CHAPTER V

DISCUSSION
DISCUSSION

The present work provides findings on anthropometry, self-rated health and functional status for the Sugali and Yanadi elderly of the Kadapa District, Andhra Pradesh, India. It is believed that the present study on tribal populations is the first of its kind from India. Earlier two studies have been carried out by Manandhar et al. (1995) and Reddy et al. (2004) on the poor elderly of Mumbai slums, North India and Tirupati rural population of Andhra Pradesh, South India. Since the comparative data is lacking from Indian populations especially on tribal groups, the results are discussed with available literature on various other population groups.

A total of 300 Sugali's (males=138; females=162) and 300 Yanadi's (males=134; females=166) from Kadapa District of Andhra Pradesh participated in the study. The subjects were classified into three age groups i.e., 60-69; 70-79 and >80 yrs for comparison. The study delineates the impact of relationship between nutritional status with functional ability, well-being and self rated health in elderly subjects from the two major tribal communities. It is anticipated that the out come of the work may lead to formulate suitable strategies and implement developmental programmes for the well being of the tribal elderly.

Aging is an inevitable and irreversible process. Since the fountain of youth continues to elude man, we must all be concerned with the prospect of growing old. Aging is not an event that takes place overnight, but a process that begins at the time of conception and continues throughout life. The elderly were the most respected members in the family and centre of authority till they disappeared from this world. This traditional value system is undergoing a tremendous change in the recent times. They are not shown adequate care and proper attention by their family members because of increasing population pressure on the limited resources of the family.
The current problem of the policy makers is to extend socio economic security for the elderly is the demographic aging and increased number of aged in the country’s population. The growth of the aged population which is either dependant on the young or unemployed or working for food during the evening years of their life is a challenge to the social security systems in the country (Madhav Rao, 2003).

Traditionally family has been the key institution that provided psychological, social and economic support to the individual at different stages of life. Elderly in the family enjoyed undisputed authority and power. They were treated as knowledge banks and resource persons for the younger. Their advice is accepted as law; their words are respected as words of god. Intergenerational relationship and the role of elderly in the family are changing that affect the care of the aged in the family (Irudaya Rajan and Kumar Sanjay, 2003). In spite of the innumerable forms and variations, the family occupies to provide for and look after the health, economic, psychological and social needs of the members and particularly of the old people. It was for this reason that family was treated as a sort of social security for the needy, sick and old members.

Marital status of the elderly

As age advances, the need for security and companionship increases. The martial status of the aged people greatly influences their life style. Marriage pattern in the study population is on par with the South Indian culture only. Divorce is not noticed appreciably among the study subjects. Of the total elderly, >90 percent of people got married. However, the researcher could not procure the data regarding the widowhood of the sample, however majority of the subjects expressed their grief for loosing their companion, which may hamper their later lives. The researcher
personally observed this difference when the researcher interacted with the subjects who are surviving with their spouses. 4 men and 2 women in Sugali tribe and 3 women in Yanadi tribe never got an opportunity to get marry. The reasons they claim is mostly about financial and health aspects.

As far as the role of marital status, studies from other parts of the world have found that while marital status is positively associated with health and survival outcomes, it was more important in explaining the health of the widowers than widows (Goldman et al., 1995). This is corroborated from other sources; a survey of the sociological literature suggests that the married persons may enjoy better health than unmarried ones (Bose and Gangrade, 1988).

Socio-economic status of the elderly

Socio-economic status has been defined as the position that an individual or the family occupies with reference to the prevailing average standards of cultural and material possessions, income and participation in group activity of the community. The social status may be inherited, but in modern society, it is achieved on the basis of occupation, income, education, type of housing and neighborhood, membership of certain associations and organizations, material possessions etc (Park, 1997).

