The International Conference on Population and Development (ICPD) 1994, brought a paradigm shift in reproductive health researches; nations agreed to make adolescent sexuality and reproductive health a priority in their health policy. Adolescent Reproductive Health (ARH) was recognized as a thrust area for research to stabilize world population. In ICPD, adolescent reproductive health was defined as physical and emotional well being of adolescents, which includes their abilities to remain free from unwanted pregnancy, unsafe abortion, sexually transmitted diseases, including HIV infection and AIDS, and all forms of sexual coercion. The emergence of Millennium Development Goal (MDG) 2000 made it critical to continue to support integrated comprehensive programmes that holistically address adolescents' reproductive health. Though there is no explicit mention on young people's reproductive health in the MDG, yet the reproductive health and well-being of the adolescents of a country are integrally related to its ability to meet the MDG regarding poverty, HIV and AIDS, and maternal and child mortality rates.

Out of 1.7 billion adolescents worldwide, about 86% of them live in developing countries. This 'second decade of life' involves rapid growth and development for their body, mind and social relationships. In India, adolescents constitute one fifth of the total population but never remained the main focus for government policies and programmes, while this period of life needs special physical and psychological care. They generally face confusion about their social status. Sometimes they are recognized as child and sometimes as adult.

Adolescent girls up to age 19 comprise about one-quarter of India's female population. These girls are in an especially disadvantageous situation within the Indian social structure having gender- bias in terms of food intakes, access to health care, and growth pattern. Physiologically and socially girls are generally more vulnerable than boys of the same age group. Moreover, following the seclusion norms of the male dominated society, these girls get little exposure or physical access to the world outside. Thus, with relatively weak health and nutrition, they are caught in a

web of ignorance, poor reproductive health, life-long economic dependency, physical seclusion, early marriage and frequent child bearing.

The issues related to adolescent reproductive health have been a longstanding interest for anthropologists, after pioneering work by Margaret Mead among Samoan girls. Studies on reproductive health carried out among adolescents of Southeast Asia, in recent past, revealed two contrasting demographic trends– a fall in age at menarche and an increase in age at marriage. Therefore, the increasing gap between the onset of menarche and age at marriage increases the possibility of getting involved in premarital sex with misinformed and unprotected sexual relationship. It is observed that among the adolescents in general and unmarried adolescents in particular, the factors behind the reproductive health related risky behaviours can be grouped into four categories, such as limited access to information, peer pressure, inadequate access to youth friendly health services and economic constraints. In the changing social setting, the family is no longer perceived to be the main source of information on reproductive health issues, rather as has been evidenced in studies among youths, peer-influence remains primary motivation followed by the media. Role of media in determining sexual behaviour of adolescents have been mixed but it is accepted as 'super peer' and ideal health care educator among adolescents.

Adolescent girls, particularly unmarried ones, are more likely to suffer from negative consequences of risky sexual behaviours such as unwanted pregnancy, unsafe abortion, sexually transmitted infections, and stigmatism of being single mother. Some Indian studies showed evidence of premarital sexual activities, though traditional norms oppose premarital sex. Among married adolescent girls, low post marital contraceptive use leads to childbearing at premature age, which enhances both maternal and infant mortality. Early childbearing not only deteriorates mother's health but also does have a negative impact on their educational prospect too. Such a situation can lead to pregnancy related school dropouts, thereby threatening their economic and overall development prospects. As a result, in developing countries, girls under 18 have maternal mortality rate, two to five times higher than women aged 18-25 years.

Adolescent reproductive health and its socio-demographic, behavioural and biological correlates have been subject matter of several studies, across the globe. Adolescents' sexual behaviours and attitudes received special attention to assess future reproductive health risks. Studies addressing the issues of sexuality, have documented risky sexual behaviours and practices among adolescents such as early initiation of sexual activities and often without protection. In general, socio-demographic characteristics have been reported to be significant determinants of overall reproductive health of adolescents. Additionally, familial support and social bonding are positively linked with healthy sexual behaviours and utilization of available health care facilities.

