Effect of Adolescent Health Policies on Health Outcomes in India

Sayooj Sahadevan , Maureen Dar Iang , Fekri Dureab *

Posted Date: 14 July 2023

doi: 10.20944/preprints202307.0952.v1

Keywords: adolescent health; health policies; India

Article

Effect of Adolescent Health Policies on Health Outcomes in India

Sayooj Sahadevan, Maureen Dar Iang and Fekri Dureab *

Heidelberg Institute of Global Health Hospital University Heidelberg
* Correspondence: fekri.dureab@uni-heidelberg.de

Abstract: Adolescence is a crucial phase marked by significant physical, psychological, emotional and social changes. India having the world's largest adolescent population, understanding and addressing their health needs are vital for the nation's social, political, and economic progress. The primary aim of this study is to evaluate the main adolescent health policies and strategies that were implemented during the period from 2006 to 2020 and analyzing the outcomes on adolescent health in India. To achieve this objective, the research adopts a mixed-method approach, combining qualitative and quantitative analysis of health policies, strategies, and programs implemented since 2005 was conducted. Additionally, data from the most recent three Demographic Health Surveys (DHS) were analyzed and compared to assess changes in adolescent health indicators after the implementation of these policies/strategies. Major adolescent health policies in India were assessed, namely the Adolescent Reproductive and Sexual Health Strategy (ARSH 2005), Rashtriya Kishor Swasthya Karyakram (RKSK 2014), and School Health Programme 2020. All the strategies and programs aim to provide a comprehensive framework for sexual and reproductive health services, expand the scope of adolescent health programming, and address various health aspects. The SWOT analysis findings, highlighted strengths in targeted interventions, monitoring, and promotion, but weaknesses in awareness, societal barriers, and healthcare worker participation. Opportunities include female-friendly clinics and education about early pregnancy, while addressing substance abuse and training volunteers remain challenges. Family planning has improved, with higher contraception usage and a decrease in unmet needs. Violence reduced, and positive health behaviors increased, such as condom use. However, challenges remain, including limited access to health services, concerns about female providers, and low health insurance coverage. Nutrition indicators show a slight increase in overweight/obesity and anemia rates. Overall, progress has been made, but certain health aspects still require attention. Therefore, conducting targeted awareness campaigns, strengthening health worker and NGOs engagement, combating the increasing prevalence of overweight and obesity among adolescents are highly recommended. Further efforts are needed to achieve universal health coverage and improve adolescent health outcomes globally.

Keywords: India adolescent health; health policy and health strategy

1. Introduction

Adolescence is a critical phase of life marked by significant physical, psychological, emotional and social changes. The WHO defines any individual who falls between the ages of 10-19 as an adolescent [1] Although these definitions point chronologically to the teenage years of an individual, the cultural and social experiences associated with this phase may start earlier or later. Physical, emotional, social, and intellectual developments can be used to classify adolescence into three categories; early adolescence (ages 11-14), mid Adolescence (ages 15-17), and late Adolescence (ages 18-21) [2]

Historically, health policies have focused extensively on maternal, child and reproductive health as a whole while neglecting adolescents largely excluded from policies and programs until recently. Recently, due to the distinct nature of crimes, health issues, and emotional and physical needs affecting this age group, there has been a growing recognition of the necessity for their representation as a separate demographic. Consequently, there has been an increasing demand for the formulation of distinct policies tailored to address the specific needs of the adolescents[3].

 doi:10.20944/preprints202307.0952.v1

The importance of addressing adolescent healthcare has garnered recognition from the United Nations, leading to collaborations with several countries to address this concern. A significant development in this regard occurred in 1987 when the International Association for Adolescent Health (IAAH), a multifaceted non-governmental organization, was established with a mission to meet the healthcare needs of adolescents worldwide. The IAAH has been actively involved in various initiatives, including the organization of health camps, offering scholarships through sponsorships, and undertaking diverse endeavors to support the well-being of adolescents[4,5].

In recent years, the health and well-being of adolescents have emerged as a key area of concern for policymakers and public health professionals worldwide. India, with its large and diverse population of adolescents, is no exception to this global concern. As a result, various policies have been formulated and implemented to address the specific health needs of this age group. The adolescent population estimated at 250 million in India, almost every policy should ideally take into consideration the adolescent population too. Adolescents undergo periods of stress and heightened emotions, making them particularly susceptible to various health-related issues [6].

