CHAPTER 1

INTRODUCTION
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Anthropology is the study of humans in all places and at all times. The term is derived from the Greek (anthropos means man and logos means study). Both literate and non-literate peoples are of interest to anthropologists. The field includes many aspects of Sociology; however anthropology reaches much more deeply into prehistory, than the humanities, and the physical sciences. Anthropologists study modern humans and their direct ancestor whom we will refer to as hominids. Anthropology is a recent discipline originating a little more than a hundred years ago. The first course in the field was offered at the University of Rochester, New York in 1879 (Bhatia Paramveer 2009).

Anthropology is divided into four main branches, viz, Cultural or Social Anthropology, Physical or Biological Anthropology, Archaeological Anthropology and Linguistic Anthropology.

Physical or Biological Anthropology

Physical anthropology focuses on the place of man in nature. It emerged as a search into the ancestry, development and genetic other characteristics of human species. In contrast, social or cultural anthropology examines the way in which people live.
Physical anthropologists view humans as a biological phenomenon, discussing the species with all the tools of anatomy, physiology, and zoology. For much of this century, they have concentrated on the way physical traits differ from population to population. Ultimately they seek evidences of our origins and the way humanity comes to populate the earth (Tommer 2008).

Biological Anthropology can be defined as the scientific study of nature-nurture relationship, although each of this interaction, i.e., nature and nurture, can be holistically studied in itself. Thus there is a genetical study of a morphological, anatomical or serological trait, and there is also anthropology of food and nutrition in the orbit of biological anthropology. Disciplines like ecology and demography lie at the interface of biological and cultural studies in which the techniques of anthropology are indispensable to determine the biological status of a population. For accomplishing the studies of nature, nurture and their ensuing relationships, the concept of population, consisting of the people sharing the same gene pool, is imperative. Biological anthropology as it stands today is an investigation of micro-evolutionary adaptation process, dialectically related to natural and cultural environments, which determine the survival value of a population. In addition to delineating the biological profile of a Mendelian group, the applied dimensions of biological
anthropology determine the pathogenic characters of a population, suggesting viable and concrete programmes for their alleviation.

**Anthropological Approach to Commercial Sex Workers**

Anthropological approach links biomedicine with biological and cultural anthropology, resulting in important contributions to understanding health and disease as dynamic, adaptive, population-based processes. The anthropological model builds on three key assumptions:

- There are no single causes of disease; rather, disease is ultimately due to a chain of factors related to ecosystem imbalances.
- Health and disease are part of a set of physical, biological, and cultural subsystems that continually affect one another.
- The anthropological prospective model provides a framework for the study of health in an environmental context, but it does not specify what factors maintain health within any given local system.

Physical anthropology raises important questions about the impact of global political and economic structures and processes on health and disease. It expands the context within which physical anthropology operates and brings it closer to the perspective of public health practice by explicitly seeking to
contribute to the creation of global health systems that "serve the people." Physical anthropology focuses on health care systems and how they function at multiple levels, including the Commercial Sex Workers experience, the microlevel of anthropologist-Commercial Sex Workers relationships, the intermediate level of local health care systems, particularly hospitals and clinics, and the macrosocial level of global political-economic systems. At each of these levels, the goal is to understand how existing social relations structure the relationships among the commercial sex worker participants in the systems. In particular, physical anthropologists study the way health care is embedded within dominant relations such as those of class, race, and gender.

In a similar mode Singer (1994) proposed a synthesis of two key concepts from the ecological model—that health and disease are ultimately due to a chain of factors, and that they are part of a set of interacting subsystems—with the broader global perspective of critical medical anthropology to describe and explain the dynamics of the AIDS pandemic. Singer coined the term "syndemic" to describe the synergistic interaction of social factors, especially local and global inequities, with the epidemiological risk factors for HIV (human immunodeficiency virus), TB, hepatitis, and substance abuse. The syndemic model provides an important intermediate model that frames the investigation of community-
level outcomes in terms of individual behavior, local processes, and higher level processes. This model raises difficult questions, and it challenges public health to address the root causes of health disparities. By introducing a multilevel, dynamic epidemiological perspective, it points toward the need to develop and evaluate systems and community-level interventions that target interconnected processes.

The observation, measurement, and explanation of human variability in time and space include both biological variability and the study of cultural or learned, behavior among contemporary human societies. These studies are closely allied with the fields of archeology and linguistics. Studies range from rigorously scientific approaches, such as research into the physiology and ecology of hunter-gatherers, to more humanistic research on topics such as symbolism and ritual behavior.

Anthropology lacks a unified theory comparable to Neo-Darwinian evolution in the biological sciences and it is characterized, instead, by a wide variety of subfields that analyze and integrate studies of human behavior in different ways. Anthropology examines the various ways in which learned techniques, values, and beliefs are transmitted from one generation to the next and acted upon in different situations. Most studies stress the historical development and internal structure
and workings of particular cultural traditions and anthropologists have amassed detailed bodies of documentation on different human societies. Significant, too, within social-cultural anthropology are cross-cultural studies that seek to identify essential structural or behavioral properties of human society. Modern scholars have sought to identify universal patterns of symbolic behavior and belief, and there are other social-cultural anthropologists actively testing these kinds of propositions in particular cases.

**Situation of Commercial Sex Workers in Karnataka**

Commercial Sex Workers in southern Karnataka and those in northern Karnataka tend to be more illiterate and belong to the scheduled castes and have commonly never been married. A majority of women engaged in sex work in Northern Karnataka were initiated into sex work as part of the Devadasi tradition. A majority of Female Sex Workers and Men who have Sex with Men in northern Karnataka either work at home, public place or in brothels and have started sex work at a younger age, a pattern which may be attributed to the prevailing Devadasi tradition. They receive more clients than those from Southern Karnataka. They work outside Karnataka more in Mumbai (Shiv Kumar and Aparna 2002).
A few people in Belgaum district believe that dedicating one of their daughters to Goddess Yellamma (Renuka Temple Soundatti), or to local temples of Khandoba and Hanuman, is a means of propitiating the Gods for helping them through difficult times. Once dedicated to God/Goddess, 'Devadasis' are not allowed to marry for the rest of their lives.

Traditionally, Devadasi had specific tasks within the temple such as lighting the lamp, cleaning the temple premises and serving the deity through dance. In addition, they are also expected to provide sexual gratification to the main priest (who was considered a part of the deity), and to live as concubines with men who would protect them financially and physically. Over the years, this system has become commercialized with Devadasi sex workers increasingly operating as Commercial Sex Workers. Also, since the Devadasi tradition retains a social and religious sanction, an increasing number of non-Devadasi members are dedicating their offsprings as a means of earning income for the family.

Sex work in Southern Karnataka, on the other hand, is more structured with various layers of exploitative operators. Poverty and desertion are the most common reasons for women and men who have sex with men to engage in sex work. They have a lower inclination towards collectivization, low negotiation skills. They experience police and client harassment more frequently. Clients
asking for specific types of sex such as anal, oral or group sex are reported more frequently by the sex workers in Southern Karnataka. They earn more than sex workers in Northern Karnataka (Kavita 2003).

**The Meaning of Commercial Sex Work**

'Sex work' is a phrase created in the last 30 years to refer to sexual commerce of all kinds. Prostitution has varying definitions in different contexts. Some of these are based on the definition of prostitution in law, or what is illegal. Legal definitions change over time and place, leading to great confusion if one relies on one definition from the criminal code or one from the civil code, as they do not travel well. Despite the difficulty of terminology, prostitution as a sexual exchange for money or other valuables is the general definition of prostitution for this work. In that sense, the term 'sex work' is appropriate in it's inclusively. (The Encyclopedia of Prostitution and Sex Work. 2006)

'Sex work' was conceived as a non stigmatizing term, without the taint of the words 'whore' and 'prostitute.' The point of the term was to convey the professionalism of the sex worker rather than her lack of worth as seen by much of society.

The terms 'sex work' and 'sex worker' have been coined by sex workers themselves to redefine commercial sex, not as the social or psychological characteristic of a class of women, but as
an income-generating activity or form of employment for women and men.

In the following definition of sex work: Negotiation and performance of sexual services for remuneration

❖ With or without intervention by a third party
❖ Where those services are advertised or generally recognized as available from a specific location
❖ Where the price of services reflects the pressures of supply and demand,

'Negotiation' implies the rejection of specific clients or acts on an individual basis. Indiscriminate acceptance by the worker of all proposed transactions is not presumed, such acceptance would indicate the presence of coercion.

A broad definition of sex work would be 'the exchange of money or goods for sexual services, either regularly or occasionally, involving female, male and transgender adults, young people and children where the sex worker may or may not consciously define such activity as income-generating'. There is a widespread view that occasional engagement in transactional sex, or sexual barter, constitutes 'sex work' (Abelgillian Abel et. al., 2009).
Sex work may be formal or informal. In some instances, sex work is only a temporary informal activity. Women and men who have occasional commercial sexual transactions or where sex is exchanged for food, shelter or protection (survival sex) would not consider them to be linked with formal sex work. Occasional sex work takes place where sex is exchanged for basic, short-term economic needs and this is less likely to be a formal, full-time occupation. Commercial sex work may be conducted in formally organized settings from sites such as brothels, nightclubs, and massage parlors or more informally by Commercial Sex Workers who are street based or self-employed.

The vast majority of Female Sex Workers and Men Who Have Sex with Men engaged in sex work are driven there by poverty and economic dislocation, or in the case of trafficking, by coercion. Many studies have shown that people turn to sex work when there is no viable alternative to meeting basic needs, such as food, clothing and shelter for themselves and their families. One study in India found that 50 percent of Female Sex Workers working in Kolkata brothels were supporting children (Sudha Sivaram et. al., 2008).
Types of Commercial Sex Work

Sex work is grouped into the following six types based on the place where Commercial Sex Workers solicit and entertain clients.

Home Based

The sex workers work at the place of their usual residence. They could be staying alone or with other related or unrelated members. The other members staying with them may or may not be engaged in sex work.

Brothel Based

The sex workers work in a place other than the place of their usual residence, under a Gharwali or an agent, who receives part of their earnings. A brothel generally has more than one sex worker.

Lodge Based

The sex workers work in a lodge, hotel, bar or a restaurant. They may not stay in the place of their work. They are usually employed by the lodge, and they do not have to go out to bring the clients. Instead, clients come to their lodge. This is different from the sex work where the workers contact a client in a public place and later entertain him in a hotel or lodge.
**Dhaba Based**

The sex worker works in Dhabas the resting places on highways, where long distance truckers and motorists break their journey and rest.

**Roadside Based**

The sex worker, in order to avoid paying the Dhaba owners, solicits clients on highway and entertains them either in any other convenient place alongside the road.

**Public Place Based**

The sex worker solicits the clients in public place such as streets, parks, railway stations, bus stands, market places, cinema halls, etc. However, the clients may later be entertained in lodges or homes or public places.

**Types of Sexual Partners**

Sexual partners may be classified into the following five groups:

**One Time Clients**

Those who visit a particular commercial sex worker only once or very rarely, paying for sex whenever they visit the Commercial Sex Worker.

**Regular Clients**

Those who visit the same commercial sex worker frequently and pay for sex. A particular commercial sex worker may have several regular clients.
**Husbands**

Those who are legally married to the sex workers, either before or during sex work, and have regular sexual contact with the sex worker. Husbands do not pay for sex, but may compensate the worker through other means.

**Lovers**

Those who are boy friends or lovers of the Commercial Sex Workers; they are not married to the sex workers and they may also compensate the Commercial Sex Workers through other means.

**Malak**

As the word suggests the master of the sex workers. He could be older than the Commercial Sex Workers, is not married to the sex workers, may not pay for sex and may provide protection to the Commercial Sex Workers.

**The Main Type of Persons Involved in Men Who Have Sex with Men (MSM) Activity**

The definitions listed here are based on discussion dialogue and interaction with the key informants and observation of Men who have sex with men. The terminology is important for the understanding of how some segments of this social subset define them.
Kothis

These men are characterized by ‘feminized’ behaviors in special situations, especially in their interactions with male sexual partners. Outside of MSM situations they generally behave and are perceived as males. In sexual activities they almost always enact the ‘female’ role, they are the ones who are penetrated during anal sex.