Reproductive health outcomes in both married and unmarried girls are influenced by their nutritional status and food habits. Prevalence of anaemia is an important health concern among females of all age groups in developing world. Among adolescent girls, it is one of the foremost causes of maternal mortality, and is associated with compromised pubertal growth spurt and cognitive development. In recent past, issues related to nutrition among adolescents like prevalence of anaemia, under-nutrition, obesity, eating disorders received more attention from researchers. Cardiovascular morbidity and mortality among adolescents of developed and rapidly developing countries have also become a major public health challenge as it directly affects labour force strength and economic productivity of the country.

Another important but less explored aspect of adolescent reproductive health is prevalence of reproductive morbidities and treatment seeking practices among them. Studies report that adolescents, particularly girls silently bear the burden of diseases and hardly seek treatment and are very less likely to discuss their problems with family members. Reproductive morbidities, however, if remain untreated can develop into serious complications which may challenge their future reproductive life.

Health systems, in many countries particularly in Asia, are not well equipped with youth-oriented services. The conservative outlook of the providers/ policy makers held the views that discussion on sexual issues and provision of contraceptive information and services will promote some form of promiscuity among adolescents.

But the research revealed that sex education does not encourage early sexual activity, but can delay first sexual intercourse and lead to more responsible behaviour.

All these aspects of reproductive health are needed to be addressed collectively to understand the reproductive health problems of adolescents, their needs and possible solutions in the current social situation concerning the adolescents. Findings of such studies will be of much help in devising strategies for prevention of reproductive health risks.

The above discussion demonstrates absence of suitably designed study considering relevant aspects of reproductive health of adolescents in general and adolescent girls in particular in many States of India. Further, studies about reproductive health of the adolescents of north-eastern region of India including Sikkim are virtually lacking. Most of the north-eastern States in general and Sikkim in particular, is undergoing a process of rapid cultural change through modernization and as a consequence of promotion of tourism. Hence, children, adolescents and the adults are increasingly experiencing a change in health profiles, affecting them in some way or the other. For adolescents, apart from other physical health challenges, there remain an enhancing risk of sexually transmitted infections including HIV and AIDS.

Under this backdrop the objective of the present study is to evaluate biocultural dimensions of reproductive health among adolescent girls aged 15-19 years (both married and unmarried) inhabiting eastern Himalayan State of Sikkim. The specific objective is to investigate into the possible life style differentials measured in terms of urban as well as rural living among the adolescents of Sikkim with respect to: (a) general vis-à-vis reproductive morbidity profile; (b) level of awareness and perception of sexuality and reproductive health and well-being; (c) role of socio-cultural factors on the level of awareness and perception; and (d) role of information and access to relevant healthcare services, on reproductive health seeking behaviours.

Erstwhile a tiny Himalayan kingdom, Sikkim was merged into Indian Republic as the 22nd State of the country in 1975. Sikkim has both national and international boundaries. It is bordered by Chumbi valley of Tibet in north, by Bhutan

in east, by Nepal in west and by Darjeeling district of the State of West Bengal in south. The State is divided into four districts and nine subdivisions. Population size of the State is 5, 40,493 with a density of 76 persons per km^2. Nepalese, Bhutias, and Lepchas constitute the major population groups of Sikkim. The major religions are Hinduism and Buddhism. Overall literacy rate of the State is 69.68% as documented in census of 2001. *Nepali* is spoken by the majority of the population groups and therefore is the *lingua franca*. After its merger into Indian Republic, development of adequate infrastructures had been a priority of successive governments in the State.

Gangtok, the capital town of the State is considered as the urban centre for the present study, considering its population concentration and other relevant developmental indicators. The entire town is divided by the National Sample Survey Organization into 81 Urban Frame Survey blocks. All the bocks are considered for the present study. Rural and suburban blocks (a total of 68 i.e. 15% of the total blocks of the State) are selected from all the four districts of the State. Rural blocks, which are situated within five kilometres radius from district headquarters i.e. having better accessibility to the facilities available at district towns, have been marked as suburban study blocks. Rural blocks are located at more than five kilometres distance from the respective district headquarter. Rationale behind marking these blocks as rural lies on the factors like: i) locating for away from district headquarters; ii) predominantly following traditional lifestyle; and iii) having poor accessibility to health.

