ORIGINAL ARTICLE

# A MULTI-DIMENSIONAL ASSESSMENT OF PHYSICAL AND PSYCHOSOCIAL HEALTH IN ADOLESCENTS: A FACILITY AND SCHOOL-BASED CROSS-SECTIONAL STUDY UNDER THE RKSK PROGRAM

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## ABSTRACT

**Introduction:** India has the largest adolescent population in the world that is vulnerable to various physical and mental health ailments. This study aims to describe the prevalence and clinical profile of health conditions outlined in the RKSK program.

**Methods:** This dual-setting, mixed-methods, cross-sectional study was conducted at an Adolescent Friendly Health Clinic (AFHC) and public schools. The data collected at the facility were from AFHC records. In the school setting, the data collected were grouped into 5 categories: baseline sociodemographic data, nutritional status, physical examination by a paediatrician, psychosocial risk assessment (SSHADESS assessment tool), and management of identified illnesses. The collected data were analysed statistically and qualitatively.

**Results:** In the facility-based analysis (n=2034), 717 utilised clinical services, and 667 accessed counselling services. Among those who availed clinical services in the strategic priorities (n=396), about 67% had nutritional issues, 17% had reproductive health concerns, and 13% had mental health problems. In the school-based study, the mean age was 16.62 ± 1.33 years (n = 512). About half of adolescents (50.4%) were undernourished, and 2.7% were obese. On examination of the 6 strategic priorities, 68.5% had nutritional issues, 3.7% had RTI, and 0.4% had injuries and violence. About 10.1% had mental health concerns like anger, sleep deprivation, and depression. Qualitative analysis through the SSHADESS framework revealed that the deep-seated issues—including domestic violence, parental substance abuse, and emotional issues —frequently manifest as severe mental health challenges.

**Conclusion:** This study highlights a critical intersection between physical undernutrition and psychosocial ailments among adolescents. Qualitative analysis revealed the deep-seated issues that often remain undetected in routine clinical settings.

## ARTICLE HISTORY

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## KEYWORDS

RKSK, Adolescent Health, SSHADESS, Underweight, Mental Health, India.

## Introduction

India has the largest adolescent population in the world, with 253 million adolescents.[1] The adolescent period, spanning ages 10-19, is a transitional phase between childhood and adulthood. During this phase, adolescents require adequate nutrition and education. They are susceptible to various health problems, including anemia, undernutrition, obesity, reproductive tract infections (RTI), mental illnesses, drug abuse, injuries, unsafe sex, and unwanted pregnancies.[2] Adolescents are the future of the nation, and their physical and mental well-being must be ensured for the nation's prosperity and to achieve Sustainable Development Goals 2030.[3] Recognising the importance of adolescents' health, the Government of India launched a flagship program, 'Rashtriya Kishor Swasthya Karyakram' (RKSK), in 2014.[4] The program has six strategic priorities - nutrition, sexual and reproductive health, mental health, injuries and violence (including gender-based violence), substance misuse, and non-communicable diseases.[5] These services are provided under three areas: community-based, school-based, and facility-based. Facility-based services are delivered through Adolescent-Friendly Health Clinics (AFHC) housed in District Early Intervention Centres (DEIC).[5] The list of services provided under AFHCs is shown in Table 1. There has been a paradigm shift in services under the RKSK program – from treatment of diseases in adolescents to prevention and counselling services for them.[4] The target population for the RKSK program includes early adolescents (ages 10-14) and late adolescents (ages 15-19). The program also has a special community focus on adolescents from marginalised and vulnerable populations, such as those in urban slums, tribal areas, orphans, and juvenile homes.[4]

Though the RKSK program was launched in 2014, many studies have reported that their services were not fully utilised.[6] There were many reasons for the

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underutilisation of the services. Adolescents often lack awareness of, or autonomy to access, the clinical and counselling services provided under the RKSK program. A scoping review by Bahl D et al in 2023 reported that the AFHC's are not fully compliant with the benchmarks set by the Government of India and identified many gaps, including a lack of privacy space, a lack of information and education materials, and a judgmental attitude of caregivers.[2] A study by Dara S et al in Rajasthan reported that only 28% of adolescents were aware of the AFHCs.[6] A study by Triveni et al. from Andhra Pradesh found that AFHCs lack dedicated space and sufficient staff.[7]

