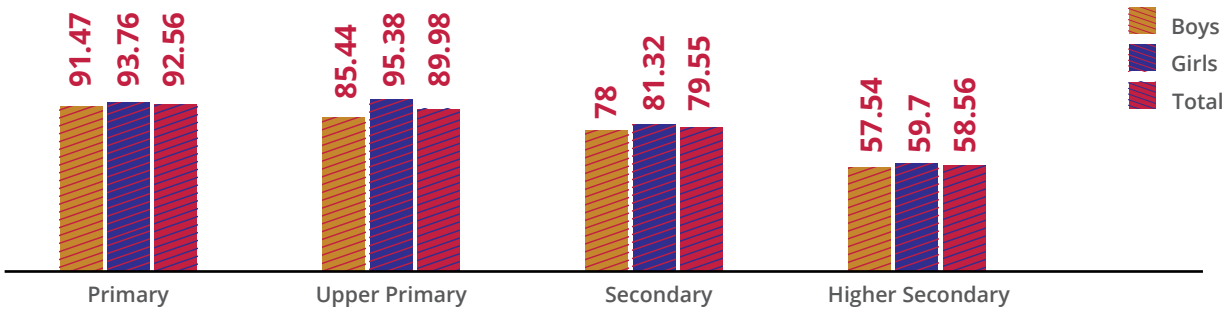
Exhibit 3.1. Gross Enrolment Ratio in Upper Primary Level[24]



Data Source: UDISE (http://udise.in/Downloads/Trends-ElementaryEducation-2015-16/All-India.pdf)

However, beyond the elementary level of education, the enrolment rates start to fall drastically. Exhibit 3.2 plots the GER by level of education. For primary education, the GER is 92.56 which falls to 89.98 for upper primary and 79.55 for secondary education. For higher secondary, the GER is 58.56.[25]

Exhibit 3.2. Gross Enrolment Ratio: 2018–2019 by Level of Education



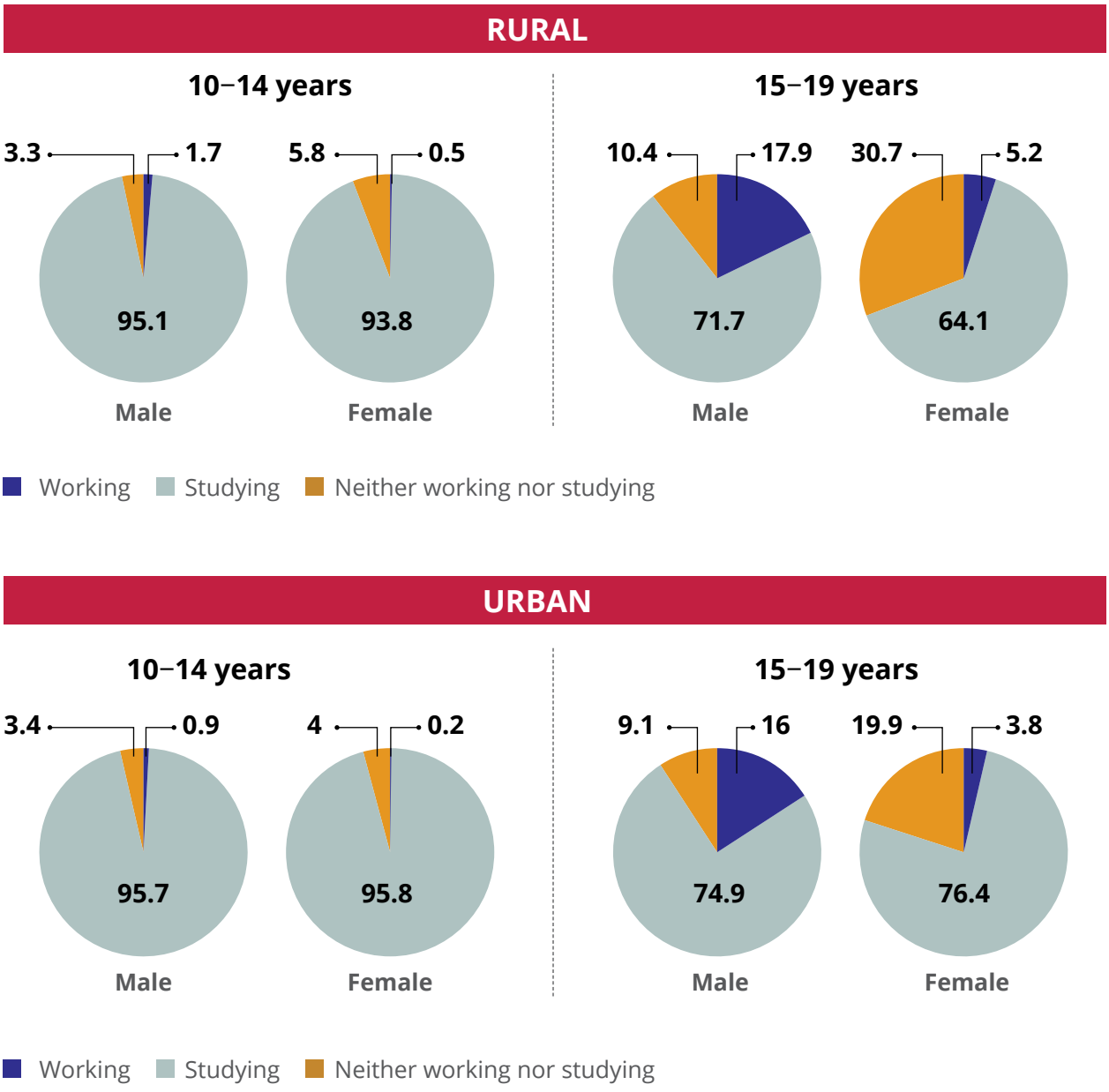
Data Source: UDISE Plus

[23] Appendix B provides a detailed examination of the policies, strategies and interventions focused on adolescent education.
[24] The UDISE data at the website is available only till 2015–2016.
[25] Secondary implies classes VI–VIII and Higher Secondary is classes IX–XII.

Additionally, contrary to trends in primary levels of education, the pupil-teacher ratio (PTR) at the higher secondary level has not improved significantly. The PTR for the higher secondary level stood at 39 in the year 2009–2010, and in 2015–2016, it stood at 37 (Ministry of Human Resource Development, 2018).

In order to examine out-of-school adolescents in more detail, Exhibit 3.3 presents the percentage distribution of adolescents by usual status.

Exhibit 3.3. Percentage distribution of adolescents by usual status (primary status + secondary status)



Data Source: PLFS 2017–2018

A preliminary look at Exhibit 3.3 shows that while most young people between the ages of 10 and 14, both in rural and urban areas, are engaged in schooling, this percentage drops significantly for the 15–19 age group. About 17 percent of the males in rural areas and 16 percent in urban areas take up employment. On the other hand, only 5.2 percent of the females in rural areas and 3.8 percent in urban areas drop out of school to work. Many older adolescents also fall into the category of 'neither working nor studying'. In both rural and urban areas, females are more like to drop out of the education-employment ecosystem, which might be driven by their involvement in household chores and marriage.

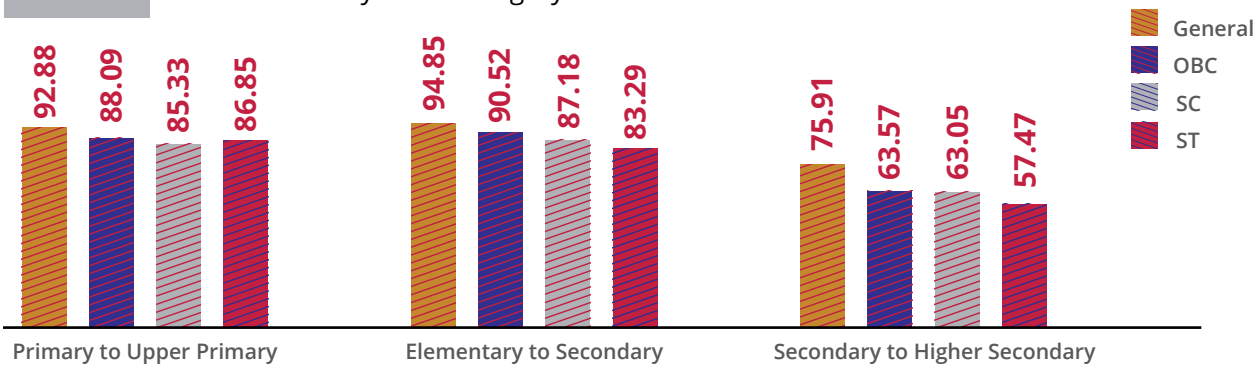
A complete analysis of the policy ecosystem and trends of outcome variables such as enrolment rates and learning capabilities reveals that while India has made substantial progress in enrolling students in primary and upper primary levels of education, transition to secondary education is low. A considerable number of adolescents drop out of the education system. This impacts the prospects of the adolescents as well as of the country's economy. Therefore, there is a need to focus on improving the education level of the older adolescents.

Apart from the overall challenge of low enrolment, viewing the education data in terms of different groups such as gender, caste and region reveal the stark disparities in the country.

Regarding median years of schooling, the NFHS-4 reveals high disparity due to economic class, gender, and type of residence (rural/urban), which preserve the status quo of economic inequalities that often add to the existing social disparities. Exhibit 3.3 also points out that female adolescents in the age group of 15–19 years are more likely to take up unpaid household work after dropping out of school than their male counterparts who join the workforce.

Caste inequalities can be understood through the transition rates depicted in Exhibit 3.4. The transition rate from primary to upper primary does not vary a lot by caste – it is 92.88 for the General category and 85.33 for Scheduled Castes. But as levels of education progress, the gap widens. Adolescents belonging to the General category have a transition rate of 94.85 from the elementary (class I to VIII) to the secondary level while the number stands at 83.29 for Scheduled Tribes. From secondary to the higher secondary level, the transition rate falls for all adolescents, but is still highest for the General category.

Exhibit 3.4. Transition rate by social category



Data Source: UDISE
(http://udise.in/Downloads/Publications/Documents/Flash_Statistics_on_School_Education-2016-17.pdf)

Caste-based discrimination in educational institutions continues to segregate students belonging to marginalized communities, which further perpetuates the existing inequality.

In addition to the low socio-economic status of marginalized groups, the residential segregation of Dalits that continues to prevail in villages also creates physical barriers to education. They are often stuck in institutions that lack proper infrastructure and resources. Even with formal education, the capacity of a Dalit to convert this cultural capital into secure employment may fail. This situation is compounded for women (Jeffery, et al., 2004).

Linguistic exclusion is another area of concern. Given India's diverse linguistic capabilities, the less dominant languages are often sidelined as a medium of instruction. This significantly affects adolescents from marginalized communities. Lack of inclusive educational spaces for people with disabilities is also a grave impediment. As per the 2011 census, 61 percent of children with disabilities (CWDs) aged between 5–19 years attended educational institutions, while 27 percent had not attended any educational institution.

Given the challenges facing adolescents, this report seeks to provide a case for investing in improving the enrolment rates by conducting a cost-benefit analysis.

Cost-**Benefit Analysis**

Estimating the Cost

Individuals as well as the government bear the cost of education. For government schools, the expenditure includes infrastructural expenses, teaching expenses, and non-teaching expenses like books, uniforms etc. Private households incur costs on school fees, tuition fees and so on. Existing literature suggests that an individual's own expenditure in government schools is almost negligible, hence the study focused on governmental expenditure.[26] The aim was to understand how much the government should spend on educating children who are currently not enrolled in educational institutes. Since this study was calculating public expenditure, data was limited to government schools.

Public expenditure has been calculated separately for elementary education (I–VIII) and higher education (IX–XII) using data from the Ministry of Human Resource Development. The data for total public expenditure on education consists of central and state expenditure.

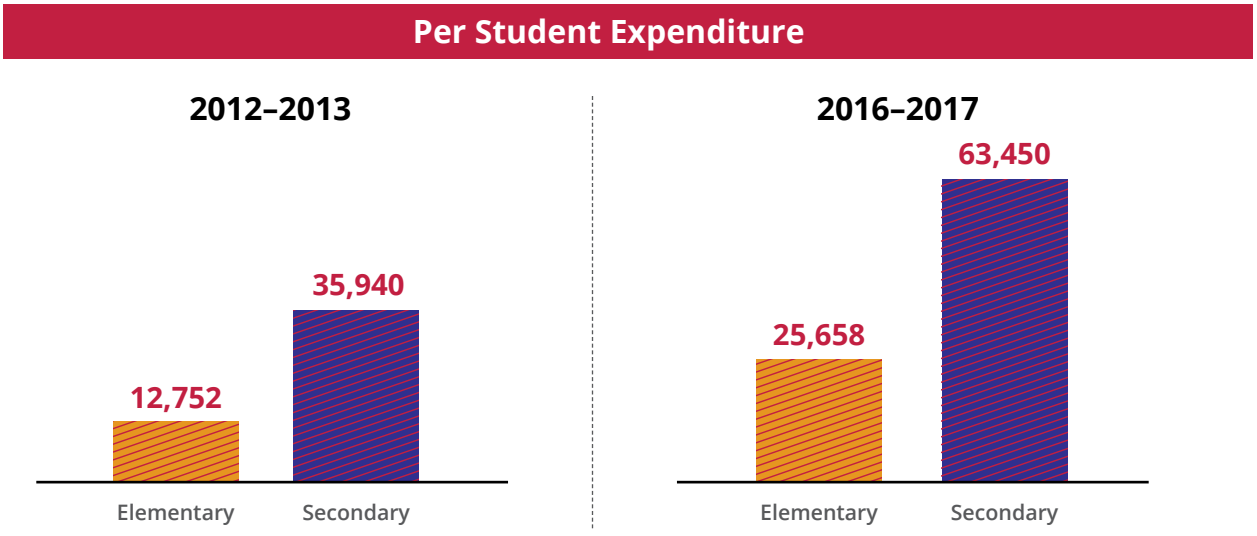
[26] http://accountabilityindia.in/sites/default/files/how_much_does_india_spend_per_student_on_elementary_education.pdf

Exhibit 3.5. Expenditure by Level of Education

Expenditure by Level of Education 2016–2017 (in crores)			
Level of Education	**State**	**Centre**	**Total**
Year: 2012–2013			
Elementary	1,21,151	38,325	1,59,476
Secondary	80,076	9,862	89,938
Year: 2016–2017			
Elementary	2,27,730	57,866	2,85,596
Secondary	1,45,716	18,695	1,64,411

The total expenditure displayed in Exhibit 3.5 was converted to a per-student expenditure (Exhibit 3.6) by dividing it by enrolments at the elementary and secondary level. The public expenditure (per student per class) was INR 12,752 for classes I–VIII (elementary) and INR 35,940 for classes IX–XII (secondary) for the year 2012–2013. For the year 2016–2017, the values stood at INR 25,658 for elementary and INR 63,450 for the secondary level.

Exhibit 3.6. Per Student Expenditure by Level of Education



Using these costs as a proxy for the amount required to educate a child, the elementary costs were multiplied by eight and secondary costs by four to estimate the total cost of schooling which lies between INR 2,45,775 to INR 4,59,062. Similarly, the cost of schooling after the primary level i.e., multiplying elementary costs by three and secondary costs by four is between INR 1,82,015 to INR 3,30,774. Since the government expenditure on education varies yearly, the calculations were done for two years and a range was provided, within which the expenditure is expected to lie.

Estimating the Benefits

The Mincer model (1974) is the most popular model for studying the returns of education on income.[27] It showed that the human capital model generates an earnings function as follows:

$$\log (Y_i) = \alpha + \beta S_i + \gamma_1 EX_i + \gamma_2 EX_i^2$$

where Y is the income, S refers to the years of schooling, EX is the years of experience.

This study used the Mincer equation in the following form to correct for the selectivity bias based on Heckman (1979) and a few controls:[28]

$$\log(Y_i) = \alpha + \beta S_i + \gamma_1 EX_i + \gamma_2 EX_i^2 + \gamma_3 IMR + \gamma_4 MS_i + \gamma_5 FT_i$$

where IMR is the inverse mills ratio (the factor obtained from the Heckman two-step procedure to correct for selectivity bias), MS is marital status and FT is the status of work i.e., full time or part time. The data used in the analysis was from the Periodic Labour Force Survey (PLFS) 2018–2019 published by NSSO. The PLFS data was limited to the working population,[29] which amounted to 1,24,180 observations.

The regression results[30] showed that the overall return from education to income is 6.7 percent on an average.

These results were used to calculate the overall benefits of education for individuals in terms of lifetime wages. The exponential value of 0.0679 (returns on log wages) gave a value of 1.0702

which implies that one year of education leads to 7.02 percent increase in monthly income.

[27] Mincer, J. (1974). Schooling, Experience and Earnings. New York: National Bureau of Economic Research.
[28] Heckman, J. (1979). Sample selection bias as a specification error. Econometrica 47(1), 153-161
[29] Working population is defined as individuals working in household enterprise as own account worker or employer, working as helper, regular salaried employee, casual worker, seeking work, attended domestic duties.
[30] The detailed regression results along with the theory behind the Mincer equation is presented in Appendix C.

The average monthly income of individuals who have attained less than or equal to primary level of schooling was calculated as INR 7,192.99 using PLFS data.[31]

$$Income_n = Income_{n-1} + \left(Income_{n-1} * \frac{\text{Rate of return on one year of education}}{100}\right)$$

Where n represents the number of formal years of education of an individual.

Using the above results on this data, one additional year of education increases their monthly income to INR 7,697. Exhibit 3.7 shows that that providing an individual with seven additional years of schooling i.e., completing senior secondary will lead to a monthly income of INR 11,565.

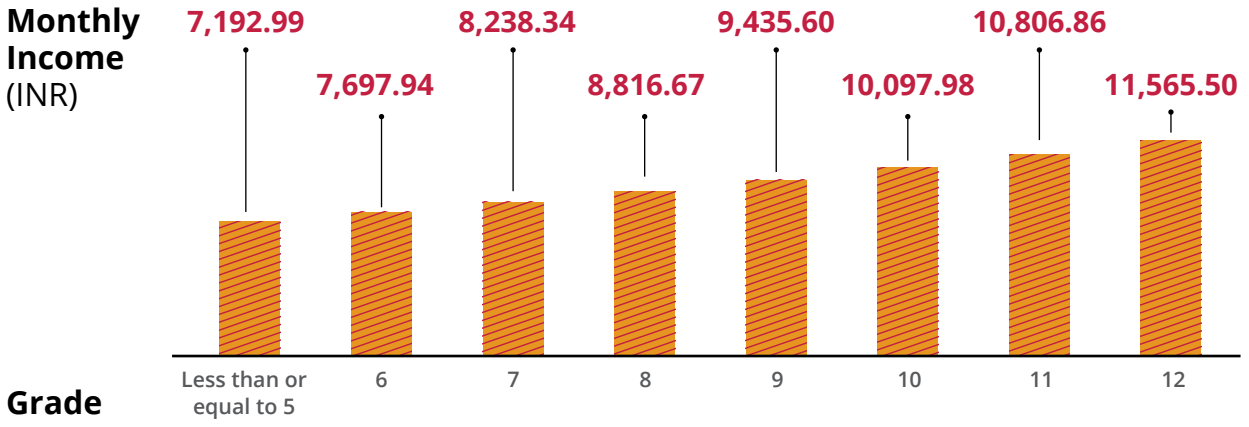
The increase in monthly income due to seven additional years of schooling is INR 4,372. This means an additional income of INR 52,470 yearly.

Increase in lifetime income = Median working years * Increase in yearly income

By assuming the median working years in India as 40, the increase in lifetime earnings is INR 20,98,803. The net benefits are calculated by subtracting the opportunity cost from this amount. The opportunity cost to individual takes into account the amount of income lost or foregone due to time spent in schooling. Seven years of schooling means that the individual lost out on approximately INR 6,04,212. After the final calculations, the total benefit amounted to INR 14,94,591.

These are the private returns to education measured in terms of the increase in income of individuals. Apart from private returns, an educated workforce also enhances the productivity of the nation and leads to further gains. In a nutshell, it is safe to say that these are conservative estimates of the returns to investment in school education.