Panthis

This label is generally used by kothis to refer to men who are the ‘penetrators’, the supposedly more masculine role, in their interactions with the koti. Unlike the self identity of the kothis, the panthi label is usually used by kothis to designate their ‘clients’ and they are relatively indifferent to the sexual identities of their partners. Some of them frequent cruising areas and they may have relationships with preferred kothi partners. These are generally men in search of some excuse for penile discharge. Panthis are very often married and have families.

Doubal Deckers

The male who likes to do both: to penetrate and to be penetrated. These types of individuals are also called Do-partha

Hijras

These individuals are also referred to as chakkas, which is a term used for a self-identified group of males who define themselves as ‘neither male nor female’. These are individuals who
belong to a traditional ‘eunuch’ social category in India who usually dress as females. Hijras in the Indian cultural tradition are people who have experienced a ritual castration; they live in small groups headed by a spiritual leader or guru. However, in actual contemporary practice not all Hijras are castrated. In their lifestyles and sexual activities there is often no sharp separation between Hijras and kothis. In some cases kothis aspire to become Hijras (Talwar Rajesh 1999).

Biological Approach to Commercial Sex Workers

Health

Health is a common theme in most of the culture. In fact, all communities have their concepts of health and hygiene, as part of their culture. Among definitions still used, probably the oldest is that health is the “absence of disease”. In some cultures, health and harmony are considered equivalent, harmony being defined as “being at peace with the self, the community, God and Cosmos”. The ancient Indians shared this concept and attributed disease disturbances in bodily equilibrium of what they called “humors”. Contemporary developments in social sciences revealed that health is not only a biomedical phenomenon, but one which is influenced by social, psychological, cultural, economic and political factors of the people concerned. These factors must be taken into consideration in defining and measuring health (Ambar Basu and Mohan Dutta 2009).
Most of the Female Sex Workers do not have the luxury of maternity leave. Female Sex Workers, who are dependent on a daily earning, often work in the field until the last moment and go back to sex work as soon as possible after delivery. Customs and traditions often prevent a pregnant sex worker from getting the food she needs. Papayas, Pineapples, Eggs and Drumsticks are thought to cause abortions and pregnant women are not allowed to eat them. Ironically, all these foods are rich in iron and vitamin A, essential nutrition for a safe pregnancy and a healthy baby. In many regions, pregnant sex workers are not given 'rich' food like milk and fats; because it is thought that these will make the baby too large and difficult to deliver.

NUTRITIONAL STATUS

Nutrition is an important feature for the sustainability of human civilization. The concept of nutrition is as old as the human civilization and it is to be assured at globalize level so as to think of development in true sense. It is rightly remarked by many scholars that the health of an individual is the indicator of progress and development. Malnutrition has been a major problem among Commercial Sex Workers of Belgaum district in particular and in most of the developing and under developed countries of the world, including India in general. It manifests in diverse forms i.e., protein energy malnutrition, vitamin
malnutrition and mineral malnutrition and contributes to poor intellectual, physical development of the individuals and different types of diseases and infections. Recent evidences in literature indicate that intrauterine and neonatal nutrition can predispose an individual to chronic degenerative diseases in adult life. It has been claimed that the fetus in a malnourished mother’s womb has to adapt to a limited supply of nutrients thereby changing its physiology, function and metabolism (Barker 1997). Such programmed changes may be the origin of a number of diseases in later life especially when dietary intakes and life styles are diametrically opposite to that uterus, (Krishnaswamy 1999).

The study of science of nutrition deals with what nutrients we need, how much we need, why we need these and, where we can get them (Mudambi and Rajgopal 1990).

History records a number of attempts by man to search for answers to his questions about food and it’s relation to health. Until World War I the significance of nutrition was recognized by a relatively small group of scientists and physicians. Science that time, a wider awareness was developed about the part that nutrition plays in the health and efficiency of individuals and the economic development of nations. A great number of discoveries and developments have been made which are important in understanding the needs of people and the means of supplying of them (McDivitt et al., 1973). Nutrition has been called a
“twentieth-century science”. Indeed, application of many earlier nutritional findings came late in history.

Mayow an English physiologist and chemist, was the first to suggest that the air inhaled by animals was taken up by blood in the lungs and transported to different parts of the body. ‘Lavosier’, who has been called the “father of nutrition”, showed that Oxygen was a part of the air and that there was a relation between breathing and the combustion of substances in the air (1743-1793). Gerrit Jan Mulder (1838) gave the name ‘protein’ to foods containing nitrogen.

BLOOD CIRCULATION

The movement of blood in the blood vessels is called blood circulation. All the living cells in the body require a constant supply of oxygen and nutrients by the blood in higher animals. The blood is kept in circulation by a central muscular pumping organ called heart.

The circulation of blood through a closed system is maintained for the proper blood supply to all the parts of the body. Certain amount of blood pressure is necessary for blood to reach the distant organs in the body. Blood Pressure is dependent on the intensity of the pumping action of the heart and resistance produced by the blood vessels.
Definition of Blood Pressure

"Blood Pressure is the lateral pressure exerted by a column of the blood on the walls of the blood vessels, while flowing through it".

Conventionally blood pressure refers to arterial pressure. Blood pressure has two levels systolic and diastolic.

**Systolic Blood Pressure:** It is maximum pressure in the arterial system during ventricular systole or contraction it is 120 mm Hg.

Range is 90 to 140 mm Hg.

**Diastolic Blood Pressure:** It is minimum pressure in the arterial system during ventricular diastole or relaxes. It is 80 mm Hg (Sainani 1992).

Range is 60 to 90 mm Hg.

A certain amount of blood pressure is required to make sufficient quantity of blood to flow from heart to brain, kidney, intestine, other muscles and back to heart. The blood pressure varies in different parts of the body at different times. It is combatively more in aorta than in an artery of the foot. It is convenient to record the blood pressure of the individual on his upper arm. The blood pressure at this point is used as relative indication of the pressure in the entire body.
Types of Blood Pressure

The normal blood pressure according to WHO is 120/80 mm Hg in actives and among sedents it is 140/90 mm Hg. Any blood pressure recorded continuously for a week, if deviates from normal value (more or less) are considered as abnormal. There are two types of abnormal blood pressure.

❖ Hypertension: High Blood Pressure

❖ Hypotension: Low Blood Pressure

**Hypertension:** When the systolic pressure at any age is more than 140 mm Hg and diastolic pressure is more than 90 mm Hg, then it is called as hypertension or high blood pressure (Sainani 1992). This type of high blood pressure is common in elderly people (above 40 years). Many times such type of blood pressure is recorded among children also. There are so many factors, which affect the blood pressure. The increase load on heart may result in heart failure. Clinically, hypertension is considered into mild, moderate and severe hypertension varies above 200/130 mm Hg.

**Hypotension:** When the systolic blood pressure is less than 100 mm Hg and diastolic pressure is below 50 mm Hg. Then it is more dangerous than the hypertension as because there are so many pills to reduce high blood pressure but there is hardly any way or pills to increase blood pressure. It is often observed among old age people it is characterized by general fatigue.
There are so many factors, which are responsible for blood pressure variations among individuals, namely genetic factor, effect of age, obesity and hardening of artery, weakens of heart mussels, kidney elements and other bad habits like smoking, alcohol intake etc.

**BLOOD GROUPS**

Of all the genetic characters blood groups have been extensively employed in the study of genetic structure of human populations all over the world. Serological and other genetic markers like hematological and biochemical traits, as important tools of physical anthropologist, help in the understanding of human variation as also in the appraisal of the biological relationship between populations based on the compilation of gene frequencies from phenotypic frequencies. The ABO and Rh (D) blood groups studied are reviewed briefly as under.

**ABO Blood Group System**

ABO blood groups are most common and suitable genetic markers. Karl Landsteiner first discovered this system in 1900. Human blood can be classified as belonging to one of the four mutually exclusive groups. O, A, B, and AB. ABO blood group system is employed for comparison of populations. Boyd (1939), Mourant (1954) and Mourant et. al., (1958) account for the importance of ABO blood groups in the classification of the world
population into social groups based on their geographical and genetic variations (Nabar 2005).

Herszfeld and Hirszfeld in 1919 during the world war, examined a large number of soldiers, including Indian and found a strikingly high frequency of blood group ‘B” Several workers extensively studied the ABO blood group system among the Indian populations (Macfarlane 1938, Macfarlane and Sarkar 1941, Sarkar 1954, Sastry 1970, Mournt Kopec and Domaniewska Sobezak 1976, Srivastava and Umapathy 1976, Rami Reddy et.al., 1980, Rami Reddy and Rajasekhara Reddy 1982 and Reddy et.al., 1998).

**Rh ± (D) Blood Group System**

Levine and Stetson in 1939 first reported in Rh (D) blood group system, while describing the severe haemolytic reactions of a woman, when she received a blood transfusion from her husband. The antibodies produced in the woman not only acted against her husband’s blood but also with 85% donor’s blood. Landsteiner and Weiner in 1940 discovered a new antigen in the blood of Rhesus monkey. They took monkey’s blood and injected into rabbits which produced antibody against monkey’s blood. This antibody was exactly same as that of the woman mentioned above. It was named as Rhesus system since the antigen was originally discovered in the Rhesus monkey.
Many works have been conducted on the distribution of Rh (D) blood group system in India (Reddy et. al., 1980, Banarjee et.al., 1988, Sastry 1990, Sengupta 1996, and Reddy et. al., 1998).

**ORAL HEALTH**

Good oral hygiene results in a mouth that looks and smells healthy. This means:

- Teeth are clean and free of debris
- Gums are pink and do not hurt or bleed when brush or floss
- Bad breath is not a constant problem

Gums hurting or bleeding while brushing or flossing, experiencing persistent bad breath, these conditions may indicate a problem. Dentist or hygienist can help learn good oral hygiene techniques and can help point out areas of your mouth that may require extra attention during brushing and flossing.

Maintaining good oral hygiene is one of the most important things you can do for teeth and gums. Healthy teeth not only enable to look and feel good, they make it possible to eat and speak properly. Good oral health is important to overall well-being. Daily preventive care, including proper brushing and flossing, avoiding use of tobacco, will help stop problems before they develop and are much less painful and expensive.
KNOWLEDGE ON STI/HIV/AIDS

**STI:** 'Sexually Transmitted Infections' describes the infections that spread from person to person through sexual contact. The germs, which are responsible for these diseases, can be transmitted only when there is close body contact between two individuals involving the body fluids or sex organs. This can happen mostly during sexual contact (Sharma Nirupama 2003).

**HIV:** Everyday thousands of germs enter the human body. These germs enter the body either through the air we breathe or the water we drink or the food we eat or even by direct contact with another person. To keep the body healthy the body has to fight these germs and destroy them. There are certain special cells in the body called the 'immune cells'. This army of immune cells is the defence system of the body. These are the cell that fight and kills germs. The human immune - deficiency virus (HIV), when it enters the body kill these immune cells of the body. The number of immune cells gradually become less and less. Therefore, the ability of the body to fight germs becomes less and less. The destruction of the immune cells leading to decreased ability of the body to fight germs is called immune deficiency.

**AIDS:** This is the end stage of HIV infection when more and more of the immune cells get destroyed. The immune system of the body is destroyed so much that it is unable to defend itself from
germs and other diseases (Karnataka Health Promotion Trust 2005).

The home based Female Sex Workers on an average, are much younger. The Devadasi tradition is the major reason for starting sex work at an early age. They are found more in rural areas and tend to migrate much lesser than women in other types of sex work. They are also the least paid, entertain overnight and report low property ownership. They have very low information about Sexually Transmitted Infection, Human Immunodeficiency Virus and Acquired Immuno Deficiency Syndrome (AIDS).

