Chapter-II

Review of Literature

This chapter contains an exhaustive review of literature on the problem area. A sufficient numbers of well organized and reputed articles published in the form of research article/books and written by experts in the field of selected problem relating to the status of health and its determinants and correlates, are reviewed which are the following.

Gwendolyn Z. Johnson (1964), in this paper, aimed to bring out the differences in health between rural and urban areas in the less developed countries and to throw some light on the factors underlying these differences. In this paper the demographic indicators that have been taken are infant mortality, child mortality, and average life expectancy. In their study they have found that until the close of nineteenth century mortality was much higher in cities than in rural areas of European countries and the United States. Epidemics of calamitous proportions were common and endured for extended periods causing tremendous increases in mortality in European United States cities. Progress in science and medicine, great strides in the field of public health, education of the masses, improvement in conditions of work, progress in social legislation and other important changes brought about remarkable improvements in urban and to a lesser extent to rural health conditions. These changes have been reflected in the notable declines in general and infant mortality and in the phenomenal increases in average life expectancy. According to them mortality is no longer uniformly higher in cities than in rural communities of economically developed countries. In the developing countries of Asia, Africa and Latin America many of the conditions that affect health are more favourable in large cities than in small towns and rural areas but these advantages are not always reflected in the comparative levels of mortality and morbidity. According to them the available statistics didn’t show a uniform difference between levels of
mortality in urban and rural communities of these countries and the data are too meagre to permit strong inferences.

Fredric D. Wolinsky and Marty E. Zusman (1980) observed that while health, itself, is the central concept in the sociology of health, little agreement exists on what constitutes an appropriate definition of health. This paper develops two composite health status measures (one continuous summary measure, and one set of eight discrete health state measures) based on the World Health Organization's conceptualization of the physical, social, and psychological dimensions of health. Data from a 1978 regional survey demonstrates the continuous summary measure's reliability (alpha = .70), and validity (factor analytic support for the hypothesized dimensions). The results also indicate that although either of the comprehensive measures significantly increase the goodness of fit of structural models of health service utilization, the set of discrete health state measures increases more the goodness of fit, bringing the explained variance of physician visits up from 16 percent to 30 per-cent. The magnitude of the increments clearly demonstrates the considerable utility of the comprehensive health status measurement approach.

Michael H. Boyle and George W. Torrance (1984), in their article, reviews the procedures for developing a multi attribute health index for use in population health studies and program evaluations. The development of such indexes involves two steps: 1) the creation of a multi attribute health state classification system; and 2) the mapping of the system into a single metric scale. The system must be relevant for its intended use and as concise as possible. Because a limit exists in the number of attributes that can be included in the system while maintaining reliable measurement, there may be a trade-off between specificity of detail and breadth of coverage. When mapping the system into a scale of cardinal values, five issues arise: 1) the selection of a scaling technique; 2) the use of mathematic models to quantify health; 3) the selection of anchor points; 4) the selection of raters; and 5) the identification of...
factors that influence raters' judgments. The article reviews the procedures that are used, discusses the issues that arise, and proposes some solutions for the development of multi attribute health indexes.

Debra Umberson (1987), in this study, found that age adjusted mortality rates are higher for the unmarried and nonparents than for the married and parents. The effects of marital and parental status on mortality are usually attributed to the positive effects of integration or social support. The mechanisms by which social support or integration is linked to healthy outcomes, however remain largely unexplored. One mechanism may involve health behaviour the family relationships of marriage and parenting may provide external regulation and facilitate self regulation of health behaviours which can affect health. The present study employs a National Sample to examine the relationships of marital and parenting status to a variety of health behaviours. It is suggested within the theoretical framework of social integration, that family roles promote social control of health behaviours which affect subsequent mortality.

Mark C. Berger and J. Paul Leigh (1989) observed that the Economists have long realized that schooling and good health are strongly positively correlated. Some conclude that schooling has a direct positive effect on the production of good health while others argue that some unobserved variable such as rate of time discount positively affects both health and schooling. This study investigates the validity of alternative explanations for the observed schooling-health correlation. Models are estimated using four different measures of overall health: disability, functional limitations, and systolic and diastolic blood pressures. The results uniformly indicate that the direct effect of schooling on health is more important than the effect of unobservable.

Catherine E Ross, John Mirowsky and Karen Goldsteen (1990) presented a general model of understanding family and health that describes patterns of well-being, and then asks, "What
explains these patterns?" Explanations are found in causal chains, conditional effects, and "structural amplification." The review summarizes and synthesizes ideas and findings about four factors: marriage and parenthood (which define the family), and the wife's or mother's employment and the family's social status (which connect it to the larger social order). Overall, the married are in better health than the unmarried, but parents are not better off than nonparents. Women's employment and high family socioeconomic status tend to be associated with good physical and psychological health. Under what circumstances are these basic patterns found, and what explains these patterns—what links structure to individual health? Economic well-being and social support are considered as the basic explanations. Concluding comments point to the need for more studies of the impact of family on the sense of control, which could be an important link to health.

Jonathan S. Feinstein (1993) reviewed the literature documenting the relationship between socioeconomic status and health, including several recent contributions and evidence from other countries. A conceptual framework then draws two distinctions: one contrasting the relative impact of lifestyle habits with the use of health care on health outcomes; and the other seeking to quantify the importance of resources relative to behavioural factors in explaining differential outcomes. The literature to date has been more successful in documenting health inequalities than in explaining why these inequalities persist.

Catherine E. Ross and John Mirowsky (1995) refined the established association between education and health by distinguishing three aspects of a person's education (quantity, credential, and selectivity) and by examining the mechanisms through which they may correlate with health. Data are from the 1995 Aging, Status, and the Sense of Control Survey, a representative U.S. national telephone survey of 2,593 respondents aged 18 to 95, with an oversample of elderly. Results show that physical functioning and perceived health increase significantly with years of formal education and with college selectivity for those with a
bachelor's or higher degree, adjusting for age, sex, race, marital status, and parental education. The credential of a college degree has no net association with physical functioning and perceived health beyond the amount attributable to the additional years of schooling. Of the three aspects of education, years of schooling has the largest effect. Most of that association appears attributable to its correlation with work and economic conditions, social psychological resources, and health lifestyle. A large portion of the net association of college selectivity with physical functioning and perceived health appears attributable to health lifestyle.

