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Prevalence Of Anaemia And Malnutrition In Adolescent Girls Of Rural Dehradun And Their Correlates

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Abstract: ***Anaemia and Malnutrition are major health challenges in developing countries and major contributors to maternal mortality. This paper presents a study to estimate the prevalence of anaemia and malnutrition among adolescent girls in rural Dehradun and to study the associated factors. A cross-sectional survey was executed among 100 girls; aged 10-19 years. Socio demographic details, anthropometric and Haemoglobin measurements were obtained and analyzed. The prevalence of anaemia was found to be 74% and malnutrition 78%. Pearson's Correlation Coefficient shows significant association of anaemia and malnutrition with family income. The Paper further outlines the National Programme for Health of Adolescents –RKSK.***

Keywords: Adolescent Girls, Anaemia, Malnutrition, BMI, Haemoglobin, Family Income, RKSK

I. BACKGROUND

Adolescence has been defined by the World Health Organization as the period of life which spans from the age of 10 years to 19 years. It has been well documented that a number of the most important physical, physiological, psychological and behavioural changes in human life cycle take place in this period thereby making this a much vulnerable period in the growth and development cycle. As compared to Boys, Girls are more likely to be affected by the changes, their causal factors and consequences due to various social and economic reasons. The individual experiences some unique changes that manifest themselves during this period which are aimed at the attainment of biological maturity.

Thus it is has been recognized that this period is a critical period of transition to adulthood when major physical and mental changes take place in the human body.

As per the estimates of the World Health Organization (WHO), 1/6th of the World's Population is comprised of Adolescents which translates into 1.2 billion people between the ages of 10 to 19 years3. Among all the nations of the world, India has the largest adolescent population, as about 21% of the population of India comprises of Adolescents (that is 243 million people) 3. Therefore the Adolescents constitute a sizable proportion of Indian population.

Within the context of the condition of adolescents in India, it is rather disappointing to note that a number of adolescent girls have been found Malnourished and Anaemic along with being the recipient of inadequate dietary intake in various studies.

The "State of the World's Children 2011" report from UNICEF has revealed that more than half (56%) of adolescent girls in India are suffering from Anaemia. India also has the highest underweight adolescent girl population of 47% in age group of 15 to 19 years as per the same report. This Scenario with regard to Adolescent Girls is particularly disappointing. They have to face challenges like Malnutrition, Early marriages, Teenage Pregnancy, high risk of Sexually Transmitted Infections and Poor Nutritional status.

Adolescent girls, constituting nearly 10% of Indian population (as per 2011 census) are therefore one of the most vulnerable groups. They are the worst sufferers of the various conditions/diseases related to malnutrition because of their increased nutritional needs and low social standing. The health and nutritional status of our mothers of tomorrow (i.e. the adolescent girls of today) is the a critical factor across

generations for the health and nutritional status of the community as a whole.

While the Girls are gifted with Physical, Mental and Emotional Maturity by Mother Nature during this period of time (Whiting SJ 2004), they face a lot of hurdles from the Societal and Cultural barriers in the spheres of Nutrition and Health (Levine R 2008).

India has traditionally been a Patriarchal and male dominated society; so there is a strong preference for sons in most parts of India which leads to girls being discriminated against by their families and society as a whole.

In an Indian family with limited income and resources, prevailing social norms and attitudes and due to lack of awareness, the girl child is more likely to be neglected. The adolescent girl is deprived of nutrition and education and is just supposed to perform all the household chores. On top of this, the additional challenge of low calorie intake coupled with menstrual blood loss makes them highly vulnerable to Anaemia and Malnutrition.

These social and economic constraints and societal values result in the girls getting a comparatively less share of the food and other household services critical to health and development, on the other hand they get a greater share of household chores and family responsibilities. This is particularly true for the rural parts of the country. This scenario combined with the paucity of time and an attitude of neglect leads to a poor health and nutritional status for most of the adolescent girls. This study was planned to demonstrate the interrelated and co dependent problems of anaemia and malnutrition in adolescent girls and to study the socio-economic and familial factors related to anaemia and malnutrition.