Exhibit 3.7. Increase in monthly income

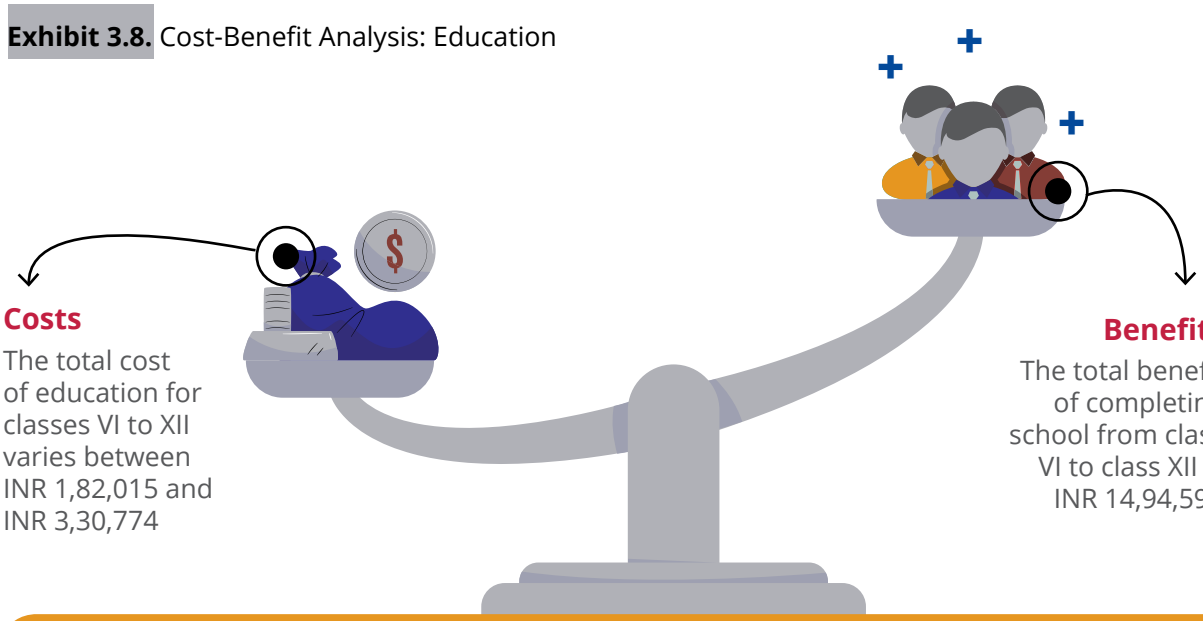


[31] The analysis is based on the assumption of linearity of returns to education. However, Appendix C highlights how the relationship changes at different levels of education.

Benefit-to-Cost Ratio

The total benefit of completing school (class VI to class XII) is INR 14,94,591. The total costs varied between INR 1,82,015 and INR 3,30,774 (Exhibit 3.8).

Exhibit 3.8. Cost-Benefit Analysis: Education



Costs

The total cost of education for classes VI to XII varies between INR 1,82,015 and INR 3,30,774

Benefits

The total benefit of completing school from class VI to class XII is INR 14,94,591

The benefit-to-cost ratio of investing in adolescent education is between 4.51 and 8.21. A rupee spent will result in a private return of the amount between 4.51 and 8.21 in terms of increased wages in the future.

Limitations of the Study

One of the limitations of the study is that it used PLFS data for the year 2017–2018 to estimate the benefits to education. In the wake of demonetisation in the country, the labour markets have been impacted. This might lead to underestimation of the benefits to education.

Addressing **Inequality in Education**

Inequalities based on income, caste, gender, linguistic background and place of birth contribute to inequalities in access, completion, and quality of education.[32]

Income Levels

The Mincer equation was used to examine how the returns to education vary by income level. This aspect of returns to education by income is crucial for policymakers because if the returns are higher for the richer sections of society, any investment in education that is not mindful of this disparity can further accentuate it. A quantile regression method was used to estimate the returns to education across earning distribution. The model took the following form:

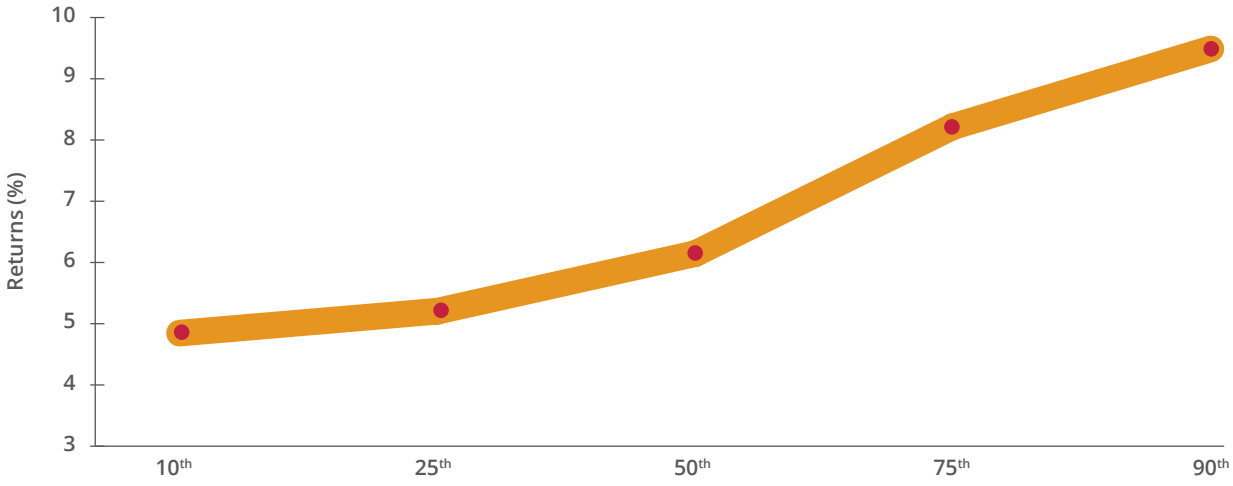
$$\log (W_Q) = \beta_Q X_Q + \varepsilon_Q$$

where:

- W = a vector containing n observations of the monthly wage, the dependent variable.
- β = a vector containing 13 coefficients to be estimated.
- ε = a classical error term.
- Q = specified quantile of log (wage). The following quantiles were examined: .10, .25, .50, .75, .90.

The results from the model[33] depicted in Exhibit 3.9, showed that the returns were higher at the top of the earnings distribution. The returns for the bottom 10th percentile were 4.6 percent, which increased to 5 percent for the 25th percentile, 5.9 percent for the 50th percentile, and rose further up to 7.9 percent for the 75th percentile and to 9.2 percent for the 90th percentile.

Exhibit 3.9. Return from education across income quantiles



[32] Taneja, A. (2020). How can India's education system escape the vicious cycle of inequality and discrimination? Oxfam.
[33] A detailed regression result table and analysis is presented in Appendix C.

These results have implications for policy purposes. Since returns from education were higher for those at the top of the income distribution, educational investments alone will lead to an increase in inequality. This implies that education is not equalizing in India, as the lower rate of return for those at the bottom of the earnings distribution and the higher rate of return for those at the top of the earnings distribution will cause investment to only increase the gap between the rich and the poor, thus aggravating the existing income inequality.

This observation coincides with existing literature, which states that higher-income groups in less developed countries benefit disproportionately from education expansion (Bhagwati, 1973). A number of factors contribute to this phenomenon. For one, individuals from higher-income groups have access to better quality of education as well as better learning tools outside of formal schooling. Furthermore, social capital and educational achievements are positively linked (Dika, 2002), which means that the upper strata are in a more advantageous position—in terms of both ability and informal networks—to reap greater returns from educational attainment. If education does have a greater impact on those with greater ability, as Harmon et al point out, it explains how the returns are higher at the top of the income distribution−there is 'complementarity' between ability and education, leading to higher returns (Harmon, 2003).

Another way the positive correlation between income levels and returns from education increases inequality is that it may increase the dropout rates. Given low returns from education coupled with the opportunity cost of foregone income, poor students may be disincentivised to continue schooling and drop out of school. The potential of education to increase inequality is much greater now; the skill-based technological progress has resulted in a higher rate of return with each additional year of education – specifically, 6.8 percent on average. Thus, employment opportunities for labour possessing educational qualifications below the tertiary level have also shrunk correspondingly. The poor are therefore doubly disadvantaged, owing to both lower returns and low education levels.

Hence, an education expansion policy should also account for and curtail the potential of education to reproduce the inequalities. As previously established, the equalising capacity of primary education investment is already exhausted, and investment should now be allocated towards secondary and higher-secondary education. At the same time, to quell the unequalising tendencies of education expansion, it should also be targeted specifically towards the poor rather than adopt a universal approach of distribution.

Gender

There is significant disparity in the returns to education between males and females. Using the overall earnings, both corrected and uncorrected measures show that the returns are higher for females. However, it should be noted that the average wages for females are lower than the average wages for males.

The returns are more than two percentage points higher for females,

after controlling for personal characteristics as well as selectivity bias. One year of education adds 8.6 percent to female monthly income while it only adds 6.1 percent to the monthly wages of men (Exhibit 3.10).

One possible explanation for this can be that education not only enhances female skill and productivity but also reduces the wage gap (attributed to discrimination) between males and females (Dougherty, 2005). Dougherty found that there is an inverse relationship between years of schooling and discrimination, taste and circumstances (DTC), so education has a dual effect for females: the direct impact on human capital, and an indirect effect through reduction in the impact of DTC. Hence, the result is a narrowing gender wage gap attributable to DTC with each additional year of schooling.

This is possible because at a higher level of education, the laws of demand and supply work to standardise wages regardless of sex. The demand for high-skilled labour and its limited availability dilutes gender-based discrimination to some degree. It may also be the case that a more educated woman is also more capable of resisting discrimination (Dougherty, 2005). She may therefore seek opportunities outside the fold of conventionally female occupations that offer low wages.

In the case of India, the social dynamics of educational attainment can also explain the differential returns for males and females. While education reduces gender-based discrimination, females in India who have access to education beyond the primary level may also be in a socio-economic location where they can rise above discrimination through education.

Exhibit 3.10. Returns from education by gender

Conclusion

Human capital is the pillar on which a rapidly growing economy like India rests. As India looks to become a trillion-dollar economy, the large youth population is an asset that it can leverage. More so now, as the country has entered a period of demographic dividend since 2018, a period where many countries were able to experience rapid economic growth.

Education is an essential driver of human capital formation, which can augment our growth potential. However, a broad policy focus on education expansion may not give the desired results. The current trends in returns to education reveal declining returns to primary education and increasing returns to higher secondary education, thus underscoring the need for greater policy focus on secondary and higher secondary education. Access of secondary and higher secondary education also coincides with the intent to leverage the demographic dividend for growth, as it is the adolescents aged between 10 to 19 who are part of the demographic dividend, the ones who will be entering the workforce in the near future. This makes their education an even greater priority from the perspective of economic goals.

The analysis presented herein also reveals further heterogeneities in returns from education that may be interlinked with one another. The analysis revealed higher returns to education at the upper quantiles of the income distribution. Despite being positive, the returns to education are lower for people at the bottom income quantile. Therefore, due to the high opportunity cost of foregoing current income and investing time in education, this might not be the choice that households with low income make. Education expansion can only be beneficial in poverty reduction and income equalisation if the rates of return increase at a diminishing rate for the rich. However, since the opposite is the case in India, the poor are at a disadvantage due to their economic status and the low returns to primary education. Studies also find a negative relationship between returns and schooling participation for poor males (Kingdon, 2008). Therefore, the poor are less likely to continue schooling beyond primary education, which would further widen the income gap.

Gender dynamics also come into play in influencing the rate of returns to education. Since the rate of returns for females is higher than that of males, it serves as an incentive for families and governments to invest in girl's education. Public spending on disadvantaged groups like the poor and women also have high social returns, as economic elevation also impacts other aspects of well-being. For instance, education can reduce gender-based discrimination to a great degree. Education also has spilover effects on health outcomes, and thus aids human development efforts.

These insights can aid policymakers to reorient policies in a way that best serve the objectives of a developing country like India. The study highlights the need for adolescent (secondary and higher secondary) education and an ideal policy should particularly target the economically disadvantaged groups and females. At the same time, primary education cannot be ignored as it forms the base for higher levels of education. If policy focus is solely dictated by rates of return, it will become counterproductive.

Nevertheless, given the limited resources, public spending patterns need to be readjusted to meet the emergent needs. Accordingly, part of the cost of acquiring education can be shifted

to the higher-income groups, especially in tertiary education, where subsidised education is provided to all. The resources thus eased up can be directed towards secondary and higher secondary education for adolescents representing the most disadvantaged sections of society. At the same time, in an age of technological progress that favours specific skills over others, the importance of promoting vocational education and training cannot be undermined. With such an approach, India can realise the vision of reconciling both, the economic and the social goals of sustainable growth and holistic development of adolescents.

04

Health: Shifting Gears

This section showcases the costs and benefits of intervening in different facets of adolescent health; from nutrition to sexual and reproductive health and mental health.

KEY FINDINGS

The current interventions on anaemia, unmet needs for family planning, and mental health are insufficient to meet adolescent requirements.

A programme to address iron deficiency among adolescents in India where IFA tablets would be provided for 45 weeks in a year to school going adolescent boys and girls and out-of-school adolescent girls would cost over INR 3,000 crores per year.

Likewise, an intervention to cover the current level of unmet needs for family planning among adolescents would cost INR 52 crores annually.

The benefits from fulfilling the unmet needs of adolescents are multifold. The study estimated that this can avert about 1.8 million teenage pregnancies.

An intervention to address the gaps in India's mental healthcare for adolescents would cost about INR 8,134 crores. There is also a need to invest INR 2,745 crores each year to cover the treatment costs for adolescents.

Adolescence is a formative phase of life that builds the foundation for adult life. It involves rapid physical growth, hormonal changes, increase in cognitive and intellectual capacities, sexual development, and transforming relationships with society. The state of health and wellness plays an enabling role in shaping these developmental experiences. Despite the incontrovertible importance of adolescent investment in health, it is often overlooked in the policy space.[34]

A leading reason for this anomaly is that adolescence is often seen to be the healthiest time in an individual's lifetime. In most countries, adolescence is a phase of lowest mortality since it lies between the peaks of early life mortality and chronic diseases experienced in adulthood. In fact, many attributes of good health are witnessed at their peak during adolescence.[35] So, national health policies tend to prioritise the health needs of the more vulnerable age groups, especially when resources are constrained. Further, issues that affect adolescents such as sexual and reproductive health and mental health are never high up on the health needs for adults as well.

However, there are a variety of reasons why adolescent health should take centrestage in policy governance. First, the health and well-being of adolescents impacts key developmental outcomes such as obtaining education, transitioning to employment, forming relationships, and engaging in civic activities. Secondly, the adolescent years determine the health trajectory of individuals for the rest of their lives. Finally, when adolescents transition to adulthood and parent children, their health reserves establish the nutritional and related outcomes for their offspring.

So, investments in adolescent health do not merely yield benefits today but do so for decades to come and for the next generation as well. India has made several interventions in adolescent health but there remain several challenges. A detailed discussion is available in Appendix D.

As noted in the methodology section, the study explored three action areas related to health: nutrition, sexual and reproductive health, and mental health.

[34] Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., ... Viner, R. M. (2016). Our future: a Lancet commission on adolescent health and wellbeing. The Lancet, 387(10036), 2423–2478. doi:10.1016/s0140-6736(16)00579-1
[35] Graham P. (2004) The end of adolescence. New York: Oxford University Press.

Nutrition: **Addressing Anaemia Among Adolescents**

Anaemia is a condition characterised by low haemoglobin concentration in the blood. It reduces the capacity of the blood to carry oxygen to tissues, which causes fatigue and reduced capacity for physical work. In pregnancy, it could lead to adverse health outcomes such as maternal mortality, low birth weight, and premature birth. In fact, anaemia affects about a third of women of reproductive age (15–49 years) worldwide.[36]

In India, anaemia is a major health problem, especially among women of reproductive age. According to NFHS-4, the prevalence of anaemia among women aged 15 to 49 years is 53 percent. Among them, about 40 percent are mildly anaemic, 12 percent are moderately anaemic, and 1 percent are severely anaemic. There is also not much variation between rural (54.3 percent) and urban (50.9 percent) populations. Among adolescent girls aged 15–19, the prevalence of anaemia is 54 percent.

While anaemia can be caused by several factors, iron deficiency is the most common driver of anaemia in India.[37] Iron deficiency can adversely affect:

- attentiveness, memory, school attendance and school performance.[38]
- physical growth.
- immunity from morbidity and infections.
- capacity to work and undertake physical activity.[39]

Most of these adverse effects take root during adolescence and have lasting consequences throughout adulthood.

Iron deficiency often gets more pronounced among women of reproductive age due to menstrual losses and diets that often lack sufficient iron. Such outcomes during pregnancy can:

- increase foetal morbidity and mortality.
- increase infant mortality and incidence of low birth weight.
- increase perinatal risks for mothers.[40]

Thus, failure to address anaemia can lead a vicious intergenerational where anaemic girls and women who become pregnant are at greater risk of giving birth to low birth weight and preterm babies. Considering that adolescence is a time of growth and development, it is an opportune time to intervene and address iron-deficiency issues.

A cost-effective way of doing this is by providing iron and folic acid (IFA) supplements. When taken once a week, they can significantly reduce

[36]Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's Fund, World Food Programme, World Health Organization (2017). The state of food security and nutrition in the world 2017. Building resilience for peace and food security. Rome.
[37]Anand T, Rahi M, Sharma P, Ingle GK (2014). Issues in prevention of iron deficiency anaemia in India. Nutrition. 30(7–8):764–70.
[38]Soemantri, A. G., Pollitt, E., & Kim, I. (1985). Iron deficiency anemia and educational achievement. The American Journal of Clinical Nutrition, 42(6), 1221-1228.
[39]Ramakrishnan, U. (Ed.). (2000). Nutritional anemias. CRC press.
[40]Scholl, T. O., & Hediger, M. L. (1994). Anemia and iron-deficiency anemia: compilation of data on pregnancy outcome. The American journal of clinical nutrition, 59(2), 492S-501S.

the risk of anaemia. The Ministry of Health and Family Welfare in India has a Weekly Iron and Folic Acid Supplementation (WIFS) Programme to address nutritional anaemia among adolescent girls and boys. It targets school-going adolescent girls and boys (in class VI to XII) and out-of-school adolescent girls.[41] The programme began as a pilot across 20 districts in five states in the year 2000 and demonstrated a significant decrease in the prevalence of moderate-to-severe anaemia post implementation.[42] Since then, the programme has been gradually expanded across the country.

Current Status of Coverage

This study aimed to ascertain the presence of gaps in programme coverage. But first, it was necessary to estimate the targeted beneficiaries. Since the programme targets children in class 6 and above, the age group of 11–19 years was considered for this calculation. Recent population projections show that there are over 22 crore adolescents in this age group; out of which 11.3 crore are males and 10.5 crore are females. Both school-going and out-of-school female[43] adolescents are eligible for the programme, while only school-going males are eligible. So, the enrolment rate among males was required. The gross enrolment ratio (GER) at each level of education was obtained from the education statistics provided by the Ministry of Human Resource Development.[44] As shown in Exhibit 4.1, the number of school-going adolescent males stands at 6.7 crore.

Exhibit 4.1. Estimation of male adolescents eligible for iron and folic acid distribution

Calculation of Eligible Male Adolescents				
Level	**Male GER**	**Age Group**	**Total Male Population**	**Eligible Male Population (in crores)**
Upper Primary (VI–VIII)	88.70	11–13 Years	3,65,77,000	3.2
Secondary (IX–X)	79.20	14–15 Years	2,51,76,000	2.0
Senior Secondary (XI–XII)	56.00	16–17 Years	2,58,65,000	1.4
			Grand Total	**6.6**

Adding the 10.5 crore female adolescents, the total number of eligible adolescents was 17.2 crores.