Catherine E Ross and Mirowsky (1995) found that employment correlates positively with health, but is employment cause or consequence? The social causation hypothesis says that employment improves the health of men and women. The selection hypothesis says that healthy people get and keep jobs more than unhealthy people do. The authors test both hypotheses using longitudinal data from a national probability sample (N = 2,436 interviewed in both years). In the equations representing social causation, full-time employment predicts slower declines in perceived health and in physical functioning for both men and women. Full-time employment has the same effect for both sexes. Among women, it also has the same effect for White and non-White, and for married and unmarried. In the equations representing social selection, physical functioning increases the odds of getting or keeping a full-time job for both sexes. Perceived health increases the odds for women but not for men. In regard to homemaking among women, homemaking predicts significantly greater declines in health, but health has no effect on the odds of becoming or staying a homemaker.

Marsha M. Cohen and Leonard MacWilliam (1995), study is based on a set of 102 population-based indicators which were developed from multiple administrative data sources; these indicators were used to compare the health status of 1 million Manitoba residents across eight administrative regions for 1 year. Marked variations in health status were shown.
Despite theoretically equal access to care in a universally insured system and high rates of utilization of hospital and physician services, residents of Manitoba's two northern, more remote regions scored most poorly—consistently and with statistical significance—across a variety of health status indicators. The strength of the various indicators was evaluated, and premature mortality emerged as the most useful "flagship" indicator for future analyses. Indicators that purport to be sensitive to how well a health care system is performing showed patterns similar to those derived from more classic measures (e.g., mortality, low birth weight). Furthermore, the "system sensitive indicators" did not appear to be sufficiently independent of utilization biases.

Singh and Yu (1995), in their article, discussed important issues for public health professionals. The purposes of their study are (1) to examine the long-term trends and differentials in infant, neo natal, and post neo natal mortality in the United States from 1950 through 1991 by race and ethnicity, education, and family income, (2) to examine the extent of socioeconomic differentials over time in infant mortality; (3) to examine changes in the race-specific patterns of leading causes of death over time; and (4) to assess the implications of the past and recent trends for the future course of mortality by projecting mortality rates for infants to the year 2010. The chief conclusions can be summarized from the Discussion section as follows: (1) despite impressive reductions in overall infant mortality, the Black/White disparity in infant mortality has not only persisted but widened; (2) substantial differences in infant mortality exist across other racial and ethnic groups; (3) inequality in infant survival widened across educational levels between 1964 and 1987; (4) the Black/White disparity in infant mortality also widened across all educational levels; (5) there is no empirical evidence of increasing inequality across income levels in infant mortality; and (6) infant mortality in the US remains higher than that in most other industrialized nations.
Marsham, Cohen and Leonard M Acwlliam, M (1995), in this article, developed a set of 102 population-based indicators from multiple administrative data sources; these indicators were used to compare the health status of 1 million Manitoba residents across eight administrative regions for 1 year. Marked variations in health status were shown. Despite theoretically equal access to care in a universally insured system and high rates of utilization of hospital and physician services, residents of Manitoba's two northern, more remote regions scored most poorly-consistently and with statistical significance-across a variety of health status indicators. The strength of the various indicators was evaluated, and premature mortality emerged as the most useful "flagship" indicator for future analyses. Indicators that purport to be sensitive to how well a health care system is performing showed patterns similar to those derived from more classic measures (e.g., mortality, low birth weight). Furthermore, the "system sensitive indicators" did not appear to be sufficiently independent of utilization biases.

Christine McMurray 1996 explores the nature of cross-sectional data, their applications and their limitations, using sample data from Burundi, Uganda and Zimbabwe. Methods of analysis which treat the data as continuous or dichotomous are compared. The conclusion is that cross sectional data can make a valuable contribution to health research provided their application and interpretation are properly understood.

The collection of body measurements, or anthropometry, has become a basic tool for monitoring the health of young children. The reliability of weight gain as an indicator of child health is widely recognized, and major episodes of illness are almost invariably associated with loss of weight. Prolonged growth faltering precedes most child deaths. Growth monitoring usually involves weighing individual children during a series of visits to a health facility so that weight increases can be tracked over time. Health workers throughout the world record weights of infants and children on growth charts which compare their progress
with the expected range for their age. Having less than the expected range of weight or weight gain indicate failure to thrive and the need for special care. Weight, rather than length or height, is the preferred measure for growth monitoring of infants as height increases more slowly and is difficult to measure accurately in small children, but height for age also is taken into account when the health status of both infants and young children is assessed. In recent years it has become increasingly common to use survey techniques to collect a single round of anthropometric measurements from a large number of children. In some instances this may be a practical exercise to identify children most in need of nutritional supplementation when there is a critical food shortage, or to determine the prevalence of poor growth attainment. For example, Beaton et al. (1990:17) recommend one-time screening in emergency situations to identify individuals requiring immediate attention in order to survive, and in non-emergency situations, individual one-time screening can be used to identify children in need of immediate nutrition or health intervention. In other instances cross-sectional anthropometry is collected to support health-related research, as in the case of the Demographic and Health Surveys (DHS), which also gather information on a wide range of other health issues and socio-economic, demographic and environmental characteristics. In these cases the anthropometric measurements are intended as an indicator of a child’s nutritional and health status.

Roger T. Anderson, Paul Sorlie, Eric Backlund, Norman Johnson, George A. Kaplan (1997) linked data from the National Longitudinal Mortality Study to census tract information on 239,187 persons to assess 11-year mortality risk among black and white men and women associated with median census tract income, adjusted for individual family income from the Current Population Survey. The Authors applied stratified Cox proportional hazards models by ages 25-64 years and 65 years and older and also used a robust covariance matrix to obtain standard errors for the model coefficients that account for correlation among
individuals in the same census tract. Both income indicators were found to be independently related to all cause mortality. Among persons age 25-64 years, the rate ratios (RR) for individual family income and the median Census tract income, respectively, for low income relative to high income were RR = 2.10 vs 1.49 for black men, RR = 2.03 vs 1.26 for white men; and RR = 1.92 vs 1.30 for black women and RR = 1.61 vs 1.16 for white women. Among persons aged 65 years or more, only individual family income was associated with mortality, and only for white men. Although family income has a stronger association with mortality than census tract, the results indicate that, more broadly, a socio economic status makes a unique and substantial contribution to mortality and should be explored in health policy and disease prevention research.

