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Ministry of Health & Family Welfare
Government of India

World Health Organization

DEVELOPING AND IMPLEMENTING A FRAMEWORK FOR MAPPING AND ASSESSING ADOLESCENT VULNERABILITIES IN INDIA (PHASE 1)

June 2021

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Contents

Acronyms

AFHC	Adolescent Friendly Health Clinics
ARSH	Adolescent Reproductive and Sexual Health Strategy
BMI	Body Mass Index
CDI	Composite Depravity Index
CNNS	Comprehensive National Nutrition Survey
DLHS	District Level Household and facility Survey
EVI	Environmental Vulnerability Index
FLW	Frontline Worker
GBV	Gender Based Violence
HIV/AIDs '	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
HLFPPT	Hindustan Latex Family Planning Promotion Trust
IFA	Iron Folic Acid
IVI	Individual Vulnerability Index
MoHFW	Ministry of Health and Family Welfare
MoSPI	Ministry of Statistics, Planning and Implementation
MVI	Multi-dimensional Vulnerability Index
NCD	Non-communicable Diseases
NCW	National Commission for Women
NFHS	National Family Health Survey
NSS	National Sample Survey
OBC	Other Backward Classes
RKSK	Rashtriya Kishor Swasthya Karyakram
RMNCH+A	Reproductive, Maternal, Newborn Child, and Adolescent Health
RTI	Reproductive Tract Infections
SBC	Social and Behaviour Change
SC	Scheduled Caste
SCVI	Social Vulnerability Index
SLCM	State Level Stakeholder Consultation Meeting
SRH	Sexual and Reproductive Health
ST	Scheduled Tribes

STI	Sexually Transmitted Infections
SVI	Structural Vulnerability Index
UDAYA	Understanding the lives of Adolescents and Young Adults
U-DISE	Unified District Information System for Education
UNICEF	United Nations Children's Fund
VHSNC	Village Health, Sanitation, and Nutrition Committees
WHO	World Health Organization

Introduction

Adolescents (10-19 years old) constitute one-fifth of the world's population. With a population of 1.2 billion, the world is currently seeing its largest cohort of adolescents, and India alone has an adolescent population of 253 million, making it the country with the largest population of adolescents.[1] Despite adolescence being recognized as a critical period of development, and adolescents carrying 11 percent of the global burden of disease, they receive only 1.6 percent of the development assistance for health (Plan International, 2018). A combination of factors put adolescents at risk, including poor knowledge and awareness of physical and psychological changes, lack of supportive environments and guidance, and limited access to health care services.[2] Further, morbidity and mortality during this period are mainly due to preventable causes.[2]

In India, significant investments in adolescent-focused policies and programmes have been made over the past two decades. These include the Adolescent Reproductive and Sexual Health strategy (ARSH) (2005), the National Adolescent Reproductive and Sexual Health policy (2006), the Reproductive, Maternal, Newborn Child, and Adolescent Health (RMNCH+A) strategy (2013), the Rashtriya Kishor Swasthya Karyakram (RKSK) (2014) and more recently the School Health and Wellness Programme (2020). Yet, there is a significant need to improve the operationalization and implementation of services for adolescents and address the gaps in services for adolescents.[3] Universal coverage through adolescent health related services and programmes is still absent and several adolescents lack access to health care services, information and guidance.[2,4] Further, research also shows that adolescents are a diverse group and programmes must be contextualized to their specific needs.[4]

It was in this context that KHPT undertook an in-depth study to develop a framework to map the most vulnerable adolescent groups in India. In this brief research report, we present the methodology of the study, identify the significant health-related challenges faced by adolescents in India, and present the framework developed for the identification of vulnerable adolescents. We conclude with a set of recommendations focused on strengthening the RKSK and related adolescent health programmes.

Methodology

The study adopted a range of methods to identify the nature of adolescent vulnerabilities in India in order to develop a conceptual framework for the identification of the most vulnerable adolescents and their needs.

a. First, a detailed **review of literature** covering a wide range of disciplines (e.g., developmental psychology, sociology, public health, etc.), types of literature (e.g., academic literature, journal articles, grey literature, policy documents, etc.), and multiple perspectives (e.g., theoretical and empirical) was completed. The literature review helped identify the significant challenges to

[1] Mehra, Daral & Sharma, 2018
[2] Sivagurunathan et al., 2015
[3] Wadhwa et al., 2018
[4] Sivagurunathan et al., 2015; Samal & Dehury, 2017

adolescent health and the critical gaps in programming. Databases such as Pubmed, Google Scholar, Jstor, Scopus, etc. were mined and literature covering the last two decades were analyzed.

b. A detailed **secondary data analysis** was undertaken using various datasets including the National Family Health Survey (NFHS)-4, National Sample Survey (NSS), the Census, Comprehensive National Nutrition Survey (CNNS), Unified District Information System for Education (U-DISE), and the NITI Aayog School Education Quality Index (SEQI) to understand patterns of vulnerability among adolescent populations in India. A Multi-dimensional Vulnerability Index (MVI) was specifically created to identify states with the highest vulnerabilities among adolescent populations.

c. **Stakeholder consultations** in select states representing the north, north-east, west, central and southern regions were conducted.