[41]Ministry of Health & Family Welfare. (2021, April). Weekly Iron and Folic Acid Supplementation (WIFS). Link: https://nhm.gov.in/index1.php?lang=1&level=3&sublinkid=1024&lid=388
[42]World Health Organization (2018). Weekly iron and folic acid supplementation as an anaemia-prevention strategy in women and adolescent girls: lessons learnt from implementation of programmes among non-pregnant women of reproductive age. Geneva.
[43]National Commission on Population (2019). Report of the Technical Group on Population Projections. Ministry of Health and Family Welfare.
[44]Ministry of Human Resource Development (2018). Educational Statistics at a Glance. Ministry of Human Resource Development, Government of India.

As per the latest data available, only about 3.5 crore adolescents were reached under the WIFS Programme as of 2016–17.[45] Therefore, the programme coverage was only about 20 percent.

The Ministry of Health and Family Welfare had targeted reaching 11.2 crore beneficiaries by 2021.[46] In fact, the school closures due to the COVID-19 pandemic are likely to have reduced the coverage even further. There is an urgent need, therefore, to rapidly ramp up the coverage to combat anaemia among adolescents.

Estimating the Costs of Meeting IFA Requirements

The study assumes that the WIFS programme aims to expand the coverage of adolescents to 70 percent. It is expected that each adolescent will take one IFA tablet per week, which makes a total of 52 tablets a year. However, schools remain open for an average of 45 weeks in a year. So, the IFA tablet requirements were estimated for 45 weeks per adolescent.

The tablet requirement incorporated a 20-percent margin as a buffer to maintain sufficient stocks of IFA tablets. It is crucial to note that only the cost of the IFA tablets was considered. The programme-implementation costs were not incorporated in the study.

The additional requirements for IFA tablets were calculated using the following formula:

IFA TABLETS REQUIRED FOR ADOLESCENTS = 45 X 70/100 X TARGET ADOLESCENT POPULATION + 20% BUFFER

NOTE: THE BUFFER IS NECESSARY TO MAINTAIN SUFFICIENT STOCK OF IFA TABLETS. CALCULATION FOR 20% BUFFER = 0.2 X TOTAL NUMBER OF IFA TABLETS REQUIRED

Using this formula, it was estimated that there is a need for about 650 crore IFA tablets each year. The cost for each tablet averages approximately INR 5. So **the yearly budget for scaling up such a programme will be about INR 3,250 crore in addition to the current cost of running the WIFS programme. In case such a scale-up is continued from 2022 until 2030, it will cost approximately INR 30,000 crore.**

[45] Khera. A. et. al. (2018). Forging an Anaemia-Free Future. United Nations Children's Fund. Link: https://anemiamuktbharat.info/wp-content/uploads/2019/09/Field_report_nutrition-web3.pdf
[46] Same as footnote 38.

Fulfilling the Unmet Need for **Contraceptives Among Adolescents**

The access to and use of modern family planning services provides a wide range of benefits to women, their families, and society as a whole. It not only ensures that pregnancies are planned but also improves the health of women and enhances their agency over their body, fertility, and societal status. Further, it helps protect the health of infants and improves the well-being of families. However, a notable proportion of women who want to avoid a pregnancy—either to delay or stop childbearing—are not using modern contraceptives.[47]

The various successes of the national family planning programmes have been accompanied by misconceptions, information gaps about contraceptives, and inadequate understanding about the importance of family planning. One of the biggest challenges has been the persisting unmet need for family planning, or the "condition of wanting to avoid or postpone childbearing but not using any method of contraception".[48]

As per NFHS-4, India's unmet need for family planning among currently married women aged 15−49 stands at 12.9 percent on an average. Within this, the unmet need for spacing births was 5.7 percent. There are vast disparities in these trends across the population. Indian women in rural areas report a higher unmet need than those residing in urban areas, indicating a lack of access to family planning services. Among various social groups, the use of contraceptives is the lowest (45 percent) among women from the scheduled tribes. There are also disparities in usage across different regions with the highest unmet need in Manipur at 30.1 percent and the lowest in Andhra Pradesh at 4.7 percent.

The recent NFHS-5 data, which has been released for 22 states, shows that almost all states have shown a reduction in unmet needs. Meghalaya is the only state with increased unmet needs for contraceptives while the number has remained constant in Andhra Pradesh. Therefore, while India is showing favourable trends in addressing unmet needs on average, some pockets still need a lot of investment to maintain the downward momentum of reducing unmet needs and presenting a more considerable combined benefit to the country.

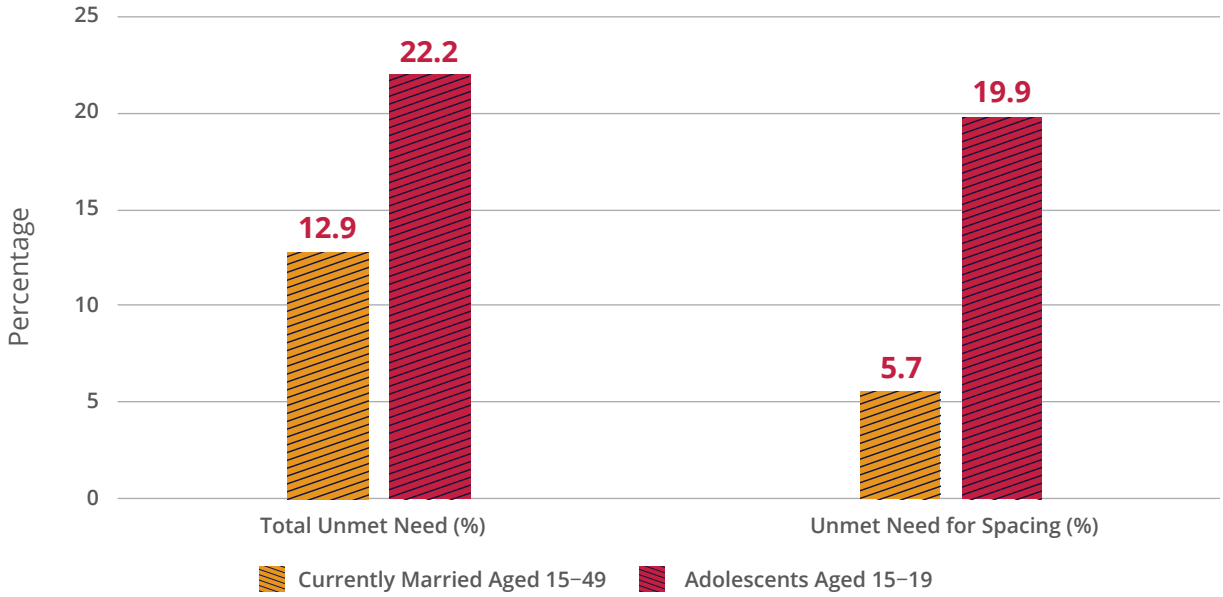
Given India's expanding young population, a key age group to focus on are the older adolescents (15–19 years). As per NFHS-4, compared to the unmet need of 12.9 percent among currently married women aged 15–49, the unmet need among 15–19-year-olds stands at 22.2 percent (Exhibit 4.2). Likewise, while the unmet need for spacing is 5.7 percent for the currently married 15–49 age group, it is considerably high for adolescents at 19.9 percent.

Therefore, there is an urgent need to fill the gap for contraceptives among adolescents. Specifically, fulfilling the unmet need for spacing births among adolescents is of utmost importance. This study aimed to:

- Estimate the cost of addressing this need for the country.
- Derive the benefits that can accrue from such an effort. It adopted a top-down approach to calculate the annual programme cost for ensuring access to contraceptives among Indian adolescents.

[47] Osotimehin, B. (2015). Family planning as a critical component of sustainable global development. Global health action, 8.
[48] Casterline, J. B., & Sinding, S. W. (2000). Unmet need for family planning in developing countries and implications for population policy. Population and development review, 26(4), 691-723.

Exhibit 4.2. Unmet need for family planning across age groups, 2015–2016



Estimating the Cost of Addressing the Unmet Need

The study estimated the cost of an intervention to cater to the unmet spacing needs among Indian adolescents. It assessed the cost of providing contraceptives to adolescents and weighed them against the benefits of such an intervention. The estimations were based on data from the NFHS-4 survey. However, since there were several data limitations, a few assumptions had to be made to arrive at the final estimates.

Assumptions

The NFHS-4 data provides the proportion of women and men aged 20–24 married before 18 and 20 years of age. Since the proportion married before 19 years of age was required, the average of the two was considered. Next, since the unmet need has been falling over time, it was assumed that the rate of decrease will remain constant as it was between NFHS-3 and NFHS-4.[49] Further, since there was no data for the unmet need of married men aged 15 to 19 years, the same proportion as that of women was considered. The study chose not to simply focus on the unmet need for women because that would imply that the onus of contraceptive usage lies merely with the female sex. Further, the study also assumed that the rate of marriage among adolescents will remain constant across the time period considered. Lastly, the estimations did not take premarital sex into account.[50]

[49] There was a change in definition of unmet needs between NFHS-3 and NFHS-4. Therefore, the NFHS reports show that the total unmet need remained almost constant across the two rounds. However, if the NFHS-4 definition is used for NFHS-3 data, the unmet need is seen to fall from 13.9 percent to 12.9 percent. For further study, refer to Kulkarni, P. M. (2020). Stagnancy in the Unmet Need for Family Planning in India. Economic & Political Weekly, 55(6), 65.

[50] This is mainly due to data challenges, but an argument can be made as to why discounting for premarital sex will not lead to a significant underestimation of contraceptive usage. As per NFHS-4 data, 48 percent women aged 20–24 were married before 20 years of age but 46.6 percent of women reported to have their first sexual intercourse before 20 years of age. Since the two numbers are quite close, it can be said with certainty that our estimate of unmet need will not be far from reality. The disparity in numbers is higher for men with only 10.3 percent married before 20 years of age and 16.9 percent having had their first sexual intercourse before that age. In this case, it can be said that the unmet need for men might be an underestimate. However, since we do not have the exact figure for unmet need among men, the study keeps the criteria same across genders.

Cost Estimation

The study incorporated two interventions for spacing: condoms (for male adolescents) and oral contraceptive pills (for female adolescents). The reason for limiting the intervention to these contraceptives was that they are cost-effective and less intrusive than others such as intrauterine devices (IUCDs) and injectables. The first step was to estimate the approximate number of beneficiaries. The adolescent population as obtained from projections of the National Commission on Population was multiplied with the proportion of female and male adolescents married before 19 years of age. This was then multiplied with the proportion of unmet need among these population sub-groups.

The NFHS-4 data states that 48 percent of women aged 20–24 get married before 20 years of age and 26.8 percent before 18 years of age. Therefore, it was assumed that an average of 34.6 percent women get married before 19 years of age. Likewise, given that 10.3 percent and 4.1 percent of men aged 20–24 get married before 20 and 18 years of age respectively, it was assumed that 8.25 percent men get married in adolescence.

The unmet need for spacing among currently married women aged 15–19 is 19.9 percent. Since the unmet need fell by 7.75 percent between NFHS-3 and NFHS-4, the same rate of reduction over time was assumed. Therefore, the study assumed an unmet need for spacing at 18.36 percent, 16.94 percent, and 15.62 percent in 2021, 2025 and 2030 respectively. Surely, an intervention through contraceptive distribution would reduce the unmet need faster, but since it is difficult to predict the effectiveness, the least possible reduction was assumed.

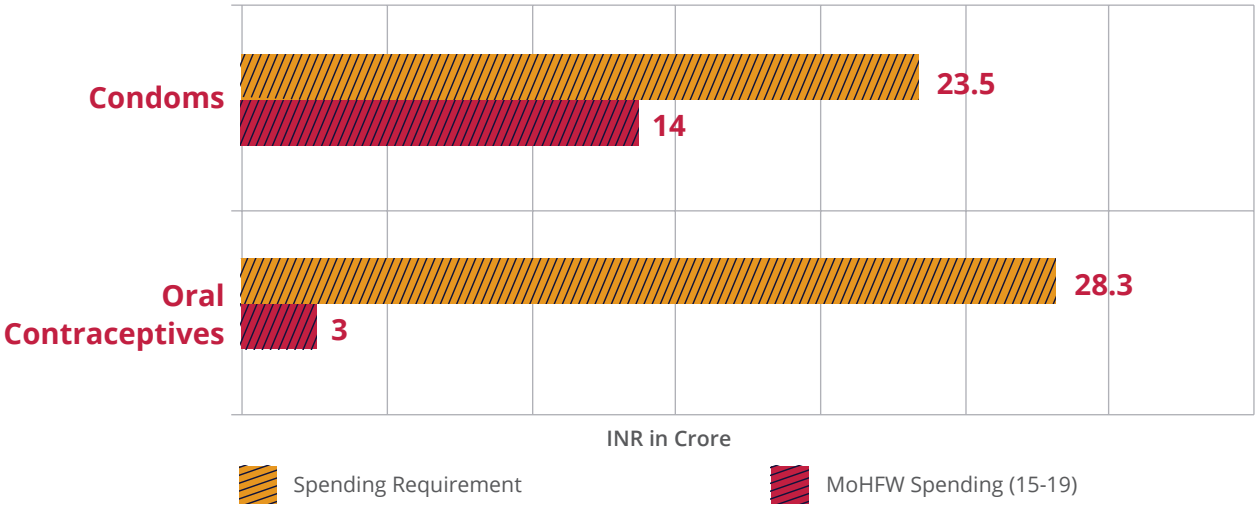
As per population estimates, there are approximately 64.7 million male and 59.5 million female adolescents in 2021.[51] Therefore, considering the percentage of married adolescents across gender and the prevalence of unmet needs, it was estimated that there are approximately 3.8 million female beneficiaries and almost a million male beneficiaries. Finally, we can estimate the overall cost of distributing contraceptives among adolescents.
The couple-years of protection (CYP) for these methods is detailed in Exhibit 4.3, which shows the cost estimate for one year (2021). These figures are based on the CYP conversion factors provided by the RESPOND project and endorsed by USAID.[52] The costs of these contraceptives are based on averages of survey estimates from various studies.[53]

Exhibit 4.3. Annual programme cost of ensuring access to contraceptives among adolescents

Methods	Approx. Beneficiaries	CYP per Unit	Unit Cost (in INR)	Cost (in INR crores)
Oral Contraceptives	37,80,898	15	5	28.3
Condoms	9,81,224	120	2	23.5
Total Cost				**51.9**

[51] National Commission on Population (2019). Report of the Technical Group on Population Projections. Ministry of Health and Family Welfare. Link: https://www.nhm.gov.in/New_Updates_2018/Report_Population_Projection_2019.pdf
[52] RESPOND is the USAID-funded global project that seeks to increase the use of high-quality family planning (FP) services, through ensuring a wide range of contraceptive options including the informed and voluntary use of long-acting and permanent contraception. In 2011, the RESPOND project updated its CYP calculations to reflect modern contraceptive usage. The same conversion factors were used for the purposes of this study.
[53] Deo, S. et al. (2019). Cost of Family Planning Methods in India: An Analysis of Four Districts in Uttar Pradesh. Indian School of Business.

Exhibit 4.4. Spending Gap for Ensuring Access to Contraceptives among Adolescents



As compared to the spending requirement of INR 51.9 crores, India spent about INR 17 crore on supplying condoms and oral contraceptive pills (OCPs) for adolescents to states in 2017–2018 as per the financial statements provided by the Ministry of Health and Family Welfare (MoHFW)[54]

Exhibit 4.4 points out the spending gaps for both contraceptives. It must be noted that MoHFW provides spending figures for the 15–49 age group. The estimation in Exhibit 4.4 was based on the proportion of the adolescent population in that age group.

[54] MoHFW (2019). Annual Report 2018–2019. Ministry of Housing and Family Welfare. Link: https://main.mohfw.gov.in/sites/default/files/06%20Chapter%2093AN2018-19.pdf

COSTING FOR THE NEXT DECADE

Assuming that the rate of unmet need for adolescents reduces over the next decade based on past trends, it should fall from 18.36 between 2021-24 to 16.94 between 2025-29 and finally to 15.62 between 2030-34. Based on these trends and the population projections for adolescents between 15-19 years provided by the National Commission on Population, it can be estimated that the total cost of providing contraceptives would be approximately INR 4 billion (or INR 475 crores).

Exhibit 4.5. Cost estimates for addressing the unmet need among adolescents over the next decade

	Approx. Beneficiaries Yearly	Unmet Need for Spacing among Adolescents (in %)	Cost (in INR)
2021–24	47,62,122	18.36	2,07,62,44,012
2025–29	41,76,970	16.94	2,26,88,17,138
2030	37,07,306	15.62	40,66,95,722
			4,75,17,56,872

Limitations

The problem of access to contraceptives is not the only factor driving unmet needs. A major driver mentioned in the literature is societal—and especially male—disapproval of contraceptive usage.[55] So, there is a need to build community acceptance for contraceptive usage, which has not been incorporated in this estimation. Therefore, while it is necessary to cover the spending gap shown here, it is not sufficient to address the problem of unmet needs.

[59]As per NFHS-4, three in eight men believe that "contraception is women's business and that men should not have to worry about it".

Benefits from Investing in Contraceptives

There are several benefits to ensuring access to modern family planning methods from reduction in poverty and hunger to averting maternal and infant deaths.[56] In this study, the benefits through the direct effects of using modern contraceptives in terms of averted unintended pregnancies were estimated.

Studies have shown that if all women who wanted to avoid a pregnancy used modern family planning methods, there would be a substantial reduction in unintended pregnancies. Specifically, in developing and lower-middle income countries, this drop amounts to 60 percent.[57]

As per NFHS-4, the age-specific fertility rate between 15–19 years was 5.1 per 100 women. Given that there were approximately 60 million girls aged 15–19 in 2016, as per the population projection estimates by the National Commission on Population, around three million could be pregnant that year.

After an intervention with a programme for contraceptive distribution akin to the one described above to eliminate the unmet need, the incidence of teenage pregnancy in India could potentially reduce from 3 million to 1.2 million.[58]

[56] Cleland, J., Bernstein, S., Ezeh, A., Faundes, A., Glasier, A., & Innis, J. (2006). Family planning: the unfinished agenda. The Lancet, 368(9549), 1810–1827.
[57] Sully, E.A. et al. (2019) Adding It Up: Investing in Sexual and Reproductive Health, New York: Guttmacher Institute, 2020. Link: https://www.guttmacher.org/report/adding-it-up-investing-in-sexual-reproductive-health-2019
[58] Here we are considering all teenage pregnancies unintended.

Addressing Issues of **Mental Health Among Adolescents**

Adolescence is a period marked by the achievement of neurobiological and physical maturity leading to growing psychological awareness and higher levels of social and emotional interactions among peers and adults. On the one hand, adolescence prepares an individual for adulthood and provides the skills to deal with its challenges. On the other hand, the burden of peer pressure, changing societal roles, and growing aspirations increase the risk of various psychological and psychiatric disorders.

As per the National Mental Health Survey 2016, the overall prevalence of mental morbidity among adolescents in India was 7.3 percent.[59] The problem was higher among urban metro adolescents (13.5 percent) than the urban non-metro (4.3 percent) and rural (6.9 percent) adolescents but only marginally higher among males (7.5 percent) than females (7.1 percent). The most frequent mental disorders among adolescents were anxiety disorders and mood disorders.

It is vital to address mental health concerns among adolescents for several reasons. It is estimated that nearly half of all adult psychiatric disorders begin before the age of 14.[60] So an effective approach to improving mental health across society would be to address the development of mental disorders among adolescents. The onset or presence of mental disorders can increase the risk of disability and premature mortality from other diseases such as cardiovascular diseases, diabetes, and other chronic diseases. This is driven by neglect of physical health (by themselves, or people around them), substance abuse, lower physical activity and an unhealthy diet. Such outcomes can also lead to higher stress on public sector services, affect peer and family relationships, and reduce participation in the labour force. Therefore, it is most effective to address the issue of mental health early in human life.

This section studies the state of mental healthcare for adolescents in the country and the cost to address the gaps.

[59] NMHS 2016 covered adolescents from the four states of Gujarat, Tamil Nadu, Kerala and Jharkhand and included about 300 adolescents from each state.
[60] Sagar R., (2011). Child and adolescent mental health: Need for a public health approach. Journal of Mental Health Human Behaviour16:1−4

The State of Mental Healthcare for Adolescents

The most notable and recent legislation that has been introduced to enable and ensure mental healthcare in India is the Mental Healthcare Act (MHCA), 2017. This law recognises that universal mental healthcare is a justiciable right for Indian citizens and mandates the central and state governments to provide affordable and quality mental healthcare by integrating mental health facilities at each level of the public health system.