The Devadasi tradition seems to be the most common reason for brothel - based sex workers taking to sex work. They tend to be more indebted and report medium police harassment. Lodge based Female Sex Workers (FSW) and Men Who Have Sex With Men (MSM) tend to be more liberate, report high police harassment and being asked for oral, anal or group sex, have low information on and more symptoms of Sexually Transmitted Infection. They are also likely to be migrant. Public places - based sex workers tend to be older, with poverty being the most common reason for initiating sex work. Though they are the highest paid they report having higher debts and tend to be more migrant. Commercial Sex Workers are particularly vulnerable to Human Immunodeficiency Virus infection and Female sex work is an
important component of the sexual networks involved in the transmission dynamics of Human Immunodeficiency Virus.

Condom

The condom is one of the oldest forms of contraception. Its use can be traced back thousands of years. It is believed that form of modern-day condoms were used by the Egyptians as far back as 1,000 B.C. The earliest evidence of condom use in Europe is there in scenes from cave paintings at Combarelles in France. Dated 100 to 200 AD.

The condom, made of animal gut, became well known and increased in popularity in the 1700's. Literature of that time suggests that the condom's contraceptive (rather than just prophylactic) properties had already been realised. By 1766 many shops were producing handbills and advertisements (Kulkarni Vinay et.al., 2004).

The rubber condom was developed shortly after the creation of vulcanized rubber in the 1840's, by Goodyear and Hancock. Vulcanisation is the method or process of treating crude rubber with sulphur and subjecting it to intense heat. This process turns the rubber into a strong elastic material. In the 1930's liquid latex manufacturing superseded crepe rubber. It is still the basis of manufacture today.
Socio-economic Approach to Commercial Sex Workers

Religious Background

Religious beliefs are closely linked to concepts and practices governing morality in any society. It is also true that sex work has often enjoyed religious sanction and it is under this pretext that it has survived for centuries. Hence, it would not be out of the context of this study to examine the religious background of the subjects.

Caste Composition

Caste also plays a vital role in every aspect of life in the Indian society. Often, caste background is directly or indirectly linked to the kind of opportunities that are Available or not available to individuals. The term backward caste includes a group of castes that occupies different ranks in the caste hierarchy and a large proportion of the members are economically backward. The forward caste are generally identified as those caste groups which occupy higher positions in the caste structure and enjoy a certain degree of economic advantage besides a higher ritual status. Though caste ‘per se’ may not have a direct bearing on a person’s entry into prostitution it might create certain conditions which may play a decisive role in determining one's entry into the Sex trade.
Marital Status of Sex Workers

There is a popular notion that single women or Men Who Have Sex With Men (MSM) generally enter into trade, in a society where early marriage has been in vogue for several centuries and girls are burdened with familial responsibilities at a very young age. It is unlikely that a large number of men and women can remain outside the institution of marriage. In fact the fear that adolescent and young girls will 'go astray' has prompted many a parent to have the marriage of his/her daughter arranged at a very early age. The belief that once a daughter is married and her responsibility transferred to her husband she is safe is proved to be one of the most unrealistic myths in recent times. Yet, parents seem to be in a great hurry to get their daughters married off. Given such a situation one would imagine that there is less likelihood of married girls/women becoming sex workers. True is the fact that desertion and ill-treatment by family members drove many married women in our sample to prostitution. Because they were unable to protect themselves and their dependent children these women had entered the sex trade.

Economic Profile of the Family

Studies have shown that one of the major factors affecting entry into sex work is the economic condition of the family. Hence an attempt is made here to elicit data relating to the economic
background of the subjects’ families. It was a rather difficult task to draw precise information about the economic status of their parental families. Most often responses such as ‘Low’ (earning per month less than 1500 Rupees) ‘Medium’ (earning per month up to 1500 to 3000 Rupees), and ‘High’ (earning per month more than 3000 Rupees) were received instead of actual figure relating to income. However, piecing together the information given by the subjects, an economic profile of their families has been constructed. When economic hardships couple with certain influences and conditions, individual falls a prey to forces that are the part of the sex work rocket. Often, poor individuals are lured into traps by owners of brothel houses or their agents with false promises of jobs as domestic servants in towns and cities or a career in films, and before long they realize that they have been forced into sex work.

**Educational Background**

Education is an important indicator of a person’s socio-economic background. It is generally believed that education helps a person not only to earn a livelihood but also to overcome the exploitative situations into which ignorance might throw them. It is thus necessary to investigate the educational status of the subjects. One would generally believe that illiteracy is a major factor contributing to sex work. While it is true that ignorance
resulting from illiteracy could push a woman into the sex work, it is also possible that access to information about easy means of achieving quick wealth and pleasures can drive some individual to seek such means.

**Age of Commercial Sex Workers**

It is very a difficult task to obtain details about the accurate age of Commercial Sex Workers. Child sex workers fear that revealing their actual age might lead to punishment under the prevention of immoral traffic Act for their procurers. Older are, on the other hand tend to camouflage their age in several ways because reaming young and being presentable are the prescriptions laid down for sex work. Conservative estimates put the number of children in India suffering from Commercial Sexual Abuse at 3, 00,000. According to an estimate provided by non-governmental organisations there is an increase of 8-10 per cent every year in the number of children entering the sex work. The central advisory committee on child sex work in its report published in 1994 said that about 15 per cent of sex workers in Bombay, Delhi, Madras, Calcutta, Hyderabad and Bangalore are children. According to a report in the 'Week' magazine 30 per cent of sex workers in these six cities are children and that nearly half of them had entered the flash trade when they were minors (The Week, Aug 4/1996:40). Against this background it would now be
appropriate to examine the age wise distribution of subjects. As we move up to the higher age groups we see that there is a reduction in the number of sex workers. Brothel houses prefer younger girls as their owners believe that they can fetch the highest price. Given the fact of Indian male’s obsession with virginity it is true that most clients Prefer ‘young virgins’. This profession also takes a heavy toll on health and sets in motion an early aging process, which in turn results in these groups being thrown out and left in the lurch.

**Reasons for Taking up Sex Work**

For several year attempts are being made by social scientists to pin down the exact causes of sex work, but it has not been possible to evolve any single theory, which could explain all the circumstances that lead individuals into the sex trade. However, many schools of thought did emerge to attempt an etiology of sex work. The emerge to school of thought attributes sex work to the factors of demand and supply that operate in society. Some of the other theoretical appreciates are the psychological theory, the environmental theory, the born prostitute theory and the Freudian perspective. Though it is not possible to find a totally comprehensive explanation in any of these theories, it is true that they provide same useful basis for discussion of the causes of sex work. In the background of this discussion it would now be
appropriate to analyze our data of reasons cited by the respondents for becoming sex workers.

Family disharmony, tradition and social customs that have sanctioned the Devadasi, desertion and other facts like kidnapping, abduction, deception and displacement were among other reasons that were responsible for entry into sex work. In a world that is fast becoming materialistic the abuse of children and women is increasing in alarming proportion. It is wrong to infer that entry into the sex trade is always voluntary. A study by the National Commission for Women noted that across India over 200 women and girls enter in the sex work every day. It is thus to be inferred that entry into sex work, is a factor that is determined by a multiplicity of factors.

Length of Stay in Sex Work

There is a general belief that once an individual enters into the sex work, they are bound to be there for life. The stigma of prostitution seems to hang on these individuals for a lifetime and whether one continues or quits, the tag of immorality would continue. It must be borne in mind that the hazards of sex work are so dangerous that a girl/woman/MSM driven into it falls not only a victim of the dreaded AIDS but also a carrier of the disease to their clients and their unsuspecting family members. Once an individual becomes disease prone their exit process begins.
Unwanted by the brothel owners and uncared for by society, the sex worker joins the ranks of many of their kind who are victims of oppression. A sex worker is unlikely to continue in her/his profession for a long time for another reason. As age advances individuals are supposed to loose their charms and their continuing in the sex work becomes difficult. Use of artificial beauty aids with dangerous chemical components also acts as a source of hazard to her face and appearance.

REVIEW OF LITERATURE

Nutritional Studies Conducted in India

Das (1998) in her article Nutrition and Sanitation important determinants of health reported that Malnutrition is a multifaceted problem and poor hygiene and Sanitation are the main factors responsible for infectious diseases which in turn lead to malnutrition. Creating awareness about various aspects of nutrition and sanitation is, therefore, critical in improving the health of the people.

Debashis and Gajbhiye (1999) assessed that nutritional status of the 351 adult male and female individuals of the Mishing population from Baligaon village in the Balipur block of Sanitpur in Assam. It appears from the nutritional assessment that Mishing population consumes 2598.94 kcal which is lower than that of the ICMR recommended allowance. Nutritional anthropometric results
revealed that the mean values of height and weight among the male and female lag behind international standard. The mean hemoglobin content shows that more than 80 percent male and 70 percent female are anaemic. It indicates that Mishing population seems to be in adverse nutritional situation.

Bhattacharya and Chaudhuri (2004) analyzed the nutritional status of 328 individuals of both sexes of Shimong of Zido, Old Zido, Nagaming and Tuting villages of East Siang District in Arunachal Pradesh. This study presents some aspects of demographic, body dimensions and dietary intake. Their diet is deficient with other nutrients like calcium, iron, vitamin A, vitamin B, vitamin B2 and vitamin C. The anthropometric results show that the people under study possess in general good physique.

Ambar Basu and Mohan (2009) studied on emerging trend in health communication. Research advocates the need to foreground articulations of health by participants who are at the core of any health campaign. Scholarly work suggests that the culture-centered approach to health communication can provide a theoretical and practical framework to achieve this objective. The culture-centered approach calls for attention to dialogue and locates the agency of cultural participants in the culture being studied. This approach underlines the import of participation of
community members in the enunciation of health problems as a step toward achieving meaningful change. Based on the culture-centered approach, this article examines narratives of sex workers to analyze how participatory communicative strategies frame discourses and practices of health, particularly those related to HIV/AIDS.

**Nutritional Studies Conducted in Abroad**

Bronner et. al., (1999) studied dietary intakes and body size that are qualitatively and quantitatively appropriate are essential for human health and well being. During childhood these requirements are even more crucial though researchers are reporting a greater number of children who are dieting to lose weight. The purpose of his study was to determine the relationships between body mass index BMI=Weight (kg) Height (mt)$^2$, perception of body image, and dieting behavior among a group of urban fourth grade students. The study group consisted of 252 fourth grade students from eight urban public schools selected to represent the demographic profile of Baltimore, Maryland. Body image data were collected by questionnaire and employed Collins pictorial body image scale (numbered 1-7 to correspond with increasing body size). Overweight was defined as 85$^{th}$ percentile of BMI. Statistical analyses were performed using SPSS. The correlation of BMI with body image perception was 0.33.
Henrik Friis et al., (2002) studied on how human immunodeficiency virus (HIV) infection affects body composition, but their relationship has not been studied in pregnant women. They conducted a cross-sectional study among 1669 women receiving antenatal care between 22 and 35 wk of gestation in Harare, Zimbabwe. The role of HIV-1 status and viral load, malaria and elevated serum (ACT, an acute phase protein) in weight, body mass index (BMI), arm circumference (AC), triceps skinfold thickness (TSF), and arm muscle (AMA) and fat (AFA) area were assessed using multiple linear regression analysis. The mean (range) age was 24.4 (14-45) and gestational age 29 (22-35) wk. HIV infection was present in 31.5% of the women, malaria parasitemia in 0.4% and 11.4% had serum ACT>0.4 g/L. There was no difference in any anthropometric variable between HIV-infected and uninfected women. However, women with viral loads (genome equivalents/ml) between 4 and 5 and >5 log10 had 1.1 [95% confidence interval (CI)-0.3, 2.3] and 2.5 (95% CI: 0.1, 5.1) kg lower weights compared with uninfected women; this was explained by losses of both AFA and AMA. Malaria parasitemia was associated with 6 cm 2 (95% CI: 0.4; 11.8) or 25% lower AMA. Elevated serum ACT was a negative predictor of all anthropometric variables, i.e., levels between 0.3 and 0.4, 0.4 and 0.5 and >0.5 g/L were associated with 1, 2 and 6 kg lower mean body weights, respectively. Despite the limitations of a cross-
sectional design, we conclude that arm fat and muscle areas, reflecting body fat and lean body mass, seem to be unaffected in the majority of HIV-infected pregnant women, but they decline with increasing viral loads. The effects of viral load are not explained by elevated serum ACT, which is a strong independent predictor of all anthropometric variables.