**Table 1:** Package of services provided under AFHC[4]

| Sl. No | Service |
|---|---|
| 1 | BMI screening (Height-Weight measurement), Blood Pressure (BP) checking |
| 2 | Haemoglobin (Hb) testing/Blood sugar |
| 3 | RTI/STI management |
| 4 | Antenatal Care (ANC) for pregnant adolescents |
| 5 | Counselling on Nutrition, Puberty-related concerns, Premarital Counselling, Sexual Problems, Contraception, Abortion, RTI/STI, Substance Abuse, Learning problems, Stress, Depression, Suicidal Tendency, Violence (including GBV), Sexual Abuse, Risky Behaviour, Other Mental Health Issues, Healthy Lifestyle |
| 6 | Management of Menstrual Problems |
| 7 | Management of Iron Deficiency Anaemia |
| 8 | Screening for Diabetes and Hypertension |
| 9 | Management of common adolescent health problems |
| 10 | HIV testing and counselling |
| 11 | Management of physical violence and sexual abuse |
| 12 | Linkages with de-addiction centres and referrals |
| 13 | Treatment by specialists |
| 14 | Referrals |

**Aims and objectives**

This study aims to describe the prevalence and clinical profile of health conditions outlined in the RKSK program among adolescents attending an AFHC and at outreach sessions in public schools in the same district.

**Methods**

This dual-setting, mixed-method, cross-sectional study was conducted in the AFHC in a Government Medical College Hospital in Tamil Nadu, and in public schools in the same district under outreach sessions of the program. The study period in the AFHC was from January 2025 to December 2025, and in the schools, it was from November 2025 to March 2026. Assent was obtained from the adolescents. Permissions were obtained from the school education authorities before the visit. Institutional Human Ethics Committee approval was obtained.

The data collected in the facility were from the records of the adolescents who were referred from the school and community to the AFHC in the DEIC. The data collected from the records included socio-demographic details such as name, age, and gender, as well as the clinical and counselling services used by the adolescents. The clinical and counselling services provided to clients, under the program, as described in Table 1, were collected. For the outreach services in the schools, 2 urban and 2 rural higher secondary schools were selected. A team of Pediatricians, nurses, a clinical psychologist, a social worker, and a gynaecologist was formed. The data collected were in 5 categories: baseline socio-demographic data; nutritional status, including height, weight, and Body Mass Index (BMI); physical examination by a pediatrician; psychosocial risk assessment; and management of identified illnesses. Referral of adolescents to DEIC for further management was made as needed. For socio-economic status assessment, the modified BG Prasad scale was used.[8] For the psychosocial risk assessment, the SSHADESS assessment tool was used.[9] The SSHADESS tool is a strength-based psycho-social risk assessment tool, which is free to use and widely used, assessing risk across eight domains: Strengths, School, Home, Activities, Drugs, Emotions, Sexuality, and Safety. It has 40 questions with yes or no answers. After evaluation of the SSHADESS tool, adolescents with concerning responses in any of the domains were counselled. The counselling session was conducted as a one-to-one interview, and adequate privacy was provided to the adolescents. After the completion of the clinical and counselling services, mass health education, including family life education, was conducted with audio-visual aids separately for boys and girls. The collected data were tabulated and statistically analysed.

Statistical analysis was done using R software. The numerical data were expressed in numbers and percentages. The continuous variables were expressed in mean and standard deviation. The mean number of concerning responses in the SSHADESS tool was compared between socio-demographic factors using the chi-square test or ANOVA, and a p-value less than 0.05 was considered significant. For Qualitative Analysis, a descriptive approach was used to explore the psychosocial stressors and lived experiences of adolescents in the schools. The study utilised a Hybrid Qualitative Analysis method, combining Deductive Framework Analysis with Inductive Thematic Analysis. For Framework Indexing, data were first categorised based on the SSHADESS screening tool to provide a structured clinical profile. For thematic sub-categorisation, within these categories, an inductive process was used to identify recurring sub-themes, such as 'Economic Stressors/part-time work,' 'Parental Substance Abuse,' and 'Body Image Distress. Finally, for RKSK Mapping, the identified themes were mapped

to the six priority intervention areas of the RKSK program as described earlier.

The minimum required sample size for this cross-sectional study was determined using Cochran's formula (n = Z2 X p(1-p) / d2). Based on a 50% estimated prevalence (p) of nutritional or psychosocial issues among adolescents, a 95% confidence level (Z = 1.96), and a 5% margin of error (d = 0.05), the calculated minimum sample size was 384 participants (1). However, the study included all the adolescents in the selected schools.

