Health, Hygiene, and Nutrition: A Cause of Concern among Adolescent Girls in Kumaun Uttaranchal

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Abstract

Adolescence is the most important period of transition in life. It requires proper knowledge of health, diet, and hygiene. Lack of timely information and guidance on these matters may cause complications for individuals in adulthood. In less advanced economies, adolescent girls face challenges in identifying their true health and hygiene status. When these issues are not adequately addressed, the adolescent's self-awareness suffers and health and hygiene-related problems result. Hill regions are no exception to this phenomenon. Consequently, there is a need to understand the barriers that impede adolescents' awareness of health, nutrition, and hygiene-related issues. These barriers can obstruct adolescent girls from achieving a better life style based on awareness of their future health needs.

A survey on health, hygiene and nutrition of adolescent girls was conducted in Nainital district of the Kumaun region in the Indian state of Uttaranchal. The survey results indicate that adolescent girls have inadequate knowledge of physiological changes, sex-related matters, dietary intake, and personal hygiene. Low family income and poor parental education-especially their mother's low level of education-leave these adolescents especially vulnerable. Almost 50% of the respondents had difficulty with their regular menstrual cycle. They reported that they were embarrassed to discuss menarche. Their hesitancy is due to a conservative family and social system. Age old myths still prevail and traditional practices continue to be followed. In most of the cases, a woman's first interaction with health professionals was either after marriage or during child birth.

Key words

Adolescence, health, hygiene, nutrition, diet, awareness, menarche, menstrual cycle

Introduction

Healthy women reflect a healthy society. But several studies have found that one of the causes of inferior health among Indian women is the prejudicial manner in which some view girls and women in comparison to boys and men (Desai, 1994). In parts of India, adolescent health is a subject that is poorly taught. This is unfortunate as certain health-related factors, if managed properly during adolescence, can minimize complications later in life.

Adolescence is the period of transition from childhood to maturity that profoundly affects the individual's physical and mental status. It is defined as the growth period from 10 to 20 years of age during which biological, physical, and social changes take place. Several studies show that Indian adolescent girls and boys in rural and urban areas are poorly informed about menarche-related issues, sexuality, and child birth (IIHMR, 2003). Research is needed that focuses on girls' knowledge about menstrual hygiene, including sanitary napkin availability and use, difficulties girls face during puberty, knowledge of hygiene, school toilet facilities, and girls' dietary knowledge. As the studies show, adolescent girls in India are a sensitive group about whom more study is needed. Therefore they should be given prominence by health researchers and in programs provided by the educated community, teachers, reform groups, health departments, and the media.

This study was conducted in Uttaranchal, which is a hill region of India. "Uttaranchal is primarily a mountainous and Terai region consisting of the two divisions of Garhwal and Kumaun having similarities in their ecological, socio-economic and ethno-cultural factors" (Nag & Saha, 2000). Of the 13 districts in Uttaranchal, Kumaun consists of six districts: Nainital, Almora, Udham Singh Nagar, Bageshwar, Pithoragarh, and Champawat. The Kumaun region consists of a large Himalayan tract together with two plain strips. The rest of Kumaun is a network of mountains, part of the Himalayan range, some of which are among the highest known. In a tract not more than 225 km in length and 65 km in breadth, there are over thirty peaks rising to heights exceeding 5500 m. According to the 2011 census, the Nainital district's population was 955,128, of which 494,115 are males and 461,013 females. The average literacy rate was 84.85%. The male literacy rate in Uttaranchal

was 91.09% and the female literacy rate was 78.21%. With regard to the sex ratio, it stood at 933 females per 1000 males. The average national sex ratio in India is 940 females per 1000 males. The 2011 census also reports that there are multiple caste people living in Kumaun. The caste system prevailing in Kumaun is known to be less complicated and not as strict as that in the plains.

Uttaranchal represents a region with poor health and a sex ratio of women to men that is lower than the average in India. The most common ailments among women are vaginal infections, poor nutrition anemia, and body aches. "Most of the women and girls have a lower BMI" (Kaushik, 2004). Women of Uttaranchal are known to be self-sufficient, courageous, and free decision makers in the family. However, in reality they are not that empowered when considered objectively. Rather, the status of women in Uttaranchal is a picture of inconsistency. In some fields, such as education and agricultural decision making, they are granted more authority than women elsewhere. However, there are many other fields, such as decision making in the family or about health and property rights in which the position of Uttaranchal women is similar to that of other women in India. Over the ages, these women have been conditioned to overlook their own needs.