Despite the progressive nature of the law, budgetary allocation towards building the mental health infrastructure across the country has been largely missing in the following years. The National Mental Health Programme was allocated a mere INR 50 crore in FY18 and INR 40 crore in the successive financial years. This amounts to less than 0.05 percent of the total health budget. Moreover, only around 10 percent of the allocated funds were utilised each year.[61]

The lack of funding for mental health in general, let alone adolescent-specific mental health, shows up in the infrastructure and human resource statistics (Exhibit 4.6). These statistics are primarily based on the Mental Health Atlas, 2017 published by the World Health Organization. It shows that around 13 crore people suffer from mental health disorders in India, out of which one crore are adolescents.

To cater to this population, the mental health infrastructure and human resources are pretty limited. There are approximately 9,000 psychiatrists in the entire country and 49 child psychiatrists. This amounts to 0.75 psychiatrists for every 100,000 people and 0.021 child psychiatrists per 100,000 adolescents. For context, the ideal number is anything above three psychiatrists per 100,000 people. In high-income countries, this reaches up to an average of 11.9 psychiatrists per 100,000 people. Combining other categories, India has about 1.93 mental health workers per 100,000 people. The global average for the same is above 6.6 per 100,000 people.

Exhibit 4.6. Overview of India's mental health profile
Source: Mental Health Atlas, 2017[63]

Category	Number
Mental Health Statistics	
People suffering from diagnosable psychiatric conditions	13 crores
Adolescents suffering from any mental morbidity	1 crore
Human Resource Statistics	
Psychiatrists	9,000[62]
Mental health nurses	10,500
Psychiatric social workers	1,000
Clinical psychologists	1,000
Child psychiatrists	49
Mental Health Infrastructure Statistics	
Outpatient facility specifically for children and adolescents	139
Inpatient facility specifically for children and adolescents	45
Child and adolescent-specific inpatient beds	500

The mental health infrastructure statistics are equally concerning. There are 139 outpatient and 45 inpatient facilities for children and adolescents in the entire country. We are clearly a long way off from the requisite mental health human resource and infrastructure facilities.

[61] Munjal, D. (2020, February 5). Huge gap in India's mental health budget. BusinessLine. Link: https://www.thehindubusinessline.com/news/national/huge-gap-in-indias-mental-health-budget/article30733494.ece
[62] The Mental Health Atlas reports a lower number of psychiatrists. However, updated estimates put the number at 9,000. Refer Garg, K., Kumar, C. N., & Chandra, P. S. (2019). Number of psychiatrists in India: Baby steps forward, but a long way to go. Indian journal of psychiatry, 61(1), 104–105.
[63] For some categories, the Mental Health Atlas reports the figures in terms of per lakh population. These have been converted into absolute number for clarity.

Estimating the Costs

Section 31 (3) of the Mental Healthcare Act (MHCA), 2017 states that the government should achieve the internationally accepted standards for the number of mental healthcare professionals per lakh of the population within ten years of commencement of the Act. Therefore, it is necessary to estimate the gaps in these targets and the costs required to meet them.

Assumptions

All requirements per lakh of the population are based on the median values of upper-middle-income countries provided by the Mental Health Atlas 2017. However, since there is no segregation of mental health nurses and clinical psychologists specifically for adolescents, it was assumed that the requirements would be 20 percent of the median target since adolescents account for 20 percent of the country's population. The same has been assumed for infrastructure requirements.

While making the costing estimates, the cost of training mental health workers was not available. However, studies have estimated that the cost of training a doctor in India is approximately one crore.[64]

Therefore, it has been assumed that a similar cost would be incurred to train a child psychiatrist. Additionally, it has been assumed that the cost of training a nurse is one-fifth and of a clinical psychologist is half the cost of training a doctor.[65]

Finally, since the costs of setting up outpatient and inpatient mental health facilities for adolescents were not available, the cost of upgrading sub-health centres (SHCs) and primary health centres (PHCs) to health and wellness centres (HWCs) has been assumed as a proxy, given that HWCs are supposed to incorporate mental health facilities within their ambit.[66]

[64] Verma R, Gupta SK, Satpathy S, Kant S, Chumber S, Deka RC. (2013) Determination of the cost of training of undergraduate medical (MBBS) student at All India Institute of Medical Sciences, New Delhi, India. Int J Res Foundation Hosp Healthc Adm. 2013; 1:1–7.
[65] These assumptions are based on the average cost differentials for relevant professional courses.
[66] The expanded range of services under HWCs can be found here.

Deficit Estimation

To estimate the deficit in mental health resources for adolescents, it was necessary to match the current resources with the ideal requirements for that category. Exhibit 4.7 depicts the gaps in the total mental health resources for adolescents. As stated, these have been adapted from Exhibit 4.6 with the assumption that 20 percent of mental health nurses and clinical psychologists would be required by adolescents given that they account for 20 percent of the total population. The ideal requirements per lakh of population are based on the median values of upper-middle-income countries in the Mental Health Atlas 2017, which have also been moderated by 20 percent where necessary. For instance, upper-middle-income countries have 0.1 child psychiatrists per lakh of the population on an average, which has been considered as such here, but these countries have about 1.9 psychologists per lakh of the population on an average. This has been reduced to 0.4 per lakh of the population for the purpose of this study as only a fraction of them would be catering to children and adolescents in upper-middle-income countries as well.

Based on these assumptions, it was estimated that India needs about 1,300 child psychiatrists, 19,500 mental health nurses, and 5,200 clinical psychologists. Likewise, there is a need for about 3,900 outpatient facilities and 1,300 inpatient facilities.

Exhibit 4.7. Gaps in mental health resources for adolescents in India

Category	Total for Adolescents	Required per lakh population	Total Required for Adolescents
Human Resource Gaps			
Child psychiatrists	49	0.1 per lakh	1,300
Mental health nurses	2,100	1.5 per lakh	19,500
Clinical psychologists	200	0.4 per lakh	5,200
Infrastructure Gaps			
Outpatient facility specifically for children and adolescents	139	0.3 per lakh	3,900
Inpatient facility specifically for children and adolescents	45	0.1 per lakh	1,300
Inpatient beds specifically for children and adolescents	500	5 per lakh	65,000

Cost Calculation

The next step was to estimate the cost of addressing these resource gaps. Since the data for unit costs of all resources was unavailable, proxies have been used to build an approximate estimate. Based on the assumptions made, the study estimated that meeting the provisions of the MHCA would require approximately an investment of INR 8,134 crores (Exhibit 4.8). Since the internationally accepted standards for the number of mental healthcare professionals per lakh of the population have to be met by 2027, India needs to allocate at least INR 1,355 crores each year for the remaining six years.

While these costs cover the requirement to set up the necessary facilities, the MHCA also puts the onus of providing mental healthcare on the state. So there are additional costs involved in delivering outpatient and inpatient care. Since almost all the one crore adolescents suffering from mental disorders will require outpatient care and if one assumes that they access care in the nearest government hospital, it was estimated that a minimum of INR 100 per person per month needs to be invested. This amounts to INR 1,200 crore per year (1 crore x INR 100 x 12 months).

Further, approximately 0.6 percent of mental healthcare users may require inpatient services at least once a year.[69] Therefore, about 60,000 adolescents would require inpatient care. The average number of days of inpatient stay per admission is assumed to be 21 days.70 As per Ayushman Bharat, the cost per admission is INR 1,500 per day. Therefore, the cost of inpatient mental healthcare would amount to INR 189 crores.

Exhibit 4.8. Required spending over the next decade to cater to adolescent mental health needs

Category	Deficit	Unit Cost (in INR)	Total Cost (in INR crores)
Human Resource Costs (Training)			
Child psychiatrists	1,251	1 crore per person[67]	1,251
Mental health nurses	17,400	20 lakh per person	3,480
Clinical psychologists	5,000	50 lakh per person	2,500
Infrastructure Costs (Upgrading SHCs and PHCs to HWCs)			
Outpatient facility specifically for children and adolescents	3,761	18 lakh per facility[68]	903
Inpatient facility specifically for children and adolescents	1,255		
Grand Total			**8,134**

[67] Verma R, Gupta SK, Satpathy S, Kant S, Chumber S, Deka RC. (2013). Determination of the cost of training of undergraduate medical (MBBS) student at All India Institute of Medical Sciences, New Delhi, India. Int J Res Foundation Hosp Healthc Adm. 2013; 1:1–7.
[68] Singh, D., Prinja, S., Bahuguna, P., Chauhan, A. S., Guinness, L., Sharma, S., and Lakshmi, P. V. M. (2021). Cost of scaling-up comprehensive primary health care in India: Implications for universal health coverage. Health Policy and Planning, 36(4), 407-417.
[69] Harrison P, Cowen P, Burns T, Fazel M. (2018) Shorter Oxford Textbook of Psychiatry; 7th ed. United Kingdom: Oxford University Press; Psychiatric Services, p. 790.
[70] Gowda GS, Lepping P, Noorthoorn EO, Ali SF, Kumar CN, Raveesh BN, Math SB. (2018) Restraint prevalence and perceived coercion among psychiatric inpatients from South India: A prospective study.
Asian J Psychiatr. 2018 Aug; 36():10-16.

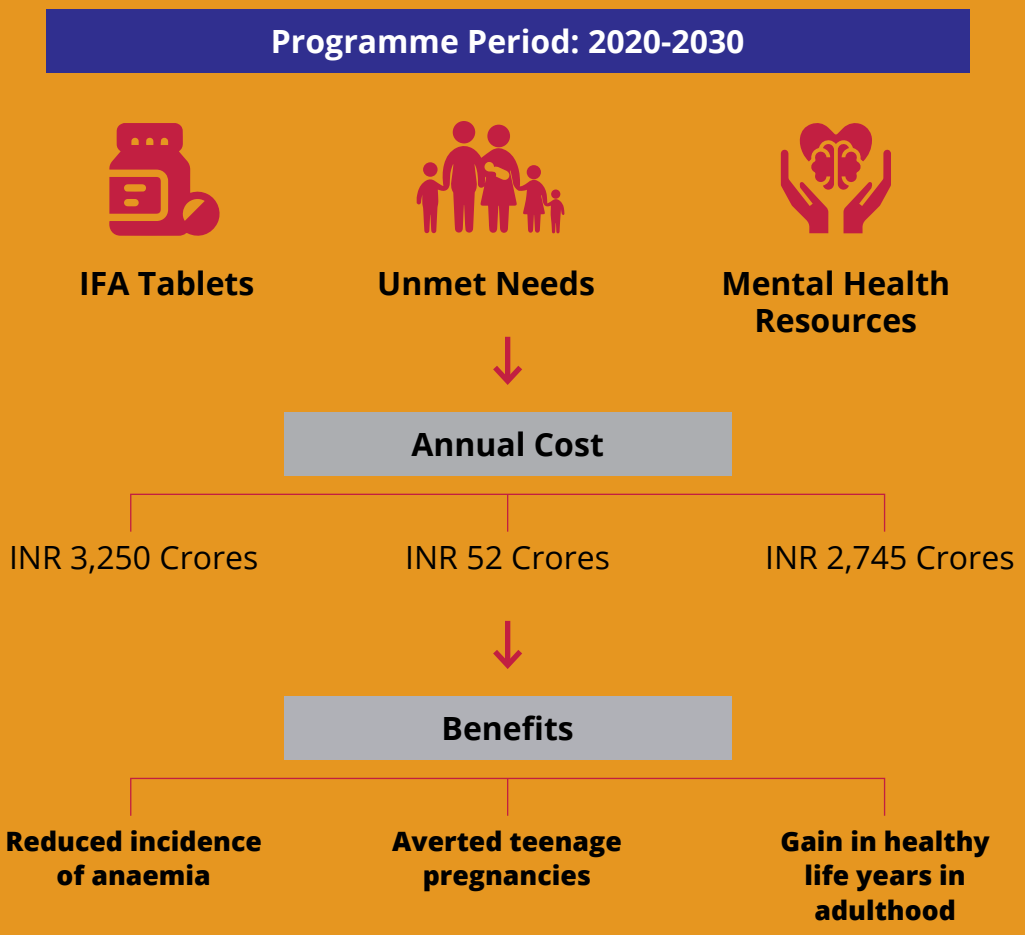
Adding all these costs, the approximate spending required on adolescent mental health amounts to INR 2,745 crores per year. This includes INR 1,355 crores on mental health resource development and INR 1,390 crores on treatment costs annually.

Limitations

Mental health is an issue that still involves invokes considerable social stigma in India. So, some adolescents in need of mental health care might not reach out for these services. It is, therefore, necessary to build awareness across India regarding the benefits of addressing mental health.

Conclusion

The study examined the costs and benefits of three interventions in the areas of nutrition, sexual and reproductive health and mental health. These are summarised below.



However, it is crucial to reiterate that the domain of adolescent health and well-being expands much further than the scope of this study. For instance, adolescents in India suffer from morbidity and mortality issues due to diseases such as tuberculosis. This also requires urgent attention. There are also issues of substance abuse, which need to be addressed through school-based and community-based interventions.

So, this study is only meant to provide a rough estimate for intervening in some key areas of adolescent health. The aim is to emphasise that the extent of benefits from such interventions will be multifold for society. Investing in the health of adolescents today will ensure a healthy future for the country.

05

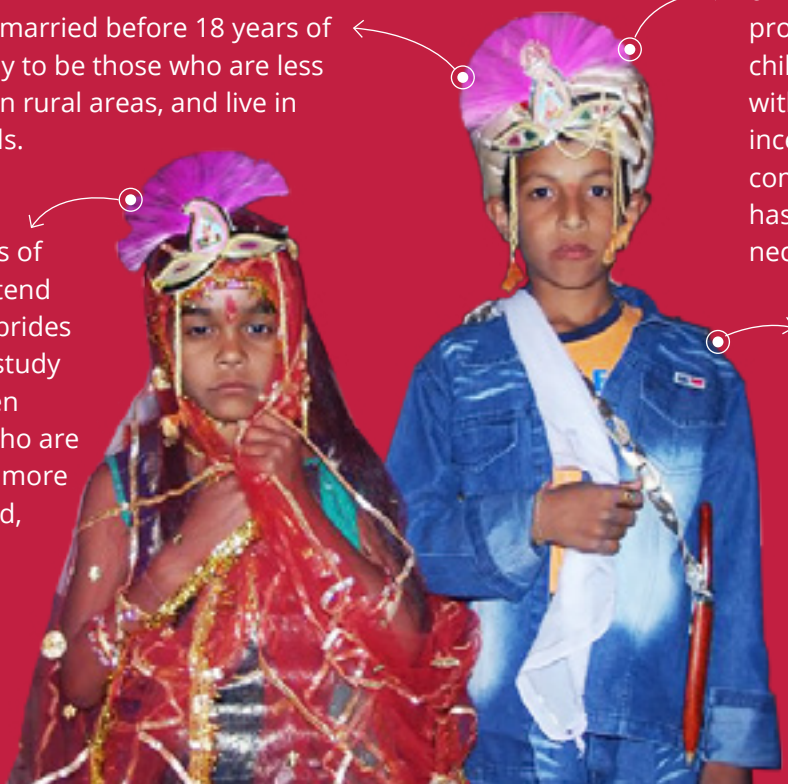
Child Marriage: The Unhealthy Consequences

This section argues the case for eliminating the practice of child marriage by showcasing the impact of the practice, not only on its victims but on future generations as well. It further elaborates on the various strategies that countries have employed to reduce child marriage and estimates the costs and benefits of a possible approach for India.

KEY FINDINGS

The girls who are married before 18 years of age are more likely to be those who are less educated, reside in rural areas, and live in poorer households.

There is little consensus on the best approach for programmes to reduce child marriage, but along with providing economic incentives, ensuring community mobilisation has been found to be necessary.



The consequences of child marriage extend beyond the child brides themselves. This study found that children born to women who are married early are more likely to be stunted, underweight and anaemic.

A conditional cash transfer programme linked with school enrolment can lead to significant benefits for India in terms of averting child marriages, increasing enrolment rates and enhancing labour force participation.

- A pan-India programme targeting girls aged 13 upwards through a conditional cash transfer scheme till they complete school education will cost the country around INR 7,000 crores.
- By spending this amount, which is equivalent to merely 0.035 percent of the gross domestic product (GDP), India could generate benefits worth more than INR 22,344 crore.

Child marriage is not only a violation of human rights but also has an adverse impact on the social, economic, and psychological outcomes of its victims.[71] Girls who are married early are denied an appropriate adolescence and adequate schooling. This limits their ability to participate in the workforce and explore other career opportunities. Adolescent brides are also likely to be subject to an increased incidence of abuse and domestic violence.

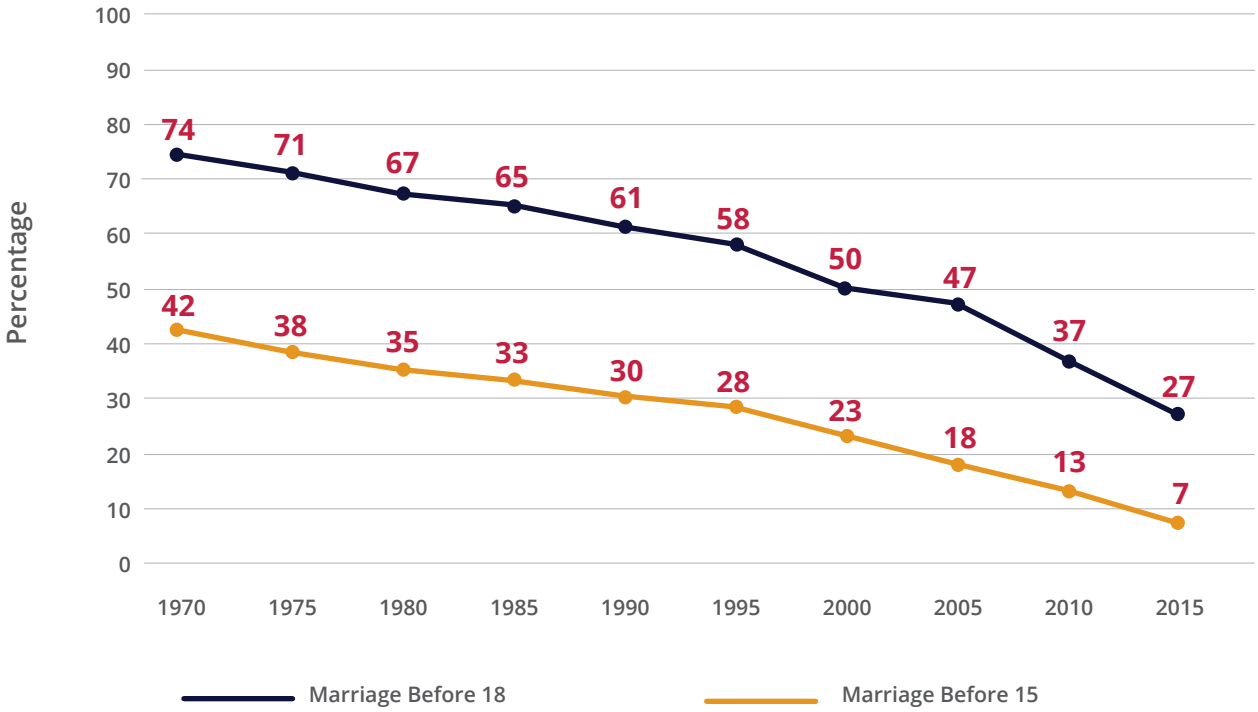
SSeveral studies highlight that early marriage leads to early and close-spaced pregnancies as adolescent brides typically have lower agency and awareness.[72] It also linked to the risk of adverse pregnancy and birth outcomes.[73] Appendix E has a detailed assessment of the link between child marriage and adverse health outcomes of the next generation.

India is home to over 223 million child brides.[74] The country accounts for about a third of the global incidence of child marriage. Within the country, about one in four young women have been married before 18 years of age.[75]

Even though these numbers present a grim situation, the country has made considerable progress in reducing child marriage over the last few decades. Exhibit 5.1 shows the prevalence of marriage before 15 and 18 years of age among women aged 20–24 over the last four and a half decades. During this period, the percentage of women married before the age of 18 has dipped from 74 to 27 while the proportion of women married before the age of 15 has fallen from 42 percent to 7 percent.