II. STUDY METHODOLOGY

The Study Area chosen was Dehradun (Rural) District covering the Sahaspur block which is about 50 km from the district headquarters. Dehradun is the capital of the Indian state of Uttarakhand. It is one of the 13 districts of Uttarakhand state and has a population of 16, 98,560 as per the 2011 census. The District has 623,270,258 males and 587,584,719 females. In the same census, Literacy rate was found to be a total of 74.04% with 65.46% literate females and 82.14% males. The density of population was found out to be 382 per square kilometers. The total sex ratio was 940 females to 1000 males. The child sex ratio (of ages 0 to 6 years old) was 914 females to 1000 males.

The present study was conducted across the Sahaspur block which is one of the six community development blocks of the district. According to the 2011 census, the block has 113 villages and there are total 37778 households in this Block. As per Census 2011, Sahaspur's population is 184381. Out of this, 96807 are male citizens whereas the females citizens are 87574.

This block has 23325 children in the age group of 0-6 years. Among them 12308 are boys and 11017 are girls. Literacy rate in Sahaspur block is 72%. Among males, the literacy ratio is 77%, while female literacy ratio is 67% thus implying that in females, the illiteracy rate is 32%. The number of working person of Sahaspur block is 56313 and yet 128068 are un-employed. Also, out of 56313 working people, 4571 individuals are fully reliant on farming.

This block is having a sizeable population of minority (Muslim) and tribal (Tharu and Boxa) community.

The area is characterized with a typical north Indian rural setting where most of the men folk are involved in agriculture, daily wagers or are unemployed. The women and girls of the area are mostly involved in house hold chores; they have little or no say in the family affairs or in the decision making process. They are excluded from receiving higher education and entirely dependent on their male counterparts. Being a patriarchal society, women and girls are not allowed to step out of their houses and have numerous other social restrictions placed on them.

We undertook a Cross Sectional Study which was conducted in 10 randomly selected villages out of the total 113 villages in the Block. 10 adolescent girls (10-19 years) were further selected per village for this study on a random basis. Thus, the sample comprised of 100 adolescent girls.

The Inclusion criteria were as follows:

- ✓ Adolescent girls between the ages of 10 and 19 years
- ✓ Resident of the selected village for not less than 5 years.

The Exclusion criteria were those who dropped out from the survey.

The survey was conducted from January 2016 to March 2016. Primary data was collected by means of a pre structured and Pre-tested interview schedule to obtain information about the respondent covering the following aspects:

- ✓ Health and Disease Status - Data regarding Health and Disease status was collected using a pre-designed, pre-tested Performa. Enquiry was made regarding personal hygiene, menstrual history, menstrual hygiene and occurrence of any ailment during previous two weeks. All subjects were examined physically with the help of a certified Physician and deviations from normal were recorded.
- ✓ Nutritional status of girls was assessed by Anthropometric measurements viz. Height, Weight, and Body Mass Index and Biochemical markers viz. haemoglobin estimation.
- ✓ Familial Characteristics were also recorded using the Performa. These included Type of Family, Family Size, Educational status of Parents and Siblings, Family Income, Family relations and interaction with parents and siblings.
- ✓ Social Environment was also assessed which covered items like interaction with friends and Peers, Social Support from peers and adults, Community attitudes, Public opinion, and Social Taboos
- ✓ Haemoglobin Estimation was done by the cyan method using haemoglobin analyzer8.. It was measured in terms of g/dl. Capillary blood was drawn by finger prick method and was incubated for 5 minutes in Cuvette tube pre-filled with Cyanmethhemoglobin reagent and readings were noted.

III. RESULTS

The study covered 100 participants. Among these girls, 13% were in the age group of 11-13 years, 19% were between the ages of 14-16 years and 68% were aged between 17-19 years.

Among the respondents, 20% were from nuclear families and the remaining lived in the joint families. The family size of the respondents ranged from 2 members to 14 members with the average family size being between 6-7 members (6.56 members per family).

With regard to the financial/economic status, 60% of the respondents belonged to families earning between INR 5000-10,000 per month. 79% of participants' fathers were farmers or labourers. 93% of participants had attained menarche.