Lack of health knowledge is at its worst among the backward class women and girls. Sharma (2012) offers this illuminating description:

> The very first social ban is considered during the period of menstruation. During this, women are not permitted or they themselves do not engage themselves into the kitchen or place of worship inside or outside the house. They sit at a distance and sleep on a blanket laid on the ground during this period. After three days they wash their hair and take a 'complete bath'. They wash their used blankets, bed sheets and clothes after five days. This is done outside the house and near a natural water stream. They do not touch food items like pickle or even plants bearing fruits. It is said that if touched, the fruits will become rotten. If someone within or outside the family touches the body by chance, he/she has to be sprinkled with *Gangajal* or/cow's

> urine/water touched with gold ornament. Only then can the person enter inside the house. During these five days, either the husband or other women in the family does cooking. But the women can go for farm/forest for work. Women lead even tougher lives during the winter. This practice is not as commonly-practiced in urban or semi-urban societies these days.

Accordingly, researchers need to observe the impact of this system on adolescent girls and work to create awareness of the importance of the adolescent girls' health, hygiene, and diet if social transformation is to occur.

Objectives of the Study

Education, health, hygiene, and nutrition are prerequisites for human resource development. These priorities have even been included in the list of Human Rights. Adolescent girls face challenges in identifying their real health and hygiene status. These issues are often inadequately addressed, frequently leaving adolescent girls without timely awareness of how they could minimize related health and hygiene problems.

This study examines current health and hygiene awareness of a sample of adolescent girls and identifies the interplay of factors that may influence whether an adolescent is prepared for adult life. The research considers why adolescents are not properly informed about teenage issues and examines how sharing of such knowledge is inhibited. Likewise, the research takes into account how greater awareness can be achieved of modern health practices, improved diet, and sound hygiene. These issues are interrelated. They form the central concern of this study-why females in particular regions are insufficiently aware of health issues, sexual education, hygiene and diet. Surely the society will benefit if adolescent girls are given appropriate guidance about health, hygiene and diet, as there will be less need to tackle these health issues later.

This study examines the present state of health awareness, nutrition, and hygiene among hill-area girls. It asks these questions: Is the existing state of awareness among adolescent girls in Kumaun Uttaranchal appropriate for a healthy future life? Do caste, religion, or community

have an impact on their awareness level? How important is health awareness to them? What are their sources of knowledge? What factors explain their lack of awareness of these concerns?

Methodology and Sample Design

The present fact-finding pilot study analyzes aspects of health, hygiene, and nutritional awareness using primary data. The analysis is based on a three-stage observation of the survey's adolescent respondents. The first observation stage considers the socio-economic characteristics of the respondents and their parents' financial and educational status. The second observation stage considers their physical health, focusing specifically on puberty and puberty-related myths. The third stage evaluates their nutritional level and hygiene. The concluding section of the paper draws together the findings from the three stages of analysis to consider what the respondents told us about their experiences as they developed physically.

The pilot study was conducted in the Nainital district of Kumaun Uttaranchal. The data were collected from girls studying at the Government Inter College in the Nainital district town of Kumaun Uttaranchal. This town was chosen so that the study could include a large number of girls from poor and middle class families. The sample size was 210 girls, including those who reside in town and those who come to study from neighboring rural areas.

A questionnaire was designed to gain insight into the respondents' health, hygiene awareness, and diet. Moreover, the questionnaire sought to determine the roles of parents and teachers in making the respondents aware of their health. The questionnaire also collected socio-demographic information-the respondent's age, educational level, and parents' income status. Questions about menstruation asked the respondents their menarche age and experience during periods. We also asked about the guidance on and availability of information about their health issues, diet, and hygiene. The printed questionnaire was written in Hindi. Additionally, we verbally explained the questions to the respondents in simple language to avoid misunderstanding and facilitate accurate reporting. The survey was conducted during May and June 2011. Permission was obtained from the school principal to distribute

the questionnaires. Anemia was detected by clinical examination by a qualified medical practitioner who accompanied us. Secondary data and other information were obtained from the various reports and books.

Literature Review

Paul and Gopal (2006) studied the reproductive health of adolescent girls with emphasis on hygiene during menstruation. Kamalam and Rajalakshmi (2005) studied the knowledge and attitudes of college-going girls regarding various aspects of reproductive health. Khanna, Goyal and Bhawsar (2005) studied issues related to menstrual practices, focusing on the socio-economic environment in Rajasthan. Rani (2005) examined factors related to sexual and reproductive health and their effects on adolescents and young married girls. Culp (1998) studied the constraints that affect adolescent girls' participation in physical and outdoor activities and usefulness of outdoor programs to overcome constraints.