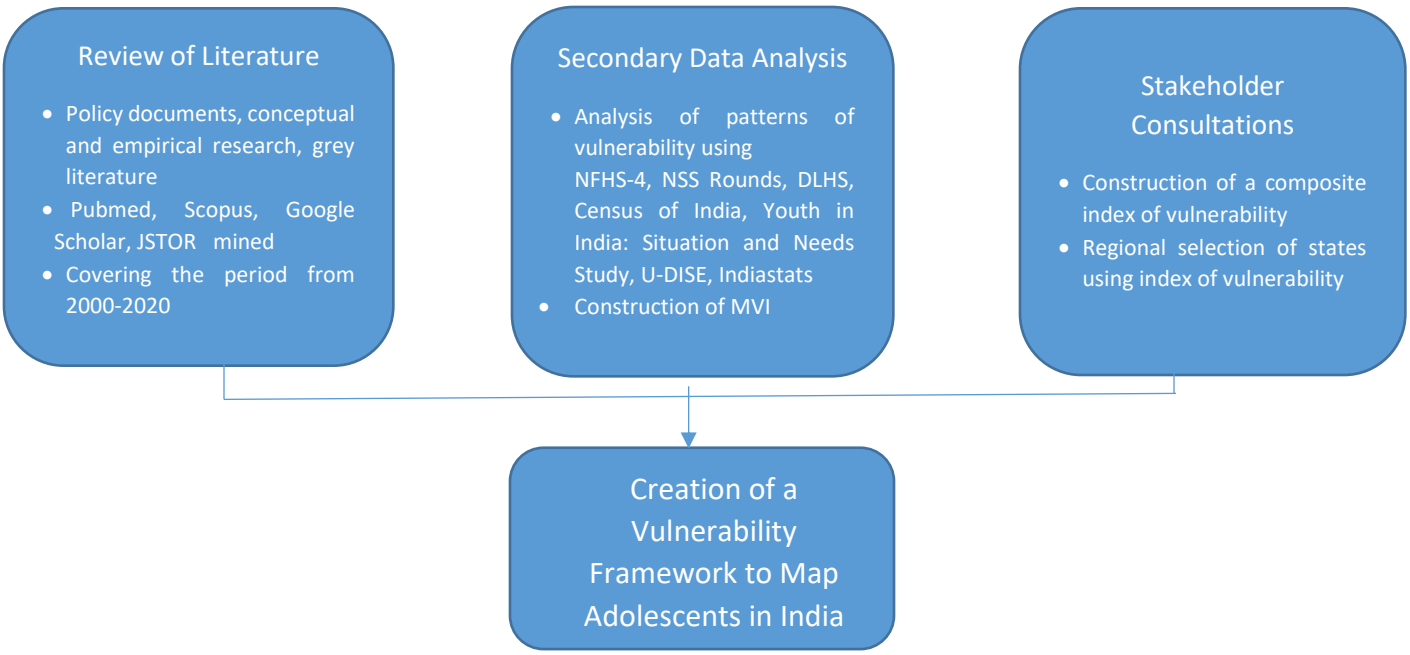


Figure 1 Methodology of Study

The framework developed identified the contributing factors for adolescent vulnerabilities at multiple levels (structural, sociocultural and individual), and resulted in a national-level analysis of vulnerabilities across different adolescent groups. In the second phase of the study, the framework will be implemented across states in order to help them map their vulnerable adolescent populations.

Findings from the Literature Review and Secondary Data Analysis

The status of health during adolescence is crucial to a healthy and productive adulthood, as many diseases in adulthood start during adolescence. A large body of literature indicates that adolescents from lower and middle income countries are vulnerable to a number of health issues, such as sexual and reproductive health, mental health, violence and injuries, malnutrition and substance use.[5] The current COVID-19 pandemic has further exacerbated these risks, particularly for girls and for adolescents from vulnerable

[5] Maliye & Garg, 2017

communities. This section briefly presents the findings of the literature review and secondary data analysis with regard to vulnerabilities among adolescents in India.

Nutrition: As per the Comprehensive National Nutrition Survey (CNNS), 24 percent of adolescents were thin for their age, while 5 percent were obese (as per Body Mass Index, BMI). According to the WHO (2018), Indian adolescents struggle with both thinness (23 percent) and obesity (21 percent). Analysis of NFHS-4 data showed that being underweight was more likely for Scheduled Caste (SC) and Other Backward Class (OBC) girls, compared to upper caste girls; it is not associated with location and decreases with increase in wealth status. Interestingly, Scheduled Tribe (ST) girls and boys are unlikely to be malnourished (either overweight or underweight) compared to other castes. The CNNS report showed that 28.4 percent of adolescents aged 10-19 years had some degree of anemia, while NFHS-4 shows that 56 percent of girls between 15-19 years are anaemic. A logistic regression analysis of NFHS-4 data showed that anemia is more likely among rural, less educated, poor, and lower caste female adolescents.

Sexual and Reproductive Health (SRH): A large proportion of adolescents in India suffer from poor menstrual hygiene practices. Out-of-school and married adolescents particularly remain a population unreached by adolescent-friendly services around SRH.[6] According to the UDAYA study,[7] 11 percent of older unmarried and married girls suffer from menstrual health problems. A number of factors have been identified within the literature as contributing to adolescent vulnerabilities related to SRH. SRH related problems are prevalent on account of a lack of knowledge and awareness,[8] attitudes and practices, including poor gender norms, and the lack of access to adolescent-friendly services.[9] Further, the early and premarital initiation of sexual behavior, which remains unaddressed due to cultural taboos surrounding adolescent sexuality, puts a large population at-risk of sexually transmitted infections (STIs) and reproductive tract infections (RTIs), teenage pregnancies and unsafe abortions.[10] Adolescent girls, particularly from the poorest households, are at higher risk as they were less likely to have used contraception.[11] A review by Barua et al (2020) has shown that 8 percent of adolescent girls aged 15–19 years have begun child bearing, and 3 percent are pregnant with their first child, despite universal knowledge of modern contraceptive methods (>90 percent). Less than a fifth of adolescent girls report using a modern method of contraception. According to NFHS-4, 31.5 percent of married girls between 15-

Key Findings on Adolescent Sexual and Reproductive Health (NFHS-4)

- Use of hygienic methods during menstruation is seen in 50 percent rural adolescents compared to 80 percent urban adolescents
- Less than 50 percent adolescents in the central and eastern states use hygienic methods for menstruation
- Use of hygienic methods for menstruation is the poorest among ST populations, particularly in the central states
- Prioritization of adolescents with lower education, and those from the poorest wealth quintile, Muslim and OBC populations is required

[6] Jejeebhoy & Santhya, 2011
[7] Desai, 2017
[8] Sreekumar et al., 2019
[9] Chandra-Mouli et al, 2015
[10] Jejeebhoy & Santhya, 2011

19 years were child bearing, and teenage pregnancies were more prevalent among ST and SC populations. According to recent data, teenage pregnancy has come down to 7.9 percent.

Gender Based Violence (GBV): GBV remains the single largest cause of morbidity and mortality among girls and women aged 15-49 years, apart from cancer, malaria, traffic accidents and conflicts.[11] According to UNICEF (2014), the highest levels of violent death among adolescent girls are found in South Asia due to poor gender norms. Findings of the UDAYA study (for Uttar Pradesh) revealed that 36 percent of girls had reported experiencing either physical or sexual violence in the last year.[12]

Mental Health: According to the WHO (2019), mental health issues constitute 16 percent of the global burden of disease and injury in the 10-19 years. Anxiety and depression are the eighth and ninth leading causes for death among adolescents.[13] According to the Ministry of Statistics, Planning and Implementation (MoSPI, 2017), suicides among youth (18 and above- below 30 years) form a 33 percent share of the total police-recorded suicide cases. If we consider adolescents of 10-19 years, suicide is also a leading cause of death, contributing to 25 percent of deaths in adolescent boys and 50–75 percent of deaths in adolescent girls.[14] There are not many large scale and representative studies which aim to understand the mental health prevalence among adolescents in India. The National Mental Health Survey (2015-16) shows that 7.3 percent of adolescents between 13-17 years are suffering from mental disorders. Compared to rural and urban areas, adolescents from metro cities are more at risk of mental health problems.[15] Girls bear a disproportionately higher burden of mental health disorders.[16]

Non-communicable Diseases (NCD): The burden of NCDs is rapidly increasing in India. Over 6 million deaths, amounting for 62 percent of total deaths in the country have been attributed to NCDs.[17] Studies conducted across different states have documented the increasing risk of NCDs among adolescent groups due to being overweight and obesity,[18] hypertension[19] and diabetes.[20] One percent of rural and urban adolescent girls (15-19 years) are prone to asthma (which is higher compared to the proportion of boys of the same age group). According to Maliye and Garg (2017), two per 1000 adolescent girls and one per 1000 adolescent boys suffer from diabetes. They are also highly prone to developing eating disorders such as anorexia nervosa or binge eating due to body dissatisfaction and depression.

