

Study of Physical Health Profile of Adolescents in Rural Field Practice Area NMCH Patna

Shiv Shankar Kumar¹, Rehana Anjum², Puja³, Amita Sinha⁴

¹Tutor, Department of Community Medicine NMCH Patna

²Tutor, Department of Community Medicine PMCH Patna

³Tutor, Department of Community Medicine PMCH Patna

⁴Associate Prof.& HOD, Department of Community Medicine NMCH Patna

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Corresponding author: Puja

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Abstract

Background and Objectives: Adolescent period is characterized by exceptionally rapid growth. Because of which nutritional requirements are increased in different proportions for boys and girls. If these are not met then it results in short stature and lean body mass affecting their working capacity in later life. Hence, there is a need to study the health profile of adolescents. To assess physical health profile of adolescent boys and girls, to determine factors affecting physical health profile and to impart health education.

Methods: A community based, cross-sectional study was conducted in rural field practice area, Department of Community Medicine, at Nalanda Medical College and Hospital Patna. Study duration of Nine Months. The study subjects were adolescents between 10 and 19 years of age. Estimated sample was 600 and by simple random method houses were visited till sample size was achieved.

Conclusion: In our study more boys (42.2%) were stunted than girls (34.8%). Factors associated with stunting were parent's education and occupation. More girls (30.6%) were underweight than boys (24.9%). Type of family, socio-economic status, parent's education and parent's occupation were associated with underweight among adolescents. Dental caries (8.5%) was most common morbidity.

Keywords: Physical health; adolescents; rural area; menstrual hygiene; anaemia.

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Introduction

The word "adolescence" is coined from Latin word "adolescere" which means "to grow into maturity". [1] Adolescence term is defined as including those aged between 10 and 19 years. [2] During this period physical, psychological and social maturity takes place. Adolescence is a period of transition between childhood and adulthood and is a crucial part of one's life. [3] They are no longer children but not adults either.

[4] Hence, they have different needs in terms of nutrition, psychological support, counseling and education about reproductive and sexual health. Adolescence can be classified into two groups' namely early adolescence between 10 to 14 years and late adolescence between 15 and 19 years. [1] So, this group includes all school going, college going and sometimes working adolescents. According

to census of India 2011, there are 253 million adolescents contributing to 20.9% of population which contributes to one-fifth of the total population. [5] Adolescent period represents a period of great turbulence [6] which is characterized by exceptionally rapid growth. This peak of growth are exceeded only by growth during foetal life and early infancy. [3] Because of the puberty spurt and rapid physical growth, the nutritional requirements are quite different i.e. demands are increased in different proportions for boys and girls. [6] Hence it is considered as second chance for growth or catch up growth for those children who experienced nutritional deficiencies in their early childhood. [7] Also, during adolescence the eating habits either healthy or unhealthy which are acquired persist in later life as well which may predispose to chronic diseases. [8] Also, they are influenced by habits and lifestyle patterns of peer groups and adults in home which they tend to adapt. This is a vulnerable age group to develop unhealthy lifestyle and habits like smoking, tobacco chewing and alcohol abuse due to peer pressure and lack of awareness of their harmful effects. [9] Adolescents not only carry the burden of pre-existing diseases of childhood but also experience pressure from peers, parents and society but they lack the skills required to manage this pressure. [4] During adolescence period, twenty five percent of adult height and fifty percent of adult weight are attained. As it is an intense anabolic period, the requirement for all nutrients are increased. If these requirements are not met then it results in short stature, lean body mass and deficiencies in muscular strength affecting their working capacity in later life. Stunting occurs as a result of malnutrition in early childhood and indicates chronic under nutrition, while thinness indicates current malnutrition. Short stature in adolescent girls when persists into adulthood is associated with increased risk of adverse reproductive outcomes. [10] Due to sedentary life style and consumption of

junk food many adolescents are likely to put on weight and become obese. Both forms of malnutrition i.e. thinness and obesity may lead to decreased performance in school as well as lower their self-esteem. [7] Previous studies have shown that malnutrition and poor health can also lead to low school enrolment, high absenteeism, early dropout. [1]

Adolescent girls and boys constitute more vulnerable group especially in developing countries where boys are expected to join men at work at early age to earn their living and girls to join household activities. Also, traditionally girls are married at an early age and hence are exposed to higher risk reproductive morbidity and mortality. According to District Level Health Survey-4 (DLHS-4), percentage of currently married women below 18 years in India was 22.1% and it was 14.1%. [11] This shows that substantial proportion of girls are still married at an early age. Many previous studies were done among adolescent girls only and a few studies on school going adolescents. A very few studies have been done among the age group of 10 to 19 years, including boys as well as girls.

Objectives

To determine the factors affecting the physical health profile of adolescents.

To impart health education to improve their health.