There have been many attempts at developing scales for measuring socio-economic status. Kuppuswami (1976) prepared a scale for Indian situation based on education, occupation and income, which he feels are the three major variables contributing to socio-economic status. Kuppuswamy's scale is widely known and often used (Park, 1997). All the elderly in both tribal populations under the study belonged to lower socio-economic strata. Their families were below the poverty line.
Literacy and level of education are two basic indicators of the level of development achieved by a group/society. The literacy results in a more awareness besides contributing to the overall improvement of health, hygiene and other social conditions. Education becomes imperative as society develops. The cumulative experience and knowledge necessary for political, economic, social and other development is to be passed on the new generations, or to the people who need this knowledge. This passing of knowledge from one to other is possible only through education.

An overwhelming majority of the sample elderly (above 90%) had no formal education and the rest of them only had formal education. In other words, most of them were illiterates. It is to mention that most of these elderly subjects were born sometime in the first quarter of 20th century. A great majority was not initiated into a formal education. Further financial constraints and access to the school prevent them to go for education. An effective evaluation of present demographic profile is a step in developing an educated population with appropriate demographic behavior (Debral and Malik, 2004).

Saha et al. (1997) have studied on socioeconomic and demographic structure of tribal communities in Rajasthan and observed that the literacy and educational level is in a dilapidated condition among them which prevent developmental spurt in their stagnant socio-economic and demographic conditions. Acharya (2005) has observed from a study in Orissa on tribes where the total literacy rate was found to be 42.00, whereas the male and female literacy rates were calculated to be 49.84 and 19.26 respectively. It is indicative from these findings that the females were far behind the males in literacy rate in tribal community. Literacy rate among Andhra Pradesh tribes
indicates that Yerukula's have reported the highest literacy rate (45.4 percent), followed by Koya (41.8 percent), Gond (36.4 percent), Yanadi's (35.3 percent) and Sugali's (34.3 percent). The female literacy rate of 26.1 percent among the Scheduled Tribe population is matter of concern.

The absence of upper primary school and high school within the study area was reported to be the major stumbling block for increasing the percentage of enrolment at upper primary and secondary levels of education. Our findings corroborated with the above findings that illiteracy is a predominant factor that subject the elderly to poverty and low level of living. It may be concluded that there is poor infrastructure development in the tribal regions and lack of better facilities for higher schooling. In the present tribal population groups Sugali's are noted with agriculturists as their predominant occupation, while Yanadi's tend to be predominantly agricultural laborers.

Regarding the financial assistance in order to carryout certain activities, both the tribes are facing similar kinetics in this. With regard to the procurement of food material for their sustenance, more than 90 percent of them expressed that they do have sufficient funds to procure the food material. Similarly for clothing also they are having enough resources for procurement. In contrary for the construction of housing around 90% of the elderly of Sugali and Yanadi tribes are facing difficulty. Similarly, more than half of the subjects are facing acute problem in getting medicamentous due to financial constraints. Overall both the tribes expressed that the income raised by them is not sufficient to meet their demands in day-to-day life.
In the present study around 50 percent of the elderly feeling loneliness in the advanced ages. But the magnitude of the impression is some what low in Yanadi when compared to Sugali’s. This condition is equally expressed in the precipitation of diseases as the self reported condition of their health is not good. In terms of attachment of the family members, a significant portion of Sugali’s felt that their children do not stay with them and they do not visit as often as. But in Yanadi, this situation is confined to a limited number, as the significant proportion felt that their children stay with them only. On the whole it is to mention that majority of Sugali and Yanadi elderly expressed that there is nobody to prepare their food material, and no care taking when they are at sick.

