

# Lifestyle Factors and Determinants of Health Behaviour among School-going Adolescents in a Sub-urban Area of West Bengal

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## Abstract

**Background:** Research into adolescents' health and behaviour and the lifestyle factors influencing them is essential to promote the effectiveness of health education, policies, programmes and practices. An adolescent's health development must be considered in its broadest sense, including physical, social, and emotional well-being, which may be impacted by lifestyle behavioural changes. This study determined factors related to adolescent health in Eastern India, where adolescents comprise 21.4% of the population.

**Aims:** to find out prevalence and pattern of different health related behaviours like eating habit, hygiene practice, substance abuse etc among school going adolescents.

**Materials & Methods:** This observational, descriptive, epidemiological cross-sectional study utilized Global School-based Health Survey (GSHS) questionnaires for India with added socio-demographic elements among 230 subjects.

**Results:** 56.96% were males, with most from classes VII, VIII, and XII (18.69% each). In nuclear families, 2.54% had no close friends. Underweight prevalence was 13.46%. While 64.78% never felt hungry, 3.04% faced food scarcity. Regarding diet, 8.69% skipped fruits, and 3.47% avoided vegetables in the last 30 days. Poor hygiene practices included 1.30% not brushing teeth, and 2.61% rarely washing hands before meals; 88.26% used soap. Teachers verbally abused 58.40%; 32.18% skipped school for over a day. Loneliness affected 13.04%, and substance use included smoking (5.22% after 14), tobacco chewing (3.05%), alcohol (6.52%), and drug use (3.48% in 12 months).

**Conclusion:** Dual nutritional issues, poor hygiene, sedentary lifestyle, substance use, lack of sex education, and persistent sadness highlight the need for urgent health interventions for adolescents.

**Key words:** Adolescent health, lifestyle factors, substance abuse, Hygiene practice, dietary habit

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## Introduction

The term adolescence, derived from the Latin word 'adolescent,' signifying "to grow" or "to mature," embodies the journey of identity formation, a relatively contemporary concept in developmental discourse<sup>1</sup>. This phase marks the onset of puberty, characterized by profound hormonal shifts prompting rapid physical metamorphosis and the emergence of secondary sexual traits. Concurrently, adolescents navigate intricate psychological and emotional terrains, asserting their individuality, fostering independence, and awakening to burgeoning sexual desires and attractions<sup>2</sup>.

As adolescents transition, they extend their social networks beyond familial boundaries, seeking validation and camaraderie among peers while endeavouring to carve a distinct niche within their social milieu. Typically spanning ages 10 to 19, this period is marked by a proclivity for novelty and experimentation, albeit often lacking in the requisite life skills to navigate the myriad influences of media and peer dynamics. Consequently, many succumb to the allure of risky behaviours such as substance abuse and early sexual activity, potentially jeopardizing their lifelong prospects<sup>3</sup>.

Notably, adolescent girls face unique nutritional exigencies frequently overlooked, precipitating various health adversities including widespread anaemia, exacerbated by prevalent practices of early marriage prevalent in remote regions. Such practices not only imperil the health of young brides but also stifle their personal development and societal contributions, manifesting in a spectrum of obstetric complications and maternal health risks<sup>2</sup>.

Recognizing adolescence as a pivotal juncture in health development, comprehensive research into adolescent health behaviours is imperative for informing targeted health education and promotion strategies. Embracing the World Health Organization's holistic conception of health as a multifaceted resource for daily living, research endeavours must encompass not only the identification of risk factors but also the cultivation of positive health outcomes<sup>4</sup>. Similar studies were conducted in other parts of India but very few of them dealt with all the components of adolescent behaviour as mentioned in GSHS (Global

School-based Student Health Survey)<sup>6</sup>, so this study seeks to elucidate the prevalence of various health behaviours, their sociodemographic correlates, and their implications among adolescent cohorts in Eastern India, fostering a nuanced understanding to inform evidence-based interventions and policy formulation.