Haldar, Ram, Chatterjee, Mishra and Joardar (2004) studied aspects of reproductive health of unmarried adolescent girls. Somers, Tolia and Anagurthi (2012) studied adolescent children's level of sexual communication with parents and their comfort level. Mishra (2006) studied needs assessment of adolescents in the Bageshwar district of Uttaranchal. Pratinidhi, Gokhale and Karad (2001) studied promotion of safe sex practices and prevention of high risk behavior among secondary school children in Pune, Maharashtra. Uniyal and Shiva (2005) studied women's traditional knowledge of medicinal plants to cure various diseases in Uttaranchal, Garhwal. Capila (2005) studied traditional health practices among Kumauni women. Parikh (2008) studied the perceptions of young women and adolescent girls regarding growth and development, nutritional requirements and reproductive health issues in Gujarat, India. Iyer, Shah, Venugopal and Sharma (2008) studied adolescent nutrition among urban adolescents in Vadodara, Gujarat.

Neumark-Sztainer et al. (1996) studied patterns of health-compromising behaviors among Minnesota adolescents in grades six, nine and twelve. Carpenter (2007) studied male and female students between ages 13 and 19, including their private feelings and experiences concerning menstruation. In a qualitative study, Shah (2009) focused on personal

stories written by women ages 18 to 61 about their menarche experiences. Her study suggests the significant role of mothers and schools in educating girls about menarche. O'Grady (2009) studied girls' early puberty due to increased nutrition and female adaptability to sexual maturation. Tara Parker-Pope (2000) studied the various aspects of early puberty and whether these aspects should be treated medically as children are often not able to bear the emotional and physical stress of early puberty. Barney Jopson (2008) mention the role of clean water and how hygiene classes helped Bangladeshi women to break with traditional menstruation practices. Seepa (2008) studied how energy deficient food and sports activities interrupt the regular menstruation cycle among girls. Selby (2007) discussed the issues of menarche and menopause and treatment of complications.

Sinead Cook (2010) explored the issues and demands of young women, which may help in policy formation. The study was conducted among groups of women from Uganda and Scotland. Alvi (2009) conducted a study that revealed a premature menopause situation that ruled out an impossibility of pregnancy and hormonal imbalance among Kashmiri young women. Buysse (1996) conducted a detailed investigation of HIV and AIDS-related knowledge among young adults. The study also focused on the gap between actual knowledge and need for additional information. Benjet and Hernandez-Guzman (2002) studied Mexican girls focusing on the role of adolescent age development on depression, behavior, and self esteem. Pant (2004) studied women and nutrition in Kumaun Himalaya. Dunbar et al. (2008) studied the determining factors which influence the link between menarche and conception among adolescents.

On the basis of previous studies conducted regarding adolescent girls' issues, this study attempts to show the relationship between adolescent health and the role of nutrition, hygiene, and other awareness-related factors in a remote and underdeveloped society.

Findings of the Study

The socio-economic profile of the respondents shows that 52% were from the backward caste category, *i.e.*, from the scheduled castes and

scheduled tribes.[1] The age classification of the respondents' shows that 52% were 13-14 years old; 30% were 15-16 years old; 10% were 11-12 years old; and 8% were 17-18 years old. Regarding height, 17% were 4 to 4.5 feet; 57% were 4.5 to 5 feet; and 26% were 5 feet and above. Regarding average body weight, 41% weighed 31-40 kg; 34% weighed 24-30 kg; 21% weighed 41-50 kg; and 4% weighed more than 50 kg. By observation, we found only a few cases of obesity.

Regarding family size, 7% of the respondents' parents had five children of their own; 37% had four; 32% had three; 18% had two; and 7% had one.

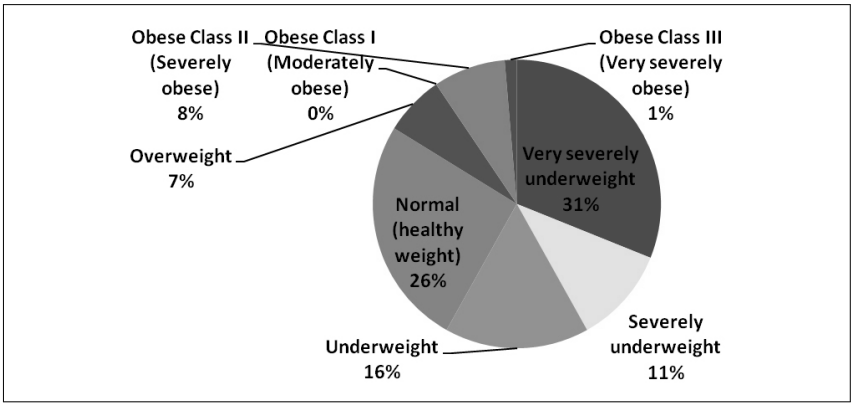

Figure 1.1 BMI Status of Respondents

Figure 1.1 depicts the BMI status of respondents. It is noted that 31% of the respondents were very severely underweight, 11% severely underweight, and 16% underweight. Only 26% of the respondents exhibited normal healthy weight, 7% were overweight, and 9% were obese, in the Class II & Class III obesity categories.