Substance Use: Use of tobacco and alcohol use are two risk factors for NCDs, as well as causes for cancer, respiratory and cardiovascular diseases. In India, 19 percent of males and 8 percent of females of adolescent age have been reported to be using tobacco in various forms.[21] The UDAYA study showed that

[11] Bishwajit, Sajeeb & Yaya, 2016
[12] Desai, 2017
[13] WHO, 2019
[14] Nebhinani & Jain, 2019
[15] Gururaj et al., 2015-16
[16] Nebhinani & Jain, 2019
[17] ICMR, 2016
[18] Patnaik et al., 2015; Ranjani et al., 2016
[19] Daniel et al, 2020
[20] Kalra & Dhingra, 2018
[21] WHO, 2010

about 1 in 6 older boys reported using tobacco at least once a week in Uttar Pradesh.[22] An analysis of the NFHS-4 data showed the prevalence of tobacco use among girls (15-19 years) to be 1.5 percent, and among boys, to be much higher at 18.4 percent. As per NFHS-4 data, girls and boys from the northeastern states had six and three times higher likelihood of tobacco use, respectively, when compared to girls and boys from the northern states, and higher consumption levels when compared to the other regions. Tobacco use is relatively higher in rural and tribal areas rather than urban areas, and is positively associated with schooling and wealth quintile (NFHS-4). There is no reliable data on alcohol consumption among adolescents aged 10-19 years in India. However, the National Drug Survey (2019) has reported a prevalence of 1.3 percent for alcohol consumption among adolescents from 10-17 years (Ambedkar et al., 2019). Analysis of NFHS-4 data showed alcohol use among girls (15-19 years) to be 0.5 percent, and much higher among boys (15-19 years), at 8.9 percent.

Challenges faced during the COVID-19 pandemic: The COVID-19 pandemic has significantly increased vulnerabilities among adolescents. Issues emerging for adolescent populations range from disruptions to

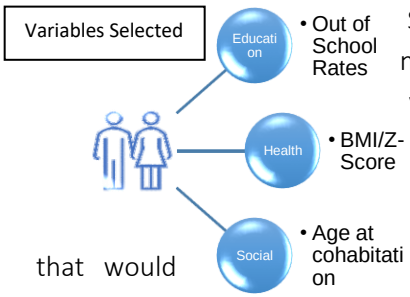
Key Insights from Desk Research

- The diversity among adolescents remains unacknowledged. For example, separate SRH-related needs of married and unmarried adolescents remain unaddressed. Sub-groups of adolescents, such as out-of-school and married girls, are particularly less likely to be reached by FLWs.
- The focus on health of younger adolescents (10-14 years) is largely missing, although they may be at greater risk for dropouts, migration and involvement with family in labour, GBV, STIs, and mental health issues. Younger adolescents also lack information and services related to menstruation, sexual health, contraception, and HIV/AIDS.
- Rural and urban adolescents may face different kinds of challenges .Urban adolescents are more vulnerable to poverty, migration, lack of access to basic facilities and stress, while rural adolescents are faced with poor sociocultural norms leading to child marriages, IPV, dropouts, and menstrual hygiene-related problems. Rural adolescents are also at-risk for seasonal migration to urban areas, which can increase their vulnerability
- Locational and regional differences in adolescent vulnerabilities are present . The northeastern and eastern states, particularly Bihar, Jharkhand, West Bengal and Odisha, and central states such as Madhya Pradesh, Uttar Pradesh, and Chattisgarh stand out in terms of adolescent vulnerabilities. In other regions, Rajasthan, Gujarat, Maharashtra, Andhra Pradesh and Telangana have a high burden of vulnerable adolescents.
- Certain social groups continue to experience a high degree of vulnerability, despite affirmative action, namely ST and Muslim populations. ST adolescents are more at-risk of teenage pregnancies, while ST and Muslim adolescents are more at-risk of STIs and tobacco use. Muslim boys are more at-risk of undernutrition and Muslim girls are more at-risk of dropouts. SC and OBC adolescents are at-risk for poor outcomes related to SRH, mental health, education and child labour, but have shown improvements following access to services.

[22] Desai, 2017

schooling and dropouts (particularly among girls); inaccessibility and unaffordability of sanitary napkins causing adolescents to revert to unsanitary methods, including the use of cloth and homemade napkins;[23] social isolation and increased mental health problems,[24] particularly among girls.[25] Further, for girls, the lockdown posed additional challenges such as the increased burden of domestic work, reduced meals,[26] an increase in child marriages,[26] and gender based violence.[27] According to Childline, 35 percent of the calls received during lockdown were related to child marriage.[28] The National Commission for Women (NCW) has also noted a steep rise of about 94 percent in cases of violence against women from 23 March to 16 April 2020. Childline received 92,000 calls reporting child abuse and violence.[29]

Findings from the Stakeholder Consultation Meetings



State level stakeholder consultation meetings (SLCMs) were an important method proposed by KHPT to undertake the development of the vulnerability framework, to map the most vulnerable adolescents with the top most needs in India. The objectives of the SLCMs were to gather field level inputs, to understand the challenges and vulnerabilities faced by adolescents across different contexts, and develop a robust framework that would be responsive to these differences. Accordingly, it was decided to identify six states for the consultation, which regionally represent adolescent issues across India . The six states were selected through the development of a composite depravity index (CDI), which was calculated using three indicators – **out-of-school population, BMI/Z-scores, and age at social cohabitation, to identify health, education and social dimensions of vulnerability.** The data (drawn from NFHS-4) for the construction of the index was further disaggregated in order to identify the most vulnerable sub-groups within each state. The states were selected based on the number of vulnerable sub-groups in each state, and a comparison with other conditions such as the number of high priority districts and lab districts (for implementation of RKSK programme). Himachal Pradesh was further added to this list based on the

Urban		Rural	
Male	Female	Male	Female
SC	SC	SC	SC
ST	ST	ST	ST
OBC	OBC	OBC	OBC
Others	Others	Others	Others

Data Disaggregation

Figure 2 Construction of CDI

[23] Bahl et al, 2021
[24] Favara et al, 2021
[25] Centre for Catalyzing Change, 2020
[26] Rao, 2020; Swamy, 2020; UNFPA, 2020
[27] UNPFA, 2020; Guessom et al., 2020
[28] Bahl, Bassi & Arora, 2021
[29] Bahl et al., 2021

suggestions of the Ministry of Health and Family Welfare (MoHFW) to represent a hill state. The final list of states is presented below.

