Urbanisation is characterised by growth of large cities. Until barely two centuries ago, all cities were of the preindustrial type. Preindustrial cities have primarily functioned as governmental and religious centres, and only secondarily as commercial establishments (Sjoberg, 1965). The process of urbanisation became accelerated with the introduction of industrialisation, which started in Europe during the middle of the 19th century. People from rural areas started migrating to the cities mainly in search of jobs. The cities exert a "pull" on the villagers, whereas the rural areas exposed to problems of unemployment, etc. apply a "push" on the same people (Ghosh, 1991). Among the migrants, those who could afford it found accommodation in satisfactory houses, but the less fortunate ones were particularly at the risk of being unable to find accommodation and sources of income, thus having to live in some kind of poor quality housing, e.g. slums and squatters settlements.

According to estimates of the United Nations Fund for Population Activities (UNFPA), at the beginning of the 19th century less than 3% of the world population was urban. The percentage increased to 43% in 1980. If this trend continues then half of the world's population will be urban by the year 2000 AD (Queloz, 1991).

According to United Nations Development Programme (UNDP) (1990), over one billion people live in absolute poverty in the Third World. About 64% of the people of developing countries of Asia live in absolute poverty. In Asia, poverty is extensive in Bangladesh, Nepal and India. Though about three - fourth of the poor people of developing countries live in rural areas, yet there is also a trend towards urbanisation of poverty, owing to rapid increase in urban slums and squatter settlements (expanding by about 7% a year).

The National Commission on Urbanisation in its report submitted to the Government of India (1988) has observed that "the most visible and dehumanising manifestation of India's urbanization is the large number of squatters and shanty dwellers...... The causes of this distressing situation are deep rooted in wide ranging factors" (Cited by Tewari, 1991). The growth of these squatters and shanty dwellers have become a conspicuous phenomenon in the Third World cities of Asia, Africa and Latin
America (Marshall, 1966). These settlements are not under the jurisdiction of municipal authorities because of their unofficial occupancy.

**Slum and squatter settlement**

Twentieth century urbanisation has brought in its wake the alarming, inevitable and persistent problem of slums. Slum life punctuates every city of the world. The word "slum" has long been in use, almost since the 18th century when it was used as a term for squalid housing in densely populated districts of industrial cities (Yadav, 1987). Slums are the areas where poverty-striken rural migrants live in a very low-cost housing, paying very cheap rent or personally owning it. The physical characteristics of slums all over the world are the following: low-cost housing, uncertain electric facilities, overcrowding, inadequate sanitation and water facilities.

Slums are designated by different names in different parts of the world. In Latin America they are known as "Jaealas", in Mexico as "Favelas", in Brazil as "Calumpass", etc. In Calcutta, slums are known as "Bustee", in Bombay as "Chawls" and in Delhi as "Jhuggis" and "Jhonpris". Some sociologists prefer to use the terms like "Blight Areas", "Renewal Areas", "Deteriorated Areas", etc. to designate slums (Yadav, 1987).

According to Stokes (1970), slums can be classified as "slums of hope" and "slums of despair". The "slums of hope" are those in which the inhabitants are interested in improvement and welfare, while "slums of despair" denotes lack of such intention.

About 33 million people live in urban slums in India. Most of the slum populations of India are Scheduled Castes or Scheduled Tribes (Ghosh, 1991). According to 1981 figures provided by the National Institute for Urban Affairs, urban slums accounted for 37.5% of the total urban population of Maharashtra and West Bengal and 32.5% of that of Tamil Nadu. On this basis, it has been estimated that the slum populations of Bombay, Calcutta and Madras are 3.1, 3.5 and 1.4 million respectively (Cited in Nutrition Foundation of India, 1988).

Like slums, squatting is also triggered by many factors like economic depression in rural areas, enforced migration of refugees, and simple opportunism (Marshall, 1966). There is a tendency among the commentators on urban problems in the Third World to assume that predominantly the migrants to cities live in squatter settlement and face the highest level of unemployment (Cited by Satterthwaite, 1993a). It has been found that in
Delhi most of the squatter settlement populations migrated due to insufficient possession of cultivable land and/or unemployment in rural areas (Mazumdar, 1983).