**Health management and care for the elderly**

Tribal groups are the most marginalized and vulnerable communities in India. Epidemiological studies on morbidity patterns among the elderly tribal members are essential to recommend intervention programmes to improve the health of the elderly in these communities (Kerketta et al., 2008). Traditionally, elderly had a unique position in Indian culture, and they enjoyed highest position in society, during pre-vedic and vedic periods (Altekar, 1973). But there was a gradual downward slide in the status of elderly from the past because the contemporary situations became considerably unfavorable to them (Baig, 1958, Hate, 1969). Since independence many steps have been taken in the field of education, and employment to raise their status but they could not reach up the expectations till date. In terms of health status, differences between the young and old are clearly explicit in that elderly have higher rate of morbidity (Vijay Kumar, 1991).
Old people in India, like those in other countries, suffer from a range of problems. However, of all the problems associated with an aging population, health care demands top priority (Ory and Bond 1989). This is particularly true of developing countries where the number of people being kept alive in misery and poor health. Increasing life expectancy is certainly desirable provided levels of health are improved by effectively organizing and adequately staffing the health care delivery system (Hansluwka 1986).

Vision impairment is the predominant illness among the present study elderly segment accounting to 70 percent in Sugali's and 50 percent in Yanadi's. One third of the respondents are not using spectacles though they have vision problem. One quarter of the respondents who procured spectacles are still not able to see properly. This is followed by hearing and walking. This clearly demonstrates the level of health care that is prevailing among the tribal groups.

Regarding the financial support to procure these health aids, more than 50 percent of the study subjects procured the aids on their own, indicating that continuous exertion of labor by the tribal populations even at advanced age. Though children are contributing for procuring health aids, but this is limited to 30 percent only. The role of voluntary agencies in lifting their lives and in providing some of the health aids is nominal.

It is also noteworthy to delineate from the observations that majority of the tribal elderly of both genders are not seeking external support to get out of the bed; to go to toilet; for bathing; walk inside the house; walk for some distance; to take food and dressing. However a sizable portion of the elderly expressed that they could not travel for distance on their own.
Caring for the elderly can be viewed from two perspectives (i) the daily care, and (ii) the nursing and care during illness. Besides the need of care during illness, the elderly may also seek help in managing their daily activities. For example, many infirm elderly find it difficult or impossible to manage such basic activities as walking outside, bathing, washing all over, wearing garments, getting around the house, getting in and out of bed and so on. To perform these personal basic activities they require daily care from others, primarily from the family or nearby kins. In the present study both the tribal groups reported that they can do most of the activities mentioned above on their own. It is perhaps because of their deep involvement in domestic chores, and also assuming the lack of support for such things from their family members or they might have adopted/adjusted to carry out the routine activities.

Prevalence of Illness

Fifty percent of the Sugali aged females and 60 percent of males reported that they do have perennial health problems. This trend has rose to 64 percent in both males and females of the Yanadi aged. The major complaints from which the respondents stated to have suffered were: 1. Blood pressure, 2. Arthritis, 3. Pains in limbs and joints, 4. Diabetes, 5. Tuberculosis. The NSSO’s estimate for the aged persons with chronic disease varied between 44.3 percent and 45.5 percent at the all India level (NSSO 1991). In a case study of two villages in South Bihar, Biswas (1987) found that 53 percent of the aged were suffering from ill-health. This variation attributed to unequal social development in the two locals. For rural sector of West Bengal the proportion (per 100,000) of 60 years and above persons having chronic disease was 65,505 of which 38.23% suffered from the problems of joints, followed by 29.57% respiratory troubles, 14.16% from blood pressure, and so on (NSSO 1991). It is interesting to note that the respondents were able to specify the names of their diseases.
A few attempts have been made at etching the profile of the illness patterns among the elderly. The NSSO 42nd round (July 1986 - June 1987) reported that 45 percent prevalence of chronic illness is reported from the elderly in India. In mapping disease patterns, Dandekar (1996) found no significant differences in male/female or rural/urban proportions of those ill among the elderly. However, the pattern of diseases between males and females differed and problems related to blood pressure, heart disease, urinary problems and diabetes were dominant in the urban areas. For urban females, the chronically ill percentages were higher than for males. She found that poverty and health status were closely linked in her study.