## Methods and Methodology

A descriptive observational epidemiological study with a cross-sectional design was conducted in various Higher Secondary schools in Khardah West Bengal between June to August 2022. At first step, 4 schools were selected by simple random sampling from the list of all schools provided by District Inspector of schools (DI) office. Data was collected from Students of class V to class XII (both boys and girls), belonging to the adolescent age group. From class V to XII, randomly students were chosen to participate in the survey by using stratified random sampling technique. Students who were not willing to participate were excluded from this study. Sample size was calculated with alpha error as 5% and taking worst case scenario (50% prevalence) and design effect 2 and non response rate of 20%.

Power analysis was not done as it is descriptive study. The final sample was 230, after discarding 15 incomplete questionnaires. 'Health behaviour' is defined as an action taken by a person to maintain, attain, or regain good health and to prevent illness<sup>5</sup>. Although adolescence and young adulthood are generally healthy, several important public health and social problems either peak or start during these years. Homicide, suicide, motor vehicle crashes, including those caused by drinking and driving, substance use and abuse, smoking, sexually transmitted infections, including human immunodeficiency virus (HIV), homelessness, poor dietary behaviour, and negligible physical activity leading to obesity have been noted. To elicit these health behaviours among urban school-going adolescents a predesigned and pretested schedule containing a validated questionnaire of GSHS (Global School-based Student Health Survey)<sup>6</sup> was used as a data collecting tool. The Global Student Health Survey (GSHS) was developed by the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) in

collaboration with UNICEF, UNESCO, and UNAIDS. The preliminary questionnaire was composed and translated into the local language (Bengali) by a linguist and the Bengali questionnaire was retranslated into English to find out dissimilarities and corrected therefore. Before composing the final questionnaire, the preliminary questionnaire was tested among 30 students comprising students from classes V to XII. Then the final questionnaire was formulated after some modifications with the help of the Department of Community Medicine of the same institute.

All data was copied into an Excel sheet and was analysed using the software Epi info 7.1.2.0

## Result

Our study involved 230 subjects with an average age of 15.9 years, with 131 (56.96%) males. Most students were from classes VII, VIII, and XII (18.69% each). Among nuclear family students, only 2.54% had no close friends, while this increased over three times (8.92%) in joint families [ $p < 0.05$ ]. More joint family parents (8.92%) never understood their child's problems [ $p < 0.01$ ].

**Dietary Habits:** 19.12% of students were overweight, and 13.46% were underweight. While 64.78% never felt hungry in the past 30 days, 3.04% experienced food scarcity. 8.69% did not consume fruits, 3.47% avoided vegetables, and 19.56% abstained from carbonated drinks. 11.30% drank water at least five times a day, and 15.65% avoided fast food.

**Hygiene Practices:** 1.30% never brushed their teeth; 2.61% rarely washed hands before meals; 88.26% used soap. Seven males never washed hands after using the toilet. 98.70% reported handwashing facilities at school, yet 42.17% found toilets dirty. Male students (9.92%) were significantly less likely to wash hands after using the toilet than females [ $p < 0.05$ ].

**Physical Injury & Mental Health:** 19.13% suffered sports-related injuries, while 16.95% sustained injuries while walking/running. 58.40% experienced verbal abuse from teachers in the past year. 32.18% missed school for over a day, 13.04% frequently felt lonely, and 9.57% struggled with sleep.

More females (19.19%) than males (5.34%) had sleep issues. 26.09% felt hopeless for two weeks or more, and 5.22% had no close friends. 21.30% struggled to focus on homework, and 15.65% had difficulty answering in class.

**Substance Abuse:** 5.22% of smokers started after 14 years. 12.61% smoked in the past 30 days, and 72.22% attempted to quit. 86.52% were exposed to second hand smoke, and 33.46% had a parent using tobacco. 9.13% (12.12% females) considered smoking masculine. Only 4.35% believed cigarettes were harmless. 3.05% chewed tobacco; 6.52% consumed alcohol, and 15 students had an alcoholic parent. 68.84% saw actors smoking, and 60.09% saw actors drinking in media. 3.48% used drugs in the past year. 12.99% of students with a smoking parent smoked, compared to 5.23% without. Similarly, 26.67% of students with an alcoholic parent drank, compared to 6.52% without [ $p < 0.01$ ].