According to Clinard (1970), squatters are of seven types: (1) owner squatter, (2) squatter tenant, (3) squatter holdover, (4) squatter landlord, (5) spectacular squatter, (6) semi-squatter and (7) floating squatter. The squatters generally appropriate another's land or house for own use without right. It starts with one or two huts, and later on the entire landmass gradually becomes filled up with these types of settlements (Marshall, 1966).

The common characteristics of squatter settlements all over the world are unsatisfactory dwelling, lack of sanitation, poor water supply and poor economic condition of the people, and the perpetual risk of getting evicted.

In developed countries like Britain, The Netherlands and Italy, squatting has flourished to a great extent. In the city of London, more than 50,000 people live in squatter settlements, in Amsterdam, the figure is 8,000. In The Netherlands, squatting started in 1968 and by 1975 there were squatters in almost every town and city. In Italy, where squatting tends to be more politicised, squatter settlements are now found in large cities (Kearns, 1987).

In Hong Kong and Singapore, there are large squatter huts. In Cuba, these types of make-shift huts, without sanitary facilities are found in large number. In Mexico city, whole colonies of squatters settled on the land with such speed that they are designated as "Squatter Parachutists". In Turkey, huts of squatter settlements are called "Mushroom houses" (Abraham, 1970). In India, squatter settlements are recognised as "Jhuggi-Johnpris" in Delhi, "Cheries" in Madras, "Zopadpathis" in Bombay and "Jhupri" in Calcutta (Majumder, 1983). Attempts to end squatting have often proved futile. In Mayanmer, the municipal corporation of Rangoon faced difficulty in ousting squatters. The report of the city improvement committee states that, "squatters are defying the corporation to evict them from the places over which they considered they had established certain rights and as the corporation has no power to order anyone out of the buildings or sites occupied, the committee finds itself impotent to effect measures for the benefits of the citizen" (Abraham, 1970).
Health and well-being of slum and squatter settlement dwellers

The health and well-being of an urban dweller has both subjective and objective components. Objective aspects include the individual's level of physical and mental health. On the other hand, the subjective component is measured by the sum of perceptions and experiences of individuals and their judgement resulting from these (Ek bald, 1993). Carolyn and Har pham (1992) are of the opinion that, health outcomes are not only influenced by environmental conditions but also by the input of health services, characteristics of the population and socioeconomic condition.

A range of socioeconomic and environmental factors in urban slums and shanty towns of the developing world show that though the overall health indices of urban populations may be better than those of rural populations, the poorest urban residents have more alarming health and nutritional conditions than their rural counterparts (Tewari, 1991). It is true that in most of the Third World cities, the lowest income groups usually face the greatest risks and the largest environmentally-related health burdens (Hardoy et al., 1992). Sapir (1990) is of the opinion that migrants or particular migrant groups may be more vulnerable to certain environmental hazards than long term city residents, and that may be due to lack of immunity to particular diseases.

Women and children

Women are more vulnerable than men to many of the environmental hazards associated with poor housing and living conditions, as they take the sole responsibility for child-rearing and household management (Moser and Peake, 1987; Lee-Smith and Trujillo, 1992; Satterthwaite, 1993b). Pregnant mothers are particularly vulnerable to certain environmental hazards. "The reproductive system is particularly sensitive to adverse environmental conditions. Every step of the multistep process of reproduction may lead to increased risk of abortion, birth defects, fetal growth retardation and perinatal death" (WHO, 1992a). Increasing mobility of the children as they learn to crawl and then walk, leads to an increase in the level of risk from environmental hazards in poor quality housing and living condition (Satterthwaite et al., 1995). Manciaux (1988) points to the cumulative harmful effects of ill-events on children, living in squatter settlements and slums, which started before birth and remained with them throughout their lives. Sapir (1990) found that children who did not remain under the supervision of sub-adults for several hours each day learn very little health-enhancing behaviour compared to those
who are under the supervision of adults. Infection influences nutritional status through its effect on intake, on efficiency of food, nutrient utilisation, absorption, and in some instances, on the body's requirement for them (Mason and Gillespie, 1990). Thus, a child's rate of growth may be retarded by too little food and/or too many infections.

