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RESEARCH ARTICLE

A STUDY OF ADOLESCENT PROBLEMS AND THEIR KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING HEALTH AND RIGHTS IN THE EASTERN REGION OF NEPAL

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ABSTRACT

Aim: A cross sectional study were conducted among 1341adolescents aged 10 to 19 years for the problems of adolescents in rural and urban areas, assess the Knowledge, Attitude and Practice (KAP) among Adolescents regarding their Health and Rights and compare the KAP of Health and Rights among early, mid and late Adolescents. **Methodology:** All subjects were randomly selected. A questionnaire was distributed among the selected students. Responses were collected on the same day in confidential manner. They were examined for their weight by Libra Weighting Scale(± 50 grams), Height with wooden stadiometer (in centimeter), BMI was calculated as the ratio of weight (in Kg) and square of height (in cm), and General Physical examination done and recorded in their respective form. Results: To find out significance difference between dependent and independent variables, Chi-Square test for categorical data and Student's t-test for numerical data were applied. Statistical significance was taken at p-value <0.05. **Conclusions:** This study was concluded that under nutrition at 36.8%, 8% of the OPD attendees were depression, about 80% adolescents knew about condom as a measure for safe sex, married were 1.78%, Romantic relationships were 15%, Premarital sexual experiences 7.44%. The knowledge of contraceptive method in urban adolescents (55%) and in rural were 37%.. Forced sexual experiences were complained by 3.28%. It was significantly high in rural, female and early adolescents. Alcohol addicted (8.57%), tobacco (2.83%) and other drugs (1.19%) adolescents. (>90%) of adolescents followed safety measure on the road, while 14.49% had ever been injured. 14.32% and 7.46% were in violent activity under peer pressure. 84% adolescents were good relation with parents. awareness about their rights was low (10.14%).

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INTRODUCTION

Adolescence refers to the developmental period between childhood and adulthood, a time of rapid biological, cognitive and psychosocial maturation. The term "Adolescent" refers to individual between the ages of 10-19 years. One in every five people in the world is an adolescent. As of 2000, adolescents comprised more than 1.1 billion of the world population, that is one in every five people in the world is an adolescent.[1] While adolescents are in general considered a healthy population group but nevertheless, they pose unique challenges to health and development owing to their vulnerability and pressure from society including peers to adopt risky health behavior. The dynamic transition period to adulthood is also a period of positive changes prompted by significant capacity of adolescents to learn rapidly, experience new and diverse situation, develop and use critical thinking, and to familiarize themselves with freedom, to be creative and socialize.

The majority of the Nepalese adolescents had a moderate level of overall HIV/AIDS knowledge, but lacked knowledge in the areas of mode of transmission and prevention of HIV/AIDS. Approximately 79% thought that AIDS was a big problem and 67% were afraid of getting AIDS. However, only 16.7% reported that they were likely to get AIDS, and 18.7% did not perceive living in Katmandu as a risk for HIV/AIDS.[2]

Regmi PR, Bhattarai RP and Lamsal G. conducted their study in Nepalese adolescents for their KAP. Knowledge regarding HIV transmission, they reported, sexual intercourse (75 %), blood transfusion (80%), by sharing syringes (75%) and mother to child (74%). Regarding prevention they mentioned condom (91% males and 93% female), avoiding blood transfusion (90%) and having sex with only one partner (15 % for both

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HIV and STD). Source of information for HIV/AIDS and RH issues said were health worker (19%), teacher (17%) and peer (12%). Among the total respondents one third (32%) of males and 12% of females had a girl/boyfriend. [3]

we were studied on the problems of adolescents in rural and urban areas of eastern region of Nepal, And to assessed the Knowledge, Attitude and Practice (KAP) among Adolescents regarding their Health and Rights and compared the KAP of Health and Rights among early, mid and late Adolescents. And excluded those subjects who were not willing to participate and very sick (need emergency treatment or mentally retarded).

MATERIALS AND METHOD

Subjects: A total of 1341 subjects adolescent aged 10 to 19 years which included about three fourth (1000; 74.57%) from the 10 different schools of Dharan, Dhankuta and Rangeli and rest 341(25.43%) from the OPDs of BPKIHS, Nepal. Subjects were selected on the basis of inclusion and exclusion criteria after signing the informed consent from all respondents. Subject recruited after approval from the institutional ethical committee of B. P. Koirala Institute of Health Sciences, Dharan, Nepal was sought. Subjects meeting inclusion and exclusion criteria were selected for the study. Study Design: It was a Questionnaire Survey (Prospective study) and duration of Study was 15th April 2006 to 14th June 2007 (14 month). Study tools: Pre tested structured questionnaire comprising of both open and close ended questions in Nepali language was used. Sample and Method: By adopting Multistage sampling technique, schools from three districts were selected and systematic sampling technique was applied to select the students from class 6-12 in school and campus. 100 students from each school/college/campus were selected. After signing of informed consent from head of their respective institution, questionnaire was distributed among the selected students. Responses were collected on the same day in confidential manner. They were examined for their weight by Libra Weighting Scale (± 50 grams), Height with wooden stadiometer (in centimeter), BMI was calculated as the ratio of weight (in Kg) and square of height (in cm), and General Physical examination done and recorded in their respective form. Out of school study Adolescent attending OPD at District Hospital Dhankuta, Rangeli, Pediatrics, Psychiatry and Dermatology OPD at BPKIHS, Nepal were randomly selected. In addition of their response and General Physical examination Systemic examination was also done when they permitted for the same.