The total sample for the present study is 1246 girls, including both married (21 urban, 28 suburban, and 166 rural) and unmarried (352 urban, 232 suburban, and 477 rural) of 15-19 years age group, selected randomly form the entire study areas. A two stage sampling method was followed for selecting unmarried girls whereas no sampling had been done for married girls; instead, total enumeration is attempted.

In order to fulfil the objectives, comparisons were made between rural, suburban and urban groups in respect of selected socioeconomic, behavioural and biological indicators of reproductive health.

Data were collected through appropriate pretested questionnaires on different aspects like socio-demographic characteristics of the study participants, mass media

exposure, awareness and knowledge about reproductive health issues, general and reproductive morbidity episodes, social support and sex education, social norms and gender roles, food habits etc. Anthropometric and blood pressure measurements were taken in a sub sample of 577 girls, following standard protocols. Blood samples were collected to measure haemoglobin (Hb) concentration, erythrocyte sedimentation rate (ESR), total leukocyte count (TLC), differential leukocyte count (DLC) and venereal diseases, by trained technicians of two pathological laboratories located in Gangtok and Namchi.

Appropriate statistical techniques were used to analyse data. Statistical analyses include chi-square test and logistical regression for categorical variables, whereas t-test, ANOVA, factor analysis, and linear regression for quantitative variables.

Significant lifestyle differentials exist among girls of rural, suburban and urban areas. Higher percentage of rural girls belongs to lower economic status as compared to suburban and urban ones. Mean age at menarche of urban girls is significantly lower than their rural counterparts. Exposure to various media devices were higher among urban girls compared to their suburban and rural counterparts. Proportion of girls exposed to television is higher as compared to any other media devices.

It appears that general ailments are not very common among these girls, though the treatment seeking is poor, irrespective of their place of residence. Among those who sought treatment, allopathy was the most preferred form of treatment, followed by indigenous, ayurvedic and homeopathic methods.

Problems related to menstruation are the most commonly reported reproductive morbidity among girls followed by those related to anaemia and infections. Girls were found to be more prompt to seek treatment for problems related to infections. Treatment seeking for menstruation related problems is very low, in spite of those being the most frequently reported problem. Girls' age, marital status, economic status, and place of residence are found to be significantly associated with the prevalence of reproductive morbidities. Among married girls, use of contraceptive

pills and intrauterine devices was also found to be significantly associated with prevalence of reproductive morbidities. Again, girl's age, her level of education, economic status, exposure to media, and place of residence were found to be significantly associated with treatment seeking for prevailing reproductive morbidities.

Significant association was noted between socioeconomic variables and dietary patterns. Consumption of sugar sweetened drinks and fat rich snacks was higher among girls of well off families as compared to girls of lower economic status. Significantly higher mean values for anthropometric indices were noted among girls who consumed fat rich snacks and sugar sweetened drinks more frequently.

Higher numbers of urban girls urged for dieting and were taking weight reduction diet as compared to suburban and rural ones. Similarly, higher proportion of urban girls remained dissatisfied with their body weight compared to their other counterparts. Place of residence, marital status, exposure to television, economic status, and body mass index are significant predictors for feeling of dissatisfaction and urge for dieting among girls.

Prevalence of hypertension is higher among urban and suburban girls as compared to rural ones. The mean values for ESR, TLC were found to be higher among rural girls compared to suburban and urban ones. On the contrary, mean value of Hb concentration is higher among urban girls compared to their suburban and urban counterparts.

Significant association is noted between awareness of reproductive health issues among girls, sociodemographic variables and discussion with various persons in the society. Exposure to media devices, discussions with friends, family members, health care workers and teachers as well as place of residence are found to be significant predictors of reproductive health awareness among them, while family environment, martial status and place of residence are found to be significant predictors of risky and non risky sexual attitudes. It is observed that harmonious family environment helps girls developing non risky sexual attitudes.