[71] United Nations. Conventions of the rights of the child. (1989). Available from: https://www.ohchr.org/Documents/ProfessionalInterest/crc.pdf
[72] de Groot, R., Kuunyem, M. Y., & Palermo, T. (2018). Child marriage and associated outcomes in northern Ghana: A cross-sectional study. BMC Public Health, 18(1), 1-12.
[73] Paul, P. (2018). Maternal age at marriage and adverse pregnancy outcomes: findings from the India human development survey, 2011-2012. Journal of Pediatric and adolescent Gynecology, 31(6), 620-624.
[74] United Nations Children's Fund. (2019). 'Ending Child Marriage: A profile of child marriage in India', UNICEF, New York.
[75] As per NFHS-4 estimates.

Exhibit 5.1. Percentage of women aged 20–24 years who were married before the ages of 15 and 18
Source: UNICEF projections using NFHS estimates

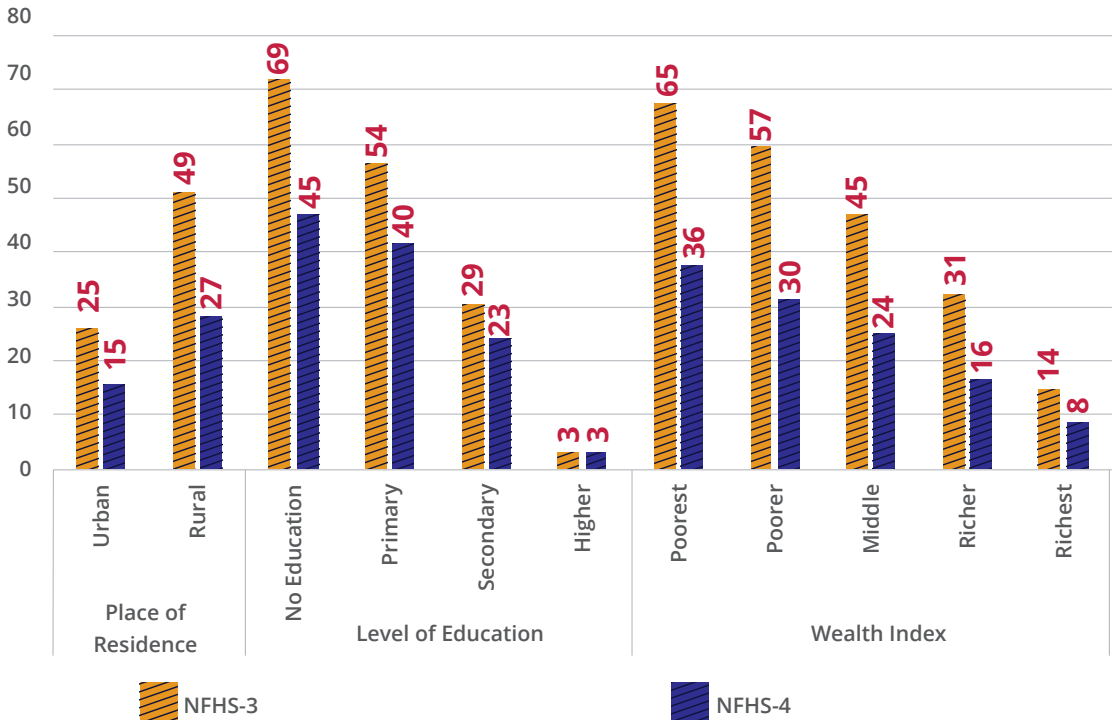


The dip has been accelerating in recent times. In the span of a decade (2005–2015), the percentage of women aged 20–24 who were married before their 18thbirthday has declined from 47 percent to 27 percent. This progress might be attributed to the efforts of the government) to eliminate child marriage. However, despite the decline, sustained action to eliminate child marriage is necessary since its prevalence is still high.

The prevalence of child marriage is higher among the most vulnerable population. Exhibit 5.2 shows the incidence of child marriage among women aged 18–23 across key socio-demographic characteristics such as place of residence, level of education and household wealth. It must be noted that the likelihood of child marriage has fallen across all categories in the period between NFHS-3 and NFHS-4.

Across both rounds of the NFHS, more child marriage cases were recorded in rural areas than in urban (31.5 percent compared to 17.5 percent, based on the most recent estimates). Less educated girls were more likely to be married early. While about 45 percent of girls with no formal education were married before 18 years, the proportion fell to 40 percent with primary schooling and to 23 percent with secondary education. The chances of child marriage are highest among poorer households. According to NFHS-4, only 8 percent of girls from the richest households were married before 18, while about 36 percent from the poorest households got married before 18.

Exhibit 5.2. Key characteristics of women aged 18–23 who were married before 18 years of age
Source: Sanjay Kumar (2019)[76]



This study examined the various approaches employed to reduce child marriage and the costs and benefits from adopting one such approach in the Indian context.

[76] Kumar, S. (2019). Experiences from Research on Child Marriage and Evaluation of the Interventions in India. Presentation at the Design Workshop for the Second Phase of the Global Programme on Ending Child Marriage (GPECM), 17– 3 February 2019, Jaipur, India.

Approaches to **Reduce Child Marriage**

The evidence on successful models for combating child marriages mostly comes from small-scale research studies and project evaluation reports. The literature consists of limited high-quality intervention studies. However, there are a few systematic reviews of these interventions, which have been studied for this section. The main findings and conclusions of these reviews were utilised to identify the approaches that can be adopted to combat child marriage in India. A broad description of these reviews is presented in Exhibit 5.3.

The programmes that were reviewed can be grouped into five broad strategies: empowering girls with life skills (information, skills, and support networks), educating and mobilising parents and community members, improving accessibility and quality of schooling for girls, offering economic incentives and support for girls and their families to delay marriage, and building a strong legal policy framework that discourages the practice of child marriage. Many programmes adopted an integrated set of these approaches while aiming to address the multiple drivers of child marriage.

Exhibit 5.3. Reviews of interventions to address child marriage

Authors and Publication Year	Number of Studies/ Programmes	Type of Studies Included
Freccero & Whiting, The Human Rights Center, University of California, 2018[77]	43	Experimental and quasi-experimental evaluations of interventions that aimed at impacting child marriage outcomes.
Chae & Ngo, Population Council, 2017[78]	22	Rigorously evaluated interventions to address child marriage that were part of a randomised control trial (RCT), quasi-experiment study, or a natural experiment.
Kalamar et al., 2016[79]	11	High-quality and impactful interventions that targeted child marriage in low- and middle-income countries.
Malhotra et al. 2011, Lee-Rife et al., ICRW, 2012[80]	23	Incorporated a wide range of interventions irrespective of the rigour of the programme and evaluation methodology.
Malhotra et al. 2021[81]	30	Systematic review to determine what approaches work in preventing child marriages.

[77] Freccero, J. & Whiting, A. (2018). Toward an end to child marriage. Lessons from Research and Practice in Development and Humanitarian Sectors. Human Rights Center, UC Berkeley and Save the Children.
[78] Chae, S., & Ngo, T. (2017). The global state of evidence on interventions to prevent child marriage. New York: Population Council.
[79] Kalamar, A. M., Lee-Rife, S., & Hindin, M. J. (2016). Interventions to prevent child marriage among young people in low-and middle-income countries: a systematic review of the published and grey literature. Journal of Adolescent Health, 59(3), S16-S21.
[80] Malhotra, A., Warner, A., McGonagle, A., & Lee-Rife, S. (2011). Solutions to end child marriage. Washington, DC: International Center for Research on Women.
[81] Malhotra, A., & Elnakib, S. (2021). 20 years of the evidence base on what works to prevent child marriage: a systematic review. Journal of Adolescent Health.

There is little consensus in the literature on which of these approaches is the most effective in addressing child marriage. In the approach that seeks to empower girls, Kalamar et al. (2016) reviewed four studies that had a life-skills component. Only one study– the Maharashtra Life Skills Program of India – observed a significant decrease in child marriage and an increase in the age of marriage. Two other studies showed mixed outcomes while one had no measurable impact. Chae & Ngo (2017), on the other hand, concluded that girl empowerment approaches obtained the highest success rate. Freccero & Whiting (2018) found that whenever such cases proved unsuccessful, they were characterised by a short intervention time, lack of resources, and an emphasis on topics that did not interest girls; such as livelihood training over education. Some studies have also found that simply having a girl-centric approach might not work unless complemented with efforts to change community behaviour.[82]

[82] Richardson, C. (2017). Ending Child Marriage in Malawi: A Gatekeepers Approach to Changing Norms (Doctoral dissertation). Columbia University.

Similarly, the economic approach seems to produce mixed results as well. While Kalamar et al. (2016) find them the most effective, Chae & Ngo (2017) argue that they are the least effective. However, the latter find that such approaches fail only when adopted as the sole approach. But when they are combined with other approaches, their success rates improve. The effects of only having cash or non-cash incentives have a time-limited impact on early marriage practices. Communities revert to the same practices once these economic support measures end, unless they are combined with interventions that can influence societal norms, values, and attitudes.

So, community mobilisation and building community awareness play a crucial role in addressing child marriage. This is also one of the most frequently used strategies, especially by civil society organisations. Malhotra et al. (2011), however, argue that such approaches are difficult to evaluate since they are usually implemented as an accompaniment to others. But most programme implementers argue that significant social change can only be achieved through active community engagement. The studies find legal channels to be vital in enabling such transformations but not sufficient in themselves. Legal reforms especially have no effect when faced with weak implementation and lack of enforcement.[83]

An approach that has been generally found to be successful in most studies is the use of schooling to reduce child marriage rates.

There is sufficient evidence that girls who attend school are less likely to be married than girls who are out of school. Thus, interventions that help adolescent girls stay in school are found to reduce the incidence of child marriage.[84] Interventions that educate girls or impart them life skills provide alternatives to early marriage and agency to make informed decisions about the future.

[83] Svanemyr, J. (2020). Literature review on effects of interventions to reduce the prevalence of child marriage. CMI Report, 2020(02).
[84] Koski, A., Clark, S., & Nandi, A. (2017). Has child marriage declined in sub-Saharan Africa? An analysis of trends in 31 countries. Population and Development Review, 7-29.

Some common means of achieving these objectives are paying school fees or offering economic aid to reduce the barriers to enrolling in school. Economic support for education becomes necessary because families often resort to early marriages out of financial necessities. Malhotra et al. (2021) find that interventions that support girl schooling through cash or in-kind transfers have been the most successful in addressing the problem of child marriage. So, approaches that do not address the root cause of the practice are bound to have little or no impact in the long run.

Exhibit 5.4 outlines some of the key programmes that have been implemented in India and their resulting impact. The Development Initiative Supporting Healthy Adolescents (DISHA) was one of the first large-scale integrated programmes that managed to increase the age of marriage among its beneficiaries by providing skilling and catering to the reproductive health needs of adolescents. The other programmes listed below are also aimed at addressing multiple objectives of adolescent development.

Exhibit 5.4. Programmes to address child marriage in India

Programme and Period	Approx. Beneficiaries	Programme Strategy	CYP per Unit
Development Initiative Supporting Healthy Adolescents (DISHA), 2005–2007	ICRW, Six local NGOs, Packard Foundation	✓ ✓ ✓ ✓	Increase in age of marriage and contraceptive usage.
Maharashtra Life Skills Programme, 1998–1999	Institute for Health Management–Pachod, ICRW, Rockefeller Foundation, Ford Foundation	✓ ✓	Significant reduction in child marriage and increase in age of marriage.
PRACHAR, 2002–2005	Pathfinder International, Packard Foundation, UNFPA, Government of Bihar, over 30 local partners	✓ ✓	Improvement in reproductive health of women.
Kanyashree Prakalpa, 2013–ongoing	Government of West Bengal	✓ ✓ ✓	Significant reduction in school dropouts and incidence of child marriage. Increased awareness about its negative consequences.
Apni Beti, Apna Dhan (My Daughter, My Pride), 1994–1998	Government of Haryana	✓	Improvement in education outcomes but no significant impact on age of marriage.

Empowering Girls with Information and Skills
Educating and Mobilising the Community
Enhancing the Accessibility and Quality of Schooling
Offering Economic Support and Incentives

An effort by the Haryana government, 'Apni Beti, Apna Dhan', which ran from 1994 to 1998, provided cash transfers to families that had a girl child. These transfers were redeemable only when the girl child reached 18 years of age and on the condition that she remained unmarried till then. However, it was realised that there was no significant difference between beneficiaries and non-beneficiaries in terms of marriage outcomes. This experience highlighted the importance of having multiple strategies in a programme addressing child marriage, especially one that aimed to enable change in community behaviour.

A programme that has been successful is the Kanyashree Prakalpa, introduced by the Government of West Bengal. It provides a conditional cash transfer to girl children of socio-economically disadvantaged families aged 13 to 18 years. An incentive of INR 750 is provided annually and a one-time grant of INR 25,000 upon turning 18, provided that they remained engaged in academic pursuit and were unmarried. This programme has shown a pronounced positive impact on school dropout rates and incidences of child marriage.[85]

Costs and Benefits of **Tackling Child Marriage in India**

Based on the literature and past experience of combating the practice of child marriage, it is well established that there is no unique strategy that any country can adopt. Therefore, this study proposes a programme that combines the most successful strategies found in the literature: a conditional cash transfer to families of the girl child, which is tied to their attendance in schools. Since schooling has been noted to be a major deterrent to early marriage while simultaneously empowering girls to get better livelihood opportunities, encouraging and enabling families to let their girl child attend school longer can help hasten the reduction in child marriages. The cash transfer will incentivise the family of the girl child to delay the marriage to a legal age. Conditioning this transfer on education and training programmes will enhance the decision-making power of the beneficiaries. However, it must be noted that even such a two-pronged approach might need to be combined with building community awareness against the practice since child marriage is a societal issue.

[85] Dutta, A & Sen, A. (2020). Kanyashree Prakalpa in West Bengal, India: Justification and Evaluation. IGC.

Description of the Programme

The programme proposed by this study is aimed at girls enrolled in class VIII onwards in government and government-aided schools across the country. A cash transfer of INR 2,400 per year (or INR 200 per month) can be made to unmarried girls in these grades provided they maintain the minimum required attendance in school. The cash transfer can be made directly into the bank account of the girls so that they have more agency over decisions regarding their education. The programme is kept universal in its scope, based on lessons learnt from the Kanyashree Prakalpa initiative, which targeted poor households. Studies found that families beyond the set income level managed to avail the benefit as well. However, the unintended universal nature of the programme possibly contributed to its huge impact.[86] There will also be some self-selection in this programme due to the transfers being made to girl students in government schools. The wealthier households with the ability to send their children to private schools might prefer not to avail the programme.

Assumptions

The study assumes that the programme impact will be similar to Kanyashree Prakalpa since it is the closest Indian programme aiming for a similar outcome. Therefore, it is assumed that the dropout rate in schools of the beneficiary population will fall by 26.8 percent and the incidence of child marriage will reduce by 32.92 percent.[87] Further, since age-specific child marriage rates are not available, the estimate of 7 percent below 15 years of age and 27 percent below 18 years of age as shown in Exhibit 5.1 is assumed to be evenly distributed between 13–18 years. This assumption was needed to estimate the reduction in child marriage cases due to the programme.

Estimation of Cost

The first step in the calculation was to estimate the number of beneficiaries for the programme. The target population was the number of girl children attending school from class VIII to class XII. This number could increase in two ways due to the conditional cash transfer intervention. First, there could be a reduction in dropouts from school as families will be able to support the education of their girl child for a longer time. The percentage reduction was taken from the Kanyashree Prakalpa programme where dropouts across districts fell by 26.8 percent on an average. The second impact on enrolment will be through the reduction in the incidence of child marriage. This reduction was assumed to be 32.92 percent as stated earlier and evenly distributed across ages. The percentage decrease in dropouts and child marriage for each grade is shown in Exhibit 5.5.

The current enrolment numbers for girls in government and government-aided schools were obtained from UDISE+. The increase in enrolment due to the programme was then estimated, based on the dropout rates and child marriage gains.

[86] Dutta, A & Sen, A. (2020). Kanyashree Prakalpa in West Bengal, India: Justification and Evaluation. IGC. pp. 63.
[87] The figures are based on the impact assessment of Kanyashree Prakalpa conducted by IGC. Link: https://www.theigc.org/blog/reducing-age-marriage-school-dropout-west-bengal/

Exhibit 5.5. Estimation of the annual programme cost to reduce child marriage in India

	Current Enrolment	Reduction in Dropouts (%)	Reduction in Child Marriage Incidence (%)	New Enrolment	Cost (in crores)
Class 8	74,54,039	1.54	1.2	75,81,831	1,819.6
Class 9	66,53,983	6.65	1.6	71,15,827	1,707.8
Class 10	58,55,602	5.81	1.6	62,15,368	1,491.7
Class 11	38,96,579	21.29	1.6	47,45,902	1,139.0
Class 12	36,89,860	2.58	1.6	38,04,979	913.2
				Total Annual Cost of the Programme	**7,071.3**

Finally, the annual cost of the programme was computed by multiplying the enrolment numbers by INR 2,400. So the programme should annually cost approximately INR 7,000 crores, which is merely 0.035 percent of India's GDP.

Limitations

The programme will prove effective among households where economic constraints are the leading cause of child marriage. Since societal norms also drive child marriage, it might have a lower success rate where the pressure from the community supersedes the economic argument. So, community awareness alongside the programme will be crucial for its success. Further, it was noted in Kanyashree Prakalpa, the dropout rate remained high in some districts because of the poor quality of education in schools. Since children usually depended on private tuitions to compensate, the programme benefits failed to adequately address the economic challenges faced by families. Each state, therefore, will also need to invest towards improving the quality of education in government schools based on local needs.

Cost-Benefit Analysis

Multiple studies in the literature have estimated the benefits arising out of various programmes to eliminate child marriage. A notable study by the Copenhagen Consensus Center has undertaken the cost-benefit analysis of different strategies adopted by Bangladesh to reduce child marriage.[88]

In 1994, Bangladesh introduced the Female Secondary School Program (FSSAP), which paid a small stipend to girls in rural areas. It was conditional to their enrolment in school with a minimum 75 percent attendance and 45 percent average on exams and provided that they remained unmarried. The programme covered more than two million girls each year.

[88] Field, E. (2016). Benefits and Costs of Reducing the Prevalence of Child Marriage in Bangladesh. Link: https://www.copenhagenconsensus.com/sites/default/files/field_child_marriage.pdf

an assessment of the benefits that resulted from the programme.[89] Since FSSAP is along the lines of the programme suggested in this study and societal conditions in Bangladesh are close to those experienced in India, it is assumed that the cost-to-benefit ratio estimated for FSSAP should be close to what might be witnessed in India.

The study found that the programme had a cost-to-benefit ratio of 3.16. Assuming that such a programme in India would have a similar outcome, it is estimated that an investment of INR 7,071 crores to enhance enrolment in secondary education among Indian girls (Exhibit 5.5) can yield a benefit of INR 22,344 crores, which is 0.11 percent of India's GDP in 2020–2021.[90]

These benefits are simply based on the returns to the beneficiaries of the programme, which is based on the returns to their education. The benefits in terms of improved health outcomes due to delayed marriage to the beneficiaries and their offspring will further improve the cost-to-benefit ratio. Thus, the actual benefit to society from the programme will exceed these estimates.

[89] ibid
[90] India's estimated GDP figures for 2020–2021 based on MoSPI estimates. Link: http://mospi.nic.in/sites/default/files/press_release/PRESS%20NOTE%20SAE%2026-02-2021.pdf

06 Policy Recommendations

With regard to the status of the adolescent population in India and the projected benefits of adolescent-centric interventions, the current trends make a strong case for investing in adolescents. Based on the analyses, the study provides the following policy recommendations, which can help to guide government bodies and policymakers in their approach to adolescent programming:

Education investment needs to be increased while ensuring equitable benefits:
There is a strong case to target universal enrolment of adolescents in secondary education, given the returns estimated the study. To achieve this, the government has to ensure higher spending on education. An estimate of the additional requirements has been provided in the study. However, a crucial point that needs to be highlighted is that the returns to education are not uniform across income and gender groups. Thus, any investment towards improving adolescent education outcomes has to specifically target the enrolment of the economically disadvantaged groups and the female gender. A one-size-fits-all approach on this front could result in counterintuitive consequences where the benefits accrue only to some sections of society.