Material and Methods

A community based, cross-sectional study was conducted in rural field practice area, Department of Community Medicine, at Nalanda Medical College and Hospital Patna. Study duration of Nine Months. The study subjects were adolescents between 10 and 19 years of age. Estimated sample was 600 and by simple random method houses were visited till sample size was achieved.

The total Patna district population living in rural areas is 7,97,484 of which males and females are 4,09,416 and 3,88,068

respectively. In rural areas of Patna district, sex ratio is 971 females per 1000 males.

Inclusion criteria

All boys and girls in the age group of 10 to 19 years.

Adolescents and parents (of minors) who give consent on voluntary basis

According to a study done in Patna, prevalence of anaemia was 52.88% where as in a study done in other State pallor (anaemia) was seen in 40% of adolescents. So, taking 40% prevalence of anaemia (lesser prevalence of anaemia among the two studies) the sample size would be 600. As per Gram Panchayat records total numbers of houses present in these two villages are 927. The probable number of adolescents available in these two villages, as per Census 2011 (at 20.9% of total population) worked out to be 1163. Out of these, proportionately 370 and 230 adolescents from village respectively were included in the study. From these two villages list of households with adolescents was obtained and by simple random method houses were visited till the calculated sample size was achieved. If more than one adolescent was present in any household then the elder one was considered. If the

concerned adolescent was not available at the time of visit then a minimum of 3 visits were paid to meet the participant. If the participant was still unavailable, then adolescent in the next household was chosen as the participant.

With the help of medico-social workers of the Community Medicine department the villages were visited sequentially for data collection. After obtaining informed consent, the study subjects were interviewed using to pre-tested and semi-structured interview and physical examination at their homes. Data like demographic, socio-economic status of parents, education, family type, marital status, education of parents and occupation of parents was collected using a structured questionnaire.

Socio-demographic information was collected under these headings:

Age: Age of the subject was recorded in years completed at the time of house visit.

Sex: Categorized under male or female.

Religion: Only major religions prevalent in this district were considered (1) Hindu (2) Muslim (3) Christian (4) others.

Marital status: Marital status was categorised as married or unmarried

SES Classification as per Modified B. G. Prasad Classification

SES Class	B.G. Prasad's classification of 1961	Modified B.G.Prasad Classification
Class I	Rs. 100 and above	Rs. 6200 and above
Class II	Rs. 50 to 99	Rs. 3100 to 6199
Class III	Rs. 30 to 49	Rs. 1860 to 3099
Class IV	Rs. 15 to 29	Rs. 930 to 1859
Class V	Below Rs. 15	Below Rs. 929

Menstrual cycles: nature of cycles whether regular or irregular was noted. Menstrual problems: like dysmenorrhea, oligomenorrhea, polymenorrhea, menorrhagia and others were noted. Dysmenorrhea: painful menstruation of sufficient magnitude so as to incapacitate day-to-day activities. Oligomenorrhea: Menstrual bleeding occurring more than

35 days apart and which remains constant at that frequency. Polymenorrhea: Polymenorrhea is cyclic bleeding where the cycle is reduced to an arbitrary limit of less than 21 days and remains constant at that frequency. Menorrhagia: Menorrhagia is cyclic bleeding at normal intervals; the bleeding is either excessive in amount (> 80 ml) or duration (>7 days) or both. Use of

absorbent during menstruation: absorbent used during menstruation such as sanitary pads, new cloth or old cloth was asked. Cleaning of genitalia: if cleaned at least twice a day then hygiene was considered as satisfactory if not then unsatisfactory. If unsatisfactory, reason for the same was noted.

Immediately after data collection, health education regarding personal hygiene,

nutrition, healthy lifestyle and physiological changes during adolescence was given using visual aids such as pictures and flip chart to all the participants. If any morbidity was found while examination, preventive measures on the ailment were explained to the concerned participant and their family members present during the time of visit.

Results

Table 1: Distribution of study participants according to gender (n=600).

Gender	Number	Percent
Boys	342	57.0
Girls	258	43.0

In the present study out of 600 participants majority (57%) were boys and rest (43%) were girls.

Table 2: Age wise distribution of study participants

Age (years)	Frequency	Percent
10	38	6.3
11	58	9.7
12	63	10.5
13	58	9.7
14	69	11.5
15	86	14.3
16	83	13.8
17	56	9.3
18	48	8.0
19	41	6.8

In our study majority of study participants were of 15 years (14.3%) followed by 16 years (13.8%), 14 years (11.5%), 12 years (10.5%), 13 and 11 years (9.7% each), 17 years (9.3%), 18 years (8%), 19 years (6.8%) and 10 years (6.3%). Among these 47.7% were early adolescents and 52.3% were late adolescents.