Table1 Systolic Blood Pressure (SBP) of different Population Group of Adolescents

	SBP			DBP		
Total (n)	Mean	SD	P value	Mean	SD	P value
Adolescent (1341)	106.78	12.55		68.93	11.39	
Rural (510)	109.06	11.85	.000	70.10	10.54	.003
Urban (831)	105.38	12.77		68.21	11.83	
Male (819)	107.38	12.85	.029	69.45	12.02	.037
Female (522)	105.84	12.01		68.11	10.28	
Early-adolescent (307)	106.51	12.07		69.02	10.05	.196
Mid- adolescent (684)	107.15	12.80	.526	69.36	11.76	
Late-adolescent (350)	106.29	12.49		68.01	11.73	

Statistical Analysis

Collected data was compiled and entered in Ms-Excel 2000 and analysis was done using SPSS statistical software version 10.0 and Ms-Excel. Descriptive data were reported as no. of observations and percentage. Mean and standard deviation were calculated for numerical variables. To find out significance difference between dependent and independent variables, Chi-Square test for categorical data and Student's t-test for numerical data were applied. The results were taken to be significant if p value < 0.05.

RESULTS

A cross sectional study was conducted among adolescents aged 10 to 19 years from 10 different schools of Dharan, Dhankuta and Rangeli and 5 OPDs as mentioned in methodology. Study sample comprised of total 1341 adolescents which includes about three fourth (1000; 74.57%) from the schools and rest 341(25.43%) from the OPDs. Out of the total study population larger part comprised of males 819(61.07%) and Urban Population 831(61.03%). Maximum number 684 (51%) of adolescents in the study were aged between 14 to 16 years (Mid adolescents) (fig. 3). Age of the population: Mean age of the total population was 15.02 years (SD 2.17). The same of the rural population was 14.98 years (SD 2.42) and urban population was 15.05 years (SD 1.99). Males were slightly younger with mean age 14.90 (SD 2.15) years and females 15.22 (SD 2.18) years (table 2).

Table 2 Adolescents with Anemia

	Clinical pallor(n) (%)	
Adolescent (1341)	164 (3)*	12.23
Rural (510)	61	11.96
Urban (831)	103	12.39
Male (819)	62	7.57
Female (522)	102	19.54
Early-adolescent (307)	39	12.70
Mid- adolescent (684)	86	12.57
Late-adolescent (350)	39	11.14

Table 3 Acne among adolescents.

	Acne (n) (%)	
Adolescent (1341)	90 (54)*	6.71
Rural (510)	40	7.84
Urban (831)	50	6.02
Male (819)	51	6.23
Female (522)	39	7.47
Early-adolescent (307)	8	2.61
Mid- adolescent (684)	44	6.43
Late-adolescent (350)	38	10.86

Marital Status: Out of the total (n=1341) only 24 (1.79%) adolescents were married. Among the married 14 (2.75%) ado Educational Status of Adolescents: About three-fourth (73.08%) of adolescents were studying in secondary level. The maximum number of adolescents (269; 20.05%) were studying in Grade 9 while, 113 (8.42%) were illiterate. Among the adolescents who visited OPDs about one third were illiterate, i.e. 113 out of 341(33.14%). lescents were from rural areas while, 10 (1.20%) from urban areas (table 3). Parents' occupation: Most of the adolescents from the rural areas belonged to family of farmers while, in urban region parental occupation was service followed by business.

Table 4 Dental Caries

	Dental Caries (n)	(%)
Adolescent (1341)	61	4.55
Rural (510)	22	4.31
Urban (831)	39	4.69
Male (819)	33	4.03
Female (522)	28	5.36
Early-adolescent (307)	15	4.89
Mid- adolescent (684)	35	5.12
Late-adolescent (350)	11	3.12

Table 5 Thyroid Swelling

	Total (n)	Percent (%)
Adolescent (1341)	27	2.01
Rural (510)	10	1.96
Urban (831)	17	2.05
Male (819)	18	2.20
Female (522)	9	1.72
Early-adolescent (307)	2	0.65
Mid- adolescent (684)	20	2.92
Late-adolescent (350)	5	1.43

(48.47%) took 3 major meals per day. 48% urban adolescents took 2 major meals while (50.78%) rural adolescents took 3 major meals per day. 46.09% adolescents skipped meals. Skipping meals was more (46.67%) in rural than urban (45.73%), in females (50.77%) than males (43.10%) and in late adolescents (52.29%).