**Lifestyle & Exercise:** 35.65% were inactive for 60 minutes/day, and 33.92% were completely inactive. 41.74% never attended physical education, and 24.35% did not do strength exercises. 26.09% spent 3+ hours daily on screens.

**Sleep & Support System:** 16.96% slept 8+ hours daily. 20.87% skipped school without permission. 25.65% reported students were rarely kind. 12.17% said parents rarely checked homework, and 81.74% said parents rarely monitored their free time. 66.52% lacked HIV/AIDS education, and only 30.87% learned about STD prevention this year.

**Table 1: Distribution of study subjects according to their hygiene practice (n=230)**

Tooth Brushing: past 30 days	Male	Female
Didn't do	2(1.52)	1(1.01)
≥1time/day	129(98.47)	98(98.98)
Hand Washing before eating: past 30 days		
Never/rarely	6(4.58)	0(0)
Sometimes/most of the time/always	125(95.42)	99(100)
Hand washing with soap: past 30 days		
Never/rarely	18(13.74)	9(9.1)

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Sometimes/most of the time/always	113(86.25)	90(90.9)
<b>Hand washing after toilet/latrine: past 30 days</b>		
Never/rarely	7(5.34)	0(0)
Sometimes/most of the time/always	124(94.66)	99(100)
Total	131(100)	99(100)

**Table 2: Distribution of study subjects according to history of physical injury and status of mental health (n=230)**

Most serious injury: last 12 months	Male	Female
no such injury last 12 months	58(44.27)	63(63.63)
playing/training for sports	36(27.48)	8(8.08)
walking/running not part of playing	24(18.32)	15(15.15)
Others including riding cycle/bike/scooter	13(11.91)	13(13.13)
<b>Verbally abused by teacher: last 12 months</b>		
0 times	40(30.53)	58(58.58)
1-5 times	76(58.02)	34(34.34)
6-9 times	11(8.4)	3(3.03)
≥10 times	4(3.05)	4(4.04)
<b>Absent due to unsafe feelings at school: last 30days</b>		
0 day	83(63.36)	73(73.74)
1-5 days	41(31.3)	19(19.19)
≥6 days	7(5.34)	7(7.07)
<b>Feeling lonely most of the times/always: last 12 months</b>		
Yes	16(12.21)	14(14.14)
No	115(87.79)	85(85.86)
<b>Worried, couldn't sleep at night most of the times/ always: past 12 months</b>		
Yes	7(5.34)	15(15.15)

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No	124(94.66)	84(84.85)
<b>Felt hopeless/sad for 2weeks or : past 12 months</b>		
Yes	34(25.95)	26(26.26)
No	97(74.05)	73(73.74)
<b>Number of close friends</b>		
Zero	7(5.34)	5(5.05)
one to two	42(32.06)	36(36.36)
≥3	82(62.59)	58(58.59)
<b>Hard time to focus most of the time/ always on homework/ others: past 12 months</b>		
Yes	32(24.43)	17(17.17)
No	99(75.57)	82(82.83)
<b>Hard time answering questions/ writing on blackboard most of the times/ always: past 12 months</b>		
Yes	21(16.03)	15(15.15)
No	110(83.97)	84(84.85)
<b>Disturbed due to comment by peers/ teachers/family: past 12 months</b>		
Yes	9(6.87)	9(9.09)
No	122(93.13)	90(90.91)
Total	131(100)	99(100)

**Table 3: Distribution of study subjects according to history of substance abuse (n=230)**

<b>Age when 1<sup>st</sup> tried cigarette</b>		
Never	120(91.61)	92(92.94)
<14 years	4(3.05)	2(1.01)
≥14years	7(5.34)	5(5.05)
<b>Smoked cigarettes ≥1 day: past 30 days</b>		
Yes	4(3.05)	2(2.02)
No	127(96.95)	97(97.98)
<b>People smoked in your presence: past 7 days</b>		