It is usually held that old people are very much fussy about their health needs and personal services. This tendency becomes more apparent when they get major ailments. For the slightest lapse in medicare and treatment, the patient may get upset and start making troubles which naturally disturbs the family environment. This discontentment often creates misunderstanding and generates tension. It may be clear that we did not expect that everybody would be happy with the nature of arrangement of treatment. It is found, for instance, that almost all the respondents would consult Doctor upon they get sick. On the other hand, bulk of the respondents appeared to take treatment from Government Doctor only and only one quarter of the elderly in both the tribes seek the treatment from Private Doctors. Three-fourths of the elderly reported that poverty and inadequate facilities forced them to take treatment from Government Doctors only. It is evident that poverty and lack of medicare facilities in the tribal segments left most of the elderly unhappy with regard to their personal health.
Majority of the respondents (60 to 75%) who suffered from major ailments had gone for allopathic treatment. It was around 25 percent of Sugali's and 40 percent of Yanadi's prefer Ayurveda for curing the ailment. Although reliance upon the modern medicines is greatly marked among the respondents, yet case-histories have revealed that the village elderly usually explore simple and less expensive modes of treatment at the initial stage of their ailment. For example a 68 year old hypertensive patient said that she was advised by his neighbours to take herbal medicine for hypertension. The treatment choices seem to range across a wide spectrum of different medical strategies depending upon the perceptions of illness, economic ability and accessibility of medical facilities.

The Sugali tribal population when enquired about their health, a marginal people claimed that they got sick during the last week days, however one quarter of Yanadi's expressed that they got sick during the last week days. This clearly demarcates health status between these two tribal groups. It may also of the reason the low nutritional status equally contributing for the high prevalence rates. However, when subjects enquired about their health during the last one month and one year, almost a similar percentages precipitated.

Differences in nutritional behavior is seen between the two tribes. Subjects taking three meals are higher in Sugali tribe than Yanadi tribe. These two tribes are categorized as non-vegetarians only. However appetite is fair in the two groups. Yanadi's are better in digesting the food material than Sugali's. This could be attributed to the continued physical activity in Yanadi tribe when compared to Sugali's. These two tribal populations sleeping patterns are in line with the standard hours like 6 to 8 hours. Rice is the staple food for both the tribal groups. Meat and
vegetable consumption is high (>70%), on the other hand consumption of sweets is very low. Consumption of milk, fruits and fish consumption is low in these two tribal populations. Majority of the males in both the tribes are smokers and consume alcohol. Smoking in females is 10% in Sugali’s and 8% in Yanadi’s. Sugali’s females consume liquor on par with males, however, this tendency is appreciably lower in Yanadi females. Though tobacco chewing is recorded in both the tribes, but females dominated males.

In the formal interviews many elderly in both the tribal groups reported illnesses that they were unable to cope with themselves and for which they needed external help, which was not forthcoming from their families. The elderly health problems were ignored due to the fact that their families running with insufficient finances to pay to the doctor or provide a regular treatment which at times was unaffordable. The economic compulsions force many to remain silent or ignorant of their condition. Old age for most of them implies a lot of health related problems and thus they feel is part of the normal process of aging.

The medical problems of the elderly belonging to the lower class were clearly related to their low economic and social status. Further, the social norms compel them to believe that they are no longer productive to the society and therefore should also not be a burden to their families. This small scale empirical study of health management and caring system of the elderly in tribes points to the health problems faced by the people in general and old people in particular.

Self-assessed health status, second only to income is an important indicator of quality of life in old age. In the present study only seven percent of the Sugali elderly claim that their health is good, on the other hand 28 percent of the elderly claim that
their health is poor and 66 percent as fair. In turn, 15 percent Yavadi females and seven percent of males claim that their health is good, but 16 to 25 percent of them claim that their health is poor and this for fair category is ranging between 60 to 78 percent. The prevalence of poor health status is coupled with the high level of disease precipitation among the respondents. This tends to indicate that the elderly were so much engrossed with other existential problems of the households that the question of personal health did not seem to find a place in their mind. This apparent passivity about personal well-being reflects the usual fatalistic attitude of our elderly. While most of the respondents having physical complaints assessed that their health status is poor, some variation could also be discerned in this respect. This tends to suggest that health status in old age does not always depend on the presence of physical ailments. Health status and economic condition seem to have relationship with one another as majority rated their health as poor. The quality of food may also have some bearing on the health status.