Numerous policies have been developed and implemented to address the specific health needs of this age group. However, many adolescents remain unaware of the diseases and threats they are exposed to, leading them to overlook early signs of both physical and mental illnesses, often concealing their struggles from their peers and parents. During adolescence, the influence of peer pressure and the desire to belong to social groups become pronounced, rendering young individuals susceptible to developing habits like addiction and engaging in petty crimes [7].To understand the challenges faced by adolescent girls, a noteworthy study was conducted in Uttar Pradesh and Bihar. The research revealed that girls forced into child marriages encountered depression, domestic violence, and were compelled to drop out of schools and colleges. Unplanned pregnancies were also prevalent, exacerbating their already difficult situations. Moreover, the study highlighted an alarming increase in both suicide rates and suicide attempts among adolescents [7].

Additionally, there was another study carried out in India that specifically investigated the prevalence of anaemia among children and adolescents. The research revealed that while iron deficiency anaemia was the most common type, there were also widespread cases of anaemia caused by other factors, such as deficiencies in vitamin B12 and folic acid, among adolescents.[8]

Countries have shown that policies and programs focusing on adolescent's health have profound impact on the health and wellbeing of adolescents (REF). and both access to healthcare centers and awareness about the necessity for specific health policies tailored to adolescents pose significant challenges [9]. Therefore, the objective of this study is to evaluate the main adolescent health policies and strategies that were implemented during the period from 2006 to 2020 and analyzing the outcomes on adolescent health in India.

2. Methods

The mixed-method approach used in this study combines qualitative and quantitative data analysis to gain a comprehensive understanding of the topic under investigation, which is adolescent health in India. combining both qualitative and quantitative data analyses, the study can provide a more comprehensive and robust understanding of of adolescent health in India. The qualitative analysis offers insights into the policy landscape and the state of research in the field, while the quantitative analysis enables the assessment of tangible outcomes and impacts of the government's health policies on adolescent health indicators. The study has two main components: qualitative data analysis and quantitative data analysis.

2.1. Study Areas

The study area includes the entire territory of India, which is located in the southwestern section of the Asian continent. The nation has a total land area of 3,287,263 square kilometers and is located to the north of the equator between latitudes 8° and 37° north and longitudes 68° and 97° east. India has a 7517 km long coastline, which is bordered by the Indian Ocean on the south, the Arabian Sea on the southwest, and the Bay of Bengal on the southeast. [10]

 doi:10.20944/preprints202307.0952.v1

With 253 million teenagers, India has the biggest adolescent population in the world, with one in five citizens being between the ages of 10 and 19. If this enormous population of teenagers is secure, healthy, educated, and provided with knowledge and life skills to support the nation's future development, India will benefit socially, politically, and economically [11].

2.2. Qualitative Data Analysis

The qualitative data analysis focuses on examining official documents of the Indian Government, specifically strategies, policies, and program reports related to adolescent health, spanning from 2005 to 2020. By analyzing these documents, the researchers aim to gain insights into the various initiatives and approaches taken by the government to address adolescent health issues during this period. This qualitative analysis helps in understanding the policy context and the intent behind the implemented programs. In total 9 official documents were reviewed and this section analyzed three key policies chosen for their nationwide coverage in India and their focus on the adolescent population. The purpose is to assess the progress made and observe the changes that have taken place.

In addition to the official documents, the study also involves reviewing scientific published papers on adolescent health in India using PubMed, Google Scholar, Research Gate website, UN agencies website) The following keywords were used to screen publications and journals, also to access Government public access websites: “National health policy”, “Adolescent health coverage”, “Health service delivery”, “Health security”, “Health promotion”, “Adolescent Girls in India”, “National strategies”, “Ministry of Health, India”, “India DHS” and so on.. This literature review contributes to the qualitative aspect of the study, allowing researchers to gather existing knowledge, research findings, and expert opinions on the topic using SWOT analysis. The qualitative data from both official documents and scientific papers are used to identify patterns related to adolescent health in India.

2.3. Quantitative Data Analysis

The quantitative data analysis in this study utilizes Demographic Health Survey (DHS) data collected from 2005 to 2021. The DHS data is a large-scale survey that provides nationally representative information on various health and demographic indicators. In this study, the DHS data is used to measure the progress and impact of health policies on adolescent health over the years. By employing quantitative data analysis techniques on the DHS data, the researchers can assess changes in key indicators of adolescent health, such as prevalence rates of certain diseases, access to healthcare services, health behaviors, and socio- demographic factors. Comparing data across different time points allows to identify outcomes and evaluate the effectiveness of health policies and interventions targeted at adolescents.