The investment gaps in adolescent health interventions must be filled:
The study has identified substantial investment gaps in key areas of adolescent health. For instance, in the aspect of nutrition, the study highlights how the current programme aimed at providing IFA tablets to adolescents has fallen well short of its targets. Similarly, the report also shows that the spending required to meet their unmet need for contraceptives far exceeds the current expenditure. These are only a few intervention areas that are crucial to improving adolescent health. The government needs to work on the areas highlighted in this study and beyond, to ensure the health of adolescents across the country. A focus on this front will determine the nature of transition into adulthood of current and future generations and their ability to make meaningful contributions to society.

Child marriage interventions should be multifaceted:
The literature on child marriage interventions, which have been elucidated in this study, highlight the complexity of addressing the issue. Since multiple factors lead to early marriages-including societal norms and poverty-focussing on any one aspect without addressing the others, reduces the effectiveness of interventions. So, any intervention adopted in India needs to be multifaceted. While incentivising families to delay marriages, the government should ensure that unmarried girls stay in school and that community awareness is built around the problems of marrying adolescents early. Also, while the study suggests one such approach based on what has worked in South Asia, it is advisable for child marriage interventions to be localised since local administrations can best understand the drivers of child marriage in their region and thus are more capable of monitoring programme implementation.

Beyond these specific policy recommendations, a few additional actions can also be made based on the study:

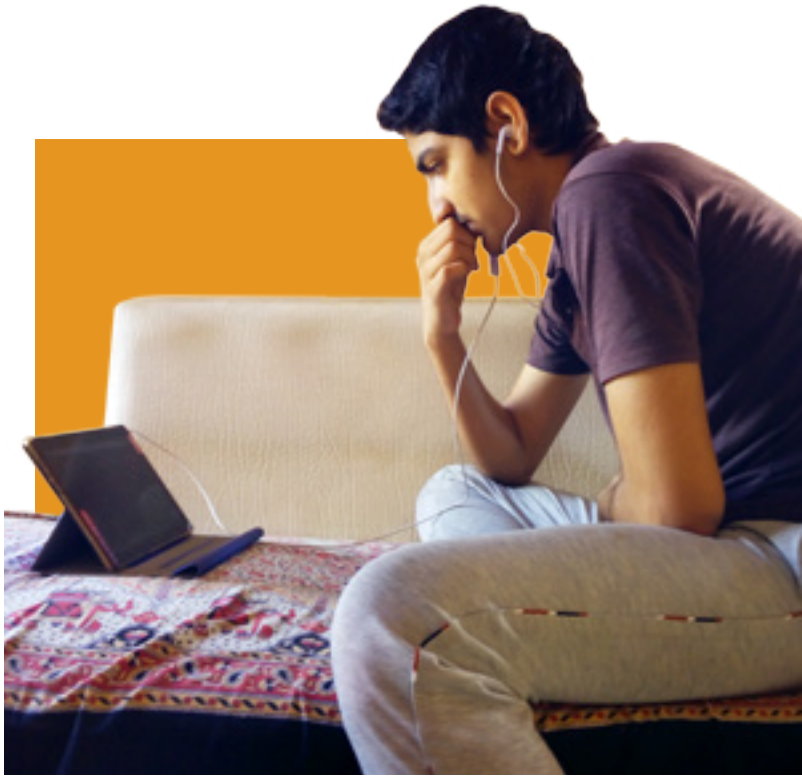
1. **Build a vision for adolescent development:**
   The first step towards improving adolescents' developmental outcomes is to build a national vision for same. Articulation of a broad national vision would attest to the government's commitment towards the policy agenda. It would also act as a guiding principle in setting explicit long-term and short-term goals regarding adolescent development, and translating them into plans, programmes and strategies. Additionally, existing programmes could be re-oriented to align with the national vision.

2. **Accounting for heterogeneity of adolescents:**
   Since adolescents are a heterogenous group, interventions need to account for disparities arising out of differences determined by their gender, caste, income group, place of residence, level of education,

etc. A broad policy focus may reproduce the existing inequities, or worse, exacerbate them. The most vulnerable are not only the ones most in need of interventions, they also face much greater barriers in accessing services. Hence, the nation should adopt an equity lens at all stages of adolescent programming, from design to implementation.

3. **Interventions operating on different platforms**:
   Adolescence is a period when individuals are heavily dependent on their surroundings for their livelihood and well-being and are also considerably influenced by it to derive their values, attitudes, behaviours and lessons from it. Hence, interventions need to operate through the various settings that form an adolescent's environment.

   Adolescents' family, school and community form a major part of their surroundings and affect their development. These institutions mould them and their future trajectory of life. Therefore, any intervention targeting adolescents should be routed through such channels or aim to influence these institutions' structure. This is because programmes and policies can prove to be ineffective due to community-level barriers. For instance, education among adolescent girls can be promoted by creating incentives in educational institutions. At the same time, interventions will also be needed to influence the values and norms of families and communities towards furthering the idea of educating girls. Similarly,



many school-based interventions need complementary efforts at the community-level to realise the desired outcomes.

The internet and mass media are also prominent aspects of the environment that shape adolescents' values and identity. While mass media has always been a strong influence on adolescents, social media is increasingly becoming a major entity in their environment due to the rapid internet penetration in the country. Therefore, adolescent programming should incorporate digital technologies in strategies to enhance delivery systems in various developmental programmes.

However, the internet and social media can be a positive or a negative influence, depending on the usage. Hence, digital technologies should also be leveraged to remove barriers to relevant knowledge related to sexual health and safe practices, behavioural risks, mental health advocacy, as well as cyber safety protocols to counter the negative impact of the internet.

4. **Participation of adolescents at different levels of programming:**
An effective approach to adolescent development encourages adolescents' participation at various levels of programming like programme designing, identification of needs, implementation, monitoring and so on. They can be useful partners in programming processes as they would be the most knowledgeable about the effectiveness of policies that affect them. Their participation can bring a more wholesome perspective on their needs and issues, and inform better policymaking. However, their meaningful involvement in decision-making can only be ensured by empowering them enough to be able to voice their needs and aspirations within their family and community. Therefore, an essential element of adolescent participation is creating a safe and empowering environment through relevant legislation and programmes and effecting change in social practices among the community members interacting and working with adolescents. The UN Convention on the Rights of the Child also acknowledges the importance of equal participation of adolescents in decision-making processes and their right to express views freely. It is imperative to take these into account for realizing adolescents' right to health and development.

Since new technologies are rapidly adopted by adolescents and basic tools like the internet and mobile phones are more readily accessible owing to the democratization of technology, digital technologies should also be leveraged to enhance adolescent engagement.

5. **Intersectoral collaboration:** Adolescent development comprises a broad range of interventions covering areas from health, nutrition and education to behavioural risks, civic empowerment etc. These are complex problem areas with interlinkages and require an intersectoral response at the national level. Education and health, for instance, are tightly interlinked, as empirical evidence suggests that a higher level of education is associated with better health outcomes. This makes education an important component of adolescent health programming. Conversely, health is also linked to educational outcomes and professional achievements. Hence, efforts in one area of adolescent development cannot lead to fruition without complementary and coordinated efforts in another interlinked sector.

   These interlinkages in outcomes should prompt institutions and agencies working towards adolescent development to break out of their silos and take a more collaborative approach towards programming and implementation. Further, a multipronged approach facilitated by intersectoral collaborations is also necessary to break the cycle of social and economic inequality induced by the heterogeneity in the adolescent population.

6. **Strengthening data on adolescents:** High quality data informs evidence-based policymaking and better governance. The lack of age-segregated data on development indicators poses limitations to adolescent programming. Since adolescence is an ambiguous age group with varying definitions regarding demarcation of the age group, national datasets do not have separate data figures on adolescents. A formal definition by the UN, which this study also followed, defines adolescence as the period between 10 and 19 years of age. If national databases follow this definition to disaggregate data on adolescents, it can lead to better research, better policymaking and programming for adolescent development.

07
Appendices

Appendix **A**

The following databases and tools were explored for the analysis across sections but had to be taken out of consideration due to data challenges:

Exhibit A.1. Tools and databases explored for the study

Tool/Database	Section	Challenge
SimuEd (UNESCO)	Education	Needed specific datapoints on construction costs of schools and staff salaries among other datapoints, which are not publicly available.
Impact2 (MSI)	Sexual and Reproductive Health	Does not allow imputing data just for adolescent population.
OneHealth (WHO)	All	Although One Health Tool has been used for the section on mental health, its applicability was explored for other sections on health. However, there are several data challenges with the OHT database.
Project UDAYA (Population Survey)	Health	Given that the survey has been recently launched, the time span is too short to assess any improvements in the target population.
Indian Human Development Survey	Health	The IHDS survey presented two problems: the last round was conducted in 2012 and is now dated, and second, the indicators of interest suffered from a median bias.

Appendix **B**

Policies, Strategies, and Interventions – Education

A. CONSTITUTIONAL PROVISIONS

The provisions under the Indian Constitution cover the young adolescents aged from 10–14 years. The original Article 45 in the Indian Constitution had mandated the state to provide free and compulsory education to all children until they complete fourteen years of age. With the adoption of the Constitution (Eighty-sixth Amendment) Act, 2002 which included Article 21-A, the state was mandated to provide free and compulsory education for all children in the age group of six to fourteen years as a Fundamental Right. The Right of Children to Free and Compulsory Education (RTE) Act, 2009 represents the consequential legislation envisaged under Article 21-A in the Constitution of India.

Keeping in mind the inequalities that exist in the country, Article 46 says that the state shall promote the education and economic interests of the weaker sections of the people. The amendments in the RTE Act that came into effect from August 2012, mandate that children with disability as contained in the Persons with Disabilities Act 2005 and the National Trust Act should be under the purview of the RTE Act.

B. POLICY LANDSCAPE

National Policy on Education

The first National Policy on Education was adopted by the country in 1968 in response to the recommendations of the Kothari Commission. It gave a proper direction to the education system in India. The policy did not focus on adolescents as a group directly but mentioned that efforts should be made to fulfil the directive of free and compulsory education for all children under the age of 14. It also recognised the role that secondary education can play in social change and transformation. In 1986, India launched a new National Policy on Education that was revised in 1992. Some of the thrust areas of the policy that impacted adolescents included:

- Focus on reducing the inequalities in the education system.
- Focus on universal retention of children up to 14 years of age.
- Widening the access to secondary education, with emphasis on enrolment of girls and children from the scheduled castes and scheduled tribes.
- Introduction of vocational-education programmes.

The National Education Policy, 2020 envisions a more holistic school curriculum, and pitches for a '5+3+3+4' design which corresponds to the age groups 3–8 years (foundational stage), 8–11 (preparatory), 11–14 (middle) and 14–18 (secondary), instead of the existing '10+2' design. For secondary education, it recommends a wide choice of subjects and courses year-to-year and aims to achieve a 100 percent Gross Enrolment Ratio by 2030. It is expected to transform the quality of learning for all age groups, including adolescents.

National Youth Policy

The older adolescents (15–19 years) find a place in the National Youth Policy 2014, which is targeted at youth in the age group of 15–29 years. This replaces the National Youth Policy, 2003 and proposes a holistic vision of empowering the youth to achieve their full potential. It identifies 11 priority areas, including education.

C. KEY INTERVENTIONS

Adolescents Education Programme

The programme aims to empower adolescents to develop knowledge about the concerns that arise with the transition towards the adolescent phase. It also helps them in developing life skills that enable informed and responsible behaviours by equipping them with accurate information. Besides this, there is a comprehensive integration of the adolescent health needs and concerns into the school education and teacher education system.

Rashtriya Yuva Sashaktikaran Karyakram

The Rashtriya Yuva Sashaktikaran Karyakram (RYSK) is the flagship programme of the Ministry of Youth Affairs and Sports that aims to realise the vision of holistic development of the youth. The National Programme for Youth and Adolescent Development (NPYAD), one of the components of RYSK, promotes adolescent development. Under NPYAD, financial assistance is provided to government/ non-government organisations for taking up activities related to youth leadership and personality development training, national integration activities, adventure, development and empowerment of adolescents, and technical and resource development. The Scheme beneficiaries are youth in the age group of 15–29 years, in line with the definition of 'youth' in the National Youth Policy, 2014. In the case of programme components specifically meant for adolescents, the age group is 10–19 years.

Samagra Shiksha Abhiyan, 2018

The Samagra Shiksha Abhiyan, 2018 is an integration of three already existing schemes– Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and Teacher Education (TE). It aims to improve school effectiveness measured in terms of equal opportunities for schooling and equitable learning outcomes.

The scheme envisages the 'school' as a continuum from pre-school, primary, upper primary, secondary to senior secondary levels. This is the first time that a programme has included senior secondary levels and pre-school levels in support for school education.

One of the outcomes of the scheme is Universal Access and the interventions include focusing on infrastructure development and retention rates. It also focuses on secondary educationof girls by upgradation of Kasturba Gandhi Balika Vidyalayas (KGBVs) from class 6–8 to class 6–12. The initiative also aims to improve the quality of education by using technology like smart classrooms and digital boards to empower children and teachers. Information and communications technology (ICT) infrastructure is being strengthened in schools from the upper primary to the higher secondary level.

Scheme of Inclusive Education for Disabled at Secondary Stage

The scheme of Inclusive Education for Disabled at Secondary Stage (IEDSS) 2009, which replaced the scheme of Integrated Education for the Disabled Children (IEDC) aims to enable the disabled children who have completed eight years of elementary education to continue their education at the secondary stage (class 9 to 12) in an inclusive environment in regular schools. It covers all government, government-aided as well as local body schools. Special focus is given on ensuring that adolescent girls have access to secondary schools and to guidance for developing their potential.

Incentive to Girl Child for Secondary Education

To address the low enrolment of girls after primary education, the government introduced the National Scheme of Incentives to Girls for Secondary Education (NSIGSE)in 2008. Under this scheme, INR 3,000 is deposited as a fixed deposit in the name of eligible unmarried girls below the age of 16. They can withdraw the amount after they turn 18 and after passing class X.

Scholarships

The central and state governments award many scholarships to meritorious students belonging to the disadvantaged sections of society. There are also special scholarships for adolescent girls to promote education among girls.

For example, the CBSE merit scholarship scheme for single girl children provides scholarships to deserving female students who are the only child of their parents. The scheme targets students studying in class XI and XII in CBSE-affiliated schools and have tuition fees not more than INR 1,500 per month.

CBSE Udaan is a similar scheme that provides free offline/online resources through virtual weekend contact classes and study material to girls studying in classes XI and XII, to prepare for the admission tests to various premier engineering colleges in the country.

Appendix **C**

Mincer Equation Results

Exhibit C.1 shows the results of four regression models that capture the return to education in India across different sections of population and schooling. Model A is the ordinary least squares (OLS) regression of the impact of years of education on log monthly income of the selected sample. The regression is controlled for a variety of controls including individual characteristics like experience and marital status, caste, the nature of the job, and region. All controls are factors that can have an impact on earnings beyond the level of education.

Meanwhile, Model B and Model C are the regression results using the same control variables for men and women, respectively. It can be seen that the number of observations of working men and women differ vastly. There are 1,03,118 men in the sample compared to merely 20,992 women. The disparity in observations shows the necessity of correcting for selectivity bias as a lot of women might not have joined the workforce. As explained, this has been corrected using the inverse mills ratio. Finally, the last model disaggregates the rates of return based on the level of education.

Exhibit C.1. Regression results of impact of education on wages

Log Monthly Income	Model A	Model E	Model F	Model G	Model H	Model I
Years of Education	0.0680***	0.0466***	0.0501***	0.0593***	0.0796***	0.0920***
	-0.00095	-0.000014	-0.000008	-0.000009	-0.000015	-0.000009
Individual Characteristics						
Experience	0.0236***	0.0213***	0.0180***	0.0222***	0.0296***	0.0310***
	-0.00095	-0.000014	-0.000008	-0.000009	(0.000015)	(0.000012)
Experience Sq.	-0.00025***	-0.00032***	-0.00023***	-0.00025***	-0.00028***	-0.00026***
	-0.000014	-0.0000002	-0.0000001	-0.0000001	-0.0000002	-0.0000002
Marital Status	-0.0132	-0.0591***	-0.0327***	-0.0210***	-0.00307***	0.0432***
	-0.0104	-0.00016	-0.000079	-0.00016	-0.00016	-0.00018
Caste						
Dummy: Upper Caste						
Scheduled Caste	-0.261***	-0.255***	-0.223***	-0.226***	-0.265***	-0.254***
	-0.0123	-0.00019	-0.000075	-0.00011	-0.000153	-0.00012
OBC	-0.151***	-0.137***	-0.119***	-0.121***	-0.155***	-0.151***
	-0.0102	-0.0001	-0.00007	-0.00008	-0.00015	-0.00013

Scheduled Tribe	-0.250***	-0.282***	-0.266***	-0.243***	-0.231***	-0.228***
	-0.0169	-0.00013	-0.00017	-0.00015	-0.00023	-0.00011
Type of Work						
Dummy: Part-time						
Full-time	0.312***	0.393***	0.333***	0.267***	0.235***	0.214***
	-0.0103	-0.00014	-0.000061	-0.00008	-0.00013	-0.0001
Region						
Dummy: Central						
North-East	0.365***	0.504***	0.447***	0.349***	0.300***	0.223***
	-0.0223	-0.00036	-0.00014	-0.00027	-0.00032	-0.00044
North	0.238***	0.251***	0.282***	0.268***	0.259***	0.229***
	-0.019	-0.00025	-0.00012	-0.00027	-0.00024	-0.00017
East	0.0568**	0.125***	0.129***	0.0852***	0.0605***	-0.0000824
	-0.019	-0.00004	-0.00016	-0.00026	-0.00025	-0.0002
West	0.240***	0.295***	0.290***	0.255***	0.239***	0.188***
	-0.0208	-0.00018	-0.00012	-0.00029	-0.00025	-0.0002
South	0.288***	0.368***	0.366***	0.320***	0.277***	0.198***
	-0.0183	-0.00006	-0.00015	-0.00027	-0.00022	-0.00017
Education						
Below Primary	-	-	-	-	-	0.0756***
						-0.0155
Primary	-	-	-	-	-	0.0756***
						-0.0159
Secondary	-	-	-	-	-	0.169***
						-0.0102
Higher Secondary	-	-	-	-	-	0.276***
						-0.0113
Tertiary	-	-	-	-	-	0.538***
						-0.015
N	124180	124180	124180	124180	124180	124180

Note: Model A is OLS for entire sub-population. Model B is OLS for males. Model C is OLS for females. Model D is OLS by education level.
Standard errors in parentheses.
* p<0.05, ** p<0.01, *** p<0.001

A quantile regression method was utilised to estimate the returns to education across earning distribution.