Adolescent - parent relationship: Majority of adolescents (60.4 had smooth relationship with their parents and 51 (3.80%) adolescents had difficult relation with their parents out of which significant number in urban population 46 (5.54%). Of the total, 1128 (84%) adolescents said that they could discuss important issues and worries with their parents. 88.63% of rural, 81.35% of urban, 84.25% of males, 83.91% of females and 90.57% of late adolescents gave the same answer. Romantic Relationship: Significant number (204, 15.12%) of adolescents had romantic relationship. 14.31% of the rural adolescents and 15.76% of urban adolescents had romantic relationship.

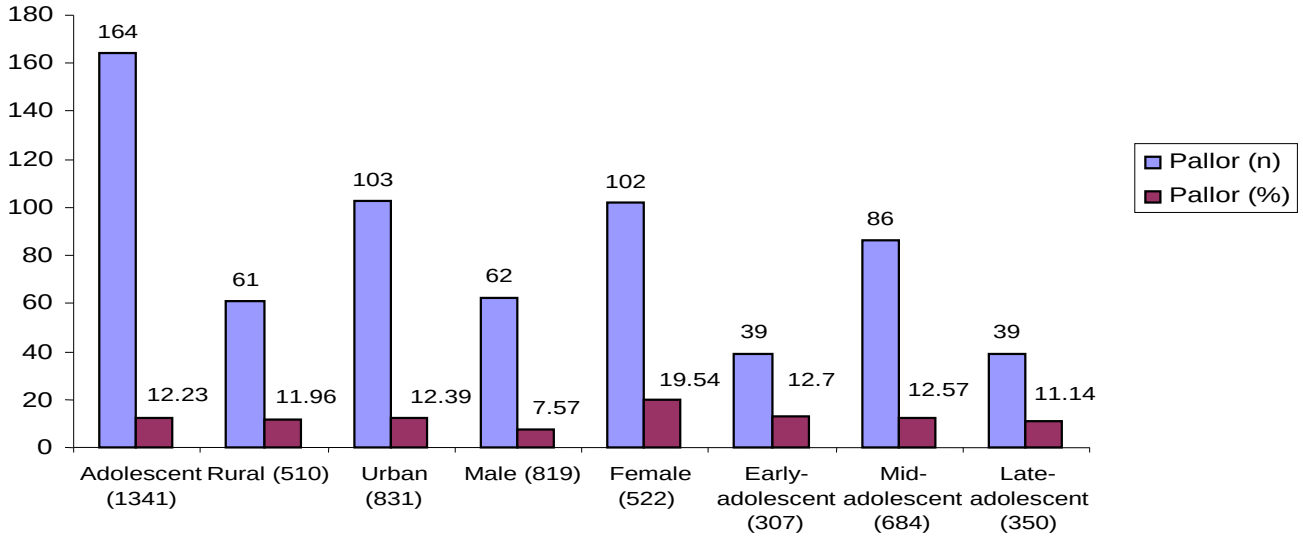

Figure 25 Adolescents with Anemia

Education amongst parents: Parents' of maximum adolescents were educated to the secondary level (49.74%) while 20.13% were illiterate. Smoking and alcoholism amongst parents: Slightly more than half (50.19%) of the parents were smokers and about a third (30.13%) took alcohol. Smoking was more prevalent in rural parents (53.92%) whereas, alcohol was more 32.25% is urban population. Growth and development: About two-third of the adolescents responded positively when they were asked whether they were happy with their weight (916, 68.31%), height (879, 65.55%) and built / figure (913, 68.08%). Urban adolescents as compared to their rural counterparts were happier with their height (69.92% vs 65.69%), weight (66.67% vs 63.73%) while, lesser number of urban adolescents were happy with their built / figure (66.79% vs 70.20%) (table 8, fig 9). 518 (38.63%) adolescents were worried about the way their body was developing. This worry was more in rural adolescents (41.37%) in comparison to urban adolescents (36.94%). Males (44.81%) were more worried than females (28.93%). The worry about their physical development was almost similar in all age groups, i.e. early adolescents (37.46%), mid adolescents (39.33%) and late adolescents (38.29%) (table 9, fig 10). Eating Habits: Adolescents took 1 to 5 major meals per day. Maximum number of adolescents 650