3. Results

Total of 9 policies/strategies/programs focusing on adolescent health during 2005-2020 were screened and reviewed (Table 1). The following section presents an analysis of three prominent policies that were selected based on their nationwide scope, targeting the adolescent population, and their alignment with the period of the Demographic Health Survey (DHS). The objective is to assess the changes and observe the notable transformations that have occurred over the period from 2005 – 2020.

Table 1. policies/strategies/programs focusing on adolescent health during 2005-2020.

POLICY/SCHEME	Year	Coverage	Source
Adolescent Reproductive and Sexual Health (ARSH) strategy	2005	Introduced in New Delhi and later implemented in all states	NHP
Kishori Shakti Yojana	2007	Odisha	NHP
National Adolescent Health Strategy	2014	New Delhi	UNFPA

 doi:10.20944/preprints202307.0952.v1

RASHTRIYA KISHOR SWASTHYA KARYAKRAM (RKSK)	2014	All states of India	NHP
Beti Bachao Beti Padhao Yojana	2015	Uttar Pradesh, Haryana, Uttarakhand, Punjab, Bihar and Delhi	NHP
Rajiv Gandhi Scheme for Empowerment of Adolescent Girls	2017	200 selected districts in India	NHP
National Policy for Rare Diseases	2017	All states of India	NHP
Poshan Scheme for Holistic Nourishment	2018	Rajasthan	NHP
School health programme	2020	Government schools in all districts	NHP

1. Adolescent Reproductive and Sexual Health Strategy (2005): This strategy aims to provide a comprehensive framework for offering various sexual and reproductive health services to adolescents. It encompasses a core package of services, including preventive, promotive, curative, and counseling services to cater to the specific needs of this age group.
2. Rashtriya Kishor Swasthya Karyakram (RKSK) 2014: This strategy has significantly expanded the scope of adolescent health programming in India. It no longer confines itself to solely sexual and reproductive health but includes nutrition, injuries and violence (including gender-based violence), non-communicable diseases, mental health, and substance misuse. The strength of this program lies in its health promotion approach, shifting from clinic-based services to prevention and promotion, reaching adolescents in their own environments, such as schools, families, and communities.
3. School Health Programme 2020: The objectives of this program are focused on various aspects, including improving nutrition, enhancing vaccination status, sexual and reproductive health, promoting mental health, preventing injuries and violence (including GBV), addressing substance misuse. Additionally, this policy is open to including other relevant topics as determined in consultation with other national stakeholders.

The achievement of this study objective several scientific papers where reviewed that analyzed health policies implemented between 2005 and 2020. Specifically, two prominent policies were selected for analysis due to their national coverage and progressive nature of strategy: the Adolescent Reproductive and Sexual Health strategy (2005) and the Rashtriya Kishor Swasthya Karyakram(2014). The analysis process applied SWOT analysis to derive meaningful results.

3.1. The Adolescent Reproductive and Sexual Health (ARSH 2005)

Strengths (S):

1. Targeted interventions in schools: The strategy showed effective strategies for providing health interventions specifically tailored to the needs of adolescents within educational settings, which can be crucial in reaching a large number of young individuals.
2. Addressed sexual violence: The policies recognized and addressed the issue of sexual violence among adolescents, indicating a proactive approach towards safeguarding their well-being.
3. Confidential and secure adolescent clinics: The establishment of confidential and secure clinics for adolescents indicated efforts to provide a safe and private environment for seeking healthcare services, encouraging adolescents to access healthcare without fear of judgment or disclosure.

Weaknesses (W):

1. Health service focused and limited focus to awareness: The analysis identified a lack of awareness among adolescents about available health services and resources, which could hinder their ability to access necessary care.
2. Non-addressal of societal barriers: The strategy may not have adequately addressed societal barriers such as cultural norms, stigma, or discrimination that can impede adolescents from seeking healthcare or engaging in preventive behaviors.

 doi:10.20944/preprints202307.0952.v1

3. Non-addressal of substance abuse: The policies may not have adequately tackled the issue of substance abuse among adolescents, which could have negative implications for their health and well-being.

Opportunities (O):

1. Overall female-friendly clinics: There is potential for the development of clinics that are specifically designed to cater to the needs and preferences of female adolescents, ensuring inclusivity and accessibility of healthcare services for this group.
2. Free nutritional supplements: Providing free nutritional supplements to adolescents can help address nutritional deficiencies, improving overall health and well-being in this age group.
3. Education about early pregnancy: Implementing educational programs focused on early pregnancy can raise awareness and empower adolescents to make informed decisions about reproductive health.