As per the haemoglobin estimation, out of these 100 participants, 74 subjects were found to be anaemic with varying degrees ranging from mild, moderate and severe anaemia which were 16% with mild anaemia (Haemoglobin between 10 -11.9 gm/dl), 54% having moderate anaemia (Haemoglobin between 7 – 9.9 gm/dl) and 4% suffered from severe anaemia (Haemoglobin less than 7 gm/dl) respectively. Table 1 and Figure 1 present a breakup of the same.

Haemoglobin (gm/dl)	No. of girls (%)
<7 (Severe Anaemia)	4
7 - 9.9 (Moderate Anaemia)	54
10 - 11.9 (Mild Anaemia)	16
>12 (Normal)	26
Total	100

Table 1: Prevalence of Severity of Anaemia

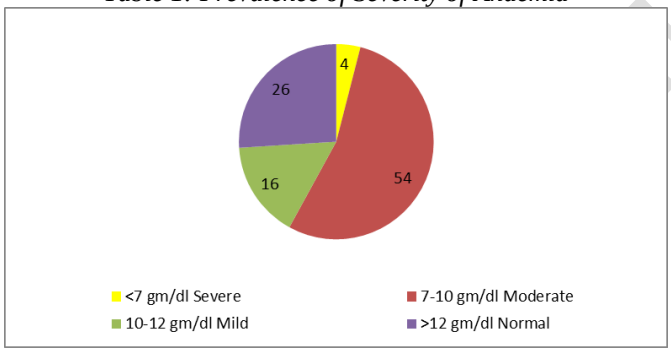

Figure 1: Prevalence of Severity of Anaemia

Malnutrition (as measured by Body Mass Index – BMI) was widely rampant in the area with 78% of the respondents being malnourished. The prevalence of varying degrees of malnutrition as per the classification scheme of the United States Department of Health and Human Services, National Heart, Lung, and Blood Institute is per Table 2 and Figure 2.

	Body Mass Index	No (%) of respondents
Severe malnutrition	<16	41
Moderate malnutrition	16–16.99	20
Mild malnutrition	17–18.49	17
Normal	18.5–24.9	22

Table 2: Prevalence of varying degrees of Malnutrition

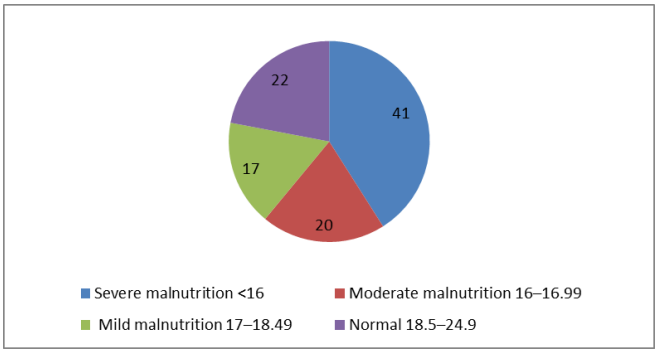

Figure 2: Prevalence of varying degrees of Malnutrition

The classification scheme stipulates that a BMI value of less than 16 signifies severe malnutrition, a BMI value between 16-16.99 denotes Moderate malnutrition, a BMI value between 17-18.49 is mild malnutrition while a BMI value of 18.5 to 24.9 is treated a normal. None of the girls had a BMI value of 25 or more that signifies overweight or obese subjects.

Thus with the application of this classification, apart from 22% of the girls who had a normal BMI value, within the 78% of malnourished girls, 41 % of the girls suffered from severe malnutrition, 20% have moderate malnutrition and 17% suffered from mild malnutrition.

Correlation analysis shows significant association of Anaemia and Malnutrition with the family income. Pearson's Correlation Coefficient - r of Haemoglobin with family income was 0.703062 and that of Body Mass Index (BMI) with family income was 0.718235 thus implying the family income is a strong determinant of both malnutrition and anaemia in these girls.

As regards the overall health and nutrition status of the respondents, various signs of Vitamin and Mineral Deficiencies were observed in 71% of the girls.

Some form of illness was observed in all but 29% of the girls. These illnesses most commonly included fever, headache, stomach ache, eczema, body ache, tooth decay and weakness.

Regarding the social and family characteristics, all the respondents felt that boys are receiving better and preferential treatment in the family as compared to the girls and in all the families the males ate meals first and the females ate thereafter. The patriarchal nature of the society and family was evident from the fact that in 74% of the respondent's families, all the important decisions were taken by father.