Wanke et. al., (2003) worked on to evaluate the contribution of acquired immune deficiency syndrome defining conditions (ADCs) in human immunodeficiency virus (HIV) associated wasting. We analyzed longitudinal data from 671 participants in a nutrition and HIV cohort study. Data on ADCs, height, and weight were collected at baseline and during 6 monthly study visits. The frequency of ADCs decreased over time, but the relative risk (RR) of wasting (decrease in body mass index [BMI] to <20 kg/m²) increased with a history of >1 ADC; the RR of wasting increased 1.3-fold with each additional historical ADC. Any ADC during the 6 months prior to a study visit was associated with a decrease in BMI to <20 kg/m². The risk of wasting increased 2.7-fold with each additional recent ADC. These risks were not altered when adjusted for socioeconomic status, CD4 cell count, energy intake, or baseline BMI. Although ADCs contribute to the development of wasting, their contribution is relatively small.
Lourenco Ana Eliza Port et. al., (2008) studied on bad nutrition. It has become a public health problem. Similar situation had happened in Chile studies on body composition. Nutritional state, and body mass index (BMI), are parameters recommended by the WHO for determining human beings' nutritional state. In order to obtain the somatic type the anthropometric Heath and Carter method was used, classifying BMI according to the WHO norms. Men were more endomorphic than women. This difference was statistically significant (p=0.005). To compare the ectomorphic and mesomorphic components of somatometric in relation to sex, these values were statistic statistically significant to men, but the endomorphic value was statistically significant to women.

Lourenco Ana Eliza Port et. al., (2008) their study was to assess the nutritional status of the adult Surui population, an indigenous society from the Brazilian Amazon, as it relates to socio-economic conditions. Fieldwork was carried out in February-March 2005, including 252 individuals (88.1% of the total eligible subjects older than 20 years of age in the villages surveyed). Anthropometric measurements were performed following standard procedures, and percentage of body fat (%BF) was measured by bioimpedance. To classify the Surui according to socioeconomic status (SES), an index was constructed based on a group of
variables to characterize socioeconomic differentiation. Evaluated by body mass index (BMI), the majority of Surui 20-49.9 years of age were overweight (42.3%) or obese (18.2%). The frequency of obesity for women (24.5%) was twice of that recorded for men. Subjects classified as overweight or obese also showed high %BF and waist circumference (WC). Women in the high SES category showed higher anthropometric values (including weight, BMI, arm fat area, and WC) and %BF than those of lower SES.

Emanuele Cereda et. al., (2009) worked on the Mini Nutritional Assessment (MNA) which is recommended for grading nutritional status in the elderly. A new index for predicting the risk of nutrition-related complications, the Geriatric Nutritional Risk Index (GNRI), was recently proposed but little is known about its possible use in the assessment of nutritional status. Thus, they aimed to investigate its ability to assess the nutritional status and predict the outcome when compared with the MNA. Anthropometry and biochemical parameters were determined in 241 institutionalised elderly (ninety-four males and 147 females; aged 80.1 (sd 8.3) years) persons. Nutritional risk and nutritional state were graded by the GNRI and MNA, respectively.

on individuals who reported their wages in urban Ethiopia. They estimated a relationship between health measures (i.e. proxied by height and BMI) and wages. Their findings from the IV quantile regression estimates indicate that productivity is positively and significantly affected by education, height and BMI. The return to BMI is important both at the lower and upper end of the wage distribution. The return to height is significant only at the end of the wage distribution. The substantive content of the results (i.e. the high-nutrition and high-productivity equilibrium story) does not change even if we did not control for endogeneity of schooling. Non-parametric evidence also supports the strong and positive relationship between productivity and our indicators of human capital.

**Blood Pressure Studies Conducted in India**

Thankappan et. al., (2001) has been evaluating the prevalence, awareness, treatment and control of hypertension among elderly individuals in Bangladesh and India. A community-based sample of 1203 elderly individuals (670 women; mean age, 70 years) was selected using a multistage cluster sampling technique from two sites in Bangladesh and three sites in India. The overall prevalence of hypertension was 65% (95% confidence interval = 62-67%). The prevalence was higher in urban than rural areas, but did not differ significantly between the sexes. Multiple
logistic regression analyses identified a higher body mass index, higher education status and prevalent diabetes mellitus as important correlates of the prevalence of hypertension. Physical activity, rural residence, and current smoking were inversely related to the prevalence of hypertension. Among study subjects who had hypertension, 45% were aware of their condition, 40% were taking anti-hypertensive medications, but only 10% achieved the level established by the US Sixth Joint National Committee on Detection, Evaluation and Treatment of Hypertension (JNC VI)/WHO criteria.

Kusuma (2002) conducted study on blood pressure levels and variability across population groups from the State of Andhra Pradesh, India, and to examine the influence of acculturization/modernization on blood pressure levels. The blood pressure levels among 1316 individuals (646 men and 670 women) belonging to two tribal (Khondh and Valmiki) and two caste groups (Wadabaliya and Settibaliya) from rural and urban areas from Andhra Pradesh were collected. Analysis of covariance (ANCOVA) was used to examine the effect of age and sex, and population differences. The distribution of blood pressure showed significant variability among these population groups. Higher levels of blood pressure were noticed in an acculturizing tribe, the Valmiki, than among the Khondh, a traditional tribal population.
The results indicate that age had significant effect on both systolic and diastolic blood pressure levels. Also, the systolic blood pressure was relatively more sensitive than diastolic blood pressure to the effect of age. The sex did not contribute significantly to the variability of blood pressure.

Deshmukh et. al., (2005) examined the prevalence, correlates of hypertension and level of awareness regarding hypertension in rural area of Wardha District of Central India. It is a cross sectional study. Overall prevalence of hypertension was found to be 20.6%. The mean systolic blood pressure was 119.08+15.68 mm Hg and mean diastolic blood pressure was 76.85+17.82 mm Hg. Significant risk of hypertension was found with increased age, increase in BMI, waist-hip ratio and occupations involving sedentary work. The risk decreased significantly with increase in educational level. The level of awareness regarding hypertension was very poor. Only 13.6% of the hypertensive was aware of the condition while only 8.7% of the hypertensive was taking the treatment regularly. As the prevalence of hypertension is high (20.6%), an appropriate intervention program shall be launched considering the modifiable risk factors in the area are BMI and Waist-hip ratio.

Rao Busi Bhaskara (2005) made an attempt on cross sectional study. It was undertaken on 956 Yata boys and 899 Yata
girls aged between 0+ and 18+ years in rural schools situated in Visakhapatnam district of Andhra Pradesh. Data on body weight, stature, head, chest, abdominal, upper arm and calf circumferences, blood pressures and pulse rate are presented including the patterns of change in these physical and physiological traits with advancement of age. It has been observed that there is progressively increasing trend in all the dimensions with advancement in age. The study reveals the adolescent growth spurt or highest peak velocity of girls (12+ and 13+) is attained earlier by two years than boys (14+ and 15+ years). Blood pressure and pulse rate increased with advancement in age with few fluctuations. Analysis of the data reveals that all the measurements showed significant differences by sex according to age. Yata boys and girls are shorter heavier with broader chest and similar head circumference than ICMR (1984) National standards.

Mukhopadhyay Barun (2006) discussed on blood pressure among a tribal population in north Sikkim. Hypertension is a significant problem in this region. However, the local health institutions do not identify this as an important health problem and do not include it in their regular preventive and curative health care agenda. Community-based primary health care in India in such a situation must formulate innovative approaches to
address the major health needs of the community. The ethics of primary health care rests on this approach. An epidemiological study of blood pressure was conducted in the year 1994 to identify significant predictors of blood pressure among the Lepchas, a tribal (adivasi) population in the Dzongu area in north Sikkim. A total of 205 adults (19 years and older) of both sexes (male: 115, female: 90) participated in the study after verbal consent. The study was the first of its kind among the Lepchas and some were measuring their blood pressure for the first time.

Soudarssanane (2006) made an investigation on blood pressure levels and prevalence of hypertension among adolescents (15-19 years) and identified the risk factors associated with high blood pressure and hypertension. Sample size is 673 adolescents (males 351, females 322) in the 15-19 years age group. Mean SBP and mean DBP were 113.6 and 74.3 mm Hg respectively (114.1 and 74.6 in males, 113.1 and 74.1 in females). Mean blood pressure (MBP) showed significant correlation with age. MBP and prevalence of hypertension increased with social class, salt intake, and parental history of hypertension, weight, height and BMI, of these, BMI and higher salt intake emerged as independent predictors by multivariate analysis. Findings were confirmed by the case control study. The major risk factors for hypertension among adolescents are BMI and higher salt intake.
Deshmukh (2006) his study exhibits relationship between different anthropometric indicators and blood pressure levels in rural population of Wardha district in central India. The mean systolic blood pressures were 120.2 and 118.4 mm Hg while the mean diastolic blood pressures were 77.7 and 76.3 mm Hg in men and women respectively. There was a significant positive correlation of obesity indicators with both systolic and diastolic blood pressure. For SBP, the correlation coefficient was 0.23 with BMI, 0.23 with waist circumference, 0.11 with WHR and 0.22 with WHtR. For DBP, it was 0.13 with BMI, 0.12 with WC, 0.04 with WHR and 0.11 with WHtR. Step-wise linear regression suggested that BMI and WC were important predictors of hypertension. The suggested cut-off values for BMI were 21.7 for men and 21.2 for women; for waist circumference, the cut-offs were 72.5 for men and 65.5 for women. BMI and WC had strong correlation with systolic and diastolic blood pressure. The suggested lower cut-off values of the anthropometric indicators cover maximum of the population with higher odds of having hypertension and may help in reducing the mean population blood pressure levels.

Ghosh Rohini (2007) emphasised that blood pressure (BP) trends vary cross-culturally, and the risk factors associated with hypertension are limited in periurban regions of India. The examination on effect of socioeconomic factors (income,
expenditure, activity time) and anthropometric measurements (skinfolds of biceps, triceps, subscapular, supra iliac, and body mass index) on 102 Munda (tribe) and 135 Pod (caste) women of childbearing age in a peri-urban area of Kolkata city revealed that Munda women had significantly higher diastolic BP in the 30+ age group. However, no difference in the systolic and diastolic BP was observed between the two groups, when the socio-anthropometric factors were controlled as covariates. Expenditure on alcohol and activity time was associated with hypertension among the Munda, while body mass index was significantly associated with hypertension among the Pod women. Alcohol consumption is a rare phenomenon among Indian women. Yet, Munda women in this transitional peri-urban environment, in spite of high poverty were more inclined to spend their earnings on alcohol consumption (due to their cultural preferences), increasing the risk of hypertension in their childbearing age.

Satish Kumar Taneja and Mandal Reshu (2007) did extensive study on essential hypertension (EH) which is a major public health problem world over and in India. Recent data on EH in the population of Chandigarh, revealed that the prevalence of EH has become double in the last 30 years in the residents of Chandigarh (26.9 to 45.80% in the year 1968 and 2002). Zinc (Zn), copper (Cu), magnesium (Mg), and manganese (Mn) in the serum
are considered important in maintaining the human hypertension. The high Zn intake was considered to increase the blood pressure (BP) and to affect the other mineral status in the body. Recent survey on the trace of metal status of different vegetables in the State of Punjab around Chandigarh (India) revealed that Zn level is significantly higher (40 mg/kg or more in above ground vegetables and 120 mg/kg or above in underground vegetables) in underground water-irrigated vegetables, but the levels of Cu and Mg are within prescribed limit. The present study was conducted on Chandigarh population to evaluate the levels of Zn, Cu, Mg, and Mn in the blood and urine of normotensive (NT) control and hypertensive (HT) subjects matched with number, age and sex. Atomic absorption spectrophotometer studies reevaluated that the levels of serum Zn, Mg, and Mn were significantly higher.