Very few comprehensive studies on the possible effects of socioeconomic and cultural differences prevailing between social groups which inhabit the same squatter settlement on health and well-being seem to have been conducted in India, or even elsewhere.

Indicators of health

The indicators generally used to estimate the general level of health in a community are based on three main kinds of data, i.e. child growth, disease prevalence, fertility and mortality rates (Pacey, 1982). The most common factors which affect the health of a population are housing conditions, sanitation facilities, personal hygienic practices, etc.

Housing condition and health

World Health Organisation (WHO) emphasises the health implication of housing as one of the common disadvantages of squatter settlements thus: "housing is intimately related to health. Poor housing conditions may provide weak defences and injury or even increases vulnerability to them" (Tewari, 1991). Stephens et al. (1985) showed a strong positive association between poor housing condition and various chronic and infectious diseases. Studies from all over the world show that poor ventilation, inadequate water supply, improper waste disposal and less per capita space lead to high incidence of mortality (Ankler and Knowles, 1977; Adamchak, 1979; Chowdhury, 1982; Mahadevan, 1983; Gunatilleke, 1991). A number of studies ranging from Uganda and Ethiopia to Brazil and Panama have established greater prevalence of diarrhoea and various helminthiasis in environments with poor housing, water and sanitation facilities (Bradley et al., 1992). According to a survey report (1954-58) on the slums of Calcutta, the majority of the houses possessed 30 sq. ft. per capita space, and about 55% of the households shared a toilet with more than 10 households (Sen, 1970). Indoor air pollution from the combustion of fuels for cooking exposes infants and children to the irritant

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fumes and leads to respiratory tract inflammation, which in turn, may lead to repeated episodes of acute respiratory tract infections, paving the way for early onset of chronic obstructive lung disease (WHO, 1992b).

Home is a place for comfort and leisure, for socialisation of the young, for security, contemplation, sleep, eating, maintaining personal hygiene and living. Poor housing and living conditions influence an individual's self-evaluation and motivation (Ekbald, 1993).

**Mortality**

Tecky and Shorter (1984) showed that housing condition, personal hygiene and economic status were some of the prime determinants of child mortality in a squatter settlement in Jordan. Basta (1977) reported that the infant mortality of a squatter settlement in Phillipines was 210/1000. In Manila, the infant mortality is three times higher in slums than in rest of the city (UNDP, 1990). United Nations Children's Emergency Fund (UNICEF) (1992) reported that infant and child mortality levels in many developing countries remained high due to widespread infectious diseases, e.g. pneumonia and diarrhoea. In Turkey, increased infant and child mortality was found in households where the overall dwelling quality (as measured by building materials) was poor (Timaeus and Hill, 1985). Bisharat and Zagha (1986) showed that the infant mortality rate of a squatter settlement in Jordan fell from 68/1000 to 55/1000 from 1980 to 1985. In Brazil and Sri Lanka, the infant mortality has been found to be higher in a squatter settlement population than in a non-squatter settlement population (Guimares and Fischmann, 1985; Cassim et al. 1982). Brehil et al. (1983) showed that the infant mortality rate in upper class districts of Ecuador was 5/1000 and that in a squatter settlement was 129/1000. In Manila, the infant mortality in slums is three times higher than in the non-slab areas of the city (UNDP, 1990).

Singhal et al. (1986) showed that the infant mortality rate of a squatter settlement in India was 99/1000. According to the International Institute for Population Science (IIPS) (1995), the infant mortality rate in urban areas of West Bengal is 73/1000 and that in the rural part is 83/1000. The infant mortality rate in the Hindu population of West Bengal is 81/1000 and that in the Muslim population is 83/1000. Ghosh Dastidar and Gupta (1996), in a study on slum dwellers of Calcutta, have found that infant mortality is
high among both the Hindu and Muslim. However, infant mortality is comparatively higher in the Muslim than in the Hindu.