Robert A. Verheij, H. Dike van de Mheen, Dinny H. de Bakker, Peter P. Groenewegen, Johan P. Mackenbach (1998) have studied urban-rural health differences that are observed in many countries, even when socioeconomic and demographic characteristics are controlled for. People living in urban areas are often found to be less healthy. One of the possible causes for these differences is registered between 1991 and 1995. Using logistic regression analyses, comparisons were made between, firstly, urban to rural movers and rural to urban movers and secondly selective migration with respect to health or health risk factors. This hypothesis is hardly ever empirically tested. The paper tries to assess the existence of selective urban rural migration. In this paper health indicators and health risk factors were measured in a 1991 population sample. Region surrounding the city of Eindhoven in south eastern part of the Netherlands was taken to study. In this paper data were used of 15 895 respondents aged 20-74 in 1991. By 1995, 613 subjects had moved from urban to rural and 191 subjects from rural to urban. Bivariate nor multivariate analyses show hardly any differences between movers into urban and movers into rural areas. Bivariate analyses on movers and stayers show that movers are healthier than stayers. However, when socioeconomic and demographic variables
are controlled for, movers appear to be less healthy, with the exception of the younger age groups. The paper concluded that areas that attract many migrants from and lose few migrants to other degrees of urbanicity will in the long run obtain healthier populations, because of demographic and socioeconomic characteristics. However, if these characteristics are accounted for, the opposite is true, with the exception of younger age groups. In extreme cases this may cause spurious findings in cross sectional research into the relation between urbanicity and health.

In William W. Dressler, Mauro Campos Balieiro, Jose Ernesto Dos Santos’s (1998) article, a cultural dimension of socioeconomic status is examined in a Brazilian city through the use of ethnographic and social survey techniques. It suggests that lifestyle, defined in terms of the relative ability to accumulate consumer goods and the adoption of associated behaviors, is an important component of socioeconomic differences. Further research using cultural consensus analysis, a structured ethnographic technique that may be used to study shared cultural knowledge, demonstrates significant consensus regarding the definition of the successful lifestyle. Then, using that culturally defined model of the successful lifestyle as the central tendency, an individual-level measure of approximation to that lifestyle was developed for representative sample of 250 persons. This culturally defined measure of lifestyle was inversely associated with arterial blood pressure ($r = -0.216, p < .01$), depressive symptoms ($r = -0.236, p < .01$), and globally perceived stress ($r = -0.358, p < .01$); furthermore, it absorbed the explained variability in these outcomes that is associated with conventional socioeconomic variables (occupation, education, income). For arterial pressure, cultural consonance explained almost 10 percent of the differences in blood pressure between individuals; for the psychological outcome variables, cultural consonance explained between 10 percent and 20 percent of the differences between individuals. Finally, its statistical effects were independent of other socio-economic, dietary, anthropometric, and psychosocial
variables. These results suggest that an individual's approximation to the cultural ideal of lifestyle, his or her "cultural consonance," mediates the observed effects of socioeconomic variables on health status.

Norman Daniels, Bruce P. Kennedy, and Ichiro Kawachi (1999) talked about ‘The Social Determinants of Health Inequalities. It is known for over 150 years that an individual's chances of life and death are patterned according to social class: to them the more affluent and educated people are, the longer and healthier their lives. These patterns persist even when there is universal access to health care - a fact quite surprising to those who think financial access to medical services is the primary determinant of health status. In fact, recent cross-national evidence suggests that the greater the degree of socioeconomic inequality that exists within a society, the steeper the gradient of health inequality. As a result, middle-income groups in a less equal society will have worse health than comparable or even poorer groups in a society with greater equality. The authors pointed out that one cannot infer causation from correlation, but there are plausible hypotheses about pathways that link social inequalities to health. Even if more work remains to be done to clarify the exact mechanisms, it is not unreasonable to talk here about the social "determinants" of health.

James P. Smith (1999), in this study, found that there is abundant evidence of a quantitatively large association between many measures of economic status, including income and wealth, and a variety of health outcomes, such as mortality or morbidity. However, considerable and often heated debate remains- especially across disciplines-about the direction of causation and about why the association arises. Although medical scientists are often convinced that the dominant if not exclusive pathway is that variation in socioeconomic status produces health disparities, they are increasingly debating among themselves about why low economic status leads to poor health. At least for industrial countries, the old standby arguments the less well-to-do have access to less or lower quality medical care or a stronger pattern of deleterious
personal behaviours have been rejected as insufficient.’ Instead, some intriguing competing theories have arisen that emphasize long-term impacts of early childhood or even intra-uterine environmental factors, the cumulative effects of prolonged exposures to individual stressful events, or reactions to macro-societal factors such as rising levels of income inequality. A common link is that each theory attempts to document the physiological processes by which low economic status leads to poorer health. While these scientific questions are extremely important, this research has had little input from economists. Economists are now making contributions about the alternative pathway—the impact that poor health has on economic resources. Poor health may restrict a family's capacity to earn income or to accumulate assets by limiting work or by raising medical expenses.

Elizabeth Goodman (1999) sought to determine whether socio-economic status gradients exist among US adolescents for self-rated health and for five diseases that cause serious adolescents. In this study data from 15,483 adolescents and parental surveys from the National Longitudinal Study of Adolescent Health were used. SES indicators included parental education and occupation and household income. Dependent variables included self-rated health and the presence of depression, obesity, asthma, suicide attempt in the past year and prior sexually transmitted disease. They found the SES gradients for self-rated health, depression and obesity (p<.01). Suicide attempt was linearly associated with income (p<.01). After adjustment for other SES and socio-demographic factors, education and income remained independent correlates of both depression and obesity; income remained an independent correlate of attempted suicide.

Stephanie A. Robert (1999), in his article, presents a conceptual model suggesting the basic pathways that may link community socio-economic context to individual health, secondly reviews recent research that has examined whether the socio-economic context of communities impacts the health of individual residents, over and above their own
socioeconomic position, thirdly discusses conceptual and methodological challenges of current research, and finally suggests new directions for future research such as the importance of more closely examining how age, race, gender, and individual socio-economic position may moderate the impact of community socio-economic context on individual health and mortality.