Table 3: Religion wise distribution of study participants

Religion	Frequency	Percent
Hindu	489	81.5
Muslim	99	16.5
Christian	12	2.0

Our study had most of the participants belonging to Hindu religion (81.5%) followed by Muslim religion (16.5%) and Christians (2%).

Table 4: Educational status of study participants

Education	Number	Percent
Illiterate	18	3.0
Primary	231	38.5
High school	297	49.5
PUC	54	9.0

In the present study majority of the participants were attending or had completed high school (49.5%), 38.5% were attending/completed primary education, 9% of them were attending/completed PUC while 3% were illiterates.

Table 5: Association of anaemia with gender among adolescents

Classification of anaemia	Boys n (%)	Girls n (%)
Normal	159(67.4)	77(32.6)
Mild	73(82)	16(18)
Moderate	108(41.2)	154(58.8)
Severe	2(15.4)	11(84.6)
$\chi^2=68.895$, $df=3$, $p<0.001$		

Among those who had mild anaemia, 82% were boys and 18% were girls. But among moderate anaemic, 41.2% were boys and 58.85 were girls. As much as 84.6% of those who had severe anaemia were girls and 15.4% were boys. This difference of anaemia among boys and girls was found to be statistically significant with $\chi^2=68.895$, $p<0.001$ at $df=3$.

Table 6: Association of anaemia with education of study participants

Classification	Illiteraten (%)	Primaryn (%)	High schooln (%)	PUC n (%)
Normal	2(0.8)	109(46.2)	107(45.3)	18(7.6)
Mild	0	35(39.3)	54(60.7)	0
Moderate	12(4.6)	82(31.3)	132(50.4)	36(13.7)
Severe	4(30.8)	5(38.5)	4(30.8)	0
$\chi^2=69.328$, $df=9$, $p<0.001$				

It was seen in our study that, among those who had mild anaemia 39.3% had attended primary education and 60.7% high school. In moderately anaemic group, 4.6% were illiterates, 31.3% had primary education, 50.4% high school and 13.7% up to PUC. Among those who had severe anaemia 30.8% were illiterates, 38.5% had primary education, 30.8% high school. Mild and severe anemia was not seen in those who were educated upto PUC. Level of education of study participants was significantly associated with anaemia in adolescents ($\chi^2=69.328$, $df=9$, $p<0.001$). On clinical examination it was found that, 6.2% had upper respiratory tract infection (URTI), 6.7% worm infestation, 6.8% refractive error (RE), 2.3% had some form of injury, 2% urinary tract infection (UTI), 1.3% tonsillitis, 1% deviated nasal septum (DNS), 0.7% chronic suppurative otitis media, CSOM with hearing loss and mumps each.

Discussion

In the present study out of 600 participants majority (57%) were boys and rest (43%) were girls. Similarly in a study conducted by Bhattacharya et al in West Bengal [1] out of 424 adolescents, 262 (61.79%) were boys and the remaining 162 (38.21%) were girls. Another study done by Banerjee et al [12] in rural area of Goa, out of 1015 adolescents 565 (55.6%) were boys and 450 (44.4%) girls. Similar finding was also seen in a study conducted by P.R. Deshmukh et al [10] in rural Wardha, out of 764 adolescents, 420 (54.9%) were boys and 344 (45.1%) were girls. In our study majority of study participants were of 15 years (14.3%) followed by 16 years (13.8%), 14 years (11.5%), 12 years (10.5%), 13 and 11 years (9.7% each), 17 years (9.3%), 18 years (8%), 19 years (6.8%) and 10 years (6.3%). In a study done by Sushma A. Khopkar et al in Nasik, Maharashtra⁷ majority of participants were 12 years old (15.4%) followed by 11 years

(12.7%), 13 years (12%), 15 years (11.7%), 14 and 16 years (11.2% each), 17 years (9.8%), 10 years (8.4%) and 18 years (7.6%). Among adolescent boys, highest mean deficiency of calorie was seen in 13-15 years age group with mean of 169.3 Cal and lowest in 18 to 19 years, with mean of 113.1 Cal. Among girls, highest mean deficiency was in 16-17 years age group with mean of 294.8 Cal and lowest among 10-12 years age group with mean of 162.5 Cal., it was noted that total calorie intake was decreased from the age of 12 years, though not significantly. Also in another study done by Banerjee et al [12] in Goa, the mean energy intake revealed that the diets were inadequate and the total calories consumed by them were much below the recommended dietary allowance. These findings were in accordance with our study finding that diets consumed by study participants were deficient in calories. This may be due to low socio-economic status of majority of participants, low education status of parents and large family size. Similar findings were seen in a study conducted by Bhattacharya et al [1] where 33.49% adolescents were found to be having refractive errors, 23.11% had history of worm infestation and 68.61% had one or the other ENT problem. In another study by Joice S et al, [13] it was found that, 20.9% had refractive errors, 3.9% had history of worm infestations, 55.3% and 6.8% had upper respiratory tract infection and diarrhoea respectively. Also a study done by Dambhare DG et al [14] showed that 13.79% adolescents had refractive error, 7.76% had worm infestation, 2.59% had tonsillitis and 2.59% had wax in the ear. Another study by Dambhare DG et al in Wardha showed that, 35.34% adolescents had dental caries and 6.9% had skin problems. Where as in study conducted by Joice S et al, [13] 30.9% adolescents had dental problems, 0.2% had scabies and 14.5% had pediculosis. Also in a study done by Dey I et al, [4] 6% had vitamin B deficiency in the form of stomatitis and glossitis, 15% had dental caries and 13%