The task of looking after the welfare of these citizens, who are in need of physical, financial and emotional care, is a daunting one for a country where the majority of the population is barely able to live above the poverty line. One aspect of this welfare consists in providing affordable and adequate health care for the elderly, by taking into account the pathologies of old age. A second issue is the socio-economic vulnerability of the elderly (in addition to the physical problems of old age). Disease profiles are generally linked to the socio-economic status of the individual in an economy like India. A study based on a household survey in Bangladesh (Kabir 1992) studied the relationship between incidence of disease and the socio-economic characteristics of the elderly respondents. Both education and occupation were found to be inversely related to the incidence of disease among the elderly. Further, it can be
suggested that the respondents did not avail government facilities because of a lack of proper exposure over the programmes. It may be also be the reason that the primary health care system had no special provision for providing health care for the elderly, and even the overall health policy showed no special concern for the elderly. These facts hold equally true for the Indian scenario (Bagchi and Sabarwal, 1997). The National Policy on Older Persons was designed to address the issues relating to the elderly, however it does not give specific policy recommendations on the health of the elderly.

Representation of poor and fair SRH categories are predominant in both Suglai ($\chi^2 = 11.94; P<0.05$) and Yanadi tribes of the present study ($\chi^2 = 10.60; P<0.05$). The results of the present study are in good agreement with the work on poor elderly from Mumbai slums (Manandhar et al., 1995) and Tirupati rural elderly (Reddy et al., 2004). On the contrary, most of the elderly European subjects (Osler et al., 1991; Pilpel et al., 1988) and Guatemalan elderly (Herman et al., 1998) considered themselves to have good health and to be physically normal (Linn and Linn, 1980). These observations, however, are not applicable to the present study, as various factors combined, such as poverty, lack of care from other family members due to the breakdown of a joint family system, running out of medical care facilities, personal hygiene and number of meals per day compel the elderly to develop stoic or cynical attitudes towards life and to usually suffer ill health during old age. This situation is further intensified in the presence of health aids, as noticed in the present study and the study on Mumbai elderly (Manandhar et al., 1995). Several studies on Indian elderly stressed the need for sharing their knowledge, skills, values and life experiences with younger generations, and on the necessity of providing opportunities for them to serve as volunteers in positions appropriate to their interests and skills with a view to providing at least mental health for them (Vijay Kumar, 1999).
Sex differences in anthropometric measurements are persistent in the present sample, and also the differences continued to be significant across the age groups. With the advancement of age, in both the tribes there is a fall in height, weight and body mass index. Similarly the other anthropometric measurements also have shown a decrease with the advancement of age. Our results are in good agreement with the findings on Tirupati rural elderly (Reddy et al., 2004). Cross-sectional studies of elderly subjects report varying degrees of relationships between different anthropometric variables and age (Woo et al., 1988; Yassan and Terry, 1991). Comparison of our data with similar age groups of Guatemala elderly (Herman et al., 1998), it is found that the subjects in the present study are shorter, lighter with lower BMI. Further more, height, weight and BMI values of our study group are considerably lower than reference data from USA (Frisancho, 1990), Europe (Minten et al., 1991) and even economically advanced and urban populations of India (Gupta et al., 1995). Similarly these data are still lower than to the nationally representative Indian data on low income groups (NNMB, 1990) as well to elderly poor in Mumbai slums (Manandhar et al., 1997) and tribal populations of Kerala State (Reddy et al., 1999). In general, the weight and BMI reflects the nutritional status of this elderly group, which is poorer than that found in developed countries, vis-a-vis more economically developed societies. Besides lower weights and BMIs, the present sample had lower waist hip ratios when compared to those of USA (Shimokata et al., 1989), Europe (Jones et al., 1986) and Asia (Khor et al., 1999).