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[1] The Scheduled Castes and Scheduled Tribes are two categories of historically-disadvantaged people recognized in the Constitution of India. During the period of British rule in the Indian subcontinent, they were recognized as the Depressed Classes. The Scheduled Castes and Scheduled Tribes comprise about 16.2 percent and 8.2 percent, respectively, of India's population. Uttaranchal has 17.9 % Scheduled Caste population out of the state's total. Whereas Nainital district has 19.4 % of Scheduled Caste out of the total population of the district. (Census 2001)

Table 1
Educational, Occupational, and Income Background (Father)

Father's Education	No. of Respondents	%
Primary	55	26%
Intermediate	54	26%
Middle	75	36%
Graduate	17	8%
Post Graduate	9	4%
Total	210	100%
Father's Occupation		
Business	22	10%
Service	137	65%
Farming, crafts and other activities	45	21%
Retired	6	3%
Total	210	100%
Father's Income		
1000-1500	45	21%
1600-3500	44	21%
4000-5000	29	14%
6000-10000	62	30%
11000 and above	30	14%
Total	210	100%

(Source-Primary Survey)

Parents' education plays an important role in nurturing a balanced future life. Table 1 shows that 52% of the respondents had a father who had completed either primary or middle school education; 36% had completed intermediate level studies; and 12% had a graduate or post-graduate degree.

The occupations and income levels of the parents show that 65% of the respondents' fathers were in service, 10% were in business, 21% were involved in mixed activities such as farming, vegetable growing,

and craft-related work, and 3% were retired from service. The monthly income of the respondents' fathers shows that 21% were earning Rs. 1,500-4,000, 14% were earning Rs. 4,000-5,000, 30% were earning Rs. 6,000-10,000, and 14% were earning more than Rs. 11,000 in a month.

Table 2
Educational, Occupational, and Income Background (Mother)

Mothers' Education	No. of Respondents	%
Primary	112	53%
Intermediate	27	13%
Middle	61	29%
Graduate	6	3%
Post Graduate	4	2%
Total	210	100%
Mother's Occupation		
Service	22	10%
Business	3	1%
House wife	185	89%
Total	210	100%
Mother's Income (monthly)		
1000-3000	18	82%
4000-5000	2	9%
8000-10000	2	9%

(Source-Primary Survey)

Table 2 shows that about 53% of the respondents' mothers had only primary school education; 29% had middle level education; and 5% had graduate or post-graduate degrees. Regarding occupational status, 1% of the respondents' mothers were in business; 10% were in service; and 89% were housewives. Among the working mothers, the income range per month was Rs. 1,000-10,000.

Menarche is a physiological and developmental phenomenon significant in the life of a female. It occurs between 10 and 16 years of age.

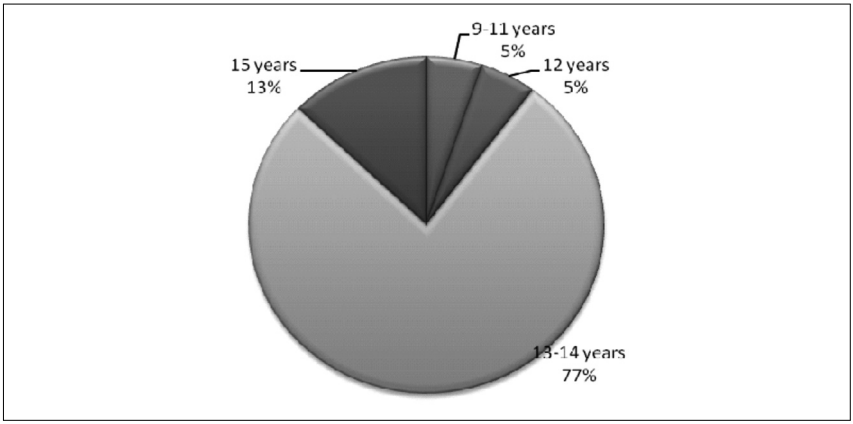

Figure 1.2 Age at which Puberty was achieved

In this study, 59% of the respondents reported having attained puberty. The other 41% reported that they had not yet attained puberty. The study findings show that of those who had attained puberty 10% of the respondents attained puberty between 9 to 12 years of age; 77% attained puberty between 13 to 14 years of age; and 13% at 15 years of age. These findings are similar to the mean age for attaining puberty reported in other studies, which for unprivileged girls is approximately 13 years of age (Baxi, 1991). More than 45% of these respondents reported that they did not have regular periods. And 65% of the respondents indicated that their menstrual flow lasted 5 to 6 days; 16% that it lasted four days; and 19% that it lasted three days.