All the respondents informed that the male members of their families were regular consumers of alcohol and many were smokers as well.

On their perception of a safe environment in their families and communities, only 25% of the girls informed that they felt safe in their families and communities, thereby implying the three quarters of the girls were not feeling safe in their families and communities.

IV. DISCUSSION

Although the Adolescents appear to be the healthiest subset of any population, there is more to this than meets the eye. Adolescence is the crucial bridge between childhood and

adulthood and is characterized by an exceptionally rapid rate of growth.

Besides the above, these young people being vulnerable to a number of diseases/ conditions in all the dimensions of health that is physical, mental and social, it has been established that many of diseases that manifest themselves in the adulthood/later life have their roots in adolescence. This is especially ironic since many of the causes of mortality and morbidity in this age group are preventable, treatable and manageable thereby reducing ill-health and disability in the adult population.

However, it is an unfortunate reality that despite all of the facts presented above, Adolescents as a group have been relatively neglected as they are neither children nor adults and are "stuck in between".

The situation has been outlined in a number of studies, according to the Report of the National Family Health Survey of 2005-06, as many as 47 percent of currently married adolescent girls aged 15-19 were chronic energy deficient and 56 percent were anaemic.

A.S. Indupalli's 2009 study conducted on 250 adolescent girls aged 13-19 years in an urban community of Gulbarga (Karnataka) revealed that 94% had anaemia.

Kalamka.H.S,'s 2001 study conducted in Nagpur in Maharashtra reported a prevalence of 60.16% as far as anaemia in adolescent girls was concerned.

In the present study, the prevalence of Anaemia was found out to be 74%. Chaturvedi etal12, and Kotecha et al13 reported a similar prevalence of 73.7% and 74.7% respectively in their studies.

The prevalence's of severe, moderate and mild anaemia were 4%, 54% & 16% respectively. High prevalence of mild and moderate anaemia necessitates due emphasis on this area so as to bring down total prevalence of anaemia in adolescent girls.

As far as malnutrition is concerned, 78% of the girls were malnourished i.e. BMI less than 18.5; among these 41% suffered from severe malnutrition with a BMI less than 16.

The results of the study conducted by Goyle in Jaipur Rajasthan revealed that about 72% of the subjects were undernourished. The study by Maiti et al in West Bengal revealed 71.8% of the subjects as per weight for age criterion were suffering from various degrees of malnutrition.

In a study by H.R. Shivaramakrishn in Kolar, Karnataka, 73.5% girls were found under nourished. The studies thus demonstrated the similar extent of the problem of malnutrition among adolescent girls.

In the present study significant association was found between Socio economic status and nutritional status of rural adolescent girls. Nutritional status of low income families' adolescents was low. Similar findings revealed in a study by Neyamul Akhter in Bangladesh.

A study conducted by Choudhary.S. et al demonstrated that among the adolescent rural girls of Varanasi (Uttar Pradesh), two-third of study subjects were undernourished (BMI < 18.5 kg/m2), nearly one-third had chronic energy deficiency grade-III (BMI<16 kg/m2). 53.33% adolescent girls had normal built. Vitamin A, B, C and D deficiencies were present in 13.70%, 4.07%, 15.92% and 10% study subjects respectively. Bitot's spots were seen in 3.33% subjects and 25.90%, 13.33% and 4.44 % girls had anaemia, dental caries and Iodine Deficiency Disorders (IDDs) respectively. Nearly one-third girls were anaemic (Hb < 12 g/dl). Anaemia was significantly more in non-menstruating girls and subjects not using footwear during defecation. The authors further reported that the maximum 82.54% under nutrition was observed in subjects belonging to lower SES (Socio Economic Status) , followed in middle (69.92%) and then in high (54.05%) SES categories thus showing significant association between SES and nutritional status.

V. CONDITION OF TODAY'S ADOLESCENT GIRLS AND IT'S IMPLICATIONS

All these studies point to the less than satisfactory condition of the health and nutrition status of the Adolescent Girls. The poor health and nutritional status of adolescents, especially girls, has important implications in terms of physical work capacity and adverse reproductive outcomes. The present times are more critical because of the spread of communication and information technology and erosion of traditional social and family norms. These times of modernization and globalization have resulted in the weakening of already poor social models and reference points for Adolescents.