Among the tribal populations, Sugali males are taller and heavier than Yani males. Even though there is no significant difference in stature and weights of the females between the tribes, Yani females possess higher BMI than Sugali females. However in other anthropometric measurements, no significant differences were
noticed between the sexes and tribes. On the other hand, Yanadi males and females possess higher skinfold thickness at triceps, subcapular and abdomen. Thus the smaller differences in anthropometric measurements stand with no weight for a comparison between them. Further a gradual decrease in the anthropometric characters with advancement of age indicates vulnerable status of the older people.

In epidemiological surveys, anthropometric measurements represent an important component of nutritional assessment in the elderly. The anthropometric standards derived from adult populations may not be appropriate for the elderly because of body composition changes occurring during aging. Specific anthropometric reference data for the elderly are necessary. In the present study in both sexes, weight, height, sitting height and hip circumference significantly decreased with age in both tribes while the other anthropometric parameters shown an insignificant decrease. The BMI was significantly higher in women than in men and it was lower in the oldest than in the youngest subjects of both genders. In both the tribes the oldest subjects showed a thinner body frame than the youngest of both genders, and there was a more marked fat redistribution in women.

A marked reduction in measures of height, sitting height with advancing age and these dimensions typically reflect the nature of changes that take place in the body after adulthood. Although most of these correlations coefficients are significant at 1% level, lower values could possibly be an expression of the multi-factorial conditioning of morphological traits in the elderly. This trend of a reduction in longitudinal anthropometric dimensions with age can be substantiated by similar findings from various cross-sectional and longitudinal investigations in different population groups (Malina et al., 1982; Borkan et al., 1983; Galloway et al., 1990; Kirchenguast, 1994). Overall evidence from the present study as well as from previous investigations seem to suggest a definite decline in height and sitting height with age.
Weight changes during aging are a complex phenomenon, which involves simultaneous changes in several tissues as well as a redistribution of subcutaneous fat. The changes in fatty tissue, particularly in the axial portions of the body produce the characteristic age changes in the body. Of all structural alterations of the body that result from changes in tissue components, changes in the amount and distribution of internal and subcutaneous body fat produces the most visible effect. Increments in weight after completion of body growth lead to changes in body composition and structure. The former are a significance to the health and functioning of the body, while the later become evident in its changed appearance. The increase in the body weight accompanied by noticeable changes in various girth measurements, is in fact believed to be one of the earliest signs of morphological aging (Kleemeier, 1959).

The protective effects of body weight on bone mass may also be due to the mechanical effects of body weight on bone formation (Francis, 1992). Body weight varies not only among individuals but also within a given individual during aging. Reduction in body water content has been reported as an important cause of decline in weight after 65 years, and was described in Swedish longitudinal study of a small number of 70 year olds (Steen et al., 1985). Changes accompanying the weight loss include a decline in muscle cell mass, and in cell mass in general, which is more pronounced men.

The general comparison of the results of other studies as well as of the present study shows that unlike age-related changes in most anthropometric measurements of length, weight changes with age may not be the same in all groups. In non-European indigenous populations, such as Australian Aborigines, the increase in average weight in the middle years is not evident, but the decline at later ages is. Data on under
privileged populations are limited (WHO, 1995). In affluent countries, the average weight of both men and women increases through middle age. Weight gains in men then to plateau at around 65 years and weight generally declines thereafter. In women, however, the weight increases are frequently greater and plateau occurs about ten years later than in men before it starts declining. This is supported by longitudinal observations which show that weight gain in younger adulthood may be greater than that reported by cross-sectional studies (Borkan et al., 1982). While such studies imply that a significant increase in weight with age may be a natural or normal tendency, this pattern may not apply equally to all societies.

Height, weight and BMI are good indicators for risk of morbidity and mortality, at least in young and middle-aged adults. It is important to note that BMI usually declines after 70 years and that this cohort and older ones represents survivors. While study of causes of death associated with low BMI is associated with tuberculosis, obstructive pulmonary disease, and cancers of the lung and stomach; those associated with high BMI are cerebrovascular disease, cardiovascular disease, diabetes and some cancers (WHO, 1995).