Romantic relationship grows with age, as the age advances more and more adolescents indulged in such relationships, early adolescents 2.28%, mid adolescents 16.37% and almost one fourth 24.29% of late adolescents have romantic relation. Dating amongst adolescents: 172 (12.83%) adolescents of total 1341 go on date. Practice of dating is more prevalent in urban population than rural (14.32% vs 10.39%), almost one third of late adolescent date (111, 31.71%). Knowledge about HIV, AIDS and STIs: Knowledge of HIV, AIDS and STIs was good in adolescents. 93.74%, 97.32% and 80.70% of adolescents knew about HIV, AIDS and STIs respectively. The knowledge was better in urban adolescents than rural adolescents. Knowledge of HIV & AIDS was better in mid adolescents 97.07% and 98.39% respectively in comparison of late adolescents (HIV; 95.71%, AIDS; 97.14%) and early adolescents (HIV; 84.04%, AIDS;95.11%). While, knowledge of STIs was better among urban population than rural population (82.43% vs 78.04%). Knowledge of STIs was directly proportional to the age (early adolescents 73.29%, mid adolescents 82.45% and late adolescents 84%) (table 15, fig 14). Knowledge about contraceptive methods: Knowledge of contraceptive method is more in urban (54.15%) adolescents than rural (36.47%) adolescents. Knowledge for the same is

slightly more in males (47.86%) than females 46.74%). Mid adolescents have better knowledge (58.19%) in comparison of early (24.10%) and late (46.86%) adolescents. 636 (47.43%) adolescents know at least one method of contraception (table 16, fig 15). Knowledge about safe sex: 79.94% adolescents considered sexual contact to be safe if condom was to be used while, 66.89% considered it safe with single partner. The knowledge of association between safe sex and condom was significantly high (~80%), among all the three age groups.

Knowledge about transmission of HIV / AIDS: Knowledge of mode of transmission of HIV / AIDS is fairly good among adolescents (sexual contact 95.37%, sharing needles 92.02%, blood transfusion 91.12% and mother to child transmission 80.68%). Knowledge was better in urban adolescents. Mid adolescents had better knowledge than their younger as well as older counter parts. Awareness about unprotected sex: A fairly good number of adolescents knew about mode of transmission of HIV/AIDS. Knowledge of unprotected sex was low. Sexual contact without use of condom was said by 43.62% but the same knowledge was low in urban population 32.74% as compared to rural 50.3% population. Knowledge of prostitution in term of unprotected sex is fairly good in rural population (46.86%) than urban (38.62%). Use of tobacco and alcohol among adolescents: Number of adolescents using tobacco was low (2.83%) as compared to alcohol (8.57%), while 1.19% adolescents use other drugs. Use of tobacco, alcohol and other drugs in rural adolescents was 1.56%, 0.58% and 0.39% respectively while, significantly high in urban population 3.61%, 13.47% and 1.68% respectively. As age advances more and more numbers of adolescent indulge in tobacco (4.57%) and alcohol (16%) in late adolescents. While, drug abuse is maximum (1.46%) in mid adolescent age group. Pattern of safety measures, violence and injuries: Most of the adolescents used safety measures on road (obeyed traffic rules; 95.22%, used helmets while riding a motor cycle; 92.24%). Significant number of adolescents had suffered some kind of injury, maximum in late adolescents group (30.29%), 14.32% had been involved in brawl and 7.46% had indulged in violence under peer pressure (table 21, fig 20-21). Symptoms of depression: More than one-fourth (27.82%) of adolescents feel sad often and almost similar number of adolescents (24.46%) having trouble sleep, 24.68% adolescents feel lonely and hopelessness and 7.76% have felt like committing suicide at any point of time. All these problems are more common in rural and male and in older adolescents (table 22, fig 22). Experience of forced sexual activity: 44 adolescents (3.28%) out of 1341 reported to have experienced some kind of forced sexual activities, of which 27 were rural resident and 16 each for early and mid adolescent group (table 23). On statistical analysis it was found that exposure to forced sexual activity was significantly higher among rural adolescents (p=0.0011) and the same for early adolescents was also significant as compared to other groups (p=0.030). Experience of sexual intercourse: 9.10% of adolescents had experienced sexual intercourse. Mean age of first contact was 14.68years (SD 1.56). Late adolescents (15.93%) had sexual intercourse at mean age of 15.58 years (SD 1.33) in comparison of their younger counterpart (P 0.000) (table 24). 7.44% adolescents had experienced premarital sex. Access to health information: More than two third (72.11%) of adolescents had access to information regarding health. Maximum respondents were from late adolescents (78.85%). Awareness about rights: Awareness among adolescents about their rights was low (10.14%). Less number of rural adolescents (7.64%) and males (8.91%) were aware of their rights. Awareness was almost similar in all the age groups. Sex education in schools: 76.13% adolescents had their opinion in favor of starting sex education in schools. Adolescents' anthropometry: Mean BMI of adolescents recorded was 17.28 SD 2.56. When BMI of different age groups were compared significant difference (P 0.000) were observed. Difference in weight and height of males and females (P0.000) and among different age group (P0.000) were significant. Nutritional status of adolescents: The best simple index of population prevalence of under nutrition, over weight and obesity in children is provided by body mass index (BMI) weight (kg)/ height^2 (m^2). [4] Since BMI changes with age. These values must be compared with any acceptable data (CDC). [5] We have defined <5 percentile as under nourished, 5th to 85th percentile as normal, >85th percentile as over weight and >95th percentile as obese (table 30).