The economically deprived children also suffer from nutritional deprivation which they carry over to adolescence with physical and, at times, intellectual deficit limiting their productivity. The stunted and malnourished adolescent girls are particularly at a high risk of producing Low Birth Weight babies when they become mothers.

The health and social community has woken up to the importance of adolescent health in the past decade beginning with the world observing the International Year of Youth in 1985 and the World Health Assembly in 1989, when discussions were focused on the health of the young people.

It has already been stated that among the adolescents and the youth the girls are particularly vulnerable and more so in the developing countries where they are traditionally married at an early age and exposed to a greater risk of morbidity and mortality related to marriage and child bearing.

The prevalence of anaemia and malnutrition is disproportionately high in developing countries, due to lack of awareness, poverty, inadequate diet, co existing diseases, pregnancy/lactation and suboptimal health services.

The nutritional deficiency and anaemia in this group attributes to high maternal and infant mortality, high incidence of low-birth weight babies and other perinatal morbidities.

It has been known that Anaemia affects physical growth, cognitive development, performance in school and reproduction. Anaemia among adolescents adversely affects these young people's growth, resistance to infections, cognitive development and work productivity.

Anaemic mothers are more prone to giving birth to low birth-weight children, increasing the morbidity and mortality rates for both mother and child. Findings from National Family Health Survey (NFHS) –3 indicate that as many as 56 percent of girls and 30 percent of boys in the 15–19 age group are anaemic. Of these, 17 percent of the adolescent girls and

14 percent of the boys suffer from moderate to severe anaemia. Married women in the age group 15–24 are more likely to be anaemic than their unmarried counterparts. The prevalence of anaemia (all age groups combined) is higher in rural than in urban areas, for both women and men. Also, marginalised groups, especially scheduled tribes, show higher levels of anaemia prevalence than the rest of the population20.

WHO / UNICEF21 have suggested that the problem of anaemia is of very high magnitude in a community when prevalence rate exceeds 40%. The underlying cause of anaemia is malnutrition and iron deficiency and it is indeed much alarming to note that the malnutrition and iron deficiency in these adolescent girls is much prevalent i.e. 74%. This necessitates that urgent steps must be taken for improving this scenario.

In addition to Anaemia, Malnutrition which refers to an impairment of health from a deficiency or imbalance of nutrients is of great public health significance among adolescents all over the world. It creates lasting effect on the growth, development and physical fitness of a person.

VI. INTERVENTIONS TO IMPROVE ADOLESCENT HEALTH AND NUTRITION

In this context, previously, the RCH programme being implemented by the Government of India had adolescent health as a programme component. Presently the health needs of the Adolescents are being catered through by the The Rashtriya Kishor Swasthya Karyakram (National Adolescent Health Programme), - RKSK which was launched on 7th January, 2014.

Adolescent often do not have the autonomy or the agency to make their own decision. RKSK takes cognizance of this and involves parents and community. The focus is on reorganizing the existing public health system in order to meet the service needs of adolescents. Under this a core package of services includes preventive, promotive, curative and counseling services, routine check-ups at primary, secondary and tertiary levels of care is provided regularly to adolescents, married and unmarried, girls and boys during the clinic sessions.

The programme is based on the National Adolescent Health Strategy which it realigned the clinic-based curative approach to focus on a more holistic model based on a continuum of care for adolescent health and developmental needs. It introduces a holistic mix of community-based interventions through peer educators, and is underpinned by collaborations with other ministries and state governments. Anaemia and malnutrition in this age group have been identified as important health challenges. The key principles of this programme are adolescent participation and leadership, Equity and inclusion, Gender Equity and strategic partnerships with other sectors and stakeholders. The programme envisions enabling all adolescents in India to realize their full potential by making informed and responsible decisions related to their health and well being and by accessing the services and support they need to do so.

The implementation of this vision requires a concerted effort by all stakeholder ministries and institutions, including health, education, women and child development, and labour as well as the adolescents' own families and communities.

The strategy marks a watershed and is a significant paradigm shift which realigns the existing clinic-based curative approaches to focus on a more holistic model, which includes and focuses on community-based health promotion and preventive care along with a strengthening of preventive, diagnostic and curative services across levels of health facilities.