S. Beer-Borst, A. Morabia, S. Hercberg, O. Vitek, M. S. Bernstein, P. Galan, R. Galasso, S. Giampaoli, S. Houterman, E. McCrum, S. Panico, F. Pannozzo, P. Preziosi, L. Ribas, L. Serra-Majem, W. M. M. Verschuren, J. Yarnell, M. E. Northridge (2000), in EURALIM (Europe Alimentation), a European collaborative study, aimed to determine and describe the extent to which European data on risk factor distributions from different populations could be pooled and harmonised in a common database for international comparisons. Seven independent population based surveys from six European countries (France, Italy, Northern Ireland/ United Kingdom, Spain, Switzerland, the Netherlands) data for 18381 women and 12908 men aged 40-59 were pooled in a common database. Central statistical analyses on major cardiovascular risk factors were conducted with careful consideration of methodological issues, including differences in study designs; data assessment tools, and analytic techniques were used. Because of the detected variability among methods used, direct comparisons of risk factor distributions and prevalence’s between studies were problematic. None the less, comparisons of within population contrasts by sex, age group, and other health determinants were considered to be meaningful and apt, as illustrated in the study for obesity. Results were targeted and disseminated to both the general public and public health professionals and framed in the context of a European information campaign. The study concluded that the International and national comparisons between existing locally run studies are feasible and useful, but harmonisation methods need improvement. Development of an international risk factor surveillance programme based on decentralised data collection is warranted.
Meanwhile, risk factor contrasts across populations can be used as a basis for targeting needed public health intervention programmes.

Peter C. Austin, Michael Escobar, Jacek A. Kopec (2000) pointed out that the self-reported health status is often measured using psychometric or utility indices that provide a score intended to summarize an individual's health. Measurements of health status can be subject to a ceiling effect. Frequently, researchers want to examine relationships between determinants of health and measures of health status. Regression methods that ignore the presence of a ceiling effect or of censoring in the health status measurements can produce biased coefficient estimates. The Tobit regression model is a frequently used tool for modelling censored variables in econometrics research. The authors carried out a Monte-Carlo simulation study to contrast the performance of the Tobit model for censored data with that of ordinary least squares (OLS) regression. It was demonstrated that in the presence of a ceiling effect, if the conditional distribution of the measure of health status had uniform variance, then the coefficient estimates from the Tobit model have superior performance compared with estimates from OLS regression. However, if the conditional distribution had non-uniform variance, then the Tobit model performed at least as poorly as the OLS model.

The paper of Adam Wagstaff and Eddy van Doorslaer (2000) reviews the large and growing body of literature on the apparently negative effects of income inequality on population health. Various hypotheses are identified and described that explain the empirically observed association between measures of income inequality and population health. The authors concluded that data from aggregate-level studies of the effect of income inequality on health, i.e. studies at the population and community (e.g. state) levels, are largely insufficient to discriminate between competing hypotheses. Only individual-level studies have the potential to discriminate between most of the advanced hypotheses. The relevant individual-level studies to date, all on U.S. population data, provide strong support for the “absolute-income
hypothesis,” no support for the “relative-income hypothesis,” and little or no support for the “income-inequality hypothesis.” Results that provide some support for the income-inequality hypothesis suggest that income inequality at the state level affects mainly the health of the poor. There is only indirect evidence for the “deprivation hypothesis,” and no evidence supports the “relative-position hypothesis.” Overall, the absolute-income hypothesis, although >20 years old, is still the most likely to explain the frequently observed strong association between population health and income inequality levels.

David E. Bloom David Canning Jaypee Sevilla (2001) extended production function models of economic growth to account for two additional variables those micro economists have identified as fundamental components of human capital: work experience and health. Our main result is that good health has a positive, sizable, and statistically significant effect on aggregate output. We find little variation across countries in average work experience, thus differentials in work experience account for little variation in rates of economic growth. Finally, we find that the effects of average schooling on national output are consistent with microeconomic estimates of the effects of individual schooling on earnings, suggesting that education creates no discernible externalities.

R. Khongsdier 2001, the present report deals with the BMI of adult males in 12 populations of Northeast India with a view to understanding their nutritional status. Anthropometric data collected by the Anthropological Survey of India on 946 adult males aged 18-62 years of 12 populations in Northeast India were used in this analysis. The populations were broadly categorized into three groups, namely, caste, Hinduized and tribal groups. The data were collected mostly from rural areas, taking into consideration the different social ranks such as castes, tribes and religious groups. In this study it is found that the variation in mean BMIs between populations was highly significant, ranging between 18.3 and 20.5 kg m². Despite a few exceptions, the mean values of BMI in the tribal populations were significantly higher
than the caste groups. The prevalence of chronic energy deficiency (CED) was also lower in the tribal (19%) than in the Hinduized (49%) and caste (52%) populations ($\chi^2$=89.4, d.f. =2, $p < 0.001$). Although it is difficult to explain why the tribal’s have higher BMI than the higher castes, the Cormic index or CI (SH/H) was significantly lower among the caste groups as compared with some tribal groups. The linear regression coefficient (standard error) of BMI on CI for all the populations, irrespective of ethnic origin, was 30.4±4.3 ($t=7.1$, $p < 0.000$), and the correlation coefficient (standard error) 0.22±0.03. The differences in BMI across groups were, however, significant even after allowing for CI. It is also found that a majority of the adult males in these populations were lean. The high proportion of individuals with grade I CED suggests the need of other information on morbidity and health status of these populations.

Jacek A. Kopec, Susan E. Schultz, Vivek Goel, J. Ivan Williams (2001) observed that the Health Utilities Index (HUI) is a multidimensional, preference-weighted measure of health status. It comprises eight health attributes, aggregated into a single utility score. The purpose of the study was to investigate the ability of the HUI to detect changes in health status in a general population cohort. In this study Health status changes were analyzed in the full cohort and in persons who were diagnosed with chronic conditions, hospitalized, or became restricted in daily activities. To assess responsiveness, longitudinal data was used from the National Population Health Survey conducted in Canada in 1994 - 1995 and 1996 - 1997. We used cross-sectional data from the 1996 sample to classify chronic conditions into mild, moderate, and severe. In this article two measures of responsiveness were calculated: Standardized Response Mean (SRM) and Sensitivity Coefficient (SC). HUI was compared with a global health index the Self Rated Health (SRH) scale.