## Results

### Facility-based analysis

The facility-based analysis of adolescents who attended the AFHC in 2025 is summarised in Table 2. About 2034 adolescents attended the AFHC, and 717 utilised clinical services. About 667 accessed counselling services. The boys-to-girls ratio was 1:1.06. Among those who availed clinical services in the strategic priorities (n=396), about 67% had nutritional issues, 17% had reproductive health concerns, and 13% had mental health problems. Seven adolescents reported substance abuse, such as tobacco. There were no reports of injuries or violence, and one boy was referred for evaluation of hypertension. Regarding nutritional abnormalities, obesity was observed in six adolescents and undernutrition in 261 adolescents. In reproductive health concerns, dysmenorrhea and leucorrhoea were common. In mental health issues, stress and learning difficulties were frequently reported. Seven adolescents were referred for substance abuse, primarily tobacco use through smoking or chewing. No reports of drug or synthetic drug abuse during the study period. All the adolescents were getting treatment as per RKSK guidelines in the AFHC.

### School-based analysis

The baseline characteristics of the school-based adolescents are shown in Table 3. A total of 512 adolescents were screened at the school. The boys: girls ratio was 1:1.42. The mean age of the study group was 16.62 ±1.33 years. Approximately 60.5% of adolescents were from class IV of the Modified BG Prasad socioeconomic scale. About 56.4% were from nuclear families. Approximately half of adolescents (50.4%) were undernourished, and 2.7% were obese. On examination of the 6 strategic priorities, 68.5% had nutritional issues, 3.7% had RTI, and 0.4% had injuries and violence. About 10.1% had mental health concerns like anger, sleep deprivation, and depression (Table 4). About 2.1% reported that they or their friends had smoked cigarettes. There were no reports of drug usage. Nine adolescents were found to have hypertension and are under evaluation. On analysing the SSHADESS screening questionnaire, almost all the adolescents had responses of concern in one or other questions, and many had concerning responses in many domains (Table 5). The mean number of concerning responses in the SSHADESS tool was 8.80 ± 5.26. There was no statistically significant difference between the number of concerning responses and the socio-demographic factors (Table 3).

**Table 2:** Footfall in the AFHC during the study period

| | Boys | Girls | Total |
|---|---|---|---|
| Adolescent clients attended | 987 | 1047 | 2034 |
| Availed clinical services | 320 | 397 | 717 |
| Availed counselling services | 285 | 382 | 667 |
| **Clinical Services in Strategic Priorities (n=396)** | | | |
| Sexual reproductive health | 1 | 67 | 68 |
| Nutrition | 97 | 170 | 267 |
| Mental health | 19 | 34 | 53 |
| Non-communicable diseases | 0 | 1 | 1 |
| Substance misuse | 7 | 0 | 7 |
| Injuries and violence | 0 | 0 | 0 |

**Table 3:** Profile of adolescents screened in school (n=512)

| Variable | No (%) | Mean concerning responses in the SSHADESS tool | P value |
|---|---|---|---|
| **Gender** | | | |
| Boys | 211 (41.2%) | 8.82±5.49 | 0.935$ |
| Girls | 301 (58.8%) | 8.78±5.11 | |
| Mean age | 16.62 ±1.33 years | | |
| **Socio-economic scale (Modified BG Prasad scale)** | | | |
| I | 9 (1.8%) | 7.33±4.61 | 0.376# |
| II | 6 (1.2%) | 5.67±4.63 | |
| III | 90 (17.6%) | 8.51±5.54 | |
| IV | 310 (60.5%) | 8.83±5.32 | |
| V | 97 (18.9%) | 9.27±4.91 | |
| **Type of family** | | | |
| Joint | 172 (33.6%) | 8.51±5.19 | 0.660# |
| Nuclear | 289 (56.4%) | 8.84±5.31 | |
| Single Parent | 47 (9.2%) | 9.28±5.46 | |
| Separated | 4 (0.8%) | 11.0±4.76 | |
| **BMI distribution** | | | |
| Under Weight | 258 (50.4%) | 9.18±5.64 | 0.467# |
| Normal | 186 (36.3%) | 8.47±4.84 | |
| Overweight | 54 (10.5%) | 8.72±5.84 | |
| Obese | 14 (2.7%) | 10.0±5.48 | |
| **BMI (Mean ± SD)** | 19.6±4.33 | | |
| **Blood pressure** | | | |
| Normal | 480 (93.7%) | 8.91±5.30 | 0.526# |
| Prehyper-tension | 23 (4.5%) | 8.14±5.21 | |
| Hypertension | 9 (1.8%) | 8.61±4.75 | |