**Fertility**

Fertility behaviour in the Third World has been greatly influenced by modernisation (Graff, 1979). With development of social and economic conditions, there is a shift from high mortality and high fertility to low mortality and low fertility. The process of modernisation influences fertility through intervening variables like literacy, changes in standards of living and in values and attitudes (Jain and Nag, 1986; Menard, 1987). Many works have confirmed that increase in literacy rate among mothers is likely to lower the fertility rates (Sharma and Retherford, 1990; Audinarayana and Thenmozhi, 1989). There exists a strong positive association between infant mortality and fertility. Mothers who have experienced one or more child loss have, on an average, 3.6 children, while it is 6.4 for mothers who lost two or three infants (Singh, 1990). Reddy (1986) also found a positive association between infant/child mortality and fertility in both slum and non-slum population. The same study also confirms that the fertility rate declines with the increasing age of mothers. According to IIPS (1995), the total fertility rate in urban areas of West Bengal is 2.14 and that in the rural areas is 3.25. The total fertility rate is higher in the Muslim (4.59) than in the Hindu (2.52). Bharati and Basu (1990) showed that in an agricultural caste group of West Bengal, fertility in all the age groups is inversely related to the nutritional status of mother. Shaw (1988) showed that the fertility rate of women of a slum population in Calcutta was lower than the national urban average (1981).

**Anthropometry of children**

Physical growth assessment best demonstrates the health and nutritional status of children. Health and nutrition problems during childhood are the result of a wide range of factors like insufficient food intake and/or several repeated infections, particularly affecting the low income group. Growth assessment, thus, serves as a means for evaluating the health and nutritional status of children.

Eveleth and Tanner (1976) showed that populations having low dietary intakes experienced a pattern of growth characterised by slow growth rate during childhood and adolescence, late adolescence growth spurt and a prolonged period of growth.

Bisharat and Zagha (1986) studied slum children of Jordan and found that 28% and 46% of 3-year-old male and female children respectively were below 90% of their
reference weight for age, Giugliani et al. (1987) studied the children over one year in a squatter settlement in Brazil and found that the social determinants were stronger antecedents of malnutrition than the biological determinants. Bogin and MacVean (1981) showed that stunting was more prevalent among children of low than high socioeconomic stratum. Easwaran et al. (1972) showed that boys and girls in the "better fed" groups were heavier and taller than those in "poorly fed" ones. In India, Rao and Karkhanis (1993) found stunting as a major problem of children belonging to the low socioeconomic group. Kakarni and Nadakarni (1986) found that the growth potential of slum children was low and that was due to environmental, cultural, economic and nutritional factors acting in combination. Nutrition Foundation of India (NFI) (1988) studied the growth velocity of infants living in slum areas of Calcutta, Madras and Bombay and found that the average growth performance of infants in Calcutta was the worst.

**Intestinal parasites**

Intestinal parasitic infestations are generally known to adversely affect the health status. It poses a major health problem in many Third World countries. A number of factors are known to influence the prevalence of enteric parasitic infestations, including physical environmental, sociocultural and socioeconomic ones (Beaver, 1961; Faust, 1931; Picot and Benoist, 1975). Crompton and Savioli (1993) are of the opinion that the environmental factors associated with poor urban habitation promote the survival and transmission of intestinal parasites and aggravate infection. Many studies confirm that prevalences of hookworm, Ascaris and Trichuris are higher in the poor than in the wealthy urban areas (Kleeven, 1966; Pierce et al., 1962; Yan et al., 1978; Soh et al., 1973). Fashuyi (1988) showed that the urban slum children were more infected with helminths than their rural counterparts due to high population concentration, low level of hygiene, poor sewage facilities, etc. Burton (1976) found that 36% of the children were malnourished and 56% had at least one type of intestinal parasite among the squatter children in Peru. The intestinal roundworm infects 1,000 million people and 20 roundworms (not an unusual load) can eat up nearly 10% of a child's total energy intake (UNICEF, 1986).

Many studies suggest that in different regions of India, including West Bengal, helminthic and/or protozoal infestations have remained highly prevalent for long (Chandler, 1926a and 1926b; Chowdhury and Schiller, 1968; Sengupta and Bhattacharya,
has also been found that there exists a relationship between prevalence of intestinal parasitic infestations and sociocultural factors, such as degree of urban contact (Bhattacharya et al., 1981) and socioeconomic status (Bhattacharya et al., 1985). Mukhopadhyay et al.’s (1993) study did not find any significant relationship between prevalence of intestinal parasites and microcultural factors associated with religion. Veerannan (1977) examined the faeces specimens of a population in Madras city and found that about 84.67% of the population was affected with one or more intestinal parasites. The study also showed that the age group mostly affected was 21-40 years. Pradhan et al. (1977) examined the faeces specimens of hospital patients of Kanpur and found 67.10% suffering from protozoal infestation and the rest from helminthic infestation. Pohowalla and Singh (1959) also examined children under 5 years of age and reported that 33.3% was suffering from intestinal parasitosis. Sinha and Sahai (1977) showed seasonal variation in the prevalence of intestinal parasites. Their study revealed that prevalence of Ascaris lumbricoides was the highest during the Southwest monsoon season.