They found HUI scores improved between the two NPHS cycles in all age-sex groups, except men 65 years of age and older. Among the respondents who remained free of chronic
conditions, improvements were seen primarily in the cognitive and emotional domains. The HUI deteriorated among persons who were diagnosed between the two cycles with a severe chronic condition, were hospitalized, or became restricted in activity, but not in those diagnosed with a moderate condition. The SRMs were generally smaller for the HUI compared with the SRH. They have concluded that The HUI responds to changes in health status associated with serious chronic illnesses. However, changes in the HUI do not always coincide with changes in self-reported health. Properties of the HUI scales require further study.

K. Gartner, B. Maire 'P. Traissac, Y.Kameli, and Fhelpeuch 2001, in their paper, tried to test the hypothesis that 'normal but vulnerable' adults, as defined by body mass index BMI) in combination with mid-upper-arm-circumference (WAC), are closer to normal than to malnourished ones. For that purpose body composition measurements were compared between normal and low BMI categories and according to MUAC value in a rural area of the Republic of Congo, Central African context and for different age groups. A representative sample \( n = 544 \) of non-pregnant women were taken. In this study the main outcome measures were such that, Arm muscle area was calculated from measurements of triceps skinfold thickness and MUAC. Peripheral body fat was assessed by the sum of four skinfold thicknesses. The ratio of resistance at high and low frequencies was derived from whole body measurement of multi frequency bioelectrical impedance analysis and used as the extracellular to total body water ratio index. The authors have found that the prevalence of thinness decreased from 18.7% as defined by BMI alone to 9.0% as defined by BMI and MUAC. This difference was due to the group of subjects classified as 'normal but vulnerable' (9.7%). Prevalence of thinness increased with age when assessed by BMI alone, but no longer when assessed by BMI and WAC. Comparison with the BMI 2 18.5 kg/m2 category showed that in 'normal but vulnerable' subjects lower BMI was accompanied by lower both
fat and lean compartments, in absolute values, but the equilibrium of body water compartments was not altered. In BMI < 18.5 women, low MUAC was associated with altered lean tissues, at peripheral and whole body level, whereas fat tissue did not differ. The conclusion were ‘normal but vulnerable' subjects appeared as 'thin but healthy' rather than malnourished, at all ages, even though their BMI was lower than 18.5 kg/m2. The new classification of thinness based on BMI and MUAC provides a more specific index of nutritional status when restricting the thin category to more at-risk subjects.

Thang Minh Nguyen and Barry M. Popkin (2002) find a strong association between poverty and health levels that matches results from several earlier studies in Vietnam and from studies in numerous other countries around the world (Lokshin and Popkin, 1999). Equity in health care in part means that the poor can receive care not from pity or as a favour, but as a right. Equity also means fair treatment of both the rich and the poor by doctors, whose medical ethics commit them to assuming a high degree of responsibility. Without government intervention, the poor in Vietnam are likely to remain poor and will benefit little from the country's increased economic growth, especially in their health care. To offset the ever-increasing inequalities in the health sector, new policies need to be established. Government subsidies, at least in some sub-sectors, are becoming more regressive and are being disproportionately appropriated by the non-poor. Due to the limited availability of government resources in Vietnam, the Authors observed, significant contributions from households are essential to ensure provision of health services to all economic levels. Given these constraints, government policies need to be targeted so that the poor benefit more from investments and subsidies for health care. This study provides evidence of the link between poverty and low health status. The poor may not be able to escape the vicious circle of poverty without targeted assistance. When access to health care declines, health usually declines - leading to reduced ability to work; thus, the poor become poorer and have even less
access to health care than before. This study provides an early warning that the benefits of Doi Moi are not being distributed equitably, and that groups belonging to higher economic quintiles are reaping more benefits, while the others are paying a greater cost. Improving the quality of health and health services for the poor must be the major thrust of the country's future poverty reduction strategy.

Jennifer M. Mellor and Jeffrey Milyo (2002), in their study, have used data of Current Population Survey (1995-99, March) to examine the effect of income inequality on individual health status for both the general population and individuals in poverty. They have found no consistent association between income inequality and individual health status. Their results contradict recent claims that the psychosocial effects of income inequality have dramatic consequences for individual health outcomes.

Mia Hashibe, Rengaswamy Sankaranarayanan, Gigi Thomas, Binu Kuruvilla, Babu Mathew, Thara Somanathan, Donald Maxwell Parkin, Zuo-Feng Zhang (2002), in their study, investigated the association between BMI, smoking, drinking, and the risk of oral sub mucous fibrosis. They conducted a case-control study within the framework of an ongoing randomized oral cancer screening trial in Kerala, India. Trained health workers conducted interviews with structured questionnaires and oral visual inspections to diagnose oral premalignant lesions. A total of 170 oral sub mucous fibrosis cases (139 women and 31 men) and 47,773 controls were identified. The odds ratios (OR) and 95% confidence intervals (CI) were calculated by logistic regression in SAS. The results show that the adjusted OR for ever-tobacco chewing was 44.1 (95% CI = 22.0-88.2). An inverse dose-response relationship was seen between BMI and the risk of oral sub mucous fibrosis when both genders were combined (p for trend = 0.0010), with an OR of 0.5 (95% CI = 0.3-0.9) for the highest BMI quartile compared to the lowest. Alcohol drinking may possibly be associated with the risk of oral sub mucous fibrosis; the adjusted OR for ever drinking was 2.1 (95% CI = 1.0-4.4).
Cigarette smoking did not appear to be a risk factor for women or for men. Both smoking and drinking were rare habits among women. This study suggested, for the first time, that BMI was inversely associated with the risk of oral sub mucous fibrosis for both genders when potential confounding factors were adjusted. Our results indicated that alcohol drinking might be a moderate risk factor and confirmed the previous observation that chewing tobacco was a strong risk factor for oral sub mucous fibrosis.