Table 1 State Consultation Meeting Schedule

Region	State	NGO Partner to Undertake the Consultation	Mode	Date
North	Rajasthan	KHPT (with support from HLFPPT)	Virtual	15 April, 2021
North-East	Nagaland	Kripa Foundation	In-person	20 November, 2020
East	Bihar	CARE	Virtual	23 June, 2021
West	Gujarat	Chetana	Virtual	30 April, 2020
Central	Uttar Pradesh	Sarathi Foundation	Virtual	10 May, 2021
South	Andhra Pradesh	KHPT (with support from World Vision)	In-person	9 April, 2021
Hill State	Himachal Pradesh	KHPT (with support from Jagori)	Virtual	27 May, 2021

The consultations across the states included participants and experts from state government departments, non-government and civil society organizations, academic institutions, and adolescent representatives.[30] (A full list of participants is given in the full report). The workshop was organized into three sessions:

1. Technical Session 1: On Specifying Adolescent Vulnerabilities - This included small group and whole group discussions focused on defining and identifying the specific vulnerabilities and vulnerable adolescent populations in the context of each state.
2. Technical Session 2: Programming for Adolescents – This was comprised of a whole group discussion on the various state and non-state programmes for adolescents, with a primary focus on the RKSK programme
3. Technical Session 3: Adolescent Voices – This comprised a first-hand account from adolescent representatives regarding their specific needs, challenges and demands for services

The SCLMs were useful in identifying the specific nature and pathways to vulnerability for adolescents across the different states. The table below presents the findings from the different states. The SLCMs reiterated the importance of adopting an ecological approach (i.e., considering not just individual factors, but the interactions between individual, socio-cultural and structural factors) in addressing adolescent vulnerabilities.

[30] Where adolescent participants were not able to directly join the consultation workshop, FGDs were conducted separately with them, and their opinions were shared during the consultation.

Table 2 Patterns of Adolescent Vulnerabilities across states

Region	State	Primary Vulnerabilities	Vulnerable populations	Geographical Spread	Pathways to Vulnerability
North	Rajasthan	• SRH (specifically menstrual hygiene) • Child marriage, Gender Based Violence • Mental health and substance use	• Girls, particularly from rural, lower caste and tribal populations • Older and unmarried adolescent girls	South-west Rajasthan and tribal belt, which are difficult to access terrains and see the practice of specific social traditions	Structural and Sociocultural
North-East	Nagaland	• Substance use and associated problems • SRH (child marriage and teenage pregnancy) • School dropout • Child trafficking and child labour	•Rural and urban adolescents •Girls (particularly early married) •Children in conflict with law •Street children	Kohima, Dimapur, Tuensang, Peren, Longleg, Mon, Kiphire, and Noklak sharing borders with Myanmar and other states	Structural, Individual
East	Bihar	• Substance Use • Migration • Child marriage and safety for girls • SRH	• Girls • Rural adolescents • Mahadalits, adolescents from lower wealth quintiles	Kosi belt and border districts like Kishanganj, Araria	Structural and Individual
West	Gujarat	• Lack of information and education, leading to vulnerabilities around SRH and nutrition • Migration and child labour • Child marriages • SRH • Mental Health	• Tribals, migrants, and working adolescents • Older adolescents • Girls	Eastern tribal belt; Kutch and Saurashtra; urban centres and districts with high SC populations	Structural and Environmental
Central	Uttar Pradesh	• Child labour • Child marriage • GBV	• Working adolescents • Girls • SC/ST and Muslims	Border districts, areas surrounding brick kilns, and traditional industries such as carpet weaving, bangles and glass industry belts; urban slum areas; Eastern and Southern UP	Structural and Sociocultural; Generational
South	Andhra Pradesh	• Child marriage • Child trafficking • Child labour • SRH • Substance abuse • Malnutrition	• SC/ST and BPL • Girls	Krishna, Guntur, Visakhapatnam, and West Godavari	Structural and Sociocultural
Hill State	Himachal Pradesh	• Substance use • Mental Health • Anaemia • Poor gender norms	• Younger adolescents • Girls	Chamba, Sirmaur, Kangra and the Punjab border	Individual and Sociocultural

For example, at least in two state contexts (Rajasthan and Gujarat), participants opined that sociocultural contexts (e.g., poor gender norms; lack of caring adults who can mentor adolescents) and the lack of supportive environments for development of adolescents put them at greater risk. In Gujarat and a large majority of other states, including Uttar Pradesh, Bihar and Andhra Pradesh, participants mentioned that structural factors, such as inter-generational poverty, lack of education and employment opportunities, migration, and labour, contribute strongly to adolescent vulnerabilities. Further, political instability and previous health-related challenges such as the HIV/AIDs pandemic have affected subsequent generations of adolescents in states like Nagaland. In Himachal Pradesh alone, individual and lifestyle factors were pointed out as primary contributing factors to adolescent vulnerabilities. SRH, child marriages, migration and labour, and substance use were the issues recurrently identified across states.

The discussions critically pointed to the diversity among adolescents and the importance of addressing their needs in a sensitive and context-specific manner. In terms of suggestions for addressing adolescent vulnerabilities through the RKSK programme, the discussions highlighted the following needs:

- The need to expand the RKSK programme within certain states (e.g., in Rajasthan, Gujarat, Andhra Pradesh, Himachal Pradesh, and Uttar Pradesh) to all districts.
- With the universal distribution of IFA, sanitary pads, the need to strengthen other components such as Peer Education and expand it to all districts.
- Further strengthening implementation by adding adequate manpower (e.g., counsellors, medical officers, etc.) to reduce the burden on key personnel and nodal officers. Further, strengthened training for personnel was suggested to improve implementation
- The need to address geographical challenges (for e.g., hill states, deserts, or hard to reach areas) by increasing the number of Adolescent Friendly Health Clinics (AFHCs), counsellors, and frontline workers, as access remains a key challenge. Further, increasing services in urban areas was also suggested (e.g., in Gujarat, Rajasthan and Himachal Pradesh)
- Further, budgetary provisions were highlighted as a way to improve implementation. For example, the inclusion of components such as transport costs for peer educators can ease implementation challenges (e.g., Rajasthan, Gujarat).
- The need for stronger guidelines on training and implementation of the peer educators component, addressing the challenges of identifying and retaining peer educators and master trainers, and planning training cycles such that they do not coincide with critical transitions among students was emphasized (e.g., in Gujarat, Himachal Pradesh and Uttar Pradesh).
- The importance of coordination between line departments, such as Education, Women and Child Department, and the Youth and Sports Department was brought up. (e.g., in Rajasthan, Gujarat, Himachal Pradesh, Andhra Pradesh, Nagaland and Uttar Pradesh). Collaboration with other stakeholders to cater to vulnerable adolescents, such as those who are orphaned, living with HIV/AIDS, disabilities, different sexual orientations, and those out-of-school, was emphasized.
- Prioritizing within the six components of the RKSK programme based on need was strongly suggested. This can allow for addressing the increasing burden of mental health and substance use related issues more effectively, on par with other components such as menstrual health and nutrition. (e.g., Participants in Rajasthan, Gujarat, Andhra Pradesh, and Himachal Pradesh shared this opinion).