**Haematology**

Several studies have indicated that in various populations sociocultural factors, including economic condition, affect haematological traits (Page et al., 1977; Devadas et al., 1980; Bharati, 1983; Roy et al., 1985). This possibly occurs through the operation of a variety of intermediate variables, e.g. nutrition, parasitic infestations, and so on. Moreover, anaemias of various aetiologies are among the major health problems in most Third World countries, affecting especially the women (WHO, 1980; Royston, 1982). A WHO (1968) study observed that nearly 65% and 85% of nonpregnant and pregnant women respectively, from a rural community near Delhi were iron-deficient and anaemic. It is suggested that the important factors contributing to iron deficiency in Indian populations could be relatively low bioavailability of iron in cereal-based diet and chronic blood loss from hookworm infestation, especially in rural populations (Malville, 1991). Mukhopadhyay (1996) showed that the Bengali working mothers of Calcutta did have a low haemoglobin (Hb) level and were more anaemic than their nonworking counterparts. NFI (1988) conducted an investigation on Hb levels of mothers of low income group, 48 hours after delivery, and found 58% of mothers in Calcutta, 40% in Bombay and 43% in Madras had Hb levels less than 10%. Bhattacharya et al. (1985) found a general increase
of neutrophil and decrease of lymphocyte frequency with age in rural populations of West Bengal. Studies concerning the effect of religious practices and rural/urban residence on haematological traits are generally infrequent and such investigations among Indian populations have rarely been attempted. Of the few available studies, Muslim mothers were found to have the highest percentage of anaemia, measured in terms of Hb level, compared to Harijans and caste Hindus of Andhra Pradesh (Mahadevan et al., 1986). Mukhopadhyay et al. (1996) showed that rural groups showed higher values of Hb level and lower percentages of anaemics compared to urban groups. The same study, however, does not show any association between haematological traits and religion.

**Blood pressure**

Changes in blood pressures are generally found to be related to changes in the social environment. Rural to urban migrants who initially had low blood pressures usually showed increase in blood pressures with age and ultimately resembled their urban-born neighbours (Stamler et al., 1967; Huizinga, 1972). Clegg et al. (1976) showed that in the low altitudes of Ethiopia, systolic and diastolic pressures were significantly higher in the high than in the low socioeconomic group. Bharati (1983) showed that in a rural population of West Bengal the systolic and diastolic blood pressures were comparatively higher in the high than in the middle and low socioeconomic groups. Mukhopadhyay (1996) found no significant differences in systolic and diastolic blood pressures between working and nonworking Bengali-speaking middle class women in Calcutta.

**Nutritional deficiency**

Malnutrition is one of the major health problems in the world, especially in the developing countries of Asia, Africa and Latin America (Basu et al., 1980). Malnutrition leads to several nutritional diseases, e.g. pellagra, scurvy, rickets, anaemia, beriberi, skin rashes, night blindness, goitre, cheilosis, glossitis, angular stomatitis, kwashiorkor, marasmus, etc. Diseases due to deficiencies of vitamins A and B complex and iron are widely prevalent in the low income groups of various populations in different parts of India (ICMR, 1961; Misra, 1970; Patwardhan and Jagannath, 1962; Rao and Satyanarayana, 1976). Deficiency of vitamin A is judged by the presence of xerosis, Bitot's spots and night blindness. Deficiency of vitamin B complex is judged by the presence of angular stomatitis and glossitis. Pandey and Chakraborty (1996) showed that children under five years of age with vitamin A deficiency suffered significantly more often from acute
respiratory infection (ARI) as compared to those who did not show signs of vitamin A deficiency. Datta Banik and Chakraborty (1996) showed that undernutrition and deficiency of vitamin A appeared to play dominant role, in the causation of ARI. High prevalences of vitamin A deficiency, angular stomatitis, glossitis and anaemia have been found in a slum population in Calcutta (Chakraborty, 1989). Datta Banik (1977) found that in India pre-school slum children suffered more from vitamin deficiency diseases than non-slum children. The All India Institute of Hygiene and Public Health, Calcutta surveyed a slum population in Calcutta and found that there was a marginal deficiency of protein intake in the diets of slum dwellers. However, high prevalences of vitamin A deficiency, angular stomatitis, glossitis and anaemia have been found among women and children (Cited by Ghosh, 1991).