*$Independent sample T test, #One-way ANOVA*

**Table 4:** Examination findings in strategic priorities of RKSK

| Examination Findings | No of patients (%) |
|---|---|
| Nutrition | 351 (68.5%) |
| Reproductive tract | 19 (3.7%) |
| Mental health | 52 (10.1%) |
| Substance abuse | 11 (2.1%) |
| Injuries and violence | 2 (0.4%) |
| Non-communicable diseases | 9 (1.7%) |

**Table 5:** Concerning responses in SSHADESS screening

| Domain | No of children with concerning responses (%) |
|---|---|
| S - School | 284 (55.46%) |
| S – Strengths | 258 (50.39%) |
| H – Home | 283 (55.27%) |
| A – Activities | 444 (86.71%) |
| D – Drugs / Substance Use | 75 (14.64%) |
| E – Emotions / Eating | 371 (72.46%) |
| S – Sexuality | 421 (82.22%) |
| S – Safety | 270 (52.73%) |

**Qualitative analysis of the school-based study**

Unlike the physical examination of schoolchildren, which can be conducted more quickly, the examination of adolescents and the provision of counselling services were very time-consuming. The adolescents need some time to establish a good rapport with the counsellor. The trust the adolescent develops with the counsellor is the foundation for the success of counselling services. Sometimes it took 2 or more visits to build the foundation. We also have various strategies to analyse the adolescents. For example, snowball sampling was used to analyse the drug history in them. Using the SSHADESS screening format, the following thematic analysis highlights the predominant issues identified.

1. **School (S):** In this domain of the SSHADESS assessment, a significant disparity was reported by many students between academic and psychosocial support from the teachers. Qualitative assessments indicated that while the academic needs of the students are addressed by the teachers, there remained a gap in the provision of emotional support from the teachers.
2. **Home (H):** Family instability and domestic dysfunction emerged as primary causes of the psychological distress experienced by the adolescents. **Domestic Violence and Substance Abuse:** A 16-year-old girl reported severe mental distress due to an alcoholic father who frequently assaulted her mother, leading to family separation. **Grief and Financial Crisis:** For a 16-year-old girl, the death of her father due to alcoholic liver disease resulted in an inability to afford chronic cardiac care for herself. **Parental Conflict:** Many students, both boys and girls, reported feelings of "hating parents" or being "scolded" due to excessive screen time usage by them or for academic pressure. **Separation Anxiety:** Emotional distress was noted in a male student whose parents were away in another city for a sibling's cancer treatment.
3. **Activities (A):** This domain highlighted the "double burden" of academic and economic responsibilities. **Part-time work:** Due to financial crises, students (e.g., the child of a single-parent tailor) are reported to be working in part-time jobs from 5:00 PM to 10:30 PM after school, leading to anxiety about their future. **Social Withdrawal:** Few students were noted to have a lack of self-confidence and a refusal to participate in group activities.
4. **Drugs/ Diet (D):** Substance abuse and metabolic health are very significant concerns in this study group. **Substance Addiction:** A 15-year-old male reported a "Coolip" (tobacco/snuff) addiction, using it 4–5 times daily. He expressed a desire for withdrawal but reported being unable to stop without help. **Severe Obesity:** Multiple cases of Class II/III obesity were identified, with BMIs reaching as high as 36.4 and 38.2. **Metabolic Risks:** An obese adolescent boy (weight 104 kg) presented with BP above the 95th centile, requiring screening for Metabolic Syndrome.
5. **Emotions / Eating (E):** The analysis showed a strong correlation between body image, chronic illness, and emotional health. **Body Image Distress:** Many adolescents reported severe stress due to "body-shaming" by relatives and friends, which often overshadowed clinical concerns like menstrual irregularities. **Chronic Illness Burden:** A Student with Type 1 Diabetes Mellitus and another student with a cardiac condition reported emotional stress related to their diagnoses. Eating Disturbance: Concerning scores in the "eating" domain, were linked to anxiety due to weight gain and irregular menstrual cycles.
6. **Sexuality / Safety (S):** Safety concerns were often manifested through high-risk behaviours and self-harm. **Self-Harm (Non-Suicidal Self-Injury):** 3 girls presented with self-inflicted cuts and lacerations on their hands, often triggered by being scolded or feeling depressed. **Suicide Ideation/Attempts:** A severe case involved a history of suicide attempt via Oleander seed ingestion following a family dispute. **Barriers to Disclosure:** Some students with concerning scores remained guarded and did not open up during initial counselling, highlighting the need for repeated rapport building that will open up.

All the adolescents identified to have concerning responses in the SSHADESS screening were counselled and managed as per the guidelines of RKSK.