Research on adolescent reproductive health received priority in last two decades. Studies were undertaken to define and measure the problems faced by adolescents and devising strategies to minimize it. Earlier Indian studies on reproductive health dealt with knowledge, awareness and practices as well as sexual behaviours of adolescents. Largely, these studies were based on school and college students, therefore, hardly portrayed the actual community level situation. The rationale of the present study rests on the fact that no such effort has been made till date in the north eastern States of India including Sikkim. Under the changed social situation adolescents of the region are exposed to various health risks including risks related to reproductive health.

The present study showed that the prevalence of anaemia is less among the study participants as compared to its prevalence among adolescent girls of several other States of India. However, association between residential status and anaemia remained significant.

Proportion of underweight adolescents is higher in urban than in rural areas. This could be fall out of the growing body image concern among girls which is likely to be more prevalent among urban girls. Growing hypertension among girls in both rural and urban areas is an important health concern. Similar findings are noted among adolescents in Pondicherry State of India. Increasing stress and transition in food habits could be the possible reasons of hypertension as reported in other studies. Mean values of other health indicators like TLC and ESR are also found to be higher among girls inhabiting rural areas as compared to girls of suburban and urban areas indicating comparatively poor health profile of rural girls.

Dietary pattern of adolescents is significantly associated with their socioeconomic characteristics. Snacks, ice cream and beverages are preferred food items among unmarried urban girls who belong to higher economic status. Easy availability, taste, and affordability are the major factors behind higher consumption of fast-foods and sugar sweetened drinks among the urban girls. Consumption of such foods (rich in fat and sugar) are significantly associated with obesity measures i.e. waist circumference, summation of skin fold thicknesses, as well as with blood

pressures. Obesity has become a major health risk among adolescents of developing world. Obesity not only affects their overall physical health but also is associated with their psychological and mental health. Added to that, obese adolescents are more likely to develop reproductive health complications as compared to their non obese counterparts.

The findings of the study reveal that adolescent girls who are exposed to media are significantly more aware about reproductive health aspects such as HIV and AIDS, condom use, STDs and safe sex. Media exposure acts as a significant determinant of awareness, even after controlling for sociodemographic characteristics. However, certain socioeconomic and demographic variables such as respondent's level of education and place of residence are also found to be significant determinants of awareness. Results of this study suggest the importance of the role played by media in navigating messages of sexual socialization and issues of reproductive health. Significant association between residential status and level of awareness indicates that urban adolescents have more access and naturally are more exposed to the world outside. Out of all three media sources, television has been the most popular and effective medium of disseminating awareness. Seemingly, its accessibility, user friendly and appealing nature in combination with impressive presentation of issues makes it more acceptable to be an ideal health care educator.

Media is considered as an important sexual health educator today and will continue to be so in future. Therefore, efforts should be made to ensure telecast of healthier views of sexuality. Media programmes are to be framed to help develop necessary life skills and also to identify risky reproductive health behaviours. In order to reduce negative effects of media, emphasis should be made to enhance media literacy of adolescents. Media literacy will enable adolescents to access, analyze and evaluate media programmes critically. Inclusion of media literacy in curricula has proved effective in countries like Canada and Australia. The role of mass media becomes more important in developing countries due to its wide coverage and cost effectiveness. Its role in presentation of public health issues cannot be ruled out.

Social networks i.e. family, peers and community organization such as educational institutions and health care machinery, unequivocally stand important in disseminating awareness on reproductive health aspects among adolescent girls. It is encouraging to note that the role of these social networks particularly of the health care workers has been even more impressive among married adolescents. Proportion of married adolescents who received advice either by family members or health care providers in recent months was much higher than their unmarried counterparts of same age group. For campaign on risky behaviours, the health care providers seem to put stress on the married adolescents considering them to be more vulnerable. Peers appear to be the most favoured persons to discuss about issues of reproductive health, though sometimes the information may be devoid of reality and may be based on delusive sources. Informal communications can be selectively used to inform, educate and motivate adolescents about several reproductive health aspects.