Blood pressure of adolescents: Mean Blood Pressure of adolescents was systolic; 106.78 mmHg, SD 12.55, diastolic; 68.93mmHg SD 11.39. Rural adolescents had significantly higher blood pressure (systolic; mean 109.06mmHg SD 11.85, diastolic; 70.10mmHg SD 10.54) than the urban adolescents (systolic; 105.38mmHg SD12.77, diastolic; 68.21mmHg SD11.83) with P 0.000 for systolic and 0.003 for diastolic. Significant difference was also observed between males and females in both systolic blood pressure (107.35mmHg Vs 105.84 mmHg, P 0.029) and diastolic blood pressure (69.45mmHg Vs 68.11mmHg, P 0.037). No significant difference was found in between age groups (table 33).

Anemia in adolescents: One of the major health problems was anemia. Pallor was identified in 12.23% adolescents. Prevalence of anemia was more than twice in females (19.54%) than in males (7.57%) (p=0.000) (table 34, fig 25). Acne in adolescents: Out of 1341 adolescents 90 (6.71%) had acne among which 54 had attended OPDs. The problem was more common in rural (7.84%), females (7.47%) and late adolescents (10.86%) (table 35, fig 26). Dental caries in adolescents: Dental caries was another common health problem identified. 61(4.55%) adolescents with slightly higher proportion in urban (4.69%), females (5.36%) and in mid adolescents (5.12%) were found (table 36). Goitre in adolescents: 27 (2.01%) adolescent had goitre. It was marginally more common in urban (2.05%) than rural (1.96%) and in mid adolescents (2.92%) (table 37). Health problems in adolescents attending OPDs: 211 rural and 130 urban adolescents (total 341) were attended at OPDs. The common problems were Depression (n=27), Worm infestation (n=23), Migraine (n=19), Scabies (n=24), Teniasis (n=17), Urticaria (n=17), Dysmenorrhea (n=9) and six females came for antenatal check up.

DISCUSSION

The second decade of life is a period of rapid growth and development for adolescents' bodies, mind and social

relationships. Physical growth is accompanied by sexual maturation, often leading to intimate relationships. The individuals' capacity for abstract and critical thought also develops, along with a heightened sense of self-awareness and emotional dependence. As the attitudes, values and behaviors that determine the young persons' future begin to crystallize and take shape, society expects the adolescent to assume greater personal responsibility. This process is marked by increased exposure and experimentation. The risks inherent is "first time" behaviors especially the use of tobacco, alcohol and other drags along with sexual activity which make the second decade of life a period fraught with danger.

Our study investigated the adolescent problems and their knowledge, attitude and practice regarding health and rights in Eastern Region of Nepal. Among 16 districts of the region we did the study in schools of Dhankuta, Rangeli (Morang District), Dharan (Sunsari District) and OPDs of Rangeli and Dhankuta District hospital along with Dermatology OPD, Pediatrics and Adolescent Medicine OPD and Psychiatry OPD of BPKIHS Dharan, where we got the adolescent from Ilam, Janakpur, Saptari, Dhanusha, Rajbiraj, Jhapa along with Sunsari, Morang and Dhankuta Districts

Our study population comprised of adolescents of all ages (10 – 19 years) including both sexes from Rural, Urban, Hilly and Terai regions of eastern Nepal. Thus the problem, knowledge attitude and practice regarding health and rights among the study population is likely to represent the adolescents of Eastern Nepal.
In the study 1341 adolescents were included in which 510 (38.03%) were rural and 831 (61.97%) were Urban residents including 522 (39.93%) females and 831 (61.07%) males. It included 307 (22.90%) early adolescents (aged 10 – 13 years), 684 (51%) mid adolescents (aged 14 – 16 years) and 350 (26.10%) late adolescents. 1000 (74.53%) adolescents were investigated in schools while 341 (25.43%) in OPDs. Out of 1341 illiterate were 113 (8.42%).

In our study 24 (1.79%) adolescents were married in which 14 were rural resident and 10 urban residents. Narayanan P *et al* reported that in most of the SAARC countries nearly 60% of all girls were married by the age 18 years with one fourth married by the age of 15 years. In India every third adolescent girl in the age group of 15 – 19 years was married. Mean age at marriage among female adolescent is 14.7 years and mean age at cohabitation slightly higher (15.5 years). 1991 census (Nepal) reported that 50% adolescent girls and 20.6% of the adolescent boys aged 15 – 19 years were married. K Venkaiah *et al* reported that 23% of adolescent girls were married in India before the age of 18 years. Educational status of adolescents in our study were recorded as follow, 8.42% were illiterate, 3.48% had studied up to class five, 88.1% had studied/ were studying in class 6 to intermediate level. Parents of 40.49% adolescent were in service, 30.35% in business and 29.16% were doing agriculture. 20.13% parents were illiterate and about half (49.74%) had studied up to secondary level. Parents of 50.19% adolescents were smoker while 30.13% used alcohol.