Pushpa Krishna et. al., (2007) made a longitudinal study on comparison of blood pressure (BP) in young population of North India and South India. Age, height and sex specific BP was estimated for 6320 North Indian subjects aged 7-18 years and compared with BP values of South Indian subjects. North Indian boys and girls had lower diastolic BP (DBP) with no difference in systolic BP (SBP) than South Indian boys and girls between 7-12 years. Between 13-18 years North Indian boys and girls had significantly higher SBP with no difference in DBP. The significant
regional differences in BP distribution among young Indians suggest considering geographic location of the population in evaluating blood pressure.

Tripathy Vikal and Gupta Ranjan (2007) carried out a study on BP variation among Tibetans in India in view of the hypothesis of age-related increase and of lower BP at high altitude. BP, height, weight, triceps skin fold thickness (SFT), mid-upper arm circumference (MUAC), and hemoglobin and haematocrit level were obtained from 1091 individuals (508 males, 583 females) at four different settlements, one being at high altitude (Choglamsar, Leh; altitude: 3521 m) and three at low altitudes (Bylakuppe, Chandragiri and Delhi; altitude: less than 1000 m), which were pooled. Comparison between altitudes was carried out separately for the two sexes and for the two age groups, children and adolescents 10-19 years of age, and adults 20 years and above. Those independent variables that could significantly explain the variance in systolic blood pressure (SBP) and diastolic blood pressure (DBP) in stepwise regression were controlled while comparing high and low altitudes using analysis of covariance.

**Blood Pressure Studies Conducted in Abroad**

Sachdev et al., (2009) analysed the blood pressure (BP) in young adults. Pooled data from birth cohorts in Brazil, Guatemala, the Philippines and South Africa. Conditional weight (CW) a
residual of current weight regressed on prior weights, to represent deviations from expected weight gain from 0 to 12, 12 to 24, 24 to 48 mo, and 48 mo to adulthood. Adult BP and risk of pre-hypertension or hypertension (P/HTN) were modeled before and after adjustment for adult body mass index (BMI) and height. Interactions of CWs with small size-for-gestational age (SGA) at birth were tested. Higher CWs were associated with increased BP and odds of P/HTN, with coefficients proportional to the contribution of each CW to adult BMI. Adjusted for adult height and BMI, no child CW was associated with adult BP, but 1 SD of BW was related to a 0.5-mm Hg lower systolic BP and a 9% lower odds of P/HTN. BW and CW associations with systolic BP and P/HTN were not different between adults born SGA and those with normal BW, but higher CW at 48 mo was associated with higher diastolic BP in those born SGA.

**Blood Group Studies Conducted in India**

Balgir (1986) studied serological markers carried out at the Department of Psychiatry P. G. Institute of Medical Education and Research, Chandigarh, India. The sample comprised 300 adult manic depressive psychotics (150 Unipolars 150 Bipolars) from North Western part of India diagnosed according to APA DSM-III (1978) criteria. ABO blood groups and haptoglobin type have been studied with special reference to their association with Unipolar and Bipolar affective disorders. The results revealed that both the red cell
antigens (ABO blood groups) and serum proteins haptoglobins studied and statistically significant difference between the Unipolar and Bipolar affective disorders supportive the indications of a genetic distinction between them.

An investigation by Singhal Praveen and Gupta Sagarika (1991) are pledged to throw discernible light on the nature of existence of ABO-Hp association and whether it is a contributing factor toward fertility of the couple. 250 couples were tested at Patiala and results revealed various interesting facets of interaction and infertility.

Rami Reddy and Kalyani (1991) studied blood groups among 170 Badagas and 76 Todas of Niligirls, Tamil Nadu to know the correlation between blood groups and diseases. Results point the bronchial asthma which was common in both tribes which also show higher proportions of (O and B) blood groups. Among Badagas and Todas “A* and “AB” are more frequent. Enteric fever, tuberculosis, cataract, corneal ulcer and diabetes in Badagas alone generally show larger group proportions of patients than of controls.

Sharma (1995) has conducted a study on maternal foetal ABO blood group incompatibility and its effect on the postnatal growth and development among the children. This cross sectional study was carried out on 303 Khairwar tribal children (163 boys
and 140 girls) aged 1 to 15 years of Surguja district, Madhya Pradesh, India. The measurements include body weights, height-vertex, height illiospinale, biacromian breadth, billicristal breadth, total upper arm extremity length, upper arm circumference, calf circumference, head circumference, biceps and skinfold and triceps skinfolds.

Gupta Sagrika and Singhal Praveen (1999) have carried out a study on 100 Muslim individuals of both the sexes of Haripari village (Tehsil Tral) of Pulwama District of Srinagar (J and K) for the distribution of ABO and Rh blood groups. A trend A>AB>B>O has been observed. The frequency of Rh-ve is 5%. The frequency of gene p (0.509) is maximum followed by r (0.316) and q (0.154) genes. Gene has frequency of 0.226. The chi-square values show insignificant differences among various sub-castes of Muslims. The results of the present study have been compared with other Muslim populations of India.

Rajni Dhingra and Anandalakshmy (2000) have designed a study to understand the connotations of blood as reflected in the responses of adolescent girls (13-17 years). The study also aimed to look at the changes in the attitudes of girls towards loss of blood through donation, injury and menstruation due to the impact of science teaching in the school. It was hypothesized that older girls (15 and 16 years) would give more scientific
explanations compared to younger girls. The sample under study consisted of 60 girls (students of IX and XII, 30 from each class). Mothers of 5 girls from each group were also interviewed. It was found that a greater proportion of older girls gave scientific explanations to some issues, suggesting that school education had an impact. This impact was also seen in the fact that daughters, more than their mothers, gave scientific explanations. A variety of beliefs associated with blood emerged from the responses. The initial expectation that the term ‘blood’ would carry a complex connotation was thus supported.

Rami Reddy and Kalyani Ramamohan (2000) have said that the LH system, first introduced in India in 1979, is either present (LH) or in humankind like the Rh system. The present work is the specific of its kind among the tribal population of South India. It is based on a sample of 400 randomly selected unrelated individuals of both sexes, 200 each from the Yerukala and Sugali tribes drawn from Cuddapah district of Andhra Pradesh. The distribution of LH* and LH in B blood group varies significantly between these tribes. LH* appears to be more in proportion in A, and AB groups of their study samples than in those studied earlier. The X2 values reflect statistically significant inter-tribal differences as well as differences between the two tribes and others.
Guha Manjula et. al., (2000) have observed that fertility has become the most important issue during the present time in the study of population. It is conditioned by a member of bioenvironmental and Socio-cultural factors. ABO Blood group is linked up with the nature and extent of fertility, and the selective effect of this group rouses special interest among the geneticists because of its influence on fertility. The paper examines how far the serological incompatible factors bring effective circumstances in fertility pattern. It tries to highlight this specific situation among the womenfolk of Bhatra tribe living in five villages in Bastar district in Jagdalpur Tehsil, Madhya Pradesh.

Jain et. al., (2003) have collected serological data on Mahar of Nagapur city. The blood samples were tested for A1, A2, BO and Rh (D) blood groups. Hbs, B-thalassaemia and G6PD deficiency. This new Buddhist group represent is one of the biggest scheduled caste communities of Maharastra which shows significant heterogeneity with respect to Hbs gene across Maharastra.

Balgir (2005) made a field study among scheduled tribes constituting a major chunk of the total population of India. Out of about 475 tribal groups in India, 75 are primitive tribes. A total of 2,488 children aged 05-16 years belonging to 15 major scheduled tribes, viz., Bathudi, Bhatra Bhumiz, Bhuyan, Gond, Kharia, Kissan, Kolha, Kondh, Lodha, Munda, Oraon, Paraia, Santal and
Saora were screened for ABO and Rh (D) blood groups at random from various Ashram schools in eight districts of Orissa. The ABO and Rh (D) blood groups distribution showed the high frequency of B over A blood group in 12 major scheduled tribes except Bhumij, Gond and Lodha.

Krithika et. al., (2006) made an investigation of ABO blood groups among three little known sub-tribes of the Adi tribe, namely, the Panggi, Komkar and Padam, of the East and Upper Sing districts of Arunachal Pradesh, India. Blood group O was the predominant group in the Komkar and Padam, whereas group A was the predominant group in the Panggi. Blood group AB was found to be the least frequent group in all three studied populations. The populations showed significant difference in blood groups A (43.00% in Panggi, 23.00% in Komkar and 18.00% in Padam) and O (33.00% in Panggi, 54.00% in Komkar and 61.00% in Padam). The chi-square test indicated significant deviation from Hardy-Weinberg equilibrium, suggesting high heterogeneity among the tribe.

Tripathy Vikal et. al., (2006) in their investigation of ABO and Rh (D) polymorphisms conducted on 923 Tibetans living in exile in four different places (both high and low altitudes) in India. The frequencies of alleles p, q, and r for the ABO blood group system were found to be 0.1295, 0.2544 and 0.6152 respectively,
and of alleles D and d of the Rh blood group system the allele frequencies were 0.9428 and 0.0572, respectively, for the total data. No significant difference was found for the allele frequencies among the four places for the two blood group systems. The allele frequencies were in Hardy-Weinberg equilibrium for the ABO blood group system and show East Asian affinity for the Tibetans.

Subhashini (2007) worked on ABO blood groups and Rh (D) factor has been studied among Irulas one of the most dominant hunting tribe of Pondicherry. The frequency of O, A, B and AB blood groups were recorded 34.00%, 20.05%, 39.05 and 06.00%, respectively. Rh negative was found to be 06.05%.

Jai Prabhakar and Gangadhar (2009) studied on frequency distribution of the ABO and Rh (D) blood groups among the Gangadikar-Vokkaligas of Mysore, Karnataka. The O group recorded the highest frequency, followed by A and B. The incidence of Rh (D) negative was 2.67% and the frequency of recessive d allele was 1.633.

Rai et. al., (2009) worked on ABO blood groups and Rh (D) factors among the scheduled caste (chamar) population of Jaipur, Uttar Pradesh. The B, O, A and AB blood group percentage are recorded as 31.04%, 30.09%, 29.04% and 08.02% respectively. The allele frequencies of O, B and A groups are found to be 0.564, 0.224 and 0.212 and Rh (D) allele frequency is 0.793.
Blood Group Studies Conducted in Abroad

Bhasin (1970) tested the blood samples among 529 unrelated Newar individuals from Nepal. Frequencies of antigen A1 A2 MnsI and Rh factor were calculated. Newar groups possess a frequency of k gene ranging between 4.77% to 7.61% of the gene for secretor ranging between three groups of Newar (Shrestha, Gubhaju and Jyapu) were not discernible for the blood groups and ABH secretion.

Thomas (1970) worked on selective differentiation of the ABO blood group gene frequencies in Europe. ABO gene frequencies had been analysed within four European countries as well as in the aggregate of twenty five countries to decide whether sub population and population differences occur at random or selectively. The differentiation proved to be everywhere of high degree predominantly of selective origin. In Switzerland, the correlation test indicates a significant influence of selective forces. The differentiation patterns in Sweden with N-s main extension and in Czechoslovakia with E-W main extension are just the opposite of each other. France clearly shows the continental differentiation pattern. The characteristic decreasing order of differentiation of the gene frequencies for the whole of Europe is p, q, and r with large distances.

Malcolm et. al., (1971) made an extensive study of blood group gene frequencies (ABO, P, Rh, MNS) for the Bundi people of the New Guinea Island determined on 759 individuals belonging to 15 different clans. Data showed some slight heterogeneity between clan divisions but increasingly marked heterogeneity when compared with
neighboring Chimata, Goroca and Simbai people. Intermarriage patterns within and into Bundi were constant with blood group data.

Alfred et. al., (1971) made a survey of nine blood group systems. Field study was conducted among some North Eastern British Columbian, Indian bands. The sites contained Beaver, Slave and Greek speakers. A significant result revealed was, Hardy-Weinberg equilibrium observed in the combined MNSs system. No age trends sex were observed by him.