Exhibit C.2. Regression results of impact of education on wages by income quantile

Log Monthly Income	Model A	Model E	Model F	Model G	Model H	Model I
Years of Education	0.0680***	0.0466***	0.0501***	0.0593***	0.0796***	0.0920***
	(0.00095)	(0.000014)	(0.000008)	(0.000009)	(0.000015)	(0.000009)
Individual Characteristics						
Experience	0.0236***	0.0213***	0.0180***	0.0222***	0.0296***	0.0310***
	(0.00095)	(0.000014)	(0.000008)	(0.000009)	(0.000015)	(0.000012)
Experience Sq.	-0.00025***	-0.00032***	-0.00023***	-0.00025***	-0.00028***	-0.00026***
	(0.000014)	(0.0000002)	(0.0000001)	(0.0000001)	(0.0000002)	(0.0000002)
Marital Status	-0.0132	-0.0591***	-0.0327***	-0.0210***	-0.00307***	0.0432***
	(0.0104)	(0.00016)	(0.000079)	(0.00016)	(0.00016)	(0.00018)
Caste						
Dummy: Upper Caste						
Scheduled Caste	-0.261***	-0.255***	-0.223***	-0.226***	-0.265***	-0.254***
	(0.0123)	(0.00019)	(0.000075)	(0.00011)	(0.000153)	(0.00012)
OBC	-0.151***	-0.137***	-0.119***	-0.121***	-0.155***	-0.151***
	(0.0102)	(0.0001)	(0.00007)	(0.00008)	(0.00015)	(0.00013)
Scheduled Tribe	-0.250***	-0.282***	-0.266***	-0.243***	-0.231***	-0.228***
	(0.0169)	(0.00013)	(0.00017)	(0.00015)	(0.00023)	(0.00011)
Type of Work						
Dummy: Part-time						
Full-time	0.312***	0.393***	0.333***	0.267***	0.235***	0.214***
	(0.0103)	(0.00014)	(0.000061)	(0.00008)	(0.00013)	(0.0001)
Region						
Dummy: Central						
North-East	0.365***	0.504***	0.447***	0.349***	0.300***	0.223***
	(0.0223)	(0.00036)	(0.00014)	(0.00027)	(0.00032)	(0.00044)
North	0.238***	0.251***	0.282***	0.268***	0.259***	0.229***
	(0.019)	(0.00025)	(0.00012)	(0.00027)	(0.00024)	(0.00017)

East	0.0568**	0.125***	0.129***	0.0852***	0.0605***	-0.0000824
	(0.019)	(0.00004)	(0.00016)	(0.00026)	(0.00025)	(0.0002)
West	0.240***	0.295***	0.290***	0.255***	0.239***	0.188***
	(0.0208)	(0.00018)	(0.00012)	(0.00029)	(0.00025)	(0.0002)
South	0.288***	0.368***	0.366***	0.320***	0.277***	0.198***
	(0.0183)	(0.00006)	(0.00015)	(0.00027)	(0.00022)	(0.00017)
N	124180	124180	124180	124180	124180	124180

Note: Model A is OLS for the entire population. Model E, Model F, Model G, Model H, and Model I are OLS for the 10th, 25th, 50th, 75th, and 90th percentile of population, respectively. Standard errors in parentheses
*** p<0.05, ** p<0.01, *** p<0.001**

The results from the quantile regressions are depicted in Exhibit C.2. While Model A is the original regression for the selected sample, Model E, Model F, Model G, Model H, and Model I are the OLS estimates for the 10th, 25th, 50th, 75th, and 90th income percentile of population, respectively.

Appendix **D**

1. Adolescent Health and Nutrition

1.1 ADOLESCENT HEALTH AND NUTRITION

A. Policy Landscape

National Population Policy, 2000

The National Population Policy, 2000 was one of the first policies to acknowledge that adolescents were an underserved group that had distinct sexual and reproductive health needs. It advocated for special interventions and the need for ensuring sexual and reproductive health information as well as affordable and accessible counselling and other services for this sub-population.

National AIDS Prevention and Control Policy, 2002

The policy was introduced in view of the rising concerns over the HIV/AIDS epidemic. It recommended preventive measures to be extended beyond the high-risk groups like commercial sex workers and injecting drug users to also include the larger reproductive age group (15–49 years) such as students, youth, migrant workers in urban and rural areas, women and children.

National Health Policy, 2002 (revised in 2017)

The policy aimed to strengthen the capacity of public health administration and ensure a more equitable access to health services. Although it did not specifically mention adolescents, the policy envisaged separate schemes to address the health needs of women and children. The revised National Health Policy, 2017 gives particular emphasis to the health challenges of adolescents and the long-term potential of investing in their healthcare. It recommends expanding the scope of reproductive and sexual health to address issues like inadequate calorie intake, nutrition status and psychological problems.

Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCH+A) Strategy, 2013

The strategy recognizes that adolescent-centric interventions are instrumental for improving maternal and child health. The 'Plus' in the strategy denotes the interlinkages between the interventions targeted at various stages of life, with adolescence being a distinct life stage.

National Mental Health Policy, 2014

Although not specifically targeted towards adolescents, the policy broadly addresses the mental health needs of the country. It aims to create universal access to mental healthcare, enhance understanding of mental health in the country, increase the number of mental health professionals, ensure support for families and caregivers of patients, address discriminatory policies, strengthen leadership in the mental health sector at the national, state and district levels, identify determinants of mental health problems, and provide appropriate interventions.

Mental Healthcare Act, 2017

The Mental Healthcare Act, 2017 has decriminalised attempt to suicide. It seeks "to provide for mental healthcare and services for persons with mental illness and to protect, promote and fulfil the rights of such persons during delivery of mental healthcare and services and for matters connected therewith or incidental thereto." This is again a provision that is not centred on adolescents but is beneficial to their mental well-being.

B. Key Interventions

Adolescence Education Programme (AEP), 2005

This programme was launched with the aim to upscale three educational programmes, so as to cover secondary and senior secondary schools of the country. The three programmes were the National Population Education Project (NPEP), School AIDS Education Programme (SAEP), the Project on Adolescent Reproductive and Sexual Health (ARSH). AEP seeks to educate adolescents on the process of growing up during adolescence, HIV/AIDS, and substance abuse and inculcate life skills among them as a way to stem the spread of the infection and substance abuse.

Integrated Child Development Services (ICDS), 1975

One of the oldest community-based programmes of India, ICDS aims to improve the health and nutrition of children up to the age of six years and of their mothers, including adolescent mothers. One of its programme components, Scheme for Adolescent Girls (SAG) specifically targets adolescent girls and aims to break the inter-generational lifecycle of nutritional and gender disadvantage.

Rashtriya Kishor Swasthya Karyakram (RKSK), 2014

RKSK succeeds the 2006 Adolescent Reproductive and Sexual Health (ARSH) strategy. It is the first adolescent-centric intervention that moves beyond their sexual and reproductive health and envisions a more holistic development of adolescents, with a model built for both boys and girls. Under RKSK, the ARSH clinics that used to provide counselling on sexual and reproductive health issues to adolescents have been revamped into adolescent friendly health centres (AFHCs) which offer a range of services in line with the objectives of RKSK. Other components of the programme include the Weekly Iron and Folic Acid Supplementation (WIFS) Programme, Peer Educator Programme and Menstrual Hygiene Scheme. RKSK has adopted a community-based approach to increase community engagement in the implementation of the programme.

Rashtriya Bal Swasthya Karyakram (RBSK), 2013

RBSK addresses the health needs of adolescents by way of early detection and timely management of illnesses. Through the platform of schools and anganwadi centres, the programme conducts periodic health screening of children in the age group of 0–18 years to cover the four Ds of Defects at birth, Deficiencies, Diseases, and Development delays including disability.

School Health Programme, 2018

As part of the Health and Wellness component of the Ayushman Bharat Programme, the School Health Programme aims to strengthen the existing RBSK and RKSK programmes. It seeks to strengthen the preventive and promotive aspects of health in environment of schools through health education, health promotion, disease prevention, and improve access to health services in an integrated, systemic manner at the school level. The programme increasingly focuses on emerging social morbidities like injuries, violence, substance abuse, risky sexual behaviours, psychological and emotional disorders.

Prime Minister's Overarching Scheme for Holistic Nutrition (POSHAN) Abhiyaan, 2018

The POSHAN Abhiyaan aims to reduce stunting, undernutrition and anaemia among young children, women and adolescent girls. Complying with the targets of POSHAN Abhiyaan, the Anaemia Mukt Bharat strategy has been designed with a multi-pronged approach and a more robust operational and accountability framework, which covers both adolescent girls and boys. It leverages the RBSK and RKSK programmes to provide weekly IFA (Blue) tablets to school-going adolescents and out-of-school adolescent girls.

Mid-day Meal Scheme, 1995

The mid-day meal scheme is one of the oldest schemes that addresses the nutritional needs of adolescents. Under the scheme, hot cooked meals are provided to children enrolled in classes I to VIII in all government and government-aided schools, as well as in madarsas and maqtabs supported under the Samagra Shiksha Abhiyan. From time to time, irregularities have been reported in the implementation of the programme.

National Mental Health Programme, 1982

The National Mental Health Programme is an intervention that too has implications for the adolescent cohort. The programme was expanded to the district level in 1996. Under the new District Mental Health Programme, India's 630 districts should have a team of mental health professionals for outpatient services and manage a ten-bed inpatient facility by 2025.

2. Review of Trends

National efforts towards adolescent development indicate that adolescents were given little space in the development agenda of India. It may be due to the ambiguity that surrounds the definition of adolescents, with adolescence being the transitional period between childhood and youth, that they were not recognized as a distinct demographic needing separate focus and interventions. Even after being recognized as a distinct policy target, the interventions were more or less with regards to their sexual and reproductive health. Nevertheless, India has made progress over time, and policies like the RMNCH+A strategy of 2013 and the RKSK, 2014 have marked a paradigm shift in India's approach towards adolescent development.

An individual undergoes notable biological, psychological and behavioural changes during adolescence, which have a lifelong bearing on their health and well-being. Nearly 35 percent of the global burden of disease has roots in adolescence.[91] Hence, preventive steps need to be taken during this period. The current policies and programmes acknowledge the myriad facets of adolescent well-being but their effectiveness can only be assessed by measuring outcomes.

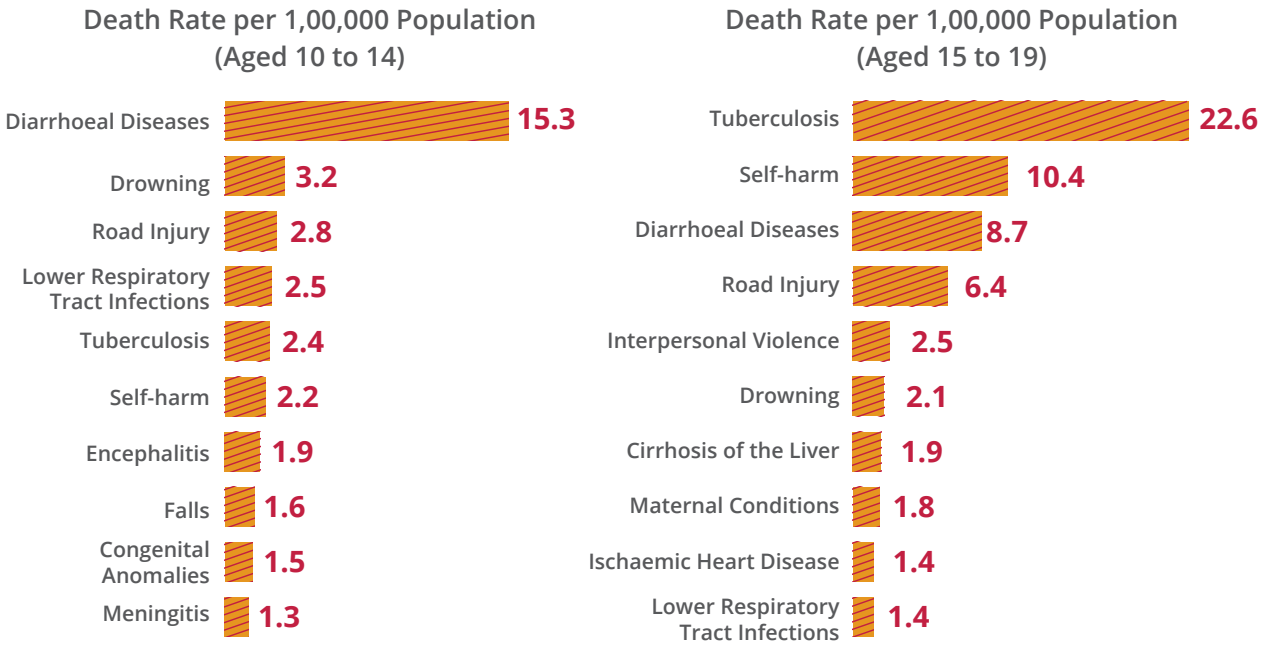
[91] Source: World Health Organization

2.1 MALNUTRITION, MORTALITY, AND MORBIDITY

Mortality rates in adolescents worldwide are low compared with other age groups and have improved in the past decade. The leading causes of adolescent death differ by country, age group and gender. In India, the mortality rate is 3 (deaths per 1,000 children aged 10) among young adolescents and 4 (deaths per 1,000 youths aged 15) among older adolescents.[92] National trends show prevalence of disease among the major causes of death among adolescents.

Due to a combination of their living environment, nutritional intake, and inaccessibility to healthcare, adolescents can grow vulnerable to serious illnesses. In India, tuberculosis and diarrhoeal diseases constitute a major burden of disease in adolescents. As seen in the figures below (Exhibit D.1), diarrhoeal disease is a leading cause of death among young adolescents, whereas older adolescents are most likely to die from tuberculosis. With 15.3 deaths and 22.6 deaths per 1,00,000 population respectively, diarrhoeal disease and tuberculosis exhibit a disproportionately high incidence in comparison to other prevalent causes of death. Drowning is the second leading cause among young adolescents but registers only 3.2 deaths per 1,00,000 population. On the other hand, self-harm is the second leading cause of death among older adolescents with 10.4 deaths per 1,00,000 population. Clearly, the high incidence of tuberculosis and diarrhoeal diseases is concerning. Other major causes of deaths among adolescents are road injury and interpersonal violence.

Exhibit D.1. Top 10 causes of death in India among adolescents (2019)

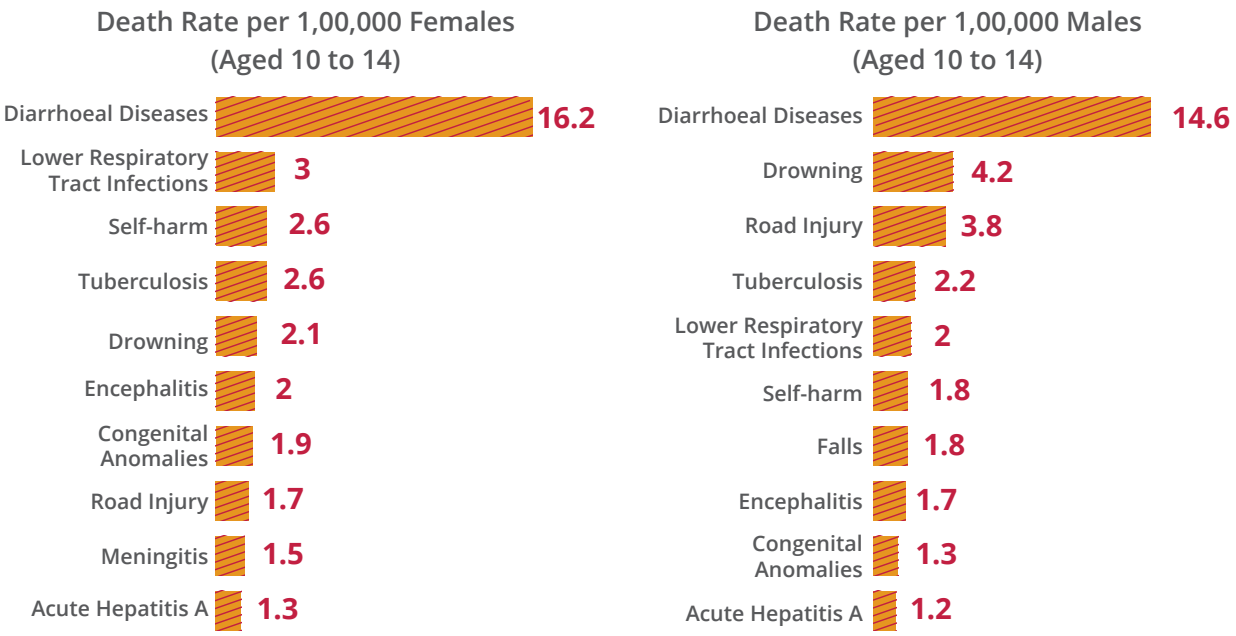


Data Source: WHO

[92] Source: UNICEF Adolescent health dashboards

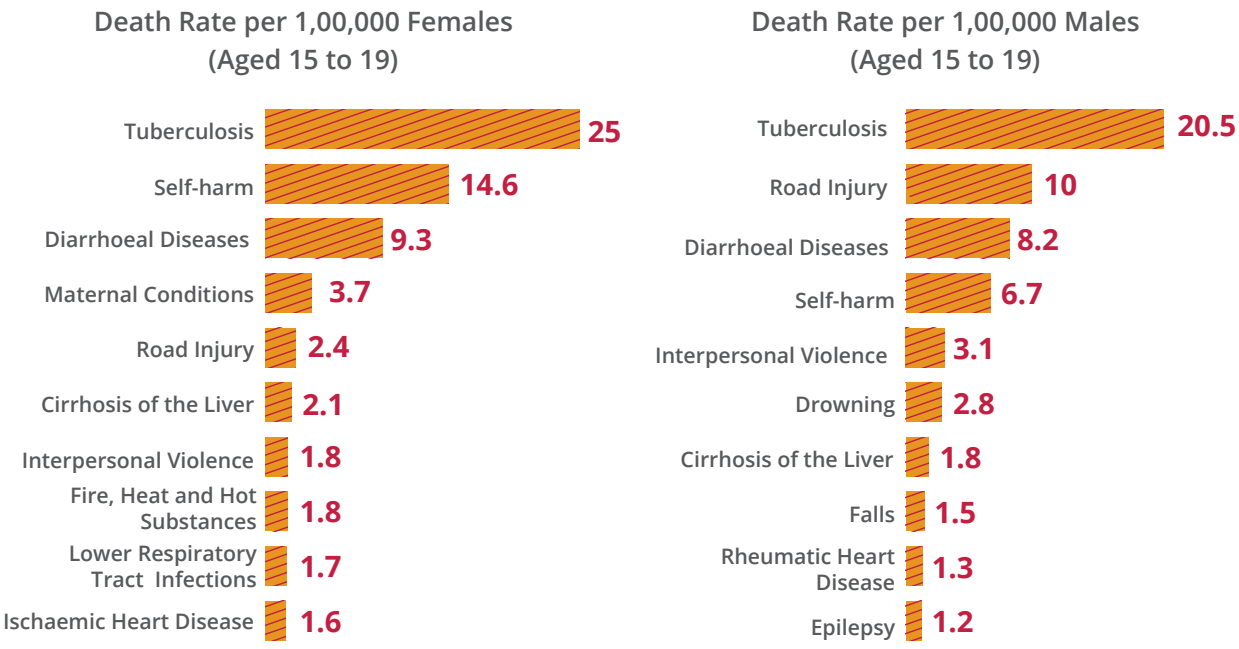
The gendered segregation of the data (Exhibit D.2) shows that the death rate for adolescent girls is higher than their male counterparts with regards to the leading cause of death. Among young adolescents, the death rate for diarrhoeal diseases is 16.2 among females and 14.6 among males. Similarly, among older adolescents (Exhibit D.3), the death rate for tuberculosis is 25 among females and 20.5 among males.

Exhibit D.2. Top 10 causes of death in India among early adolescents by sex (2019)



Data Source: WHO

Exhibit D.3. Top 10 causes of death in India among older adolescents by sex (2019)



Data Source: WHO

Nutritional disparities are one of the major sources of the disease burden, and the Body Mass Index (BMI) is a helpful indicator for assessing the nutritional status of an individual. The poor nutritional status of India's adolescents can be assessed from India's 196th rank among 200 countries in the most recent Lancet study on the BMI of children and adolescents.[93]

The National Family Health Survey (NFHS) also provides information on the BMI. However, the 15–19 year cohort is the closest proxy for the adolescents, as NFHS does not contain BMI data for the 10–14 year cohort. An examination of the NFHS-3 and NFHS-4 data shows a slight increase in the mean BMI of both male and female adolescents. This could be a result of a decrease in undernutrition or increase in obesity or a combination of both.

Exhibit D.4. Mean BMI of adolescents aged 15−19 years

Mean BMI	Men (15−19 Years)	Women (15−19 years)
NFHS-3 (2005−2006)	18.3	19
NFHS-4 (2015−2016)	19.3	19.4

Data Source: NFHS-3 and NFHS-4

A further breakdown of the data (Exhibit D.5) shows an increase in overweight and obesity and decrease in thinness among both males and females. This suggests that India has been able to curtail the undernutrition levels and has brought more adolescents within the normal BMI range, but at the same time, obesity has become a growing concern. The phenomenon is representative of the larger trend of the double burden of malnutrition in the country, which is a characteristic of Low- and Middle-Income Countries (LMICs), wherein undernourishment and obesity simultaneously exist.[94] Alongside the interventions improving nutrition levels in the country, the trends such as rise in income levels, rapid urbanisation, and availability of cheap energy-dense/nutrient-poor foods have resulted in an increase in obesity levels as well.