Threats (T):

1. Societal taboos prevalent and difficult to configure: Deep-rooted societal taboos and norms may pose challenges in designing and implementing effective policies that address sensitive issues related to adolescent health.

The scarcity of financial resources poses a significant threat to the complete implementation of strategies and related interventions on a national scale.

3.2. Rashtriya Kishor Swasthya Karyakram (RKSK 2014)

Strengths (S):

1. Extensive monitoring and promotion: The policies demonstrate a strong commitment to monitoring and promoting adolescent health, ensuring that the interventions are effectively implemented and reaching the target population.
2. Special training of health workers: The policies recognize the importance of adequately trained healthcare workers who possess the necessary skills to address the unique healthcare needs of adolescents.
3. Additional focus on substance abuse: The policies have placed emphasis on tackling the issue of substance abuse among adolescents, indicating a proactive approach to address this significant health concern.

Weaknesses (W):

1. Resistance in utilizing clinics both by adolescents and parents: There may be reluctance among adolescents and their parents to utilize healthcare clinics due to various reasons, such as stigma, lack of awareness, or fear of judgment.
2. Poor NGO involvement: The limited involvement of non-governmental organizations (NGOs) in implementing and supporting the policies could potentially impact the reach and effectiveness of the interventions.
3. Lack of privacy in clinics: Inadequate privacy measures in healthcare clinics may discourage adolescents from seeking healthcare services, particularly for sensitive issues, leading to reduced access to necessary care.

Opportunities (O):

1. Weekly supplementation scheme: Implementing a weekly supplementation scheme for essential nutrients, along with regular assessment, can improve the overall nutritional status of adolescents, promoting their health and well-being.
2. Counseling for substance abuse, tobacco use, etc.: Integrating counseling services as part of the policies can help address substance abuse and tobacco use, providing support and resources for adolescents seeking to overcome these challenges.

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 14 July 2023 doi:10.20944/preprints202307.0952.v1

3. Special Menstrual Hygiene Scheme: Introducing a dedicated scheme for menstrual hygiene can improve access to menstrual products, education, and support for adolescent girls, positively impacting their health and hygiene.

Threats (T):

1. Human resources: A shortage of trained healthcare personnel and other human resources may limit the effective implementation and execution of the policies.
2. Logistics supply: Challenges in logistics and supply chain management may hinder the timely delivery of healthcare services, medications, and resources to the target population.
3. Infrastructure: Inadequate healthcare infrastructure, including clinics and facilities, could pose challenges in providing quality healthcare services to adolescents.

Table 2 presents a comparison of various health indicators for adolescents aged 14 to 19 years across three different DHS: 2005/2006, 2015/2016, and 2019/2021. It presents trends in various health indicators for adolescents aged 14 to 19 years across three different periods. Overall, there have been improvements in family planning, the percentage of married women currently using any method of contraception increased from 13% in 2005/2006 to 14.9% in 2015/2016 and significantly rose to 28.1% in 2019/2021. Similarly, the usage of modern contraceptive methods among married adolescents increased from 6.9% in 2005/2006 to 10% in 2015/2016 and further rose to 18.8% in 2019/2021. The unmet need for family planning decreased over time, from 13.9% in 2005/2006 to 12.9% in 2015/2016 and dropped further to 9.4% in 2019/2021. The proportion of demand for family planning satisfied by modern methods increased from 7.3% in 2005/2006 to 26.9% in 2015/2016 and notably increased to 40.9% in 2019/2021.

Table 2. comparison of health indicators among adolescents aged 14 to 19 years from three DHS datasets in the years 2005/6, 2015/16 and 2019/21.