- Aligning the programme with the interests and needs of adolescents was suggested as a way to increase demand for services (e.g., in Himachal Pradesh)
- Further visibility for the RKSK through community mobilization, and familiarizing communities with programme components was also suggested as a way to increase demand for services (e.g., in Himachal Pradesh, Andhra Pradesh, Nagaland and Uttar Pradesh)
- Collaborations with civil society organizations and NGOs to increase reach, and develop innovative strategies to reach adolescents was suggested to strengthen the programme (E.g., in Andhra Pradesh, Uttar Pradesh and Himachal Pradesh).

Development of the Vulnerability Framework for Mapping the most Vulnerable Adolescents in India

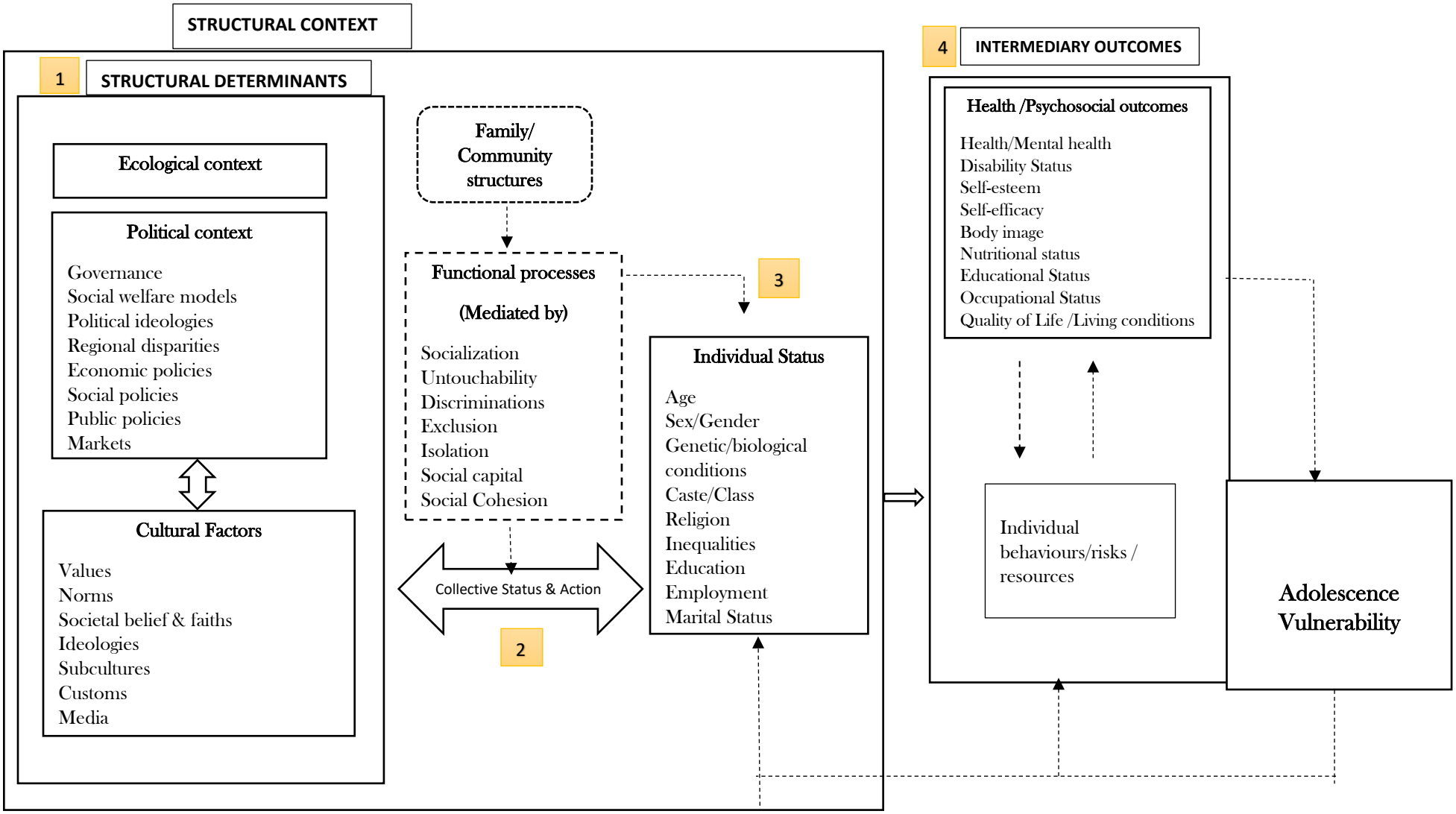
The review of literature, secondary data analysis and stakeholder consultations provided significant inputs for developing the conceptual framework to map adolescents with the highest vulnerabilities and needs in India. The purpose of the framework was to identify the influencing factors and pathways to vulnerability, thus providing an understanding on how individual states can respectively identify their vulnerable populations in order to specifically cater to their needs.

For the purposes of the framework, vulnerabilities are understood as "exposure to the possibility of harm, and a lack of, or limited, ability to protect oneself from that harm".[31] The definition captures the account of vulnerabilities as embedded within ecological and resilience theories, and identifies the dual nature of risks as:

i. Certain behaviours (e.g., smoking, unprotected sexual intercourse, etc.), that may increase the likelihood of experiencing negative outcomes (e.g., such as emphysema, or STIs, respectively)
ii. Contexts or particular circumstances (such as living in poverty) that may put specific adolescent populations 'at-risk'.

Drawing upon frameworks such the Social Determinants of Health Framework[32] and Social Determinants of Mental Health Framework,[33] the definition of risks was chosen to reflect the influence of structural, socio-cultural and environmental contexts, in addition to individual factors that increase the likelihood of negative outcomes for adolescents. Further, drawing upon ecological and resilience theories, our framework also hypothesized the mediating (i.e., exacerbating and mitigating) effects of structural, sociocultural and individual factors in determining adolescent vulnerability.