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0 day	21(16.03)	10(10.1)
1-6 days	47(35.88)	43(43.44)
All 7 days	63(48.09)	46(46.46)
<b>Parents/ guardians using tobacco:</b>		
Neither of them	73(55.73)	63(63.63)
Father / male guardian	44(33.59)	27(27.27)
Mother / female guardian	2(1.53)	2(2.02)
Both	1(0.76)	1(1.01)
I don't know	11(8.39)	6(6.06)
<b>Thought about a man smoking:</b>		
Lacks confidence	33(25.19)	40(40.4)
Stupid	67(51.15)	39(39.4)
Loser	21(16.03)	8(8.08)
Successful	1(0.76)	0(0)
Intelligent	0(0)	0(0)
Macho	9(6.87)	12(12.12)
<b>Smoking cigarettes harmful?</b>		

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Yes	125(95.42)	95(95.96)
No	6(4.58)	4(4.04)
<b>Age when 1<sup>st</sup> chewed tobacco</b>		
Never chewed tobacco	126(96.18)	97(97.98)
<14 years	4(3.05)	1(1.01)
≥14 years	1(0.76)	1(1.01)
<b>Experiencing a drink of alcohol</b>		
Yes	7(5.44)	8(8.08)
No	124(94.66)	91(91.92)
<b>Parents/ Guardians drink alcohol</b>		
Neither of them	115(87.79)	81(81.82)
Father / male guardian	8(6.11)	7(7.07)
Mother / female guardian	0(0)	0(0)
Both	0(0)	0(0)
I don't know	8(6.11)	11(11.11)
Total	131(100)	99(100)

**Table 4: Association of parental addiction with substance abuse of the study subjects (n=230)**

Parents' addiction behaviour	Study subjects' addiction behaviour			Odd's ratio	p value
	Ever smoked	Never smoked	Total		
Smoker	10(12.99)	67(87.01)	77(100)	2.7(1.02-7.16)	0.038
Non smoker	8(5.23)	145(94.77)	153(100)		
Total	18 (7.82)	212 (92.18)	230 (100)		

	Ever drunk alcohol	Never drunk alcohol		Odd's ratio	p value
NonAlcoholic	11(5.12)	204(94.88)	215(100)		
Total	15(6.52)	215(93.42)	230(100)		

**Discussion**

We found a noteworthy 9.56% of the population was found to be overweight, with an additional 9.56% categorized as obese. Interestingly, there was a gender disparity in these statistics, with 12.21% of males and 6.06% of females classified as overweight, and 12.97% of males and 5.05% of females falling into

the obese category. This mirrors previous research by Deoke A et al<sup>7</sup>, conducted in Nagpur, which reported 5.84% overweight individuals and 0.35% obese. We believe this higher prevalence of overweight and obesity among boys as compared to girls, roots from their inactivity or reluctance to consume healthy meal.

The study also shed light on dietary habits, indicating that 8.69% of students did not consume fruits, while 3.47% did not include vegetables in their diet over the past month. Additionally, 18.25% consumed fruits less than once a day, and 13.03% consumed vegetables once a day. These figures, although concerning, are relatively favorable compared to a study by Karl Peltzer and Supa Pengpid<sup>8</sup> in Southeast Asia, where 28% reported inadequate fruit consumption and 13.8% reported insufficient vegetable intake.

In terms of hygiene practices, females exhibited a higher level of hygiene compared to males, underscoring the need for comprehensive hygiene education, particularly among male students. This is particularly pertinent in the context of the COVID-19 pandemic, where hygiene maintenance emerged as a critical preventive measure. Poor hygiene, unbalanced nutritional intake and reduced physical exercise all points to the development of a number of morbidities like diabetes, ischaemic heart disease in males.