Welch et. al., (1975) studied 161 inhabitants of the Seychelles Islands for blood groups, serum proteins and red cell enzyme polymorphisms. The results of the Seychelles surveys reported in his paper provided additional biological evidence to support the anthropological view that the present day Creole-speaking inhabitants of the Islands result from an admixture of African and Caucasian stock.


Polychronopoulos et. al., (1977) collected data from 666 young Greek male subjects and 163 girls to study the relation between ABO, Rhesus ‘B’, blood groups and serum Cholesterol, triglycerides and
phospholipids. Rh negative subjects had higher serum cholesterol levels than Rh positive. No difference was found in ABO and Rh groups as regards the distribution of triglyceride and phospholipids levels.

Cartwright et. al., (1977) in their investigation of "Serum proteins and is enzyme polymorphism from Nottingham, England", observed that among 1000 blood samples collected from Englishman the regional differences were found. Blood samples were typed for red blood cells, acid phosphate, adenylate kinase, esterase and transferring. Regional differences among these levels were interpreted as variability due to variation in residence location, urban, rural, or pit village.

An investigation of Salzano et. al., (1978) a total of 363 Ayoreo Indian from three localities of Southern Bolivia and Northern Paraguay were studied in relation to 33 genetic systems which are expressed in blood and one in saliva. Results revealed that South American, Indian showed no variation at the Estense 'D' locus very high frequencies of LMS (MNSs blood groups) and acid phosphates system as well as a low frequency of P1, No Diego (a) or GM (x) positives were found among them.

Befaptante et. al., (1979) investigated HL-A antigens determined for the A and B loci among 164 Chamorros living on Guam, Rota and Saipan in the Southern Mariana Island of Micronesia. The overall antigen phenotype and gene frequencies for the Chamorros population were presented and comparisons were
made between Chamorros and other pacific population using HL-A antigen phenotype frequency distributions and analysis of genetic distance. Result agreed with historical accounts of admixture between Chamorros and Philippines during the Spanish colonial era and data from blood group studies show close similarities between those populations. The disease, amyotrophic lateral sclerosis is very high frequency among Chamorros, also exhibits high local prevalence's in Japanese and Philippines, who are in closest to proximity to the Chamorros by genetic distance analysis.

Fox et. al., (1981) conducted an investigation to know the ABO blood group association with cardiovascular risk factor variables like I serum lipids and lipoproteins. Samples were determined for 656 white and 371 Black adolescent school children particularly in a community based screening programme. This was followed by appropriate adjustment of lipid values for concomitant variables mean. Two levels of ABO phenotypes were found to differ significantly in both races. (A>B in Whites, B>O in Blacks). Analysis of phenotypic ratio at different percentile levels of lipid and lipoprotein distribution indicated that phenotypic ratios for Black and White children ranking above the 85th percentile of their respective B-LDC distributions. Results differed significantly from ratios prevailing in the remainder of the study population.

Banerjee et. al., (1981) made brief study of 543 random samples of blood collected from unrelated male blood donors of Amman, Jordan and were analysed for ABO and Rh (D) blood groups.
Serum haptoglobin, transferring and albumin 56pd. The results revealed that the estimated gene frequencies of 194 subjects fall within the reported range of gene frequencies of Arabs in general with a high frequency of genes.

Rasmson and Mossberg (1987) worked on distribution of ABO genes in Southeast Sweden. The blood samples collected from about 78,000 conscripts born 1900-1935 in Southeast Sweden have been analyzed for regional differentiation using hierarchical subdivisions of the area. The results show, the heterogeneity was present at all levels of division. Gene diversity among the sub populations has been compared to a corresponding estimate performed on date from the country of Vasterbotten in Northern Sweden.

Schineida Horacio et. al., (1987) studied on ABO blood groups in natural population of Black handed Tamarins (Sagecinus Midas Riger) Eighty one black handed Tamarins from the Tucurui Region were tested for ABO blood groups. Eleven belonged to ‘A’ group 45 to group ‘B’ and 25 to ‘AB’. The result revealed ABO system appeared to be polymorphic, with three alleles occurring at the following frequencies. A=0.26, B=0.66 and O=0.08. The observed distribution fitted the expected on the basis of Hardy-Weinberg equilibrium.

Taylor et. al., (1987) dealt with migration and changes in ABO and Rh blood groups in Britain. He concluded after his investigation that, the force of internal migration towards national genetic homogeneity is seen in a Cohort to 8850 British women who were ABO and Rh (+ve or -ve) typed and located by residence in one of the
40 countries or country group areas in England, Scotland and Wales in 1958 and again in 1974. The climes of phenotypic frequencies of types O, A, B, Ab, Rh +ve and -ve were plotted by polynomial regression on easting (longitude) and northing (latitude) and show a persistent integeneity but with statistical significant inter-regional shifts that account for the slightly flatter carriers for some of the geographic distribution after 16 years.

Salzano et. al., (1991) worked on 31 genetic systems obtained for 421 individuals belonging to the Arara, Arawete, Mundureucu and Jamamadi tribes of Northern Brazil. The data were analysed together with those of 24 other Amazonian groups. The Genetic distances and corresponding devdrogremos indicated a cluster of 14 related tribes living near North of the Amazon River. The results show only a modest correlation with linguistic and geographic relationships among these groups.

**Oral Health Studies Conducted in India**

Medhi et. al., (2006) a brief study of epidemiological on alcohol and tobacco (smoking and non-smoked tobacco) use was carried out in tea garden population of Assam, one of the largest agroindustries of India. A total sample of 2,264 individuals (male, 1,033; female, 1,231) aged 15 years and older was interviewed in 2002-2003 to collect information about alcohol and tobacco use using a predesigned and pretested questionnaire. Age-adjusted prevalence of alcohol consumption was 59.2% (male, 69.3%;
female, 54%). Smoking was more common among males (13.2%) than females (2%). However, use of non-smoked tobacco was almost as popular among females (71.9%) as among males (75.3%). More than half of the respondents (54.7%) were multiple users of alcohol and tobacco. Prevalence of alcohol consumption, non-smoked tobacco, and smoking among the young age group (15–24 years) were 32.2%, 52.5%, and 2.2%, respectively. Prevalence of smoking increased with age, and more than a quarter of males above 54 years were smokers.

**Oral Health Studies Conducted in Abroad**

Rodrigues Luciana et al., (2009) worked on association between oral health status and nutritional status and investigated in 200 semi-institutionalized persons with mental retardation aged 5–53 years, 45.5% females, in the cities of Florianópolis and Sao Jose, province of Santa Catarina, Brazil. In this cross-sectional study, clinical-odontological examination revealed a high percentage of individuals (68%) with heavily compromised dentition. The index of decayed, missing and filled deciduous and permanent teeth, which increased from 2.85 ± 2.87 in children to 20.5 ± 6.86 units in adults, was used to classify the individuals' oral health status. Anthropometric evaluation revealed the prevalence of suboptimal nutritional status in 52% of children and adolescents [22% underweight, 30% at risk of overweight or
overweight], and in 60% of adults [7% underweight, 53% overweight or obese]. Significant association was found between unsatisfactory oral health status and overweight in children ($x^2 = 4.627; p = 0.031$). Findings evidenced the existence of a relationship between oral health status and nutritional status in persons with mental retardation.

Kongstad Johanne et. al., (2009) while conducting research investigation on association between overweight/obesity and periodontitis assessed as clinical attachment loss (AL) and bleeding on probing (BOP) in a cross-sectional design. Participants included 878 women and 719 men aged 20 to 95 years (participation rate 54%) who underwent an oral examination, including full-mouth recording of clinical AL and BOP. Overweight and obesity were assessed by body mass index (BMI) using the World Health Organization criteria. BMI was related to clinical AL (defined as mean $= 3$ mm) and BOP (defined as $= 25$%) by multivariable logistic regression in the total population and in subjects stratified by gender and smoking habits.

Anne Nordrehaug Astrom (2009) worked on confirmatory factor analysis (CFA), to semi-longitudinal data and provides new information about the factor structure of oral health-related behaviors among 25-year-old Norwegians. The purposes of the study were to (1) evaluate the factor structure of oral health
behaviors and its invariance over time, (2) assess temporal changes in patterns of oral health behaviors and in their socio-economic distribution between 1997 and 2007. Random samples of 1190 residents born in 1972 and 8000 residents born in 1982 were drawn from the populations of three counties in Western Norway in 1997 and 2007. After one reminder, 735 (58 percent; women, response rate 62 percent) and 1509 (63.3 percent; women, response rate 19 percent). A correlated three-factor model with cross-loadings showed a better fit than a two-factor model to both the 1997 sample and \( \chi^2/df = 2.1, \ CFI = 0.95, \ RMSEA = 0.03 \) and the 2007 sample and \( \chi^2/df = 3.1, \ CFI = 0.95, \ RMSEA = 0.04 \). Multiple-group CFA showed an acceptable fit for the unconstrained model, \( CFI = 0.95, \ RMSEA = 0.03 \), and no statistically significant difference in fit between the unconstrained and constrained models (\( P = 0.739 \)).

Thorstensson Helene and Johansson Boo. (2009) studied on oral health as an integral part of general health. Oral health contributes to and is influenced by a nexus of inputs from biological, psychological, and social functioning. Little is known about the relationship between markers of oral health and subsequent survival in late life. The study sample comprised 357 individuals with a median age of 86 years who were selected from participants in the comprehensive longitudinal Origins of Variance
in the Old: Octogenarian Twins (OCTO-Twin) study, which examined monozygotic and dizygotic twins aged 80 years and older on five occasions at 2-year intervals, includes a broad spectrum of bio-behavioural measures of health and functional capacity, personality, well-being, and interpersonal functioning. Oral health variables were number of teeth, per cent decayed and filled surfaces (DFS and percent), and periodontal disease experience. A longevity quotient (LQ), the ratio between years actually lived and those statistically expected, was determined.

Muirhead Vanessa et. al., (2009) worked on and explored oral health disparities associated with food insecurity in working poor Canadians. A cross-sectional stratified study design and telephone survey methodology to obtain data from 1049 working poor persons aged between 18 and 64 years was used. The survey instrument contained socio-demographic items, self-reported oral health measures, access to dental care indicators (dental visiting behaviour and insurance coverage) and questions about competing financial demands. Food-insecure persons gave ‘often’ or ‘sometimes’ responses to any of the three food insecurity indicators used in the Canadian Community Health Survey (2003) assessing ‘worry’ about not having enough food, not eating enough food and not having the desired quality of food because of insufficient finances in the previous 12 months.
Ericsson Irene et. al., (2009) study conducted on oral health developments increasingly include self-reported assessments of how oral health affects quality of life (QoL), referred to as 'oral health-related QoL'. People with dementia are often excluded in studies of oral health-related QoL. Eighteen elderly individuals (aged between 78 and 94 years) with dementia of varying degrees of severity were interviewed with the aid of an interview guide. Pictures and objects were used as stimulus material (triggers). The material was analyzed using grounded theory as point of departure, and a professional assessment of the oral health of the participants was used as reference. Four categories were identified, the ability to chew and eat, independence, oral problems, and teeth were important. These factors are largely consistent with those that have emerged in earlier studies of the elderly, but in some cases less pronounced in persons with dementia. The use of triggers is a positive way to communicate oral health-related QoL among persons suffering from dementia. The material used in this study needs further evaluation and development.

Colangelo Gary (2009) worked on improving access to oral health care which requires an understanding of the social, cultural, political, financial, and manpower factors that influence access. Armed with this knowledge, individuals and organizations desiring to improve access can innovate to change public policy,
garner resources, create clinical programs, and expand public health interventions as demonstrated by the examples in this article. This article highlights past and contemporary innovations that have improved access, or have the potential to improve access to oral health care. These innovations are grouped into six categories, the dental profession, public health, community-based care delivery, oral health care funding, dental education, and evidence-based dentistry.