[31] Tobian, 2015
[32] Solar & Irwin, 2010
[33] WHO and the Calouste Gulbenkian Foundation, 2014


STRUCTURAL CONTEXT
1
STRUCTURAL DETERMINANTS
Ecological context
Political context
Governance
Social welfare models
Political ideologies
Regional disparities
Economic policies
Social policies
Public policies
Markets
Cultural Factors
Values
Norms
Societal belief & faiths
Ideologies
Subcultures
Customs
Media
Family/ Community structures
Functional processes
(Mediated by)
Socialization
Untouchability
Discriminations
Exclusion
Isolation
Social capital
Social Cohesion
Collective Status & Action
2
3
Individual Status
Age
Sex/Gender
Genetic/biological conditions
Caste/Class
Religion
Inequalities
Education
Employment
Marital Status
4
INTERMEDIARY OUTCOMES
Health /Psychosocial outcomes
Health/Mental health
Disability Status
Self-esteem
Self-efficacy
Body image
Nutritional status
Educational Status
Occupational Status
Quality of Life /Living conditions
Individual behaviours/risks / resources
Adolescence Vulnerability

Understanding the Vulnerability Framework

1. An individual's vulnerability is influenced by factors such as his/her age, gender, caste/class, religion, socio-economic status, education, employment, biological and genetic factors. The valuation of the different identifying characteristics of the individual (e.g., age, gender, caste, etc) in society contribute to vulnerability.

2. The valuation of individual identities and status is shaped by a set of structural, ecological and cultural determinants such as the environment, political systems and processes (which are reflected in provisions, programmes and policies for adolescents).

3. Individual positions are linked to structural determinants through a set functional intermediary processes such as those of socialization, social cohesion, exclusion, discrimination, social network, and social capital, provided via the family and the community.

4. Individual positions are linked to structural determinants bi-directionally. Provisions to address social inequities (e.g., social policies) may be taken up, negotiated or resisted by social actors, based on individual and cultural choices and values.

5. The set of structural determinants, social processes, and individual status, together constitute the structural context, which influence the intermediary outcomes such as individual behaviours, attitudes, perceptions, beliefs, and judgements, as well as outcomes related to nutrition, health, education, employment etc.

6. The sum total effects of the intermediary outcomes is what is finally understood to contribute to an adolescent's vulnerability status, keeping in mind the protective and risk factors at the structural level (e.g., availability of schools), socio-cultural level (e.g., positive role models, or strong parent-adolescent relationships;), and individual level (e.g., out-of-school status), which affect the intermediary outcomes (e.g., self-esteem, knowledge about risk behaviours, etc.).

Application of the Vulnerability Framework

The vulnerability framework identifies an inter-related, dynamic and reciprocal set of factors that contribute to adolescent vulnerabilities. These factors occur at various levels – Structural and Environmental, Sociocultural and Individual. The framework also recognizes the role of protective and risk factors that contribute to adolescent vulnerabilities. Based on this framework, we provide two sets of tools (one qualitative and the other quantitative) in order to implement the framework across individual states. The tools are explained below:

A. Qualitative analysis using the Vulnerability Matrix.

The vulnerability matrix attempts to identify the adolescent populations in each state with the highest vulnerabilities, along with the specific nature of these vulnerabilities using a matrix (given below).

Table 3 Vulnerability Matrix for Qualitative Analysis

Date:	**Filled by:**	**Organisation:**
With Inputs from:		
(List all the stakeholders at the consultation who have given inputs for this matrix)		
Geography covered:		
Vulnerable Adolescent groups:		
(Describe in detail the groups that are most vulnerable within your context)		

Domain:	**Adolescent Health Challenge:**				
	Indicator	**Positive Factor**	**Explanation**	**Negative Factor**	**Explanation**
	State per capita expenditure on education				
	State per capita expenditure on health				
	Availability of adequate **primary and secondary** schools				
	Access to **primary and secondary** schools				
	Affordability of **primary and secondary** schools				
	School quality (**infrastructure, including toilets and water; pupil-teacher ratios; regularity of classes, etc**)				
	Vocational training facilities				
	Availability and access to skilling/sex education and empowerment programmes				
	Availability of adequate PHCs/AFHCs				
	Access to PHCs/AFHCs				
	Availability of SRH related provisions and services				
	Access to SRH related provisions and services to **married and unmarried** adolescents				
	Availability of family planning related provisions and services				
	Access to family planning related provisions and services to **married/ unmarried** adolescents ; **boys and girls**				
	Household level income and consumption				
	Sanitation & hygiene facilities at household and community level				
	Community awareness/ sensitisation /education on adolesecent issues or gender				
Structural	Employment/unemployment conditions				

	Availability and efficacy of legal mechanisms				
	Political stability				
	Ecological conditions (natural disasters like floods, earhquakes heatwaves, etc)				
Other Structural Factors					
	Caste/religious and other discriminations				
	Gender norms				
	Sociocultural practices/taboos				
	Family size preferences				
	Family interest in education				
	Parents educational levels and exposure				
	Parent-daughter relations				
	Peer influence				
Sociocultural Factors	Media Exposure				
Other Sociocultural Factors					
	Agency				
	Self-esteem				
	Disability/illness				
	Interest and aspirations for Education				
	Premarital sexual debut / exposure				
	Knowledge and awareness about SRH and family planning				
	Peer support/reliance on peers for SRH and other knowledge and issues				
Individual Factors	Life and social skills				
Other Individual Factors					

The matrix must be filled out through a consultative process involving grass-root/frontline workers, state departments working with adolescents, civil society and NGO partners working with adolescents, and adolescent representatives themselves. Based on inputs received:

1. Identify the vulnerabilities or challenges that are most prevalent (that are faced by the greatest majority of adolescents in the state), or specific to the state context
2. For each vulnerability, identify the domain
3. For each vulnerability (e.g., dropout, child marriage, child labour, etc.), identify the pathways using the matrix to list the indicators at the structural, sociocultural and individual levels that may act as protective or risk factors for vulnerabilities. For each indicator, consider
    i. How it relates to the specific vulnerability identified; consider whether the indicator contributes to increasing adolescent vulnerability (i.e., works as a negative factor) or reducing adolescent vulnerability (i.e., works as a positive factor) and tick the appropriate column.
    ii. Add an explanation for why or how the indicator works as a negative or positive factor
    iii. If the adolescent vulnerability is caused by factors other than the ones listed given in the matrix, identify whether this is a structural/sociocultural/individual level factor. (For guidance on how to classify as structural/sociocultural/individual, the framework can be used).
    iv. Add this in the additional space provided to identify 'Other indicators/factors', repeating steps i and ii for these factors.
4. The final analysis of the specific problems and pathways listed in the matrix can provide directions for contextualizing programmes for the most vulnerable adolescents

B. Multi-dimensional Vulnerability Index

A second process for identification of the nature of vulnerabilities for adolescents at a macro-level is through the quantitative construction of a multi-dimensional vulnerability index (MVI) using largescale datasets such as the NFHS and DLHS. The MVI is useful to identify vulnerabilities at the state and district levels.[34]

Steps for Construction of the MVI:

[34] Sample limitations at district level need to be considered for MVI construction.