In our study adolescents had one to five major meals per day, in rural area 50.70% had three major meals while in urban area major proportion of adolescents (48.01%) took two major meals per day. 46.09% adolescents skipped meals, 52.29% late adolescent skipped meals in comparison of their younger population 45.60% early adolescents and 43.13% of mid adolescents. The best simple index of population prevalence of under nutrition, over weight and obesity in children is provided by body mass index (BMI) weight (kg)/ height^2 (m^2).[4] Since BMI changes with age. These values must be compared with any acceptable data (CDC).[5] We have defined <5 percentile as under nourished, 5th to 85th percentile as normal, >85th percentile as over weight and >95th percentile as obese. Mean BMI of adolescents recorded was 17.28 SD 2.56. When BMI of different age groups were compared significant difference (P 0.000) were observed. Difference in weight and height of males and females (P0.000) and among different age group (P0.000) were significant. According to Nepal demographic health survey 2001, the mean BMI for girls aged 15 – 19 years was 20.1 with 75.6 % falling in the normal range, 1.2% over weight and remainder (23.2%) were under nourished.[6]

In our study 68.08% of adolescents were happy with their built/figure which included 70.20% of rural and 66.79% Urban adolescents. Number of adolescents happy with their built/figure were maximum in late adolescent group 73.43% followed by early adolescents 70.03% and mid adolescents 64.47%. 38.63% of adolescents were worried about the way their body was developing. This worry was present in 41.37% of rural and 36.94% of Urban population, 44.81% of males and 28.93% of females, 37.46% in early adolescents, 39.33% in mid adolescents and 38.29% of late adolescents.

We observed 84.12% adolescents could discuss important issues and their worries with their parents including 88.63% of rural, 81.35% of Urban, 86.97% of early adolescents 79.53% of mid adolescents and 90.57% of late adolescents.

In our study 15.21% adolescents had romantic relationship, which included 14.31% of Rural, 15.76% Urban, 2.28% of early adolescents, 16.37% mid adolescents and 24.29% late adolescents. Adolescents went on date were 172 (12.83%) including 10.39% of Rural, 14.32% Urban, 13.92% of males, 11.11% of female, 3.58% of early adolescents, 12.57% of mid adolescents and 31.71% of late adolescents group.

In our study 93.74% adolescent knew about HIV, 97.32% knew about AIDS and 80.76% knew about STIs. Mahat G *et al* reported that majority of Nepalese adolescents had a moderate level of overall HIV/AIDS knowledge.[7]

Regarding mode of transmission of HIV/AIDS our study indicated that adolescents had fairly good knowledge; sexual contact 95.37%, sharing of needles 92.02%, blood transfusion 91.12% and mother to child transmission 80.68%. Harms G *et al* reported knowledge of mother to child transmission 93% in Tanzanian adolescents and 67% in adolescents of Uganda.[9] Bhattacharya G *et al* found that 86% of Asian-Indian born in USA knew that HIV can be spread with unsafe sex with a person infected with HIV. In his finding 47% adolescents were unaware of transmission with sharing a razor of an HIV

positive person.[8] Regmi PR *et al* Nepalese adolescents knowledge of mode of transmission was reported sexual intercourse (75%), blood transfusion (80%) by sharing syringes (75%) and mother to child (74%).[10] According to child health profile in Nepal 2002, 80% adolescents boys were aware of the vertical transmission of HIV/AIDS while only 46% of the females adolescents were knowledgeable about it.[11]

In our study 81.44% boys and 70.50% girls had the same knowledge. Knowledge of condom was 79.94% in our study. In Iran 72% adolescent were aware of condom (Mohammad Reza Mohamadi *et al*) [12] In our study 47.43% adolescents knew at least one method of contraception. Among them the knowledge was as follow; Condom 89.31% (42.36% of the total adolescents in the study), Pills 56.5% (26.85% of total), abstinence 33.18% (15.73% of total) and operative methods 37.11% (17.56% of total). In Iran 58% adolescents were aware of condom and pills as contraceptive 53% and 41% were aware of operative methods for females and males respectively 13% adolescents were not familiar with any contraceptive methods.[12] In India and Nepal knowledge of contraception among adolescents was reported more than 90%.[14]

In our study 2.83% adolescents had ever used tobacco, 8.57%, alcohol and 1.19% had ever used other drugs. Out of total adolescents 1.56% tobacco users were rural and 2.83% urban resident. Kokkevi A *et al* reported 32% daily smokers in high school students in Greece.[15] and Linardakis M *et al* find 10% adolescents who smoke daily in Cretes.[16] Kyrlesi A *et al* reported that through out Greece 32.2% adolescents had ever smoked and approximately one in four of ever smokers had initiated smoking before age of 10 years.[17] Nearly 70% of students aged 13 to 15 years have ever smoked cigarette in Ukrain, Poland and Russian federation (A white paper on Tobacco, London).[18] In india the use of Tobacco products as dentrifice varied from 6% (Goa) to 68% (Bihar). The prevalence among boys was notably higher than among girls in Orrisa and Uttaranchal, marginally higher in nine states and marginally lower in three states (Sinha *et al*)