The approach proposed in the strategy is based on a continuum of care for adolescent health and development needs, including the provision of information, commodities and services at the community level, with mapped out referral linkages through the three-tier public health system.

Most importantly, it proposes a convergent model of service delivery that will engage adolescents and field service providers (for example, teachers, Accredited

Social Health Activists—ASHAs, Auxiliary Nurse Midwives—ANMs, Anganwadi Workers—AWWs and Nehru Yuva Kendra Sangathan—NYKS—volunteers) actively, to secure and strengthen mechanisms for access and relevance.

The strategy moves away from a 'one-size-fits-all' approach to more customised programmes and service delivery specific to needs of adolescents, and aims at instituting an effective, appropriate, acceptable and accessible service package, addressing a range of adolescent health and development needs.

To implement this paradigm shift, the strategy identifies seven critical components (7Cs) that need to be ensured across all programme areas. These components are: coverage, content, communities, clinics (health facilities), counseling, communication and convergence.

The six strategic priorities (programme) areas that have emerged from a situational analysis of adolescent health and development needs in India are: nutrition, sexual and reproductive health (SRH), non-communicable diseases (NCDs), substance misuse, injuries and violence (including gender-based violence) and mental health. The intervention and approaches delineated in National Adolescent Health strategy work at building protective factors that can help young people develop 'resilience' and operates in four major areas: the individual, family, school and community by providing a comprehensive package of information, commodities and services.

To deliver these interventions, the adolescent health programme – Rashtriya Kishor Swasthya Karyakram under the overall ageis of the National Health Mission (NHM), envisages strengthening of the health system for effective communication, capacity building and monitoring and evaluation. Further, RKSK underscores the need for several constituencies to converge effectively and harness their collective strength to respond to adolescent health and development needs.

The different stakeholders, working on issues related to adolescent health and nutrition focus on age groups 10-14 years and 15-19 years with universal coverage, i.e. males and females; urban and rural; in school and out of school; married and unmarried; and vulnerable and under-served and seek to achieve the following objectives:

- ✓ Improve nutrition: Reduce the prevalence of malnutrition among adolescent girls and boys (including overweight/obesity) and reduce the prevalence of iron-deficiency anaemia (IDA) among adolescent girls and boys.
- ✓ Enable sexual and reproductive health: Improve knowledge, attitudes and behaviour, in relation to SRH, Reduce teenage pregnancies, Improve birth preparedness, complication readiness and provide early parenting support for adolescent parents
- ✓ Enhance mental health by Addressing mental health concerns of adolescents
- ✓ Prevent injuries and violence and Promote favourable attitudes for preventing injuries and violence (including GBV) among adolescents
- ✓ Prevent substance misuse by increasing adolescents' awareness of the adverse effects and consequences of substance misuse.
- ✓ Address conditions for NCDs by Promote behaviour change in adolescents to prevent NCDs such as cancer, diabetes, cardio-vascular diseases and strokes

The strategy is operationalised through six key components i.e. Communication (including Social and Behaviour Change Communication for improved health seeking behaviour); provision of commodities; provision of services; capacity building; monitoring & evaluation and programme management including supportive supervision.

The main interventions to achieve objectives can be broadly grouped as:

- ✓ Community based interventions which include Peer Education (PE), Quarterly Adolescent Health Day (AHD), Weekly Iron and Folic Acid Supplementation Programme (WIFS) and Menstrual Hygiene Scheme (MHS)
- ✓ Facility based interventions which comprises of the Strengthening of Adolescent Friendly Health Clinics (AFHC).
- ✓ Convergence within Health & Family Welfare - FP, MH (incl VHND), RBSK, NACP, National Tobacco Control Programme, National Mental Health Programme, NCDs and with other departments/schemes – Women and Child Development (ICDS, KSY, BSY, SABLA), Human Resource Development (AEP, MDM), Youth Affairs and Sports (Adolescent Empowerment Scheme, National Service Scheme, NYKS, NPYAD).
- ✓ Social and Behaviour Change Communication with focus on Inter Personal Communication.