Jeremy Powell-Tuck, Enidm. Hennessy 2003 tried to measure the status of health with the help of BMI and MUAC. A nutritional supplementation trial (Vlaming et al., Clin Nutr 2001; 20: 517) enabled them to assess the nutrition of 1561 patients on emergency admission to hospital. Patients acutely admitted to the 15 relevant medical, surgical and orthopaedic wards were identified. Mid upper arm circumference (MUAC) measurements were obtained in 95 % (848m, 635f) patients. For clinical reasons, Body mass index (BMI) was assessable in only 44% patients (408m, 285f). Data on three month weight loss were obtainable in 509 patients. These measurements combined to demonstrate that 18.3% of patients were undernourished (At least one of: BMI=20 kg/m$^2$ or MUAC=25cm or loss of weight Z=10%). There was a close relationship between BMI and MUAC. The results of regression equations (excluding age) were for men: BMI=1.01, MUACF=4.7, ($R^2=0.76$), and for women BMI=1.10, MUAC=6.7, ($R^2=0.76$). After adjustment for age, weight loss Z=10% was the most significant of the three as a predictor of mortality. Among patients in whom weight loss was not recorded MUAC was a significant predictor of mortality either alone (P=0.002) or after adjustment for BMI (P=0.007), but BMI was not significant. All three measures, even when adjusted for age and sex, were poor predictors of hospital stay although MUAC was significant in the larger group with a MUAC measure ($R^2=0.7%$ P=0.001). MUAC correlates closely with BMI, is easier to measure and predicts poor outcome better.
R. Antonelli-Incalzi, C. Imperiale, V. Bellia, F. Catalano, N. Scichilone, R. Pistelli, F. Rengo, and the SARA investigators (2003) attempted to assess whether different stages of chronic obstructive pulmonary disease (COPD) severity defined according to the Global Initiative for Chronic Obstructive Lung Disease (COLD) criteria correlate with meaningful differences in health status. A total of 381 COPD patients, aged 73.6 yrs, were classified in the five COLD stages. Disease-specific (St George Respiratory Questionnaire (SGRQ)) and generic indexes of health status were measured in all patients. Multivariate analysis of covariance or Kruskal Wallis tests were used to compare health status indexes across the spectrum of COLD stages of COPD severity. COLD stages of COPD severity significantly differed in SGRQ components and Barthel's index, but not in the indexes assessing cognitive and affective status and quality of sleep. The largest variation in health status was observed at the transition from stage II(a) to stage II(b), while there were no other significant differences between consecutive stages. Both female sex and co morbidity were associated with a greater impact of COPD on the health status. In conclusion, the upper limit of stage II(b) (forced expiratory volume in one second of 49%) marks a threshold for dramatic worsening of health status.

Francis Obare 2003 uses data from a slum survey in Nairobi, Kenya, to examine the factors associated with self-assessed health status among 1,654 teenage boys and girls. Analysis involved logistic regression and multilevel models. The results show: 1) a significant but non-linear association between prior morbidity experiences and self-assessed health; 2) gender differences in self-assessed health status with female teenagers being more inclusive in their assessment of health status than male teenagers; 3) that the absence of the father was significantly associated with lower likelihood of reporting good health for male teenagers; for female teenagers, it was the absence of the mother; and, 4) that female teenagers who had
experienced physical abuse were less likely to report good health compared to those who did not. These findings suggest a need for adolescent health interventions to not only target all aspects of health but also take the gender dimensions into account.

M. Thorogood, P. N. Appleby, T. J. Key, J. Mann (2003) have conducted the study to investigate the relation between body mass index (BMI) and mortality in an unusually slim cohort in UK. Prospective cohort study is adopted on about 11000 non-meat eaters and their meat eating friends and relatives, with a median age of 33 years who were recruited between 1980 and 1984. More than 20% of the cohort had a self reported BMI below 20 kg/m2 at recruitment. There were 195000 person years of observation after a mean of 18.0 years of follow up. Main results: The characteristics of participants with a BMI below 18 kg/m2 were favourable to a lower risk of cardiovascular disease. Nevertheless, these participants had an increased all cause death rate ratio (2.07, 95% CI 1.58 to 2.70) in comparison with participants who had a BMI between 20 and 22 kg/m2. The death rate ratio for the slimmest category was also significantly increased for circulatory diseases (including ischaemic heart disease and cerebrovascular disease), respiratory diseases, and all other causes combined excluding all malignant neoplasm’s. This finding was consistent across a range of subgroups. Conclusions: Lean men and women (BMI <18 kg/m2) experience increased all cause mortality compared with those with a BMI between 20 and 22 kg/m2. This pattern is not seen for cancer mortality, but is found for cardiovascular and respiratory diseases. It is important that public health messages regarding healthy eating are aimed at maintaining a healthy body weight rather than just 'losing weight'.

Alok Bhargava Dean T. Jamison Lawrence Lau Christopher JL Murray (2004) investigated the effects of health indicators such as adult survival rates (ASR) on economic growth rates at 5-year intervals in the period 1965-90 in developed and developing countries. This is an important topic because economic performance of developing countries could conceivably be
enhanced by improving health of the citizens. Because of the previous findings regarding the life expectancy-income relationship by Preston (1976), the extent to which additional resources should be invested in health is likely to depend on the Gross Domestic Product (GDP) of the country. While health can be defined more broadly to include indicators of physical and mental health of the population especially by age cohorts, data on health indicators at the national level typically comprise of variables such as life expectancy, child mortality, adult survival rates, etc.