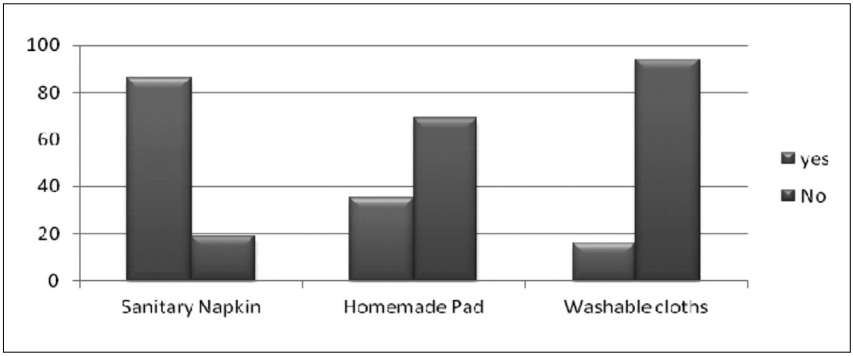

Figure 1.3 Types of Napkins used during menstruation

Of the respondents, 82% reported that they used branded sanitary napkins. They were aware of wrapping and disposing of sanitary napkins in the dustbin. Sixteen percent reported that they used washable cloth during their periods. Normally they do not dry the cloth in the open after washing. Drying the cloth outdoors risks introducing bacteria into it, and using rough rags causes skin rashes. During the menstruation period, major and minor problems, such as irregular periods, back pain, white discharge, excessive bleeding, itching and burning, are common (Capila, 2005, p. 124). We questioned the respondents about such discomforts.

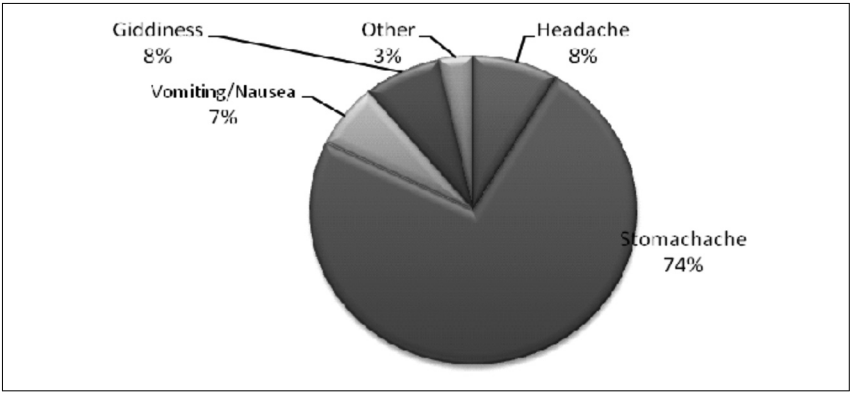

Figure 1.4 Symptoms of discomfort during menstruation

As shown in Fig. 1.4, 76% of the respondents reported that they feel discomfort during their periods. And 74% had stomach cramps; 16% complained of headache and giddiness; 7% had feelings of nausea and vomiting, and 3% experienced other discomforts.

During interviews, we observed that many restrictions are practiced during the menstruation period. Forty-two percent of the respondents mentioned that they avoid certain foods during their periods, such as rice, tea and coffee, jaggery, ice cream, pickles, sour or spicy foods, and various non-vegetarian items. They told us they that avoid these foods because they have been told either by their mother or by their peers that these foods cause menstruation problems. Also, 78% of the respondents reported that they do not participate in physical education or sports during their periods due to discomfort and fear of outflow.