The programme is unique in the aspect that it adopts a 360 degree approach and engages not only adolescents but Focus on reaching out to communities on behalf of the adolescents. It engages Parents, Influencers, Gate keepers and Community to mitigate risk factors and enhance protective factors while imparting the life skills which are quite beyond merely imparting knowledge.

The Rashtriya Kishor Swasthya Karyakram which is comprehensive intervention and evolving programme; thus aims to comprehensively address the health needs of the 243 million adolescents in the country with the objectives of Improving Nutrition and Sexual and Reproductive Health, Enhancing Mental Health and Preventing Injuries and violence and Preventing substance misuse.

For the above mentioned interventions, the relevant results of this study show that the factors such as family income, weight, meal order and Menstruation are the factors contributing to the prevalence of anaemia and malnutrition.

This study reveals that anaemia and malnutrition prevail in the rural areas and low socioeconomic strata which underline the need to tackle this challenge. There is an urgent need for improvement in the nutritional status of these adolescents. Also, more attention needs to be done to address the issue of adolescent malnutrition.

Unaddressed, these lead to different types of complications that may be life threatening for adolescent girls. To tackle these problems all the stakeholders must adopt a mission based approach which include awareness campaigns, deworming and iron supplementation campaigns and improvement in living conditions.

As outlined above; Even though the RKSK and various national programs have been implemented by the health department and the social welfare department in all the states of the country since decades, problems of anemia and malnutrition in adolescent girls still persists. A number of strategies are available for dietary modifications based either on promoting the intake of iron, absorption enhancers, including haem iron, or on reducing the ingestion of absorption inhibitors (such as phytates and tannins) to double the bioavailability of iron. There is a need for counseling parents to prevent their children from consuming junk foods, which is becoming a trend in nuclear families.

A significant association of anaemia and malnutrition with the low socioeconomic status suggested a need to develop strategies to improve the socioeconomic status of the population through poverty alleviation programs. This should be supported by programs for the prevention of anemia among adolescent girls through nutrition education and prophylaxis with iron and folic acid supplementation with deworming. Enhancement of the economic status of families, especially poor families, is a prerequisite to the amelioration of anemia and malnutrition among adolescent girls.

Lastly, in spite of the fact that over the past few years, Adolescent health and nutrition has received considerable attention from researchers in the Health and Development field which has been reflected in the increasing volume of research; the Adolescent's issues and challenges have been viewed from a Medical and Health Perspective and not a lot of work has been done on the Social and Familial contexts of Adolescent's Health, Nutrition, Growth and Development. The body of research that studies these ever changing contexts and the complex inter-relationships among these factors is still limited.

The present scenario also underlines the need for a greater understanding of the dynamic complex and bi directional interactions of Adolescent Health and Nutrition with Familial and Social conditions.

Furthermore, there is also a need of Research with a focus on development and holistic health status and its determinants, while at present much of the research that has been undertaken has been specific problems oriented. Although this has helped us gain valuable insights into the health problems that these Girls face, the research with a focus on holistic health will be much productive as the factors determining vulnerability and

resilience will be identified. This will be of much relevance in decision-making and comprehensive interventions.

Hence the role of these newer research approaches that will treat the health and nutritional challenges as the outcomes those are under multiple influences. Identification of these influences and the interrelationships among these biological and social factors need to be given more importance

To conclude, despite being a time of Vulnerability, Adolescence is a time of greatest opportunity as well. This is the period when young people develop and establish their thinking, perspective; relationships with peers and other adults; it can be safely surmised that a healthy adolescence is a solid foundation for being a healthy adult.

The Rashtriya Kishor Swasthya Karyakram - RKSK being implemented by the Government of India under the aegis of the National Health Mission is a very crucial intervention. This flagship program offers a comprehensive package that promises to addresses the needs related to health and developmental challenges of adolescents in a holistic manner. The need of the hour is to effectively implement the interventions of the RKSK in letter and spirit at the grass roots level. This will only be possible if all the stakeholders come together.

Moreover, as this study and the other similar studies have pointed out, adolescent health, nutrition and development are governed by a number of economic, social and cultural factors, therefore it is imperative that other social welfare and poverty alleviation programmes must also be strengthened so that the gains are made in improving the health and nutritional status of the adolescents and these gains are sustained in the long term.

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