DHS Indicators	2005/2006 %	2015/2016 %	2019/2021 %
Family planning			
Married adolescents currently using any method of contraception	13	14.9	28.1
Married adolescents currently using any modern method of contraception	6.9	10	18.8
Unmet need for family planning for adolescents	13.9	12.9	9.4
Demand for family planning satisfied by modern methods	7.3	26.9	40.9
Violence			
sexual violence committed by husband/partner in last 12 months	11.6	5.5	6.1
Physical violence committed by husband/partner in last 12 months	21.8	16.3	16.4
Women first married by exact age 15	8.2	1.9	1.3
Access to health			
Adolescent girls access to health: Problems Getting permission to go for treatment	9.3	20.8	16.5
Adolescent girls access to health: Problems Getting money for treatment	16.3	26.2	22.4
Adolescent girls access to health: Problems Distance to health facility	24.6	31.5	24.2
Adolescent girls access to health: Problems Concern there may not be a female provider	21	41.6	34.3
No Health insurance Adolescent girls	No data	83	74.5
No Health insurance Adolescent boys	No data	81.5	73
Behaviours			

 doi:10.20944/preprints202307.0952.v1

Condom use at last higher risk sex (with a non-marital, non-cohabiting partner) [Adolescent boys]	33.4	47.9	56.6
Condom use at last higher risk sex (with a non-marital, non-cohabiting partner) [Adolescent girls]	20	35.3	62
Adolescent boys who smoke any type of tobacco	57.3	29.7	34.4
Adolescent girls who smoke any type of tobacco	3.1	1.1	0.8
Nutrition			
Adolescent girls who are overweight or obese according to BMI (>=25.0)	2.4	4.2	5.4
Adolescent boys who are overweight or obese according to BMI (>=25.0)	1.7	4.8	6.6
Adolescent girls with any anemia	55.8	54.1	59.1
Adolescent boys with any anemia	30.2	29.2	31.1

Generally, there is reductions in violence, and positive changes in certain health behaviors. Incidents of sexual violence committed by husband/partner in the last 12 months decreased from 11.6% in 2005/2006 to 5.5% in 2015/2016 and slightly increased to 6.1% in 2019/2021. Physical violence committed by husband/partner in the last 12 months also decreased over time, from 21.8% in 2005/2006 to 16.3% in 2015/2016 and remained relatively stable at 16.4% in 2019/2021. The percentage of women first married by exact age 15 declined significantly from 8.2% in 2005/2006 to 1.9% in 2015/2016 and decreased further to 1.3% in 2019/2021.

The data show improvement in the knowledge and practice healthy behavioral among adolescent, for instance, Condom use at last higher risk sexual encounter (with a non-marital, non-cohabiting partner) increased from 33.4% in 2005/2006 to 47.9% in 2015/2016 and further rose to 56.6% in 2019/2021 for male adolescents. Similarly, for girls, condom use higher risk encounters increased from 20% in 2005/2006 to 35.3% in 2015/2016 and significantly increased to 62% in 2019/2021. Moreover, the percentage of male who smoke any type of tobacco decreased from 57.3% in 2005/2006 to 29.7% in 2015/2016 and slightly increased to 34.4% in 2019/2021. Female adolescents who smoke any type of tobacco experienced a decline from 3.1% in 2005/2006 to 1.1% in 2015/2016 and further decreased to 0.8% in 2019/2021.

However, there are still challenges in access to health services and concerns related to health insurance coverage. Females faced fewer problems getting permission to go for treatment over time, with percentages decreasing from 9.3% in 2005/2006 to 20.8% in 2015/2016 and slightly decreasing again to 16.5% in 2019/2021. The percentage of women aged 14-19 years old experiencing difficulties getting money for treatment increased from 16.3% in 2005/2006 to 26.2% in 2015/2016 and slightly decreased to 22.4% in 2019/2021.The challenges related to the distance to health facilities experienced decreased from 24.6% in 2005/2006 to 31.5% in 2015/2016 and slightly decreased again to 24.2% in 2019/2021. Concerns about the lack of female providers at health facilities increased from 21% in 2005/2006 to 41.6% in 2015/2016 and decreased to 34.3% in 2019/2021. The percentage of female adolescents without health insurance decreased from 83% in 2015/2016 to 74.5% in 2019/2021. For males, the as well decreased from 81.5% in 2015/2016 to 73% in 2019/2021.

Additionally, nutrition indicators show deterioration in the nutritional status of the adolescents, the percentage of females who are overweight or obese according to their BMI (Body Mass Index) increased from 2.4% in 2005/2006 to 4.2% in 2015/2016 and further rose to 5.4% in 2019/2021. Similarly, males who are overweight or obese according to their BMI also increased from 1.7% in 2005/2006 to 4.8% in 2015/2016 and further rose to 6.6% in 2019/2021. The percentage of females adolescents with any anemia slightly decreased from 55.8% in 2005/2006 to 54.1% in 2015/2016 and increased to 59.1% in 2019/2021. For males adolescents with any anemia slightly decreased from 30.2% in 2005/2006 to 29.2% in 2015/2016 and slightly increased to 31.1% in 2019/2021.