In a survey on the slum population of Dhaka city, it has been found that the energy and protein deficiency affects 88% and 80% of the population respectively (Hassan and Ahmed, 1993).

Body Mass Index (BMI) is a measure of chronic energy deficiency. Pryer (1993) showed that in a slum area of Khulna district of Bangladesh 54% of mothers had BMI < 18.5 (which is an indicator of chronic energy deficiency) and 70% of the children under 5 years of age were severely undernourished. Gracia and Alderman (1989) showed a lower BMI among males and females in low than in high income groups. The average BMI of younger members of a slum population in India is less than 19.0 (Gopalan, 1987). The Calcutta Metropolitan Development Authority conducted a survey in 10 slums in the early 1980s and showed that the families below the poverty line (55%) had high prevalences of chronic diseases and malnourishment among children representing well over 44% of the population in that income group (Tewari, 1991).

Disease prevalence/morbidity

Poor living condition is strongly associated with infection and diseases. Giugliani et al. (1987) showed that 48% of the mothers of a squatter settlement in Brazil suffered from medical problems such as anaemia, hypertension, urinary tract infection, etc.

Indoor household pollution related to the type of cooking fuel and ventilation is the major cause of ARI of adults and children (Chen et al., 1990; Surjadi, 1993). ARI of children is also associated with garbage deposition in and around the house, damp housing and mothers suffering from ARI (Surjadi, 1993). Among the pre-school slum children of
Nigeria, the most common illness symptoms in children were nasal discharge, followed by coughs and fever (Osinusi and Oyejidi, 1989). Songsore and McGranahan (1993) showed that in the poorer areas of Ghana, in 13% of the households with children under six at least one child had diarrhoea within the last two weeks prior to the interview. The same study also confirmed that diarrhoea is highly correlated with sharing a toilet with more than five other households. In India, Bapat and Crooke (1984) in a survey in Poona city found a negative correlation between morbidity and per capita provision of latrine. A study by Calcutta Metropolitan Development Council, of an upgraded slum showed that prevalences of tuberculosis, viral infections and skin diseases were higher in a slum than in a nearby non-slum area (Tewari, 1991). According to a report of the All India Institute of Hygiene and Public Health, Calcutta the major causes of death of infants in a slum area of Calcutta are ARI and diarrhoea (Cited by Ghosh 1991). Guha (1958) surveyed a slum population in Calcutta and pointed out that 1.6% of the individuals were infected with tuberculosis.

The living condition of the slums of Calcutta city until the mid-1970s was generally considered to be miserable. However, the scenario has changed since then. At present, most of the slum settlements of this city get facilities like piped water, electricity, sewerage, concrete roads, etc. On the other hand, the living condition of the squatter settlements of Calcutta has continued to be poorer than slums.

**Objective of the study**

Health and well-being of social groups do indeed depend on economic and social factors, and the differences in respect of these factors existing between the two groups, Hindu and Muslim, inhabiting the same squatter settlement studied, may exhibit the expected differences in respect of variables related to health and well-being.

Religion per se is unlikely to affect health and well-being. However, microsocioeconomic factors related to religion may affect them through differences in the health-related behaviour of the two social (religious) groups.

The specific questions sought to be answered in the proposed study are:

1. What are the health problems of the two social groups inhabiting the squatter settlement studied?
2. Do the two groups inhabiting the same squatter settlement differ with respect to the different health-related traits?

3. If so, can those differences be correlated with differential exposure of women to the middle class society?

   This study has been restricted to the health of mother and children.