[93] Cooper, C., Dennison, E., Fall, C., & Osmond, C. (2020). Height and body-mass index trajectories of school-aged children and adolescents from 1985 to 2019 in 200 countries: Pooled analysis of 2,182 population-based studies with 65 million participants. The Lancet.
[94] Popkin, B. M., Corvalan, C., & Grummer-Strawn, L. M. (2020). Dynamics of the double burden of malnutrition and the changing nutrition reality. The Lancet, 395(10217), 65-74.

Exhibit D.5. BMI of men and women aged 15-19 years

Nutritional Status	NFHS-3		NFHS-4	
	Age group 15–19			
BMI	**Women**	**Men**	**Women**	**Men**
18.5–24.9 (normal)	50.8	40.2	53.9	50.4
<18.5 (total thin)	46.8	58.1	41.9	44.8
17.0–18.4 (mildly thin)	25.9	28.8	23.2	23
<17 (moderately/severely thin)	20.9	29.3	18.7	21.9
≥25.0 (overweight or obese)	2.4	1.7	4.2	4.8
25.0–29.9 (overweight)	2.1	1.4	3.4	3.8
≥30.0 (obese)	0.2	0.2	0.8	1

Data Source: NFHS-3 and NFHS-4

2.2 SEXUAL HEALTH

Adolescence is a period when many individuals initiate sexual activity. The social stigma surrounding topics of sex and reproduction results in lack of awareness about sexual health. Adolescents are therefore the most vulnerable cohort to sexually transmitted diseases including HIV/AIDS. The age cohort of 15–29 years constitutes almost 25 percent of India's population, but accounts for 31 percent of the AIDS burden.[95] This obviously indicates that young people are at a high risk of contracting the HIV infection.

NFHS data reveals that the percentage of HIV-positive adolescents in the 15–19 year age group (Exhibit D.6) has only increased from 2005-2006 to 2015–2016, except in the case of adolescent girls residing in rural areas. Meanwhile, adolescent girls residing in urban areas have been the most infected among adolescents.

Exhibit D.6. Percentage of HIV-positive among women and men aged 15–19

Percentage of HIV-positive women and men aged 15–19				
	NFHS-3		NFHS-4	
	Women	**Men**	**Women**	**Men**
Urban	0	0.08	0.07	0.1
Rural	0.01	0.06	0.03	0.05

Data Source: NFHS-3 and NFHS-4

[95] Source: National AIDS Control Organisation (naco.gov.in/youth)

The upward trend in HIV-positive cases is linked with the downward trend in awareness about HIV/AIDS. A comparison between NFHS-3 and NFHS-4 data reveals that comprehensive knowledge regarding HIV/AIDS and preventive measures (Exhibit D.7) has declined among adolescents. Similarly, knowledge of contraceptive methods (Exhibit D.8) has also declined among both adolescent boys and girls. This is particularly worrying because sexual health is the most targeted policy area of adolescent development in India.

Exhibit D.7. Comprehensive knowledge about HIV/AIDS and knowledge of a source of condoms among age group 15–19 years

Comprehensive knowledge about HIV/AIDS and knowledge of a source of condoms among age group 15–19 years				
	NFHS-3		NFHS-4	
	Women	Men	Women	Men
Percentage who rejected two common misconceptions and know how to prevent HIV/AIDS*	22.7	41.9	22.6	34.9
Percentage with comprehensive knowledge of HIV/AIDS	18.6	34.5	18.5	28.2
Percentage who knew a condom source	39	80.5	36.1	75.9

Data Source: NFHS-3 and NFHS-4

*In NFHS-3, the indicator mentions three common misconceptions instead of two.

Exhibit D.8. Knowledge of contraceptive methods among age group 15–19 years

Knowledge of contraceptive methods among age group 15–19	NFHS-3			NFHS-4		
	Know any method	Know any modern method	Know any modern temporary method	Know any method	Know any modern method	Know any modern temporary method
Women	94	93.9	83.8	93.2	93.1	83.1
Men	96	96	92.6	94.4	94.3	92.1

Data Source: NFHS-3 and NFHS-4

Owing to lack of knowledge and experience, adolescents have a higher possibility of engaging in risky sexual behaviour than other demographic groups. However, a positive development over the years has been a decline in the percentage of women who do not use contraceptive methods. As seen in Exhibit D.9 below, there has been a slight decline in the percentage of married women and a sharp decline in the percentage of unmarried women in urban areas. Sexually active unmarried women in rural areas, on the other hand, have demonstrated an increase in the percentage of those not using contraceptive methods.

Exhibit D.9. Percent distribution of currently married women and sexually active unmarried women (15–19 years) who are not currently using any contraceptive methods

Data source (for the age group 15–19)	Currently married women – Urban	Currently married women – Rural	Sexually active unmarried women – Urban	Sexually active unmarried women – Rural
NFHS-4 (2015–2016)	83.2	85.6	59.5	88.1
NFHS-3 (2005–2006)	84	87.6	85.3	86.1

Data Source: NFHS-3 and NFHS-4

Another positive development is that among the adolescents who were sexually active in the last 12 months, the percentage of those who used a condom during their last sexual intercourse (Exhibit D.10) has increased over the years; though the percentage is still low, especially for girls.

Exhibit D.10. Among the age group 15–19 years, sexually active in the last 12 months, percentage that used a condom at the last sexual intercourse

Percentage who used a condom at the last sexual intercourse (15–19 years)		
	Women	Men
NFHS-3	18.1	31.3
NFHS-4	32.7	45.7

Data Source: NFHS-3 and NFHS-4

2.3 BEHAVIOURAL RISK FACTORS

The well-being of adolescents is also threatened by their high likelihood of engaging in other risky behaviours. Such behaviours are a product of rapid developmental changes, but they can be detrimental to brain development and have lifelong repercussions. Substance abuse and addiction among individuals usually begin in their adolescence. Studies show that the risk of experiencing alcohol-related injuries and alcohol dependence in adulthood is higher for those who start drinking at an early age.[96]

[96] Jernigan, D. H., & World Health Organization. (2001). Global status report: alcohol and young people (No. WHO/MSD/MSB/01.1). World Health Organization.

Trends captured by the NFHS (Exhibit D.11) reveal that consumption of tobacco and smoking is particularly high among adolescent boys. However, among tobacco and cigarette users, adolescent girls are more frequent smokers (93.6 percent) than boys (86.4 percent). Similarly, with regards to consumption of alcohol (Exhibit D.12), a higher percentage of adolescent boys drink alcohol (8.9 percent) in comparison to girls (0.5 percent), but among the drinkers, adolescent girls are more likely to drink every day (13.8 percent) in comparison to 2.6 percent boys.

Exhibit D.11. Percentage of adolescents aged 15–19 years who consumed tobacco

	Percentage who use any kind of tobacco	Percentage who smoke cigarettes	Percentage who smoked at least one cigarette/bidi in the past 24 hours
Women	1.6	0	93.6
Men	18.5	6.3	86.4

Data Source: NFHS-3 and NFHS-4

Exhibit D.12. Percentage of adolescents aged 15–19 years who consumed alcohol

	Consumption of alcohol	Frequency of drinking among users		
	Percentage who drink alcohol	Almost every day	About once a week	Less than once a week
Women	0.5	13.8	22.7	63.5
Men	8.9	2.6	29.4	67.9

Data Source: NFHS-3 and NFHS-4

A positive aspect of adolescent life in India is their high participation in physical activities.

In a WHO study on physical activity among adolescents aged 11–17 years, India, with one of the lowest levels of insufficient physical activity among adolescents, is ranked 8th among 146 countries. The study suggests that this positive outcome can be attributed to the culture of playing sports such as cricket in local communities. As for adolescent girls, the societal factors that require them to contribute to domestic chores explains the low prevalence of insufficient physical activity. Between 2001 and 2016, the prevalence of insufficient physical activity among adolescent boys has declined from 76.6 percent to 71.8 percent, whereas for girls, the dip was negligible–from 76.6 percent to 76.3 percent (Exhibit D.13).

Exhibit D.13. Prevalence of insufficient physical activity among school going adolescents aged 11−17

Prevalence of insufficient physical activity among adolescents aged 11–17 years			
	Boys	Girls	All
2001	76.6%	76.6%	76.6%
2016	71.8%	76.3%	73.9%

Data Source: Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2020). Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1· 6 million participants. The Lancet Child & Adolescent Health, 4(1), 23-35.

Besides engaging in risky behaviour, adolescents are also highly vulnerable as victims of violence. Adolescent girls are particularly vulnerable to domestic violence and intimate partner violence. In fact, according to UNICEF, across the world an adolescent girl dies as a result of violence every 10 minutes.97 Adolescent girls in married relationships are also the most vulnerable demographic experiencing emotional, physical, and sexual violence. The NFHS data (Exhibit D.14) indicates that there has been a decline in cases of spousal violence experienced by adolescent girls in the 15–19 age group between 2005–2006 and 2015–2016. The exception to the trend is emotional violence, wherein the cases have risen slightly in the intervening years.

Exhibit D.14. Prevalence of spousal violence experienced by women in the 15−19 age group

Spousal violence experienced by women in 15−19 age group		
	NFHS-3	NFHS-4
Emotional violence	12.5	12.9
Physical violence	25.3	18.6
Sexual violence	13.1	6.4
Physical or sexual violence	30.8	20.4
Emotional, physical, or sexual violence	33.9	23.9

Data Source: NFHS-3 and NFHS-4

[97] UNICEF. (2014) A statistical snapshot of violence against adolescent girls.

2.4 MENTAL HEALTH

The risky behaviour exhibited by adolescents is also linked to the mental health issues faced by them. Mental illness and suicide among adolescents have increasingly become an important issue in India, with an estimated 9.8 million Indians aged 13–17 suffering from serious mental illness.[98] Suicide is as much a personal tragedy as it is a public health problem, and India reports one of the highest youth (15−29 years) suicide rates in the world.[99] According to the National Crime Records Bureau (NCRB), the age group 18-below 30 years is the most vulnerable group resorting to suicide, with leading causes being family problems, love affairs and mental illness.[100] Meanwhile, the main cause of suicides among individuals below 18 years are also the same with the addition of one more cause – failure in examinations.

The youth and adolescents in India face stress and anxiety in different areas of their life, from interpersonal relationships to professional struggles. Many of these causes begin to take form during adolescence when individuals undergo psychological and behavioural changes, enter romantic relationships and begin building the foundations of their professional life.

There is also a stark difference in the prevalence of mental disorders among adolescents according to residence – the issue is higher in urban metros than in rural and urban non-metros, and the most frequent mental disorders (current prevalence) among adolescents in India are anxiety disorders and mood disorders.[101]

[98] Hossain, M., & Purohit, N. (2019). Improving child and adolescent mental health in India: status, services, policies and way ahead. Indian Journal of Psychiatry, 61(4), 415-419.
[99] Patel, V., Ramasundarahettige, C., Vijayakumar, L., Thakur, J. S., Gajalakshmi, V., Gururaj, G., ... & Million Death Study Collaborators. (2012). Suicide mortality in India: a nationally representative survey. The Lancet, 379(9834), 2343-2351.
[100] National Crime Records Bureau (2019). Accidental Deaths & Suicides in India. Ministry of Home Affairs. Retrieved from https://ncrb.gov.in/sites/default/files/ADSI_2019_FULL%20REPORT_updated.pdf
[101] Gururaj, G., Varghese, M., Benegal, V., Rao, G. N., Pathak, K., Singh, L. K., & ... Misra, R. (2016). National mental health survey of India, 2015-16: Summary. Bengaluru: National Institute of Mental Health and Neurosciences.

Appendix **E**

This section aims to study the consequences of child marriage by comparing the nutritional outcomes of children born to mothers married before 18 years of age to those married after the legal limit. Specifically, it investigates whether child marriage is significantly associated with poor nutritional outcomes and anaemia among children below 5.

Data Description and Preliminary Findings

The data used is from the fourth round of the National Family Health Survey (NFHS-4) conducted in 2015–2016. The surveys are conducted to capture information on family planning, maternal, and child health indicators. NFHS-4 is a nationally representative sample survey of 6,01,509 households, 6,99,686 women aged 15–49 years, and 1,22,122 men aged 15–54 years. The survey sought information from women about their children born in the last five years as well. For this study, the sample has been limited to ever-married women aged 20–24 who have had a child in the last five years. Thus, the study uses a sub-sample of 56,183 mothers and 73,409 children.

Exhibit E.1 outlines the sample's descriptive statistics and offers some preliminary outlook into the socio-economic and demographic trends, which have also been segregated based on the legal age of marriage. About 37 percent of women in the sample have been married before the age of 18. Even though a majority of women in the sample have received a secondary or higher level of education (56 percent and 8 percent respectively), a high proportion of the women are either uneducated or educated till the primary level among those who have been married before the age of 18 compared to those who have been married after 18 years of age (30 percent and 19 percent respectively compared to 15 and 12 percent). However, the prevalence of anaemia among the mothers is almost similar irrespective of their age of marriage.

The table also shows some preliminary statistics of the children in the sample. It can be seen that the 37 percent of women who have experienced child marriage account for about 40 percent of the children in the sample. The greater share of children can be attributed to the early marriage, which is also why the age profile of the children is much older compared to children of women who have been married after 18 years of age. It can also be seen that the children of mothers from the former group are more likely to reside in rural areas and poorer households.

Exhibit E.1. Socio-economic and demographic characteristics of the selected sample

Characteristics	Total		Women Married Under 18 Years of Age		Women Married After 18 Years of Age	
	n	%	n	%	n	%
Mothers	**56183**	**100**	**20926**	**37.25**	**34758**	**61.87**
Maternal Education						
No Education	11787	21	6235	30	5375	15
Primary	8289	15	3901	19	4287	12
Secondary	31661	56	10189	49	21263	61
Higher	4446	8	601	3	3833	11
Maternal Anaemia						
Anaemic	31330	57	11821	57	19252	56
Not Anaemic	23952	43	8759	43	14967	41
Children	**73409**	**100**	**29701**	**40.46**	**43048**	**58.64**
Age of Child						
Less than 1 year	19856	27.04	5389	18.14	14316	33.26
1–2 years	18153	25	6263	21	11734	27
2–3 years	15097	21	6473	22	8490	20
3–4 years	12141	17	6354	21	5667	13.16
4–5 years	8162	11.12	5222	17.57	2841	6.58
Sex of Child						
Male	40387	52	16445	52	23547	52
Female	37790	48	15403	48	22047	48
Residence						
Urban	16330	21	5395	17	10798	24
Rural	61847	79	26453	83	34796	76
Wealth						
Poorest	19167	25	10283	32	8591	19
Poorer	20395	26	9319	29	10900	24
Middle	17349	22	6559	21	10646	23
Richer	13265	17	4016	13	9152	20
Richest	8001	10	1671	5	6305	14

Data Source: NFHS-4

Exhibit E.2. Nutritional status and anaemia of children born in the last five years to women aged 20–24

Variable	Total		Women Married Under 18 Years of Age		Women Married After 18 Years of Age		Pearson Chi-squared Test	
	n	%	n	%	n	%	p-value	Significance
Stunting								
Yes	25604	38.0	11808	43.1	13590	34.5	0.000	Yes
No	41762	62.0	15577	56.9	25850	65.5		
Wasting								
Yes	14873	22.1	5981	21.8	8762	22.2	0.250	No
No	52493	77.9	21404	78.2	30678	77.8		
Underweight								
Yes	23500	34.9	10809	39.5	12492	31.7	0.000	Yes
No	43866	65.1	16576	60.5	26948	68.3		
Anaemia								
Yes	37053	61.6	15803	61.2	20931	61.9	0.126	No
No	23122	38.4	10002	38.8	12908	38.2		

Data Source: NFHS-4

The study aimed to assess the association between child marriage and the nutrition status and anaemia of children. Exhibit E.2 shows some preliminary observations on the significance of these linkages. It can be seen that over 60 percent of children below five years of age are anaemic, about 40 percent are stunted, almost 35 percent underweight, and over 22 percent wasted.

These figures present some interesting variations when seen through the lens of child marriage. The incidence of stunting was more prevalent in children who were born to mothers who married in childhood (43 percent) compared to children of mothers who married as adults (34.5 percent). The same is true for underweight children where the gap is approximately 8 percent apart. The Pearson's chi-squared test shows that these differences are significant at 1 percent level of significance.

However, the differences in wasting and anaemia between children born to women married before and after 18 years are not significant.

Establishing the Effect of Child Marriage on Future Generations

While the previous section shows some relationship between child marriage and the health outcomes of children born out of such marriages, there is a need to determine the degree of association between them. Logistic regression modelling was used to estimate the odds of select health outcomes among children. The outcome variables used were described in the previous section: stunting, wasting, underweight, and anaemia.

The logistic regression was first estimated without any controls. In the second step, the same regression was estimated after adjusting it for the child's age, sex, type of residence, caste, wealth, and mother's education level. These controls were chosen because each factor plays a significant role in determining nutrition outcomes for children, irrespective of the incidence of child marriage.[102]

The regression analysis (Exhibit E.3) shows that children born to women married in childhood have a significantly higher chance of being stunted. Specifically, child marriage increases the log odds of stunting by 1.44 and the result is significant at a 1 percent level of significance. Similarly, child marriage also has a significant impact on the child being underweight. The log odds of an underweight child increase by 1.40 when girls are married before the age of 18. This result is also significant at 1 percent level of significance. Meanwhile, just like the observations made in the previous section, wasting and anaemia are not significantly associated with the incidence of child marriage.

However, when the regression is adjusted with the set of controls, the outcomes are different. The adjusted odds ratio for stunting becomes lower (1.03) but remains significant at the 5 percent significance level. Further, the increase in log likelihood and pseudo R2 shows that the adjusted model is a better fit than the initial model of stunting. Again, the same holds for underweight children where the odds ratio falls (1.05) and the adjusted model proves to be a better fit.

The case of anaemia is the most notable change in the regression results upon adjustment of the model. The odds ratio increases upon adjustment and becomes highly significant. Specifically, the incidence of anaemia increases by the odds ratio of 1.08 with child marriage, which is significant at a 1 percent level of significance. The adjusted model is also a better fit as seen through the improvement in log likelihood and pseudo R^2.

[102] Mukhopadhyay, S. (2016). The apparent non-significance of sex in child undernutrition in India. Journal of biosocial science, 48(2), 267.

Exhibit E.3. Logistic regression results for the association between child marriage and nutritional status and anaemia of children born in the last five years

Variable	Odds Ratio	Adjusted Odds Ratio
Stunting		
No	1.00	1.00
Yes	1.44***	1.03**
Number of Observations	66825	64574
Log Likelihood	-44121.909	-41160.926
Pseudo R^2	0.006	0.041
Wasting		
No	1.00	1.00
Yes	0.98	1.0
Number of Observations	66825	64574
Log Likelihood	-35262.411	-41160.926
Pseudo R^2	0.000	0.041
Underweight		
No	1.00	1.00
Yes	1.40***	1.05**
Number of Observations	66825	64574
Log Likelihood	-42995.708	-40308.494
Pseudo R^2	0.005	0.036
Anaemia		
No	1.00	1.00
Yes	0.97	1.08***
Number of Observations	59644	57632
Log Likelihood	-39724.211	-37011.010
Pseudo R^2	0.000	0.033

Note: * p<0.1, ** p<0.05, *** p<0.01

Adjusted analysis has controlled for child's age, sex, type of residence (urban/rural), caste, wealth, mother's education level

Data Source: NFHS-4

The analysis of the NFHS-4 data shows with certainty that the effects of child marriage extend to future generations of children. The analysis has significantly established the adverse health outcomes in terms of stunting, underweight, and anaemia among such children. The findings highlight the need to eliminate the practice of child marriage among adolescents in the country.

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Population Foundation of India is a national non-government organisation, which promotes and advocates for the effective formulation and implementation of gender sensitive population, health and development strategies and policies. It works with the government, both at the national and state levels, and with NGOs, in the areas of family planning, reproductive and sexual health of adolescents, community action for health, scaling up of successful pilots and social and behaviour change communication.

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