During conversations with the respondents, we found that their society

still follows orthodox practices regarding normal physiological processes. Ninety-seven percent reported that they do not visit temples or religious places during their menstrual period. Fifty percent mentioned that they are not allowed to enter the kitchen during their period. And almost 75% of the respondents mentioned that their mothers and other family members follow strict rules during their menstrual period. Women do not enter the kitchen or cook food. Those who follow strict rules may chop vegetables, but they are not allowed to knead dough or wash pulses and rice. Cooking is done by male family members if other females are unavailable. Entering places of worship is also restricted, and they do not take part in any ceremonial functions. After the fifth day of menstruation, they take a head bath and are allowed to again enter the kitchen. Forty percent of the respondents reported that they do not use regular cloth bedding during their menstrual cycle. Some instances were reported where blankets instead of quilts were used because blankets can be washed. Conservative families also follow the practice of sprinkling holy water or cow urine after the women's menstrual cycle is over. Girls brought up in such an environment automatically adopt these practices.

We asked the respondents whether they can discuss their puberty-related issues openly. Thirteen percent told us that they freely discuss such issues with family members. Fifty-five percent said that they discuss such issues only with female family members. And 30% reported that they were not comfortable discussing these matters because of a rigid family atmosphere.

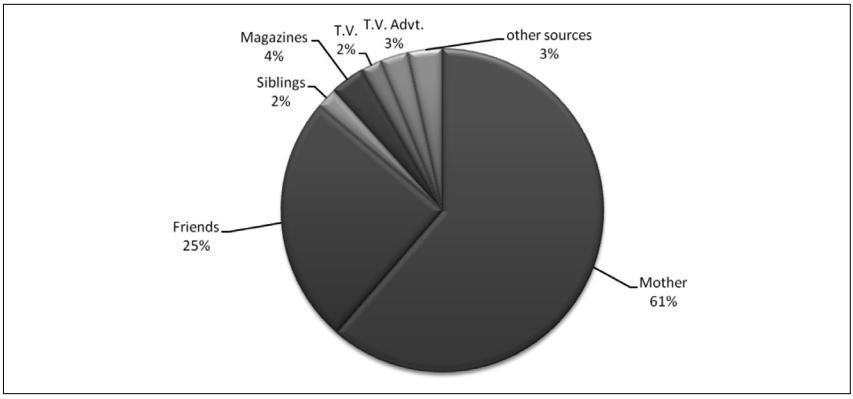

Figure 1.5 Sources of awareness about health and physical queries

We asked the respondents how they felt about obtaining answers to the queries they had about their physical changes and sex-related concerns. Eighty-four percent of the respondents felt that their curiosity about physical changes needed to be thoroughly answered. As shown in the Diagram 4, 61% of the respondents discussed their queries with their mothers. Further, 25% discussed their queries with friends; 5% acquired information from television advertisements and programs; 4% from magazines; and 2% from talking with their siblings. The findings in our study shows that level of communication is a necessary factor in solving adolescent queries, hence right source of guidance should be available.

Table 3
Medical opinion & Physical problems

Visit to female doctor / gynecologist about physical change queries	No. of Respondents	%
Yes	27	13%
No	156	74%
Total	210	100%
Physical problems during periods		
Dysmenorrheal	55	29%
Back pain	72	38%
White discharge	32	17%
other problems	30	16%
Total	189	100%
Visit to hospital to treat such problem		
Yes	27	14%
No	162	86%
Total	189	100%

(Source-PrimarySurvey)

We tried to learn about the discomforts the respondents experience during their menstrual cycle. The study shows that 74% of the respondents have never visited a female doctor or gynecologist to obtain

answers to their queries about physical changes. Most of the time, these changes are treated with home remedies. As shown in Table 3, they experience various discomforts. These include 38% who reported back pain, 29% dysmenorrheal, 17% white discharge, and 16% other discomforts such as skin allergies. Surprisingly, only 14% had ever visited a hospital for treatment of these problems. The role of mothers was highly important in providing their daughters with guidance. Seventy percent mentioned that their mother had prepared them before their first menstruation, but 30% did not receive this guidance. Eighty percent mentioned that their school teachers also guided them about adolescent issues.

> Although the median age of marriage for women aged 20 to 49 years in Uttaranchal is 18 years, more than one-fourth of women in Uttaranchal still marry before reaching the legal age of 18 years. In general, women in rural areas tend to marry at an earlier age than their urban counterparts. Due to the absence of family life education, particularly for adolescent girls, there are no opportunities to learn about reproductive health issues at an appropriate time (Health and Population Policy of Uttaranchal, 2002).