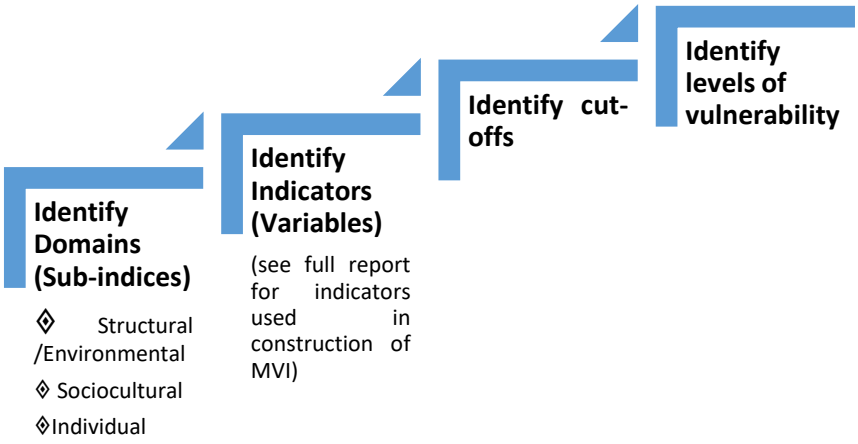


Figure 3 Steps to Calculate the MVI

To estimate each of these sub-indices, the variables are standardized using Min-Max scaling. The standardization is performed under the following scheme:

$$z_1^s = \frac{value_{1,s} - minimum_1}{maximum_1 - minimum_1}$$

Where, $value_{1,}$ is the value of variable 1 observed in state 's'. Maximum and minimum of variable 1 across all states are represented as $maximum_1$ and $minimum_1$ respectively.
Further, using the standardized values for each variable, the sub-indices are computed for each state under the stipulated themes. The computation for sub-indices for each state is performed using the following formula

$$SVI = \frac{\sum_1^{14} a_i}{14}$$

$$IVI = \frac{\sum_1^{9} b_i}{9}$$

$$SCVI = \frac{\sum_1^{6} c_i}{6}$$

$$EVI = \frac{\sum_1^{2} d_i}{2}$$

where a_i, b_i, c_i, and d_i are standardized variables classified under the theme of structural, individual, social, and environmental vulnerability, respectively. Finally, the composite score or the multidimensional vulnerability index is computed using equal weight linear aggregator, represented as:

$$MVI = \frac{StVI + IVI + SVI + EVI}{4}$$

The obtained scores will range between 0 and 1. Any score near to 1 exemplifies higher vulnerability, whereas scores near to zero implies lower vulnerability. Therefore, MVI presents a continuum of vulnerability under the selected domain. Based on the score obtained, further classification of vulnerability can be made using the Common Vulnerability Scoring System[35] or the Multi-objective Optimisation Problem[36] to overcome inconsistency issues in classification, as follows:

	Vulnerable	0-0.33
	Moderate vulnerable	0.34-0.49
	High vulnerable	0.50-0.69
	Extremely vulnerable	0.70-1

Figure 4 Common Vulnerability Scoring System Classification

TIER I – Most Vulnerable

to

TIER VI – Least Vulnerable

Figure 5 Multi-Objective Optimisation Problem Scoring

To demonstrate the outcomes of this process, below we present the outcomes of the state-level analysis using the MVI:

Table 4 Classification of States on MVI

State	IVI	SCVI	SVI	EVI	MVI	Level of vulnerability (based on cut-offs)	Hierarchy of vulnerability in multiple tires (based on Pareto optimality)
Andhra Pradesh	0.29	0.39	0.41	0.50	0.40	Moderately vulnerable	Tier V
Arunachal Pradesh	0.54	0.36	0.54	0.50	0.48	Moderately vulnerable	Tier II
Assam	0.40	0.38	0.61	1.00	0.60	High vulnerable	Tier II
Bihar	0.54	0.70	0.57	0.50	0.58	High vulnerable	Tier I
Chhattisgarh	0.48	0.46	0.41	0.00	0.34	Vulnerable	Tier IV
Goa	0.41	0.26	0.48	0.00	0.29	Vulnerable	Tier V
Gujarat	0.51	0.35	0.54	0.00	0.35	Moderately vulnerable	Tier IV
Haryana	0.36	0.30	0.46	0.50	0.40	Moderately vulnerable	Tier IV
Himachal Pradesh	0.38	0.28	0.34	0.50	0.38	Moderately vulnerable	Tier IV
Jammu And Kashmir	0.42	0.37	0.49	0.50	0.44	Moderately vulnerable	Tier II
Jharkhand	0.42	0.49	0.65	0.50	0.51	High vulnerable	Tier I
Karnataka	0.51	0.35	0.45	0.50	0.45	Moderately vulnerable	Tier III

[35] Ram, Cotton, Frederick, & Elliot, 2019
[36] Bera, Das, & Mazumdar, 2019

Kerala	0.36	0.34	0.32	0.50	0.38	Moderately vulnerable	Tier IV
Madhya Pradesh	0.43	0.46	0.57	0.00	0.37	Moderately vulnerable	Tier III
Maharashtra	0.39	0.34	0.45	0.50	0.42	Moderately vulnerable	Tier III
Manipur	0.32	0.32	0.58	0.50	0.43	Moderately vulnerable	Tier V
Meghalaya	0.64	0.44	0.60	0.50	0.55	High vulnerable	Tier I
Mizoram	0.35	0.36	0.50	0.00	0.30	Vulnerable	Tier IV
Nagaland	0.64	0.41	0.57	0.00	0.41	Moderately vulnerable	Tier III
Odisha	0.42	0.45	0.47	1.00	0.59	High vulnerable	Tier II
Punjab	0.32	0.39	0.40	0.00	0.28	Vulnerable	Tier V
Rajasthan	0.39	0.43	0.46	0.00	0.32	Vulnerable	Tier IV
Sikkim	0.35	0.28	0.31	0.00	0.23	Vulnerable	Tier V
Tamil Nadu	0.40	0.31	0.37	1.00	0.52	High vulnerable	Tier III
Tripura	0.19	0.36	0.54	0.50	0.40	Moderately vulnerable	Tier V
Uttar Pradesh	0.46	0.60	0.51	0.50	0.52	High vulnerable	Tier I
Uttarakhand	0.37	0.33	0.40	1.00	0.53	High vulnerable	Tier IV
West Bengal	0.36	0.43	0.52	0.50	0.45	Moderately vulnerable	Tier III
Telangana	0.40	0.54	0.33	0.50	0.44	Moderately vulnerable	Tier III