Rodrigues et. al., (2009) studied on correlation between caries experience in individuals with cerebral palsy (CP) and the quality of life of their primary caregivers. Sixty-five non-institutionalized individuals, presenting CP, aged 2–21 years old, were evaluated for caries experience. Their respective caregivers aged 20–74 years old answered the Short Form 36 (SF-36) health survey and Independence Measure for Children. Fifty-eight non-disabled individuals (ND group), aged 2–21 years old, and their respective caregivers, aged 25–56 years old, were subjected to the same evaluation process as the CP group. Primary caregivers of CP individuals exhibited significantly lower scores than the ND group in all subscales of the SF-36 health survey, physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role and mental health. The CP group presented significantly higher values for the Decayed,
Missed and Filled (DMF-T) index than the ND group and a significant negative correlation was obtained between the SF-36 and DMF-T index. It suggests that caregivers of CP individuals exhibited worse quality of life than those of the non-disabled. A negative correlation exists between caries experience of CP individuals and their caregivers' quality of life.

Hathaway Kristen (2009) investigated on oral health care reform which is made up of several components, but access to care is central. Health care reform will occur in some fashion at some point, and shows that impact the entire dental sector is unclear. In the short term, there is likely to be a dental component during the reauthorization of State Children's Health Insurance Program in early 2009, and several federal oral health bills are expected to be reintroduced as well. Additional public funding for new programs and program expansions remain questionable, as federal funding will be tight. Fiscal conservancy will be occurring in the states as well, however, various proposals to expand dental hygienists' duties are likely, as the proposals are related to student grants for dental schools. Regardless of one's political stance, the profile of oral health care has been elevated, offering countless opportunities for improvement in the oral health of the nation.

**STI/HIV/AIDS Studies Conducted in India**
Thomas Elizabeth Beena et. al., (2004) did extensive study and examine the acceptability of condoms to men from Chennai, South India. A sample of 150 male respondents who, in the main, had at least one risky sexual experience with a commercial sex worker or multiple partners was interviewed. The respondents included HIV-positive and HIV-negative individuals at sexually transmitted disease clinics, college students, and homosexuals. Awareness of condom usage was high, and 83% had used condoms at least once. The reasons for using condoms were protection from disease (43%), protection from AIDS (20%), and partner insistence (25%). 73% of the respondents expressed dissatisfaction. Of those who used condoms for the first time, 72% were HIV negative, compared to 34% among those who did not use condoms. This indicates the need for developing the 'condom habit', as using condoms at the first sexual experience is a strong predictor of future condom use.

John O'Neil et. al., (2004) discussed two ethnographic studies with Female Sex Workers in rural areas of Karnataka and Rajasthan, India. In particular, investigator focused on women whose socio-economic status, and religious and occupational practices, were part of sex work systems that have historical precedents such that they can be termed 'traditional' sex workers. The approach taken in the ethnographic work was informed by
current critical approaches in medical anthropology and public health. The paper argues that in the context of an expanding HIV/AIDS epidemic in rural areas of India, understanding the historical and structural factors that operate to perpetuate Female Sex Work as a culturally "sanctioned" occupation is critical if interventions intended to reduce the risk of HIV transmission are to succeed.

Halli et. al., (2006) made an attempt to study the role of female sex worker (FSW) collectives in the state of Karnataka, India, regarding their facilitating effect in increasing knowledge and promoting change towards safer sexual behaviour. In 2002 a state-wide survey of FSWs was administered to a stratified sample of 1,512 women. Following the survey, a collectivization index was developed to measure the degree of involvement of FSWs in collective-related activities. The results indicate that a higher degree of collectivization was associated with increased knowledge and higher reported condom use. Reported condom use was higher with commercial clients than with regular partners or husbands among all women and a gradient was observed in most outcome variables between women with low, medium and high collectivization index scores. Collectivization seems to have a positive impact in increasing knowledge and in empowering FSWs in Karnataka to adopt safer sex practices, particularly with
commercial clients. While these results are encouraging, they may be confounded by social desirability, selection and other biases. More longitudinal and qualitative studies are required to better understand the nature of sex worker collectives and the benefits that they can provide.

Orchard Treena (2007) worked on popular imagination and certain academic fields. Sex workers' experiences of sexuality and intimate relationships are often 'naturalized', to the point where they are assumed to be deviant or completely different than those of women in mainstream society. Researchers and sex worker organizations are challenging these reified constructions by examining more diverse and representative models of sexuality and relationships. However, the experiences of women selling sex in the 'third world' are consistently portrayed as violent, non-pleasurable, and oppressive, characteristics often applied universally to "third world women." Using data from ethnographic fieldwork with girls and women who belong to the Devadasi (servant/slave of the God) tradition of sex work in rural Karnataka, India, the examines on cultural dynamics of sexuality and relationships. Gender and dominant models of feminine identity emerge as powerful factors in shaping these facets of life, producing experiences among Devadasis that are similar to those of other Indian women. Yet, Devadasis also encounter additional
constraints in their lives because of their participation in the morally and culturally contested Devadasi system. The investigation emerging destabilizes images of sex workers as 'different' from other women, while also highlighting the impact of tradition on sexual mores and relationship structure in this unique cultural context.

Orchard Treena Rae (2007) made an attempt to study the emotive issue of child prostitution which is at the heart of international debates over 'trafficking' in women and girls, the 'new slave trade', and how these phenomena are linked with globalization, sex tourism, and expanding transnational economies. However, young sex workers, particularly those in the 'third world', are often represented through tropes of victimization, poverty, and backward cultural traditions, constructions that rarely capture the complexity of the girl's experiences and the role that prostitution plays in their lives. Based on ethnographic study on girls and young women who are part of the Devadasi (servant/slave of the God) system of sex work in India, Demonstrating the ways in which this practice is socially, economically, and culturally embedded in certain regions of rural south India underlies this new perspective.

Sudha Sivaram et. al., (2008) worked on male heterosexual risk is a high priority for HIV prevention efforts in India.
Particularly in urban India, which draws men for employment opportunities, these efforts are gaining momentum with a focus on understanding possible risk facilitators such as alcohol use. However, little is known about venues where such efforts might be targeted. This study explores community-based alcohol outlets or ‘wine shops’ in Chennai, India, as potential venues. The observation made on ethnographic research with wine shop staff and clients to understand alcohol use and sexual behaviors. Then surveyed 118 wine shop patrons to quantify these risk behaviors and plan an appropriate intervention. Results show that wine shops are a venue where social and sexual networks converge. Reports and observations of regular and heavy drinking were frequent. Over 50% of patrons surveyed reported three or more sexual partners in the past 3 months, and 71% of all patrons reported a history of exchanging sex for money. Condom use history was low overall but, in the adjusted analyses, was significantly higher (OR$=\hat{20.1}$) among those who reported that their most recent partner was a sex worker and lower (OR$=\hat{0.28}$) among those who reported they drank to feel disinhibited. The data suggest that wine shops may be an appropriate location to target men for HIV prevention interventions.
Sarkar Kamalesh et. al., (2008) community-based cross-sectional study was conducted among brothel-based sex workers of West Bengal, eastern India, to understand sex-trafficking, violence, negotiating skills, and HIV infection in them. In total, 580 sex workers from brothels of four districts participated in the study. A protested questionnaire was introduced to study their socio demography, sex-trafficking, violence, and negotiating skills. Blood sample of 4-5 ml was collected from each sex worker using an unlinked anonymous method to study their HIV status. Results of the study revealed that a sizeable number of the participants were from Nepal (9%) and Bangladesh (7%). The seroprevalence of HIV was strikingly higher among Nepalese (43%) than among Bangladeshis (7%) and Indians (9%). Almost one in every four sex workers (24%) had joined the profession by being trafficked. Violence at the beginning of this profession was more among the trafficked victims, including those sold by their family members (57%) compared to those who joined the profession voluntarily (15%). The overall condom negotiation rate with most recent two clients was 38%. By multivariate analysis, HIV was significantly associated with sexual violence (odds ratio=2.3; 95% confidence interval 1.2-4.5). The study has documented that the trafficked victims faced violence, including sexual violence, to a greater magnitude, and sexual violence was associated with
acquiring HIV in them. There is a need for an in-depth study to understand the problem of trafficking and its consequences.

Dandona Lalit et. al., (2008) studied on risk factors associated with HIV which are not readily available in India. This understanding, and an estimate of the impact of addressing behavioural factors on reducing HIV, would be useful. They interviewed a population-based sample of 12,617 persons, 15–49 years old from 66 rural and urban clusters in Guntur district in the south Indian state of Andhra Pradesh and tested their dried blood spots for HIV. Author used multiple logistic regressions to assess the association of risk factors with HIV, and calculated population impact numbers for HIV reduction if behavioural factors were addressed.

Talukdar Arunansu et. al., (2008) made an investigation on whether homeless men are a bridge group for transmission of HIV to the general population in India. A cross-sectional study design was used to measure subjects of past and current sexual activities. Sample size is 493 of 606 homeless men aged 18-49 years who live in public places in Kolkata, India, who were invited to take part in a structured interview, using a CD player and earphones. Almost two-thirds of respondents had never attended school. Sex with Commercial Sex Workers (CSWs), multiple sex partners, and inconsistent condom use were common. About 90% of married
homeless men visited CSWs, but only 3.3% consistently used condoms. AIDS awareness and risk perception were very low. Less education and being married but not currently living with wife were associated with high-risk sexual behaviors. Homeless men should be considered a potential bridge for HIV transmission from CSWs to the general population. Appropriate non-written communication strategies targeted to homeless people are urgently needed. Community intervention programs targeting the homeless, such as the 'Popular Opinion Leader' model, should be designed and evaluated.

Singh et. al., (2008) worked on growing menace created by the HIV/AIDS (human immunodeficiency virus/acquired immunodeficiency syndrome) has alarmed not only the public health officials but also the general community. The Voluntary Counseling and Testing Centre (VCTC) services have begun as a cost-effective intervention in reversing this epidemic. Study included 249 individuals, of whom 64.7% were males, 88.7% females (age, 15-49 years), married (72.7% males and 84.0% females) and literate (females 71.5% and males 85.7%). A high percentage of non response regarding the pattern of risk behavior was noted among the subjects (males: 42.8% and females: 90.9%). Of the individuals who responded, 91 males (98.9%) and 6 females (75.0%) had multiple heterosexual sex partners, while 1 male had
homosexual partner. The figures in females show that two (25%) of them had a history of blood transfusion. The reasons for visiting the VCTC were cited as some form of illness (33.3%), confirmation of test results (32.9%), family members diagnosed as HIV positive (12.9%) and 11.6% were referred from Directly Observed Treatment Scheme (DOTS) center. More than three quarter of the sample population anticipated discrimination at the time of medical treatment.

Sudha Sivaram et. al., (2008) stated that the development of HIV counseling and testing services in a rural private hospital and to explore the factors associated with reasons for seeking HIV testing and sexual behaviors among adults seeking testing in the rural hospital. Sample size is 5,601 rural residents sought HIV counseling and testing and took part in a behavioural risk-assessment survey. The prevalence of HIV was 1.1%. Among the two reported reasons for test-seeking based on past sexual behaviour and based on being sick at the time of testing men, individuals reporting risk behaviors, such as those having multiple pre and post marital sexual partners, individuals whose recent partner was a sex worker, and those who reported using alcohol before sex, were more likely to seek testing. Men also were more likely to seek testing because they were sick. The findings from this large sample in rural India suggest that providing HIV-
prevention and care services as part of an ongoing system of healthcare-delivery may benefit rural residents who otherwise may not have access to these services. The implications of involving the private sector in HIV-related service-delivery and in conducting research in rural areas are discussed. It is argued that services that are gaining prominence in urban areas, such as addressing male heterosexual behaviors and assessing the role of alcohol-use, are equally relevant areas of intervention in rural India.

Rao Manjula et. al., (2008) worked on socio-demographic profile and risk behavior pattern of sero-positive attendees in the voluntary counseling and testing center (VCTC). Setting VCTC in the outpatient complex of Kasturba Medical College Hospital, Mangalore, Karnataka. Subject records pertaining to all the 539 and 330 sero-positive attendees. Variables age, sex, marital status, religion, educational status and occupation, place of residence and pattern of risk behavior in relation to HIV/AIDS. Sero-positives were around 20% between 2001 and 2007 with a sharp increase in 2006, i.e., 33.64%. Male sero-positivity constituted 60-63%, 81-91% of sero-positive attendees belonged to the age group of 15-50 years, 58-70% was married. Only about 3% were illiterates and 20-25% constituted 6th - 12th pass-outs. With regard to occupational profile, about 17-27% were housewives, 19-21% were laborers/hotel workers and 7% were entrepreneurs. About
45% were from urban area and nearly one-third hailing from other districts in the border of Karnataka. About 25% were exposed to Commercial Sex Workers, another 21-23% was involved in premarital sex and nearly 38% were indulging in heterosexual activities.