**Discussion**

In this study, we have analysed the prevalence and clinical profile of health conditions outlined in the RKSK program in the AFHC and in the school setting. We employed a mixed-method study design to narrate the experiences of the adolescents in the school. It was a

challenging task to establish a good rapport with the participants. Once the rapport was established, the adolescents were able to open up and narrate their experiences.

During the study period, about 717 adolescents received clinical services and 667 received counselling services. Nutritional issues were the most common condition treated. The estimated adolescent population in India is 21%.[1] Compared to the adolescent population, footfall in AFHCs is low. Across the country, the utilisation of RKSK services under AFHCs remains low.[2] Many studies have reported that most AFHCs are not fully compliant with the benchmarks proposed by the RKSK program.[10-16] The major gaps pointed out were a lack of privacy, unavailability of Information Education and Communication material, and a judgmental attitude of the staff in AFHCs. However, in the studied AFHCs, none of these gaps was noted. The reported morbidities in the AFHCs represent only a tip of an iceberg, as a large number of such morbidities remain unreported.[1] The underreporting of adolescents may be due to the fact that they do not have the autonomy to attend the AFHCs.[2]

In the school-based study, the findings highlight a significant double burden of health challenges among the adolescents, where high rates of physical undernutrition coexist with complex psychosocial problems. Conducting this research under the RKSK framework allows for a direct comparison with national objectives and existing Indian literature. In the present study, about 50.4% of adolescents were undernourished. The undernutrition prevalence varies from study to study and depends on the various socio-demographic factors. Some studies report a higher prevalence of undernutrition than this study. Studies by Dhingra et al and Saravanakumar et al reported a prevalence of undernutrition of 58.5% and 63,5%, respectively.[17,18] Whereas, in the Comprehensive National Nutritional Survey (CNNS), in 2019, the prevalence of undernutrition among adolescents was 24%.[19] It is also important to observe that hypertension and obesity were observed in a subset of adolescents in this study. These non-communicable diseases were priority areas under the RKSK program. The integration of the District Early Intervention Centre (DEIC) for managing chronic conditions (like Type 1 Diabetes and cardiac surgery follow-ups) demonstrates a successful referral pathway within the RKSK program.

The psychosocial morbidities analysed used the SSHADESS tool, which revealed a significant proportion of adolescents had concerning responses in the emotions, activities, and sexuality domains. The psycho-social morbidities were independent of the socio-economic factors. All the adolescents with concerning responses were individually counselled, and those warranting psychiatric evaluation were referred to AFHC. Since SSHADESS is a screening tool that brings out only the concerning responses, the prevalence of the psychosocial problems cannot be determined. However, the National Mental Health Survey estimates adolescent mental morbidity at 7.3%.[20] Given the higher number of concerning responses in the study, the mental health of the adolescents should be focused on during every opportunity of contact with the adolescent.

The adolescent statements revealed that while the teachers were highly effective in supporting academic needs, they were not able to provide emotional support during periods of high stress. This finding points toward a need for mentorship of teachers, empowering them with the tools to recognise and respond to early signs of emotional distress in their students. The Competency-Based Medical Education program was successful in providing emotional and psychosocial support to the medical students in India.[21] A similar program for adolescents will be of great benefit to the adolescents.

A small subset of the adolescents in this study had reported domestic violence and parental alcoholism as recurring triggers for depression and suicide attempts. It has been reported in many studies in India.[22,23] Another observation in this study is the stress experienced by adolescents due to part-time employment. This has also been reported in a few studies.[24,25] The identification of self-inflicted cuts and histories of suicide attempts highlights the critical need for the Safety and Emotions domains of the SSHADESS screen.

This study suggests that many adolescents remain guarded during initial screenings. This underscores the importance of Adolescent-Friendly Health Clinics (AFHCs) as safe spaces for long-term rapport-building and de-addiction. This study confirms that adolescent health requires a holistic approach that treats physical and psychosocial ailments as interlinked issues.

**Conclusion**

This study, conducted in a dual setting, highlights a critical intersection between physical undernutrition and psychosocial ailments among adolescents. The high prevalence of undernutrition and emerging metabolic risks like obesity underscores a double burden of malnutrition within this study group. Qualitative analysis through the SSHADESS framework revealed that the deep-seated issues—including domestic violence, parental substance abuse, and emotional issues —frequently manifest as severe mental health challenges, such as self-harm and suicidal ideation, which often remain undetected in routine clinical settings. The study successfully demonstrates that school-based screenings and the DEIC referral pathway are essential for capturing and managing these hidden morbidities.

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