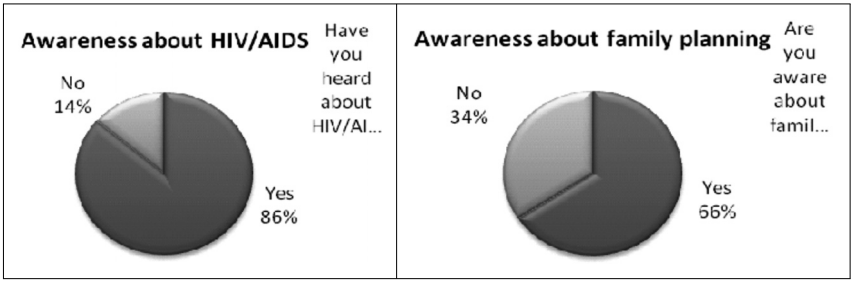

Figure 1.6 Awareness Level of HIV/AIDS and Family Planning

The respondents' perception about family planning and sexually transmitted diseases was studied. As shown in the diagram, 66% of the respondents were not aware of family planning; 14% were not aware of HIV/AIDS.

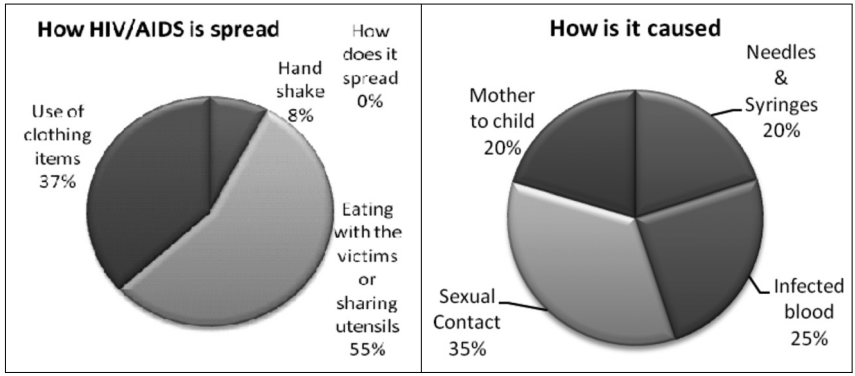

Figure 1.7 Awareness Level of how HIV/AIDS is spread

Among those who were aware of the causes of HIV/AIDS, 35% mentioned that it is caused through sexual contact, 25% that it is due to infected blood, and 20% that it spreads through needle syringes and 20% from mother to child.

About 55% respondents believed that HIV/AIDS spreads by eating or sharing utensils with the victim. Also 37% believed that it spreads through sharing clothing items with the patients. 8% even believed that it spreads by shaking hands; still others had no idea about the disease or how its spreads. The respondents also had misconceptions about other sexually transmitted diseases. Forty-six percent mentioned that they obtained information about HIV/AIDS from their teachers. Forty percent reported getting such information from the media, while 7% got the information from their parents.

We also asked questions about the respondents' personal hygiene. Sixty-nine percent brush their teeth twice a day; 15% only once; and 17% three times a day. Twenty-five percent did not use tooth paste; instead, they used neem (Azadirachta indica) stick and tooth powder. Forty-two percent do not wash their hair every day. More than one-third reported washing their hair twice a week. Fourteen percent reported not changing their undergarments every day. Sixty percent wash their school uniform twice a week; 11% only once a week; and 24% three times a week. We did not find any respondent who washed her uniform every day.

During adolescence healthy eating habits are developed, which in turn

help to maintain good health. Nutrient deficiency adversely affects adolescent women; it may cause protein, iron, vitamin, and iodine deficiencies as body changes occur. It is also very important to mention that if adequate information is not provided, adolescents can easily be misled to engage in unhealthy activities. Adolescence is an appropriate time to eat healthy and exercise. Our observations show that almost one-third (32%) of women in Uttaranchal are under-nourished based on their Body Mass Index. Nutritional deficiency is more prevalent among rural, illiterate women, and women belonging to households with a low standard of living. About 46% of the women in Uttaranchal are anemic compared with 52% for India as a whole. We also studied the respondents' nutritional consumption. The onset of menarche further predisposes the underprivileged girls to anemia (Kashyap & Gopaldas, 1988). As the need for healthy food increases due to changes in the body during adolescence, insufficient nutrition and poor food quality results in an undeveloped body structure. The family-particularly the mother-is perceived as the primary socialization agent who transmits messages to the adolescent regarding appearance and eating practices. Women and girls are typically the last to eat in a family; thus, if there is not enough food available, they are the ones who suffer most (Horowitz & Kishwar, 1985).