Panel data were analyzed in this paper on Gross Domestic Product (GDP) series based on purchasing power adjustments (Penn World Table; PWT) and a GDP series based on official exchange rates (World Development Indicators; WDI) using several econometric methodologies. It was important to use two alternative GDP series because purchasing power comparisons in the PWT invoke several assumptions about prices of goods in countries where the data were unavailable and used certain smoothing procedures. The analysis of growth rates would be more reliable if the use of two GDP series led to similar results. First, we developed a framework for modelling the inter-relationships between GDP growth rates and explanatory variables by re-examining the life expectancy-income relationship. It is argued that, while the effects of ASR are likely to taper off at relatively low GDP levels, a broader view of health entails focusing on human development, including the formation of human capital. Nutrition and learning are essential components of human development. Second, the stochastic properties of the GDP series were analyzed by applying classical tests for unit roots in a fixed effects framework; a dynamic random effects framework was subsequently used for specification testing. The GDP series showed persistence and heteroscedasticity over time; growth rates seemed amenable to econometric modelling. The analysis provided important insights for using the appropriate models for growth rates. Third, models for growth rates were estimated using panel data, taking into account the interaction
between ASR and lagged GDP level that is essential for understanding the associations between economic growth and measures of health. The problems of simultaneity of explanatory variables, namely, lagged investment/GDP ratio, ASR, GDP, and interaction between these variables was addressed in a static random effects framework. Fourth, we computed the confidence intervals for the net effect of ASR and on GDP growth rates. This enabled a systematic treatment of the GDP levels beyond which the effects of ASR on growth rates were not statistically significant. We also developed and applied a test for parameter stability to GDP growth rates outside the sample period (in 1995) using the GDP data from the WDI. The results indicated that our model for growth rate performed better outside the sample period when the simultaneity of some of the explanatory variables was taken into account. Overall, the results showed the importance of ASR on growth rates for poor countries; the GDP levels beyond which ASR had a zero impact on growth rates using data from PWT and WDI were, respectively, 3554 international dollars and 690 dollars in 1987 prices. While these figures indicate that benefits of health apply primarily to poor countries, it is argued in the paper that other measures of health such as disease prevalence rates and cognitive functioning are important for maintaining a steady supply of skilled labour; skilled labour is an important ingredient in economic production. The collection of more comprehensive data on the prevalence of various diseases by age cohorts in future work is likely to afford sharper insights into the effects of health on the economic growth, even for countries in the middle and high income groups.

Jason Beckfield’s (2004) provocative hypothesis that income inequality harms population health has sparked a large body of research, some of which has reported strong associations between income inequality and population health. Cross-national evidence is frequently cited in support of this important hypothesis, but the hypothesis remains controversial, and the cross-national work has been criticized for several methodological shortcomings. This study
replicates previous work using a larger sample (692 observations from 115 countries over the 1947-1996 periods), a wider range of statistical controls, and fixed-effects models that address heterogeneity bias. The relationship between health and inequality shrinks when controls are included. In fixed-effects models that capture unmeasured heterogeneity, the association between income inequality and health disappears. The null findings hold for two measures of income inequality: the Gini coefficient and the share of income received by the poorest quintile of the population. Analysis of a sample of wealthy countries also fails to support the hypothesis.

Hilary Graham (2004) attempted, in this study, a public health policy in older industrialized societies is being reconfigured to improve population health and to address inequalities in the social distribution of health. The concept of social determinants is central to these policies, with tackling the social influences on health seen as a way to reduce health inequalities. But the social factors promoting and undermining the health of individuals and populations should not be confused with the social processes underlying their unequal distribution. This distinction is important because, despite better health and improvement in health determinants, social disparities persist. The article argues that more emphasis on social inequalities is required for a determinants-oriented approach to be able to inform policies to address health inequalities.

John Lynch, George Davey Smith, Sam Harper, Marianne Hillemeier, Nancy Ross, George A. Kaplan, Michael Wolfson (2004), in their article, review 98 aggregate and multilevel studies to examine the associations between income inequality and health. Overall, there seems to be little support for the idea that income inequality is a major, generalizable determinant of population health differences within or between rich countries. Income inequality may, however, directly influence some health outcomes, such as homicide in some contexts. The strongest evidence for direct health effects is among states in the United States,
but even that is somewhat mixed. Despite little support for a direct effect of income inequality on health per se, reducing income inequality by raising the incomes of the most disadvantaged will improve their health, help reduce health inequalities, and generally improve population health.

Ulf-G. Gerdtham Magnus Johansson (2004) tested whether mortality is related to individual income, mean community income, and community income inequality, controlling for initial health status and personal characteristics. The analysis is based on a random sample from the adult Swedish population of more than 40,000 individuals who were followed up for 10-17 years. We find that mortality decreases significantly as individual income increases. For mean community income and community income inequality, they could not, however, reject the null hypothesis of no effect on mortality. This result is stable with respect to a number of measurement and specification issues explored in an extensive sensitivity analysis carried out in the work.

The objectives of the study of E. Lahelma, P. Martikainen, M. Laaksonen, A. Aittomäki (2004) were to examine the pathways between three socioeconomic determinants of ill health. Cross sectional survey data from the Helsinki health study in 2000 and 2001 were used. Each year employees of the City of Helsinki, reaching 40, 45, 50, 55, and 60 years received a mailed questionnaire. Altogether 6243 employees responded (80% women, response rate 68%). Socioeconomic indicators were education, occupational class, and household income. Health indicators were limiting longstanding illness and self rated health. Inequality indices were calculated based on logistic regression analysis. Main results include the following: Each socioeconomic indicator showed a clear gradient with health. Among women half of inequalities in limiting longstanding illness by education were mediated through occupational class and household income. Inequalities by occupational class were largely explained by education. A small part of inequalities for income were explained by
education and occupational class. For self rated health the pathways were broadly similar. Among men most of the inequalities in limiting longstanding illness by education were mediated through occupational class and income. Part of occupational class inequalities were explained by education. Two thirds of inequalities by income were explained by education and occupational class. The authors conclusions that parts of the effects of each socioeconomic indicator on health are either explained by or mediated through other socioeconomic indicators. Analyses of the predictive power of socioeconomic indicators on health run the risk of being fruitless, if interrelations between various indicators are neglected.

Jean-Christophe Fotso and Barthelemy Kuate-Defo (2005) developed and tested a set of measures of socioeconomic status indicators for predicting health status in developing countries. The construction of socioeconomic indexes that capture both household and community attributes allows to separate the social from the purely economic dimensions of the socioeconomic status within a cross-national perspective, with applications to data from Demographic and Health Surveys (DHS) fielded in five African countries in the 1990s. This study demonstrates the distinctive contributions of socioeconomic indexes measured at the household vs. community level in understanding inequalities in health and survival and underlines the importance of going beyond the purely economic view of socioeconomic status to cover the multidimensional as well as multilevel concept of economic and social inequality.