In most industrialized countries, alcohol is generally accessible to everyone, including young people. Although moderate use of alcohol by adults and teenagers is socially accepted in many countries, excessive use is invariably considered to be a problem with severe social and physical consequences. In our study 8.57% of adolescents had ever used alcohol including 0.58% of rural and 13.47% in urban adolescents. 9.64% of the total males and 6.89% of females had ever used alcohol. Use of alcohol increases with age early adolescents 2.93% mid adolescents 7.30% and late adolescents 16.00%.

WHO, Health of young people reported 15% young people in Mexico and Chile, and 40% of youth in Brazil regularly use marijuana.[2] In United States, almost 60% of youth between the ages of 15 and 18 years have ever used marijuana, where as in United Kingdom, Canada and the Netherlands, less than 20% of young people have used marijuana. [2,3] In our study 1.19% adolescents had ever used drugs. Drugs use was 4 times more common in urban (1.68%) than rural (0.39%) adolescent population.

Our study identified depressive symptoms; feel sad often in 27.82%, Trouble sleeping 24.46%, feel lonely, Hopeless and helpless in 24.68%, Had thought of hurting himself/someone else in 18.05%, felt like committing suicide in 7.76% and 48 (3.5%) adolescents attending OPDs with Primary Psychiatric disorder including 27 (2%) with depression. Up to 20% of children and adolescents suffer from a disabling mental illness (WHO).[19] 1 in 10 young people in United States suffer from a mental illness severe enough to cause some level of important yet fewer than one in five receives the needed treatment (WHO). [19] A clinic based study in Kenya found that at least 30% of 11-15 years old attendees had a primarily psychiatric disorder, although all presented with a physical complain (Kangethe R *et al*).[13] In Australia 15.40% of young people report some feature of depression (National Health and Medical Research Council, Australian Government).[20] Scheidt P *et al* reported one of the most common mental disorders affecting adolescents and young people worldwide is depression. When comparing depressive symptoms among adolescents in 28 countries it was shown that adolescents in United States had the highest levels of depressive symptoms, where as Austrian teens reported the lowest level of weekly depressive symptoms.[21] An NIMH sponsored study of 9 to 17 years old have estimated that the prevalence of any depression is more than 6% in a 6 month period, with 4.9% having major depression.[22] S. Khurana *et al* reported from Delhi that 20.7% children have high hopelessness and 8% children had depression. He also found 2% children who revealed that they had attempted suicide at any point of time in life.[4] According to Grossman *et al* lifetime suicidal ideation rate have range from 20 to 54%.[23] Tanuj Sidhartha *et al* reported life time suicidal ideation 21.7%, suicidal ideation in last year 11.7%.[24]

Our study shows that 9.10% adolescents had experienced sexual contact with mean age of contact 14.68 years SD 1.56. Mean age of first sexual contact was not significantly different in urban and rural population or in between males and females. 7.17% of early adolescents, 6.73% mid adolescents and 15.43% of late adolescents have experienced sexual intercourse with mean age of 13.35 (SD1.35), 14.40 (SD1.34) and 15.58 (SD 1.33) respectively with significant difference (P value 0.000). A National survey of teenager aged between 12 – 18 years old, conducted in six districts of Nepal 19.5% perceive premarital sex to be proper. The median age for first marriage and first sexual intercourse is 16.6 years in female and 18.8 years in males (NDHS).[25] In adolescent boys in Urban slums of Lucknow, prevalence of premarital sex in boys: 18 years and > 18 years was 7.9% and 7.6% respectively.[26] Results from 1991 study conducted in nine districts of Nepal also found 20% of young people were engaged in premarital sex.[27] In Tehran mean age at first sexual contact among young male was 14.8.[28]

We found 3.28% of adolescents had experienced forced sexual activities which was relatively common in rural 5.29% than Urban 2.04%. Female were common victim 2.93% as compared to male 2.04%. On statistical analysis it was found that exposure to forced sexual activity was significantly higher among rural adolescents (p=0.0011) and the same for early adolescents was also significant as compared to other groups

(p=0.030). In Sub Saharan Africa 5% to 15% of all young female report a forced or coerced sexual experience.[29] In a World Bank report among in and out of school adolescents in three cities in Bostawana, 21% experienced forced/coerced sex: in Peru this figure was 20% among secondary school students, and 41% among young females attending Urban night study centre in Lima.[30] In rural Malawi, 55% of adolescent girls surveyed report that they were often forced to have sex (WHO).[31] Stewart L *et al* reported from Kenya that on 28% of boys and 22% girls forced sex have attempted. In addition, 31% of boys and 27% girls reported having been pressured to have sex. [32] In the Caribbean, 7.5% of boys aged 16 – 18 years reported having experienced some kind of sexual abuse (WHO).[33] Shanler S *et al* reported from Zimbabwe that 30% of secondary school students had been sexually abused.[34]