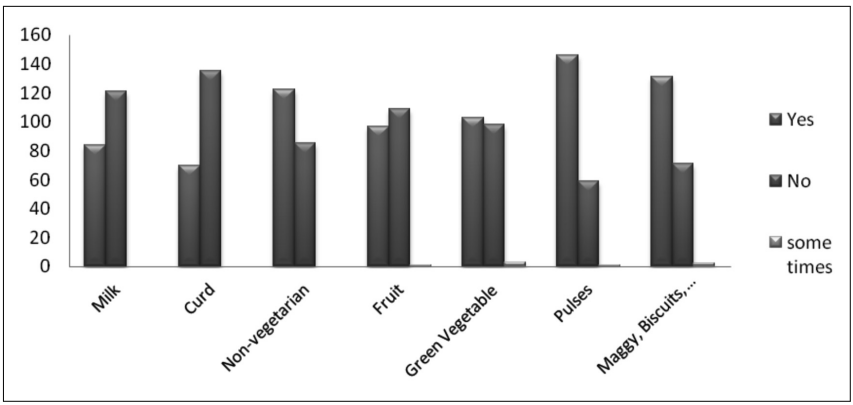

Figure 1.8 Nutrition Intake and Eating Habits

As shown in Figure 1.8, the respondents commonly ate three meals each day. Fifty-nine percent mentioned that they do not drink milk every day. Sixty-six percent do not eat curd every day. Fifty-nine percent were non-vegetarian. Among the non-vegetarians, 6% had either eggs or meat every day; 82% once a week; and 13% three times a week. Consumption of non-vegetarian food on a daily basis was not seen. Fifty-three percent did not consume fruit every day. Forty-eight percent did not consume green vegetables on a daily basis. Locally grown pulses were commonly eaten daily. Sixth-four percent of the respondents mentioned that they eat magi noodles and biscuits, and that every day they also like food items that include bread and butter.

Discussion and Conclusion

The study examined whether adolescents need greater access to age-specific guidance about physical care, medical facilities, nutrition, and hygiene-other than what classroom teaching provides. It also considered the need to bridge the gap between social taboos and modern learning. The findings are consistent with other studies that show adolescents' lack of access to modern learning is due to their families' lower income status and poor parental education. Because girls lack awareness, they remain dependent on age old systems and myths.

The study's findings show that the most important factor is ignorance about vital organs and their maintenance. Empowerment of women is only possible when they take care of their bodies and are self-aware. As 50% of the girls in this study were from the backward category or lower caste, there is a need to focus on awareness creation among this group. Their needs and empowerment require serious efforts. Their parents' lower education and rigidity limit the adolescent girls' options, leaving them no recourse but to follow age old traditions.

As we have seen in the study, having a large number of children indicates lack of family planning based on income status. Daughters tend to follow the example set by their mothers with regard to child bearing and physical care. Among men, the practice of seeking medical advice to control child birth is unpopular. Sex-related subjects are either seldom spoken about or only spoken about after marriage. One-third of

the respondents had not yet reached puberty at the time of study. Many of them could not understand our questions and refused to talk with us. We need to know why puberty has not yet started for these respondents. Is this due to climatic factors, a vegetarian diet, or some other variables that should be examined?

The period of adolescence and the sensitivity associated with it is not generally recognized. For girls adolescence is especially significant, they are considered adults after the onset of their menstrual cycle. Their freedom is then often restricted as is their participation in sports, they are not allowed to stay outside, and they must be home before sunset or be accompanied by male members of the family if they must go out later. This puts intense pressure on them. They become very cautious about their bodily changes. In towns and cities, due to availability of computers and Internet access, they are able to educate themselves, but in the absence of access to these information sources, they have little choice but to follow age old practices.

Along with educational and vocational opportunities the girls should be provided the preparations needed for marriage and post marriage health care, so that physical and psychological needs should be fulfilled rationally. Basic needs such as a nutritious mid-day meal, proper sanitation, hygiene guidance and health care education are a must. Changing food habits and preference for junk food is a growing choice today, which was evident in most of our respondents. The mid-day meal program in which pulses, rice and vegetable combination is prepared by using oil has not been very effective source in providing a quality diet. It can be made tastier with the use of local pulses and vegetables which have sufficient amount of protein, iron and other nutrients. Thus the girls should be encouraged to consume it. The school guideline shows regular weight and height measurement to be compulsory but such qualitative practices were not seen during the study. To provide long-term, sustainable care to the adolescent girls, the roles of family, school, government, and community are all important. Low-cost sanitary pads and the availability of a female doctor for school visits may help to solve their problems. The addition of basic physiology, hygiene, and nutrition chapters as part of the school curriculum is also a must. For formal school education, a specific development policy is a must. If women

and their needs are not incorporated into such a policy, it becomes irrelevant not only to half of the population but to all marginalized sections of the economy and society (Dewan, 2008). Finally, the gap in adolescent girls' learning-with girls unable to access the knowledge they require as they mature-also leaves a gap in the broader society.

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