The analysis revealed the following information:

1. The Individual Vulnerability Index (IVI) across states ranges from 0.19 to 0.64. Six states have high IV scores: Arunachal Pradesh, Bihar, Gujarat, Karnataka, Meghalaya and Nagaland.
2. Social Vulnerability Index (SCVI) scores range from 0.26 to 0.70 across states. Three states appear highly vulnerable on SCVI: Bihar, Uttar Pradesh and Telangana.
3. Structural Vulnerability Index (SVI) scores range from 0.31 to 0.65 across states. 13 states are highly vulnerable with respect to SVI: Gujarat, Arunachal Pradesh, Madhya Pradesh, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura.
4. Environmental Vulnerability Index (EVI) scores range from 0.00 to 1.00, and very few states have a zero vulnerability score as they did not face any major natural calamities or endemic conditions during the reference period of calculation of score. 16 states were highly vulnerable during this period on EVI
5. Four states, namely, Bihar, Jharkhand, Meghalaya, and Uttar Pradesh, were found most vulnerable in terms of Multidimensional Vulnerability (MVI)
6. Overall, adolescents of eastern and northeastern regions were found most vulnerable (resonating with the findings of the review of literature and secondary data analysis)
7. The inclusion of the environmental dimension provided new insights into the adolescent vulnerability dialogue, as it highlighted the vulnerability for adolescents in states performing

relatively well on other dimensions (e.g., Tamil Nadu) and reiterated the importance of also paying attention to the temporal dimensions of vulnerability.

8. Structural factors have a key role to play in the vulnerabilities of adolescents in major states.

Conclusion

Adolescents constitute 20 percent of India's population and are a highly diverse group. The desk research and consultations together reiterate the need to pay further attention to this population. The literature review and consultations have provided insights for how adolescent health can be further prioritized through the opportunity offered by the RKSK programme – for example, by paying specific attention to younger adolescents and boys as well. The most significant challenges for adolescent health remain issues of nutrition, SRH, child marriage and gender based violence, substance use and mental health. Structural factors (such as access to information and services, education, employment, healthcare and transportation facilities, strength of implementation of programmes and policies), and sociocultural contexts (i.e., poor sociocultural and gender norms, lack of supportive environments, adult role models and mentors) have emerged as the significant factors predisposing adolescents to vulnerabilities. Together, this manifests as inadequate adolescent friendly, sensitive, non-stigmatizing, and confidential services and appropriate counselling and mentoring to address the developmental needs of this age group.

In terms of sub-groups, while girls were identified across contexts as vulnerable, the specific groups of girls (e.g., older, younger, married, unmarried, urban, rural), vary across state contexts. Boys appear to be specifically vulnerable for problems related to substance use, migration and labour. Further vulnerable groups such as working adolescents, out-of-school adolescents, adolescents from socially marginalized communities (such as SC/ST and Muslim communities), orphan and street children, adolescents from BPL families, etc. have also emerged as most vulnerable, further reiterating the importance of differentiated and contextualized programming.

Overall, gaps still exist in our understanding of what works in improving adolescent health. Studies on the efficacy of different intervention models, ranging from community-based approaches to technology-assisted practices and Social and Behaviour Change (SBC) are still urgently required. Further disaggregated research on how vulnerabilities affect adolescents differently, from married to unmarried, school-going and our-of-school, working, urban, rural, etc. is required. Literature suggests that more intervention research and study designs that can provide accurate information on knowledge, attitudes, practices, behaviours, as well as outcome indicators across all six strategic priority areas of the RKSK is needed. Ecological approaches for understanding and planning for adolescent health that recognize the multiple and multi-directional influences on health behaviours and outcomes is much required with respect to programmes and policy.

Recommendations for Adolescent Programming

Specific inputs drawn from the review of literature, data analysis, and consultations to strengthen programming for adolescents are given below.

- **Prioritization of adolescent health**: Addressing adolescents as a priority group in themselves, and a focus on their overall well-being can help mimic the achievements made in relation to maternal and child health-related targets.
- **Vulnerability-specific approach**: Adopting a vulnerability-specific, rather than a geographic approach, to contextualize programmes, can significantly impact adolescent populations.
    - The tools and procedures to map vulnerable adolescents and their needs (at the state level) given in this report, can also be extended to the district and sub-district levels.
    - Adopting a sub-unit focus within the programme in this manner can help make adolescent interventions manageable and responsive.
    - The development of plans and tools to adopt a sub-unit focus, in consultations with the states, can be undertaken in the second phase. This will offer opportunities to contextualize programme content according to the differences between, and specific challenges faced by, vulnerable adolescent populations.
    - The sub-unit approach can further help in identifying the newer and emerging areas of vulnerability for specific groups, such as mental health, stress, anxiety, influence of peers, and social media and substance use. This can help the programme achieve the desired results on all six target areas of RKSK, beyond nutrition and SRH.
- **Strengthen Demand for Services**: In addition to the strong supply-side focus, adopting demand generation activities, by involving panchayats and other local stakeholders such as the Village Health, Sanitation, and Nutrition Committees (VHSNCs) can improve the knowledge of available provisions among beneficiaries and contribute to improving quality of services.
- **Using attractive and transformative approaches to programme**: Digital campaigns, gender-transformative programming, inclusion of components such as activity-based life skills education, improved parent-child relationships and other non-institutional programme formats can strengthen adolescent interest in programmes.
- **Creation of safe and open spaces for adolescents to discuss their issues**: The findings of the study show a strong need for safe spaces for adolescents to come together to discuss their concerns. Strengthening peer-led outreach strategies in community, empowerment-based approaches to discuss gender, masculinity, and social issues that affect adolescents, can provide opportunities to address these concerns.
- **Inclusion and sensitization of caregivers and adults**: Adults, including parents, teachers, frontline health workers, medical staff and other community stakeholders may not have the adequate skills and knowledge to address adolescent concerns. Conservative attitudes among adults may limit opportunities for adolescent development and access to services. Hence training for adults can bring critical changes to programme outcomes.
- **Collaborations with grass-root agencies**: Collaborations with local organizations, NGOs and civil society can help increase reach and can have the benefits of bringing in creative and wider strategies to address adolescents, and areas that are not key focus areas of the RKSK programme.
- **Stronger monitoring and evaluation systems**, **public sharing of data on programmes, research and evidence-led interventions**: This can ensure quality, accountability and responsiveness of programmes.

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