 doi:10.20944/preprints202307.0952.v1

4. Discussion

Outcome metrics for each of the six strategic priorities for adolescent health identified by the Indian Ministry of Health & Family Welfare. These strategic priorities are nutrition, sexual and reproductive health, non-communicable diseases, substance abuse, injuries and violence (including gender-based violence), and mental health [12]. The Adolescent Reproductive and Sexual Health Strategy implemented in India from 2005 is the fundamental strategy to pave the road for better interventions targeting young population, similar initiatives in Southeast Asian countries were developed to address the specific needs of adolescents, including their reproductive and sexual health. For instance, in Bangladesh, Indonesia and Thailand [13].

The ARSH Strategy initially emphasized the provision of reproductive and sexual health services, offering a comprehensive package that included preventive, promotive, curative, and counseling services through health facilities. This approach primarily revolved around the establishment of Adolescent Friendly Health Clinics. However, in 2014, a new program called RKSK was introduced, aiming to empower all adolescents in India to make informed and responsible decisions regarding their health and well-being. The RKSK program expanded the scope beyond sexual and reproductive health to encompass a broader range of concerns, including non-communicable diseases, nutrition, mental health, substance misuse, and injuries and violence. To effectively deliver these services, the program utilizes both clinic-based and community-based service provision models, complemented by activities to generate demand for these services[14].

Despite the expanded coverage and improved coordination between the central and state governments in implementing RKSK compared to previous policies, certain challenges persist that could potentially become problematic in the future. These challenges include the insufficient participation of non-governmental organizations (NGOs), and inadequate infrastructure[14]. Nevertheless, the primary unresolved issue persists in the mindset of the population worldwide. Numerous parents feel uncomfortable with the idea of their children, particularly young girls, attending adolescent clinics. They believe that exposing them to information concerning reproductive and sexual health might corrupt their young minds. Consequently, they withhold all such information from their children. This opposition extends even to sex education at the school level, with many parents expressing their disapproval. Moreover, societal pressure and the fear of bringing dishonor to their families compel numerous women to suffer silently, enduring domestic violence without voicing their plight[15,16]. Hence, involving NGOs and the community in adolescent programs can play a crucial role in fostering community acceptance of sensitive issues concerning adolescent health [14]. For instance, in Pakistan, NGOs like Aahung and Rutgers Pakistan have achieved success by demonstrating their willingness to comprehend the intricate contextual factors within communities. They actively collaborate with various stakeholders, including parents, school officials, religious leaders, media personnel, and adolescents themselves, to garner support and overcome resistance. These organizations employ specific strategies such as involving communities in content selection, employing tactful approaches to address sensitive issues, engaging influential figures in adolescents' lives, strengthening media presence, showcasing successful school programs to enhance understanding and transparency, and identifying opportune moments to deliver key messages [16]. Moreover, India has made significant strides in promoting adolescent health by integrating it into school programs since 2020, which encompass a wide range of aspects and reach a large student population in the country. However, there is a need for stronger monitoring, particularly in religious schools, as observed in the Indonesian experience [17].

The DHS health indicators for adolescents aged 14 to 19 across three time periods: 2005/2006, 2015/2016, and 2019/2021. The analysis reveals improvements in family planning indicators, including increased contraceptive use, decreased unmet need, and higher satisfaction with modern methods. Comparable trends were observed in Bangladesh and Nepal[18]. Moreover, positive changes have been observed in certain health behaviors and a reduction in violence. Incidents of sexual violence committed by husbands/partners in the last 12 months decreased from 11.6% in 2005/2006 to 5.5% in 2015/2016, with a slight increase to 6.1% in 2019/2021. Physical violence committed by husbands/partners in the last 12 months also decreased over time, from 21.8% in

 doi:10.20944/preprints202307.0952.v1

2005/2006 to 16.3% in 2015/2016, and remained relatively stable at 16.4% in 2019/2021. This figure is approximately equivalent to the global average of 16% for adolescent girls aged 15-19 who have ever been married or in a partnership and have experienced physical and/or sexual intimate partner violence, which is close to the worldwide average within the past year [19]. Additionally, when comparing India to global trends, it is evident that there has been a noteworthy reduction in the percentage of adolescent girls getting married at the precise age of 15. In India, this figure decreased significantly from 8.2% in 2005/2006 to 1.9% in 2015/2016, and further dropped to 1.3% in 2019/2021. Globally, there has also been a decline in the proportion of young women who were married as children, with a decrease of 15%. Previously, approximately one in four young women were married before reaching adulthood, but now it stands at approximately one in five [20].