Rao Monica Biradavolu et. al., (2009) made an attempt on argument that policing practices exacerbate HIV risk, particularly for Female Sex Workers. Interventions that mobilize sex workers to seek changes in laws and law enforcement practices have been prominent in India and have received considerable scholarly attention. Yet, there are few studies on the strategies sex worker advocates to modify police behavior or the struggles they face in challenging state institutions. The contemporary theories of governance and non-state regulation to analyze the evolving strategies of HIV prevention non-governmental organization (NGO) and female sex worker community-based organizations (CBOs) to reform police practices in southern India. Using detailed ethnographic observations of NGO and CBO activities over a two year period, and key informant interviews with various actors in the sex trade, this examination shows how a powerless group of marginalized and stigmatized women were able to leverage the combined forces of community empowerment, collective action and network-based governance to regulate a powerful state actor,
and considers the impact of the advocacy strategies on sex workers' well-being.

Ambar Basu and Mohan Dutta (2009) highlighted the emerging trend in health communication research and advocate the need to foreground articulations of health by participants who are at the core of any health campaign. Scholarly work suggests that the culture-centered approach to health communication can provide a theoretical and practical framework to achieve this objective. The culture-centered approach calls for attention to dialogue and locate the agency of cultural participants in the culture being studied. This approach underlines the importance of participation of community members in the enunciation of health problems as a step toward achieving meaningful change. Based on the culture-centered approach, this article examines narratives of sex workers to analyze how participatory communicative strategies frame discourses and practices of health, particularly those related to HIV/AIDS.

Menon Nivedita (2009) made a survey on tracks, the journeys made by the term 'gender' in India. From its beginnings in the 1970s as a feminist contribution to public discourse, destabilizing the biological category of 'sex', we find that gender has taken two distinct forms since the 1990s. On the one hand, gender as an analytical category is being used to challenge the
notion of 'woman' as the subject of feminist politics. This challenge comes from the politics of caste and sexuality. On the other hand, gender is mobilized by the state to perform a role in discourses of development, to achieve exactly the opposite effect, that is, gender becomes a synonym for 'woman'. Thus, the first trend threatens to dissolve, and the second to domesticate, the subject of feminist politics. The finding explores the implications of both journeys in terms of a feminist horizon.

Pamela Andanda (2009) brief study on the Universities of Oxford, Nairobi, and Manitoba are collaborating on a project to develop an HIV vaccine based on the immunological protection mechanisms found in Commercial Sex Workers from the Majengo slum in Nairobi. This group consists of educationally and economically disadvantaged women who resort to commercial sex work for a living. A clinic was established in the slum to study sexually transmitted diseases, which now includes HIV/AIDS. The clinic serves as a research facility for the collaborating researchers who have been using the women's blood, cervical, vaginal, and saliva samples for the ongoing studies. The clinic runs two HIV-integrated activities: HIV research and HIV care and treatment. For HIV negative participants, samples are collected and used for research and care after they give informed consent.
Ford et. al., (2000) have examined has been made on AIDS/STD knowledge and behaviour from 1992-1998 comprising, current levels of STD infection and psychosocial and demographic determinants of condom use and STD infection among Female Sex Workers. Sex workers were offered a vaginal exam for STD diagnosis and treatment. Sera were tested for HIV infection (anonymous, Elisa/ Western blot) and syphilis (TYPHA, RPR). Cervical mucous was tested for chlamydia (LcX), gonorrhea (LCx), herpes (pcr) and HPV (pcr). Knowledge of AIDS and awareness of STDs has increased tremendously in this population since 1992. Reported condom use has also increased substantially (69.9%). Perceived susceptibility toward HIV infection remains low. Ineffective preventive strategies such as medication use continue to be common. HIV infection remains very low in this population (0.2%), although the prevalence of other STDs such as gonorrhea (60.5%), chlamydia (41.3%) and HPV (37.7%) are very high. STD knowledge and self-efficacy were significantly related to condom use as were the sex workers' perceived susceptibility to STD and HIV infection. Women with a larger number of partners were more likely to be infected with gonorrhea, Chlamydia and HIV. Women who had come to Bali recently were more likely to be infected with HIV and gonorrhea.
Lau et. al., (2002) worked on the perspective relations between HIV/AIDS and condom-related knowledge, condom use, history of sexually transmitted diseases (STDs) and predictive factors of condom use by Female Sex Workers (FSW) who were sent to the Women Re-education Center (WRC) in Shenzhen, People's Republic of China. Seven hundred and one FSW were interviewed. Whereas respondents had attained certain accurate knowledge about the HIV transmission routes, misconceptions were still commonly reported. Level of condom related knowledge was not high. The prevalence of using condoms with clients was relatively low 15% - 22% reported not using condoms consistently. One of the major obstacles was 'Refusal by clients'. Significant predictive factors associated with consistency of condom use with clients were age, educational background and average number of client intakes per-day, capacity in determining the use of condoms and past STD history. The respondents may have developed a false sense of safety by subjectively assessing whether their clients had a STD but they were unaware that HIV carriers may show no obvious symptoms at all. The data has confirmed the worries regarding the potential 'bridging effect' of HIV transmission as resulted by cross-border commercial sex-networking activities.

Aral Sevgi et. al., (2005) studied on relationship between commercial sex work, drug use, and sexually transmitted
infections (STI) in St. Petersburg, Russia. They assessed using qualitative research methods existing research, surveillance and epidemiology data. The rapid assessment methodology included in-depth qualitative interviews with key informants, naturalistic observations of commercial sex work and drug use sites, geo-mapping, and a critical review of the available surveillance, epidemiology, and sociological data. Patterns of Commercial Sex Work and drug use in St. Petersburg are described. The existing surveillance data attributes infections to injected drug use over and above any other risk category. However, examination of the clinic and epidemiology data suggests that HIV infection may be increasing fastest among groups that are acquiring HIV through sexual transmission. Targeted screening studies of STI and HIV morbidity among populations that are not included in the surveillance algorithm are needed, such as Commercial Sex Workers, street youth, and the homeless.

Matthew Mimiaga et. al., (2009) studied on whether sex work has been associated with elevated risk for HIV infection among men who have sex with men (MSM) in many settings. This mixed methods study examined sexual risk among MSM sex workers in Massachusetts, collecting formative data on HIV risk behavior by sex worker type in order to gain a better understanding of how to tailor prevention interventions to this
unique and high-risk subgroup of MSM. Two groups of MSM sex workers were recruited between January and March 2008, street workers and internet escorts. Almost one third (31%) were HIV-infected. The majority of participants (69%) reported at least one episode of unprotected sero-discordant anal sex (either insertive or receptive) with a mean of 10.7 (SD=42.2) male sex partners of an unknown or different HIV sero-status in the past 12 months. Salient findings included: (a) internet sex workers reported being paid substantially more for sex than street sex workers, (b) inconsistent condom use, high rates of unprotected sex, and low rates of HIV status disclosure with sex work partners for both internet and street workers, (c) general perceptions of a lack of trust on the part of sex work partners (i.e., telling them what they want to hear), (d) more money for unprotected sex, (e) contextual differences in risk taking, internet sex workers reported that they are more likely to engage in sexual risk-taking with non-commercial sex partners than sex partners who pay, (f) HIV status and STI history, two street workers became infected in the context of sex work, and 25% of the entire sample had never been tested for sexually transmitted infections (STI) and (g) motivations and reasons for doing sex work, such as the 'lucrativeness' of sex work, as a means to obtain drugs, excitement, power, 'why not?' attitude, and because social norms modeled this behavior.
Alfredo Mejia et. al., (2009) emphasized that the epidemiology of Treponema pallidum (syphilis) among Female Sex Workers (FSW) in Santa Fe de Bogota, Colombia on the basis of the data on socio-demographic characteristics and risk behavior information. Blood samples were screened for syphilis using the VDRL test and the MHATP assay. Results revealed the prevalence of syphilis was 10.3% (53/514). Adjusted risk factors significantly associated with syphilis were, age (linear increase), education (primary or no education), monthly income (history) and use of illegal drugs. Effective health education programs for improving the level of knowledge of STI and the promotion of consistent condom use activities along with other appropriate harm reduction activities are urgently required among FSW in Colombia.

Abelgillian Abel et. al., (2009) did extensive study on impact of Decriminalization on the Number of Sex Workers in New Zealand In 2003, New Zealand decriminalized sex work through the enactment of the Prostitution Reform Act. Many opponents to this legislation predicted that there would be increasing numbers of people entering sex work, especially in the street-based sector. The debates within the New Zealand media following the legislation were predominantly moralistic and there were calls for the decriminalization of the street-based sector. This study estimated the number of sex workers post-decriminalization in five
locations in New Zealand, the three main cities in which sex work takes place as well as two smaller cities. These estimations were compared to existing estimations prior to and at the time of decriminalization. The study suggests that the Prostitution Reform Act has had little impact on the number of people working in the sex industry.

Sophie Day (2009) made longitudinal study on 1990s saw government initiatives restricting immigration in many countries, and a good deal of popular unease. Associated policies have targeted sex workers, with the Policing and Crime Bill that is currently in its Third Reading in the House of Commons (UK). In the name of ‘victims’ of a trade organised by ‘evil’ traffickers, this Bill seeks further sanctions against all of those involved. This editorial asks whether initiatives during the current recession might not seem to succeed but for the wrong reasons. Immigrants are already leaving the UK in search of a living while local workers, who were promised safer working conditions in the wake of the murder of five women in Ipswich (2006), will be punished more and more. With its apparently humanitarian efforts to ‘stop the traffic’, the UK government will turn out to have replaced our ‘slaves’ from abroad with home-grown substitutes, and effectively solidify and further exclude an underclass. This situation suggests striking parallels with the panic over white slavery during the last
comparable period of globalization culminating in the First World War.

Hong Yan et al., (2009) tried to analyse on currently. There are millions of Female Sex Workers (FSWs) in China and these women play a critical role in the escalating HIV epidemic in the country. Existing studies revealed high mobility of this population, but data on the relationship of FSWs' migratory status and their HIV/AIDS-related sexual risks are limited. A cross-sectional survey was administered among 454 FSWs in a rural county of Guangxi, China. Sexual risks and current infections of sexually transmitted disease (STD) were compared among local FSWs (i.e., those who were the county residents or from other parts of Guangxi) and those FSWs who migrated from outside Guangxi. Data reveal that local FSWs were younger, less educated and newer to the sex industry, and had more sexual risks and higher rates of STDs compared to migrant FSWs. This relationship remains significant after controlling for potential confounders. A higher level of sexual risks and STDs among local FSWs than migrant FSWs in the rural Chinese county suggests the need to examine the relationship between migratory status and HIV/AIDS related risks within specific social and cultural contexts. The data also underscore an urgent need for culturally appropriate HIV/AIDS-prevention intervention efforts among FSWs in rural or less developed areas in China.
Objective of the Present Study

By keeping the review of literature and other aspects discussed in the introduction in mind, the present investigation makes an attempt to study the Bio-Anthropological study among the Commercial Sex Workers of Belgaum district of Karnataka state, where adverse conditions prevail.

Following are the main objectives of the present study:

❖ To assess the nutrition status among the Commercial Sex Workers.

❖ To investigate the Blood Pressure level of the Commercial Sex Workers.

❖ To examine the biological variation with the help of ABO and Rd (D) blood group systems.

❖ To understand the Oral Health status of Commercial Sex Workers.

❖ To understand the knowledge on STI/HIV/AIDS and use of condoms at the time of sexual intercourse and.

❖ To analyse the influence of Socio-economic conditions on Commercial Sex Workers.