Role of social networks and community organizations in raising awareness about reproductive health has been re-established from our findings. Social bonding and familial supports are important among adolescents. During adolescence they need surveillance and supervision to control their behaviours and attitudes, and restrict them to be away from the risk taking behaviours. Cohesive family and school environments may also exert preventive checks against following risky behaviours and future health threats.

The results of the present study indicate a linear relationship between prevalence of reproductive ailments and age of participants. Older adolescents were significantly more likely to report about reproductive morbidities, as compared to younger adolescents. This trend can be explained in more logical way if it is put together with their treatment seeking behaviour. It has been observed that older adolescents are more prompt to seek treatment than their younger counterparts. Such promptness for treatment seeking could be due to two possible reasons; first, a substantial proportion of older adolescents are married therefore having increased interaction with health care providers so far as reproductive health matters are concerned. For the unmarried adolescents, poor cognizance and less awareness about the symptoms of reproductive ill health, keep them away from health care providers.

Moreover, in most of cases reproductive morbidities largely remain to be asymptomatic at the initial stages. Awareness about symptoms, seriousness and consequences of such morbidities develop steadily with age, prolonged social interaction about these issues, and with consistent exposure to media and health care system. However, in India as well as in other developing countries, health care infrastructure designs hardly acknowledge specific health needs of unmarried adolescents.

The present study shows that unmarried girls are more likely to report menstrual problems whereas married girls are more likely to report problems related to anaemia. It can be noted that treatment-seeking behaviour of unmarried girls has been poorer than married ones. Therefore, it can be argued that culture of silence still prevails and girls seek treatment about reproductive health problems only after marriage or during pregnancy when they are forced to consult health care providers, else they silently bear the burden of diseases because of social stigma.

Girls residing in the urban blocks are less likely to complain about reproductive morbidities and are more prompt to seek treatments for the morbidities (as reported) as compared to their rural counterparts. Results of the study also demonstrate that place of residence and exposure to the media are significantly associated with the treatment seeking behaviour of the girls.

Parity, economic status, use of oral pills and intrauterine devices showed significant association with prevalence of reproductive morbidities among married girls. Repeated pregnancy had serious ill effects on reproductive health of married girls, since multipara were about two times more likely to complain about all sorts of reproductive morbidities as compared to nullipara. Reportedly high prevalence of morbidities related to anaemia among married girls particularly among those with poor economic status is also needed to be looked into because anaemia remained to be a major avoidable health risk among females of developing world. Significant associations between treatment seeking for prevailing morbidities and educational attainment as well as media exposure provides a window of hope that social

institutions and media, if used strategically, can level off the effect of economic differentials to some extent.

Results of the present study demonstrate that in spite of considerable awareness about contraceptive methods, use of contraceptives is poor among married adolescents. Local health care institution can positively contribute in this regard by addressing the issues of use, compliance, adverse effects, and complications together. Couples' counselling and interaction with health care professionals may help increase contraceptive use among them.

Results of the present study indicate that all the strategies for adolescents must be tailored to the unique developmental needs of young people and to the contexts and cultures in which they live. Health providers, teachers, and programmers all need specific knowledge and skills to assess and respond to the unique needs of this age group. The diversity of sexual behaviours and sexual health needs also demands a range of prevention strategies among them.

In conclusion, the present study on the reproductive health aspects of adolescent girls of Sikkim, a eastern Himalayan State of India, demonstrates that the socioeconomic factors such as place of residence, economic status, and exposure to media are major correlates of reproductive health awareness, prevalence of reproductive morbidities and treatment seeking. Prevalence of obesity and hypertension is growing among adolescent girls and it needs special attention from health care providers since it impinges both on cardiovascular and future reproductive health of the adolescents. The role of healthcare workers and teachers are significant in imparting knowledge and awareness to adolescent girls on reproductive health issues. It is to be noted that the present study provides community level baseline information on the reproductive health aspects and the findings of study may help formulating health policy for the adolescent girls of the State.