For individuals over 65 years of age the health risk of over-weight is unclear, in fact population data indicate that moderate over-weight at older ages is associated with lower mortality (Andres, 1985). Among those older than 80 years, thinness and loss of lean body mass may be more significant problem than overweight (WHO, 1995).

A follow-up study in Finland of 95 men and 431 women over 85 years of age showed that low BMI was a more important predictor of risk of death than high BMI (Mattila et al., 1986). Highest five year mortality was reported in the group with BMI
<20.0 and lowest in the group with BMI >30.0. It was concluded that overweight ceases to be a risk factor for death in this age group. Results from a follow-up study (US National Health and Nutrition Examination Survey-NHNES-1) revealed that the moderate additional risk of death associated with weight apparent in older men was not apparent in older women (Tayback et al., 1990).

Thus in the assessment of the nutritional status of individuals and communities, anthropometric measurements play an important role. The basic causes of under-nutrition in developing countries are poverty, poor hygienic conditions, and little access to preventive and health care (WHO, 1990, Nube et al., 1998, Nandy et al., 2005). Efforts to reduce under-nutrition depend on reducing poverty and raising people's living standards by improving the basic amenities. Such interventions have positive impacts on health, and implementing these also goes some way towards healthy life (Nandy et al., 2005).

Some of the anthropometric characteristics of individuals and populations are simple and strong predictors of future ill health, functional impairment, and even mortality; in turn they may be modified by disease. For these reasons, anthropometric data are used in many contexts to screen for or monitor the disease (WHO, 1995). As suggested by WHO (1995), in the present study some age related anthropometric changes with advancing age were assessed by using simple non-invasive technique. In the present study both Sugali and Yanadi tribes are under nutritional stress. Therefore, it is imperative that immediate nutritional intervention programmes are initiated among these populations. Such programmes would be beneficial in not only reducing the rates of malnutrition, but also its associated maladies of morbidity and mortality.
In the elderly, however, anthropometry is a relatively new tool and thus not easy to evaluate. The comparative analysis of world populations by the experts in the field suggested that the predictive power of anthropometric indicators is likely to vary with a number of factors such as age-related biological changes, illness, secular changes, disease, lifelong practices (diet, exercise) and socio-economic factors (WHO, 1995). Still the importance of this tool can not be denied. Using Body Mass Index, the over weight and extremely thin, both of which carry risk for morbidity and mortality in the elderly, can be segregated and preventive measures taken to improve the quality of life in old age.

Emotional and social well-being

Aging is said to put an increased burden on the social, economic, and health care demands of all countries (Johnson, 2008). A challenge to ensuring the quality of life of the aging population is the double burden of diseases and disability, especially in developing countries. These countries still struggle with infectious diseases and malnutrition along with the recent, rapid growth of non-communicable diseases such as diabetes, cardiovascular diseases, and hypertension, as well as disability caused by age-related changes in physical health, including mobility and ability to perform activities of daily living (WHO, 2001; Manton et al., 1998).

One of the approaches towards studying the well-being of the elderly has been to study their "competence" in daily living. Such "functional competence" based approaches assess the ability to manage the tasks of daily living by the elderly, without dependence on others. Statistics from India (Dandekar 1996) have found that there are male-female and rural urban differentials in the incidence of disability relating to such functional competence. In fact, the conclusion reached is that the
health-related quality of life of the elderly from poorer sections is considerably lower in India when compared to other countries. Poor nutrition, inadequate health care, socio-economic conditions and gender have been the major factors explaining the ability of the elderly to maintain competence.

No statistical significant differences were noticed in the mean scores of ADL, WB, MI and MCF between Sugali and Yanadi tribes. In general, females had lower aggregate scores for ADL and MCF than males. Elderly women from European countries (Osler et al., 1991) are also experiencing similar setbacks. This phenomenon could be attributed to illiteracy and lack of exposure to the outside world.