According to the National Noncommunicable Disease Monitoring Survey (NNMS) 2017-18, the prevalence of tobacco uses among male adolescents (15-17 years) was 11.9%, while among female adolescents, it was 1.7%. On average, the prevalence of tobacco use among all adolescents was 7% [21]. Comparatively, the Demographic and Health Surveys (DHS) show a decrease in tobacco smoking among both male and female adolescents. The prevalence of smoking among males decreased from 57.3% in 2005/2006 to 34.4% in 2019/2021, while among females, it declined from 3.1% in 2005/2006 to 0.8% in 2019/2021. These findings indicate positive changes in the healthy behaviors of adolescents.

The collective global and national efforts towards achieving universal health coverage for adolescents are significantly supported by the Sustainable Development Goals and the prevailing global political momentum. Adolescents, who constitute approximately 1.2 billion people, or one in six of the global population, present a crucial demographic. The majority of these adolescents, nearly nine out of ten, reside in low- and middle-income countries (LMICs) where they face challenges accessing healthcare, social services, employment, and sustainable livelihoods. Asia houses over half of the world's adolescent population, with South Asia alone accommodating 344 million adolescents. In certain countries, adolescents comprise as much as a quarter of the overall population, and their numbers are projected to increase until 2050, particularly in low- and middle-income countries. For instance, in India, there is a significant adolescent population that is expected to grow in the coming years [22]. Although there have been positive improvements in various health indicators among adolescents, challenges persist in accessing health services and ensuring adequate health insurance coverage. While the percentage of females facing permission-related obstacles for treatment has decreased over time, as well poverty remain a concern. Challenges related to distance to health facilities fluctuated, while concerns regarding the lack of female providers showed a slight decrease. Health insurance coverage for both female and male adolescents has improved, yet a significant proportion still lacks coverage, health insurance coverage for adolescents is limited to less than 20% in most countries, despite notable advancements regarding effective coverage of sexual and reproductive health (SRH) services. However, there is a lack of progress specifically targeting adolescents within these programs, as many national universal health coverage initiatives exclude key SRH services that are vital for this age group [23].

Traditionally under-nutrition is the major problem, however, the percentage classified as overweight or obese based on their Body Mass Index (BMI) has risen from 2.4% in 2005/2006 to 5.4% in 2019/2021 among females and from 1.7% in 2005/2006 to 6.6% in 2019/2021 among males .A study conducted in 2018 on the prevalence of childhood and adolescent overweight and obesity in Asian countries found that the overall pooled prevalence of obesity in adolescents aged 12-19 years, the overall prevalence of obesity was 8.6%, with 10.1% among boys and 6.2% among girls. The study also reported that the prevalence of overweight in adolescents, the prevalence of overweight was 14.6% overall, with 15.9% among boys and 13.7%, the study indicated that a higher percentage of boys were obese and overweight compared to girls among both children and adolescents [24].

In conclusion, efforts have been made in India to implement initiatives addressing the health needs of adolescents requires strategic focus on nutrition, sexual and reproductive health, non-communicable diseases, substance abuse, injuries and violence, and mental health. While progress has been made in certain areas, challenges remain in terms of inadequate infrastructure, societal

resistance, and health insurance coverage for adolescents. Engaging NGOs and communities is crucial in fostering acceptance and addressing sensitive issues. Additionally, attention should be given to combatting the increasing prevalence of overweight and obesity among adolescents. Further efforts are needed to achieve universal health coverage and improve adolescent health outcomes globally.

Author Contributions: F.D., M.D.I. and S.S. worked on study conceptualization and methodology; S.S. wrote the original draft; F.D., M.D.I. reviewed and edited the manuscript; F.D. and S.S. analyzed and interpreted data and results; F.D supervised and gave the final approval. All authors read and approved the final manuscript.

Funding: The study has no fund.