Our study found 12.23% of adolescent with anemia (clinical pallor), female had anemia more than twice (19.54%) than male (7.57%) (p=0.000), in rural 11.96% and Urban 12.39%. National Adolescent Health and Development Strategy had reported precedence of anemia in 30.6% among women below 20 years and 24.4% of female aged 10 – 19 years among married population.[35] Sabita Basu *et al* reported overall prevalence of anemia in school going adolescents 16.25% anemia was significantly less among Urban school going children as compared to rural school going ones (14.16% Vs 25.4%, P<0.01).[36] S Goel *et al* reported that overall anemia prevalence in Urban hilly community of India was 13.1%, prevalence in female was higher than male (13.3% Vs 12.9%).[37] Agha *et al* reported prevalence of anemia in 17% males and 18% females in Islamabad, Pakistan.[38] Similarly a prevalence of 20% was observed in Saudi Arabia by Abalkhail *et al*.[39]

In our study 27 adolescents (2.01%) of total population had Thyroid Swelling (Goitre). 2.20% of the males and 2.92% of the mid adolescents were having goitre. In a study conducted in Manipur, India the total goiter rate was 34.96% (Grade 1-32.15%: Grade 2-2.81%) in school children aged 6 to 12 years (Amar K Chandra *et al*).[40] School children were clinically examined for the enlargement of thyroid (goiter) by palpation method endorsed by WHO/UNICEF/ICCIDD (Grade 0:no goiter: grade 1: thyroid palpable but not visible: ad Grade 2: thyroid visible with the neck in normal position). According to these criteria, a prevalence rate of 5.0-19.9% is considered as mild: 20.0-29.9% as moderate and prevalence rate of above 30% is considered as a severe public health problem.[41]

In our study 211 rural and 130 urban adolescents (total 341) were attended at OPDs. The common problems were Depression (n=27), Worm infestation (n=23), Migraine (n=19), Scabies (n=24), Teniasis (n=17), Urticaria (n=17), Dysmenorrhea (n=9) and six females came for antenatal check up. Summary and Conclusion: Our study concluded that the common health problems revealed in the study were under nutrition at 36.8% (<5th percentile). The overall prevalence in the males and rural population were marginally high. It was lower in mid adolescents than both of their younger and older groups. Mean BMI was lower than the National index. Anemia (clinical pallor) was in the higher in the female population group in general at 19.54% as opposed to 7.57% in males. Features of depression were found in almost one-fourth of the population. Nearly one-third of the rural residents and males were affected. The most common complaint was disturbed sleep. Nearly 8% of the OPD attendees were diagnosed with depression. Other health problems encountered were acne, dental carries, migraine, worm infestation, skin problems and dysmenorrhea. The blood pressure of the urban population and that of males were statistically significantly higher as compared to their counterparts.

Knowledge about HIV and AIDS was almost universal (>95%). The same for STIs was almost 80%. More than 90% knew about mode of transmission by sex, sharing needles and by blood transfusion. Only 80% knew about mother to child transmission. Although about 80% adolescents knew about condom as a measure for safe sex but only 40% responded that, sex is unprotected when done without condom, while only 6% considered homosexuality as unprotected sex.

The adolescents who were married were 1.78%. Romantic relationship was found in 15% adolescents. Premarital sexual experience was seen in 7.44% of the adolescent population. The knowledge of contraceptive method was high in urban adolescents (55%) and the same in rural was 37%. Less than half (47.43%) population knew about at least one method of contraception. Forced sexual experience was complained by 3.28%. It was significantly high in rural, female and early adolescents.
Alcohol was the commonest substance of abuse (8.57%) followed by tobacco (2.83%) and other drugs (1.19%). All these habits were more prevalent among urban, males and late adolescents.

Fairly good proportion (>90%) of adolescents followed safety measure on the road, while 14.49% had ever been injured. The adolescents involved in brawl were 14.32% and 7.46% had asserted that they got involved in violent activity under peer pressure. On being asked about their relationship with parents, 84% adolescents could discuss important issues / worries with them. About 4% adolescents had difficult relationship with parents. It was also high in urban, males and mid adolescents at almost 5%. The awareness about their rights was low (10.14%). It was relatively low in rural and males. It was similar in all the ages. More than three-fourth of the adolescents had the opinion that sex education should be started in their schools. We recommend regular health check up and intervention to minimize common preventable diseases. Establish adolescent friendly health care and information centre not only in all district health facilities but also at PHC level to take care of the problems of adolescents and to increase their knowledge and capacity building. Nutritional status can be improved by implementation of government schemes and participation of NGOs and INGOs.

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