A significant decrease of the scores was observed with advancement of age in males and females of both Sugali and Yanadi tribal populations. Many studies have documented a decline in ADL, WB, MI and MCF and other interactions with advancing age (Guralnick et al., 1989; Reuben et al., 1992). Thus our results are in accordance with reports that ADL can be used to predict morbidity and mortality in elderly subjects (Guralnick et al., 1989; Reuben et al., 1992). Further, the proportion of individuals craving for independence was slightly higher for males than for females, as evidenced in the Seneca Study of European elderly (Osler et al., 1991).

It is significant to note that the persons who rated their self health as poor are equally carrying low levels of weight, BMI, WHR and skin fold measurements. Further a significant decrease in ADL, WB, MI and MCF is noticed among the people who rated their self health as poor when compared to the people who rated their self health as good.
Self-assessment of health is largely dependent on an individual's functional ability and psychological processes, as evaluated by analysis of life satisfaction (Grand et al., 1990). This was in agreement with the mechanism, as suggested by Kaplan and Camacho (1983), that subject's self-rating of health depends on different psychosomatic processes. The subject either accepts or denies the status of 'sick person'. This affects the subject's health through the body's ability to resist disease. The predictive variables in the present sample seem to support this mechanism.

Logistic regression demonstrates a statistically significant association between SRH and BMI, MUAC (only in Sugali's), WC (Sugali's and Yanadi males only), SSFT (only in Sugali's), ADL, MI, WB (Sugali females and Yanadi's only) and MCF (Sugali females and Yanadi's only). Nevertheless, subjects with high scores on well-being and mobility indices perceived their global health to be superior to those who had lower scores (Herman et al., 2001). Therefore, for the elderly people, an individual evaluation of health is substantially influenced by his or her level of emotional well-being and physical function. Similar reports are also available elsewhere (Wolinsky and Johnson, 1992; Hirdes and Forbes, 1993).

Psychological variables and measures of disability in terms of activities of daily living are the strongest predictors of self-rated health as revealed in a French population (Grand et al., 1990). A study on Mexican-American disabled elderly reported that the subjects exhibited increased concern with respect to posing a burden to their families and expressed to lead independent lives (Frisancho, 1984). Since the Indian culture is entirely different from Latin and other European cultures, maintaining independence is not rooted in the minds of the elderly who automatically enjoy the dependency on the nearest kin, especially during old age.
Statistical significance of BMI in SRH is a significant feature of this study. On examining the relationship between SRH and BMI, it is found that subjects who rated themselves in good/fair health tended to have BMIs in the normal range, while in the category of poor self-rated health more than 50% males and females in both the tribes were below 19 units of BMI, which was reflected in the increase in odds ratio of 2.484 in Sugali males and 1.878 in Sugali females and 1.565 in Yanadi males and 1.557 in Yanadi females between good vs poor health ratings. Adjustment for age has decreased the Odds ratios. Indians in general are not obese and especially among poorer sections the majority fall below normal or under weight as indicated in the present study. Prevalence of under weight may contribute to the claim by the majority that their health is poor. In contrast, elderly populations from Guatemala and USA have higher BMIs and remain physically active and independent, even in their seventh decade, which may help to explain their higher ratings for self-rated health (King et al., 1997; Sichieri et al., 1992).

The present findings on Sugali and Yanadi elderly reveal that well-being and BMI are strongly associated with self rated health. Hence, improved self-perceptions of health may have a positive effect on one’s well-being and independence. However, evaluation of causal association between self-rated health, well-being and nutritional status requires both longitudinal and cross-sectional studies with larger sample sizes. This study highlights the physical dimension of health problems of elderly individuals. To improve quality of life, rectification of poor health status through affordable health service for disease screening and better management of illness, nutritional improvement and greater health awareness are necessary particularly among low socio-economic groups (Medhi et al., 2006).