The study also highlighted the prevalence of injuries among students, with 19.13% sustaining severe injuries during sports or training and 16.95% experiencing injuries while running or walking in the past year. Additionally, a concerning 58.40% of students reported verbal abuse by teachers over the same period, with boys being disproportionately affected. While we can justify the physical injury that occurred as a result of tussle, or during sport or training; what astonished us was that a majority of the participants claimed verbal abuse from their teachers. Our questionnaire did not allow us to go into the details of the abuse or what they considered to be abused actually verbally or in any other respects. However, it is our understanding that such concerns should have been identified earlier and investigated thoroughly. We like to believe that school plays a vast role in moulding a child's personality and is responsible for development of their academic, social and humanity. Unable to explore this particular region was one of our major limitation.

Regarding tobacco and substance use, the study found that 92.17% of students had never smoked, and only 12.61% of ever-smokers had smoked in the past 30 days. In a study done in Jhansi<sup>9</sup>, 15.30% of students aged 14-19 years old tried cigarette/ bidi smoking at least once in their lifetime, while 5.46% of smokers tried smoking at an age less than 14 years. The results are similar to what we see in this study where 7.83% are ever smokers. This shows a lower frequency of adolescent smoking in this part of West Bengal using the GYTS questionnaire<sup>10</sup>, but it is similar to a study conducted by the Centre for Disease Control (CDC) among middle school students in 2004, which found that 12% reported using tobacco at least once in the past 30 days. 12.99% of students had smoked in their lifetime whose at least any of the parents were using tobacco which is more significant than those 5.23% smokers whose parents did not use [ $p < 0.05$ ]. However, 3.81% of males and 2.02% of females reported chewing tobacco, while 3.04% used other forms of tobacco such as pan masala or gutka. Notably, parental influence played a significant role, with 12.99% of students reporting smoking in their lifetime having at least one parent who used tobacco. Tobacco intake was higher among those with a history of parental tobacco intake in a study by Anindya Mukherjee et al in West Bengal, India<sup>11</sup>. Only 4.35% of students believe that cigarettes are not harmful. This is a significant improvement from a previous study conducted in rural West Bengal where 26% of the students thought that smoking causes no health problems<sup>11</sup>. This shows better knowledge of this urban township regarding smoking.

Alcohol consumption was also prevalent among students, with 6.52% reporting alcohol use, and 15 students indicating parental alcoholism. This trend was particularly pronounced among girls, with paternal drinking emerging as a significant factor. Fathers' drinking (14.48%) was a significant factor in alcoholism in a study by Peeyush Kariwal et al.<sup>9</sup> in Jhansi. Nearly 89% of students had seen anti-tobacco advertisements in media last month, while 76% had watched their favourite heroes smoking on television or in cinemas in a study by Anindya Mukherjee<sup>11</sup>. In this study, 94.35% of students saw anti-smoking

messages in media in the past 30 days and 68.84% of those who watch TV have seen actors smoking which is congruent with the results of similar studies. 3.48% have used drugs in the past 12 months.

Hence, its quite evident that parental influence had significant role in substance abuse. Peer pressure is known to be a giant driving factor in initiating various addictive substances. This study just adds more strength to previously established findings<sup>12-14</sup>.

Furthermore, the study revealed a lack of comprehensive sex education and communication between parents and children, with many students expressing constant sadness. This highlights the urgent need for improved parent-child communication and comprehensive sex education at both the family and school levels<sup>15</sup>. While the population of India is rapidly increasing, discussing anything related to sex is still quite taboo in the region<sup>16</sup>. While Khardah is a sub-urban region, the school welcomes student from quite remote places. Hence, sex education is undoubtedly a massive challenge even if its done by doctors or specialists. The awareness of STDs, including HIV/AIDS has thus taken a serious toll too<sup>17</sup>.

### Conclusion

In conclusion, the study underscores several pressing concerns among urban adolescents, including issues related to overweight and obesity, poor dietary habits, inadequate hygiene practices, injuries, tobacco and substance use, alcohol consumption, and lack of sex education and parental communication. Addressing these challenges requires concerted efforts from policymakers, educators, and healthcare professionals to ensure the holistic well-being of the younger generation.

**Ethical Consideration:** Ethical clearance was taken from institutional ethics committee of Medical College, Kolkata (MC/KOL/IEC/NON-SPON/1111//06/2021). Consent was taken from one of the parents of the students. Assent was taken from all the study participants.

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