Informed Consent Statement: As data was anonymous, informed consent was waived.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. WHO. *Adolescent health*. 2023 30.05.2023]; Available from: https://www.who.int/health-topics/adolescent-health#tab=tab_1.
2. Sawyer, S.M., et al., *The age of adolescence.* Lancet Child Adolesc Health, 2018. **2**(3): p. 223-228.
3. UNICEF. *Adolescents: Health Risks and Solutions*. 2021 [cited 2023 01.04]; Available from: https://www.unicef.org/media/60561/file/adolescents-health-risks-solutions-2011.pdf.
4. IAAH. *International Association for Adolescent Health*. 2023 [cited 2023 04.07]; Available from: https://iaah.org/about/.
5. Collin, P. *Youth civic engagement: building bridges between youth practice and policy*. 2021 [cited 2023 04.07]; Available from: https://www.unicef.org/eap/media/11921/file.
6. Nandita Babu, M.F., Adolescent Health and Well-Being: Issues, Challenges, and Current Status in India. 08 March 2022.
7. Shilpa Aggarwal a b, K.L.F.a.c., S. Ghazaleh Dashti c d, George Patton a c, Child marriage and the mental health of adolescent girls: a longitudinal cohort study from Uttar Pradesh and Bihar, India. 2023.
8. Sarna, A., et al., Characterisation of the types of anaemia prevalent among children and adolescents aged 1–19 years in India: a population-based study. The Lancet Child & Adolescent Health, 2020. **4**(7): p. 515-525.
9. Sivagurunathan, C., et al., Adolescent health: present status and its related programmes in India. Are we in the right direction? (2249-782X (Print)).
10. Chakraborty, A., et al., Assessing biome boundary shifts under climate change scenarios in India. Ecological indicators, 2013. **34**: p. 536-547.
11. unicef. *Empowering adolescent girls and boys in India*. 2023; Available from: - https://www.unicef.org/india/what-we-do/adolescent-development-participation.
12. Srivastava, N.M., *Adolescent health in India: Need for more interventional research.* Clinical Epidemiology and Global Health, 2016. **4**(3): p. 101-102.
13. WHO. *Strategic directions for improving Adolescent Health in South-East Asia Region*. 2011 [cited 2023 06.07.2023]; Available from: https://apps.who.int/iris/bitstream/handle/10665/205917/B4771.pdf?sequence=1&isAllowed=y.
14. Barua, A., et al., *Adolescent health programming in India: a rapid review.* Reproductive Health, 2020. **17**(1): p. 87.
15. Latifnejad Roudsari, R., et al., Socio-cultural challenges to sexual health education for female adolescents in Iran. Iran J Reprod Med, 2013. **11**(2): p. 101-10.
16. Munea, A.M., et al., Socio-cultural context of adolescent sexuality and youth friendly service intervention in West Gojjam Zone, Northwest Ethiopia: a qualitative study. BMC Public Health, 2022. **22**(1): p. 281.
17. Muthmainnah, et al., Implementation of Adolescent Health Programs at Public Schools and Religion-Based Schools in Indonesia. Journal of Public Health Research, 2021. **10**(4): p. jphr.2021.1954.
18. USAIDS. *The DHS Program STATcompiler*. 2023 [cited 2023 06.07]; Available from: https://www.statcompiler.com/en/.
19. WHO. Violence against women prevalence estimates, 2018: global, regional and national prevalence estimates for intimate partner violence against women and global and regional prevalence estimates for non-partner sexual violence against women. 2021 [cited 2023 07.07]; Available from: https://apps.who.int/iris/handle/10665/341337
20. UNICEF. *Child Marriage: Latest trends and future prospects*. 2018 [cited 2023 07.07]; Available from: https://data.unicef.org/resources/child-marriage-latest-trends-and-future-prospects/

21. MHFW. *National Noncommunicable Disease Monitoring Survey (NNMS) 2017-18*. 2018 [cited 2023 07.07]; Available from: https://cdn.who.int/media/docs/default-source/ncds/ncd-surveillance/data-reporting/india/india-nnms-2017-18-factsheet.pdf?sfvrsn=a3c7547b_1&download=true.
22. WHO. *Adolescent Health: The Missing Population in Universal Health Coverage*. 2019 [cited 2023 07.07]; Available from: https://pmnch.who.int/resources/publications/m/item/adolescent-health---the-missing-population-in-universal-health-coverage.
23. UNFPA. *Universal Health Coverage and Adolescent Sexual and Reproductive Health*. My Body is My Body, My Life is My Life: Sexual and reproductive health and rights of young people in Asia and the Pacific 2021 [cited 2023 07.07]; Available from: https://asiapacific.unfpa.org/sites/default/files/pub-pdf/asrh_factsheet_7_uhc.pdf.
24. Mazidi, M., et al., Prevalence of childhood and adolescent overweight and obesity in Asian countries: a systematic review and meta-analysis. Archives of Medical Science, 2018. **14**(6): p. 1185-1203.