skin infections. [15]

Conclusion

600 adolescents from rural field practice area were included in the study. Out of 600 participants majority (57%) were boys and rest (43%) were girls. Around 6.2% of female participants were married. Out of 258 girls, 188 had attained menarche. Among these 188, 117 (62.2%) did not have any information about menstruation before menarche. As much as 41 (21.8%) were given information by their mothers, 22 (11.7%) by friends and 8 (4.3%) were informed by teachers. 85.6% of those who had attained menarche had regular cycles, while 14.4% had irregular cycles. And 28.2% of them gave history of leucorrhoea. Majority of girls who had attained menarche (44.2%) complained of dysmenorrhoea, 6.9% oligomenorrhoea, 3.2% had polymenorrhoea, 3.2% backache and menorrhagia respectively.

References

1. Bhattacharya A, Basu M, Chatterjee S, Misra RN, Chowdhury G. Nutritional status and morbidity profile of school-going adolescents in a district of West Bengal. *Muller J Med Sci Res* 2015; 6(1):10-5.
2. Park K. *Park's Textbook of Preventive and Social Medicine*. 24th ed. Jabalpur: M/s Banarasidas Bhanot Publishers; 2015.
3. Shivaramakrishna H R, Deepa A V, Sarithareddy M. Nutritional Status of Adolescent Girls in Rural Area of Kolar District -A Cross-Sectional Study. *Al Ameen J Med Sci* 2011; 4 (3):243-6.
4. Dey I, Biswas R, Ray K, Bhattacharjee S, Chakraborty M, Pal P P. Nutritional status of school going adolescents in a rural block of Darjeeling, West Bengal, India. *Health* 2011; 2(3):75-7.
5. Census of India [Internet] 2011 [cited 2015 Sep 28]. Available from <http://www.Censusindia.gov.in/2011census/C-series/c-2.html>.
6. Choudhary S, Mishra C P, Shukla K P.

- Nutritional Status of Adolescent Girls in Rural area of Varanasi. *Indian J Prev Soc Med* 2003;34(1):53-61.
7. Khopkar SA, Virtanen SM, Kulathinal S. Anthropometric characteristics of Underprivileged adolescents: A study from urban slums. *J Anthropol* 2014; 1-8.
 8. Harika Y, Naidu S, Baliga S, Mallapur M D. Dietary Pattern of College Going Adolescents (17-19 years) in urban area of Belagavi. *Int J Recent Sci Res* 2015;6(5) :3774-7.
 9. Kelkar D S, Patwardhan M, Joshi V D. Prevalence and Causalities of Tobacco Consumption (TC) among Adolescents: A Cross Sectional Study at Pune. *J Assoc Physicians India* 2013 ;61(3):174-8.
 10. Deshmukh P R, Gupta S S, Bharambe M S, Dongre A R, Maliye C, Kaur S et.al. Nutritional status of adolescents in rural Wardha. *Indian J Paed* 2008 ;73(1):139-41.
 11. DLHS-4 fact sheet [internet] 2012-13 [last accessed on 6/9/2017]
 12. Banerjee S, Dias A, Shinkre R, Patel V. Under nutrition among adolescents: A survey in five secondary schools in Goa. *Natl Med J India* 2011;24(1):8-11.
 13. Gupta D, Pant B, Kumari R, Gupta M. Screen out Anemia in adolescent boys as well!. *Nat J Community Med* 2013; 4(1):20-5.
 14. Patil SS, Patil SR, Naik SS, Durgawale PM, Devkar VV. An Assessment of Nutritional Status among School Going Adolescents (10-15 Years) - A Study from Rural Maharashtra. *Online J Health Allied Sci* 2015;14(2):1-4.
 15. Abdulhadi, Z. T. ., & Muhsin, Z. Y. . (2023). Footprints to achieve digital smile design and esthetic: Narrative review. *Journal of Medical Research and Health Sciences*, 6(2), 2430–2440. <https://doi.org/10.52845/JMRHS/2023-6-2-5>