Alex C. Michalos, Harvey V. Thommasen, Rua Read, Nancy Anderson, Bruno D. Zumbo (2005) attempted an investigation to obtain some baseline self-reported data on the health status and overall quality of life of all residents of the Bella Coola Valley of British Columbia aged 17 years or older, and to measure the impact of a set of designated health determinants on their health and quality of life. In the period from August to November 2001, a variety of
procedures were used to ensure that all eligible residents of the Valley received a copy of our questionnaire, and 687 useable questionnaires were obtained for our working dataset. Health status was measured by SF-36 and the U.S. Centres for Disease Control healthy day’s items. Thirty-one items were used to measure the Provincial Health Officer’s designated determinants of health in four clusters, namely, biological, social and economic, health behaviours and health services determinants. Quality of life was measured by satisfaction levels in 13 specific domains of life (e.g., family, financial security), four global items (e.g., happiness, life satisfaction) and one global Subjective Well Being Index. Besides obtaining baseline figures on all our measures for the Valley, we made some comparisons among our figures and those from other areas, e.g., Prince George, BC. Most of the measures indicated that the health status and quality of life of Bella Coola Valley residents were lower than those of Prince George residents. For the sample as a whole, SF-36 scores on the eight dimensions ran from 82.3 (physical functioning) to 50.0 (social functioning), with a mean of 62.7. Residents in the Valley averaged 6.5 days in the past 30 in which their health was physically not good, 5.5 days when it was mentally not good and 4.1 days when their health limited their usual daily activities. Eleven percent of respondents described their general health as "excellent" and another 27% said it was "very good". On a 7-point scale from 1 = very dissatisfied to 7 = very satisfied, respondents had average life satisfaction and satisfaction with the overall quality of life scores of 5.5. For specific domains of life, the lowest mean level of satisfaction was reported for federal and provincial government officials (3.3) and the highest was reported for living partners and personal safety around home (5.8). Regarding bivariate relations, each of the eight dimensions of SF-36 was significantly correlated with a single item measure of general health, and five of the eight were significantly correlated with the number of good health days. Happiness and the Subjective Well-Being Index were positively but moderately correlated with six of the eight dimensions, and life satisfaction
was positively correlated with five. Age was negatively related to general health, but positively related to life satisfaction. Not being of aboriginal descent was positively related to all of the four global health indicators and to the Subjective Weil-Being Index. Education was positively related to the four global health measures but not to the three global quality of life measures. The Social Support and Good Family Indexes were positively related to all seven global measures. There was a positive correlation between six of the seven global measures and the frequency with which respondents participated in activities sponsored by voluntary organizations. Frequency of smoking was negatively associated with every global dependent variable except the Physical Health Index. Frequency of skipping meals was negatively associated and average hours of sleep per night were positively associated with all seven global measures. Turning to multivariate relationships, the four clusters of health determinants explained from 12% (SF-36 Mental Health Index) to 24% (general health) of the variance in the dependent global health variables, and from 20% (happiness) to 26% (Subjective Weil-Being Index) of the variance in the dependent global quality of life variables. Adding domain satisfaction scores to the total set of predictors allowed us to explain from 20% (SF-36 Mental health Index) to 29% (general health) of the variance in the dependent global health variables, and from 39% (happiness) to 62% (life satisfaction) in the dependent global quality of life variables. By including measures of social support and good family relationships in our set of health determinants, we practically guaranteed that the latter would be relatively strongly predictive of global quality of life.

Wojszel ZB 200 attempted to assess the nutritional status of older people living in the chosen long-term care setting in Poland as well as the determinants having an effect on the nutritional status of the examined subjects. The subjects included older residents (aged 65 years and older) of the nursing home for the somatically ill adults in Bialystok. The MNA-Mini Nutritional Assessment test was used as an assessment tool to detect nutritional risk.
The assessment included elements of clinical and functional evaluation (Katz Index, Instrumental Activities of Daily Living (ADL) scale, Geriatric Depression Scale, Abbreviated Mental Test Score, Norton scale and mobility scale). It is found that one hundred out of the 109 persons fulfilling the age criterion were examined. We found that 12% of them were malnourished, 61% were at risk of malnutrition and 27% were well nourished according to the MNA test. Malnutrition affected more often persons having difficulties with chewing, ADL dependent, with limited mobility, suspected of dementia, having suffered from cerebral stroke and who lived with other people coming to the nursing home. The risk of malnutrition was observed significantly more often in individuals suspected of depression and living in urban area before nursing home placement. The significant determinants of lower scores of MNA in the regression analysis were: suspected depression, IADL dependency, limited mobility, female gender and higher number of drugs. The study has confirmed that malnutrition remains a common problem among older people living in nursing homes. Malnutrition is an increasing hazard especially for women, for people taking higher number of drugs and for those with different mental and physical disabilities.

Neil J. Buckley, Frank T. Denton, A. Leslie Robb, Byron G. Spencer (2006) opined that it is well established that there is a positive statistical relationship between socio-economic status (SES) and health, but identifying the direction of causation is difficult. This study exploits the longitudinal nature of two Canadian surveys, the Survey of Labour and Income Dynamics and the National Population Health Survey, to study the link from SES to health (as distinguished from the health to SES link). For people aged 50 and older, who are initially in good health, the Authors examined whether changes in health status over the next two to four years are related to prior SES, as represented by income and education. Although the two surveys were designed for different purposes and had different questions for income and health, the evidence they yield with respect to the probability of remaining in good health is
similar. Both suggest that SES does play a role and that the differences across SES groups are quantitatively significant, increase with age, and are much the same for men and women.

The study of Jennifer A Linde, Jennifer Utter, Robert W Jeffery, Nancy E Sherwood, Nicolaas P Pronk and Raymond G Boyle 2006 examined correlates of body mass index (BMI) in overweight and obese members of a managed care organization seeking treatment for obesity. It assessed intake of specific foods, dietary fat or fiber, and behaviors attempted to control weight. Total respondents were 508 men and 1293 women who were > 18 years and had a self-reported BMI > 27.0. This paper reports analyses of baseline and 24-month follow-up data from a randomized weight-loss trial. Cross-sectional and prospective relationships between BMI and behaviors were examined with regression analyses controlling for age and education. It is found that at baseline, hamburger and beef consumption were associated with higher BMI for men; for women, hamburger, fried chicken, hot dog, bacon or sausage, egg, French fry, and overall fat consumption were associated with higher BMI, while eating high fiber cereal, fruit, and overall fiber intake were associated with lower BMI. Virtually all forms of weight control behavior were reported more often in heavier people. Subscribing to exercise magazines, however, was associated with lower BMI. Decreased fat intake and increased fruit/vegetable/fiber intake over the course of the study were associated with reductions in BMI at 24 months.

Bridget K. Gorman and Jen'nan Ghazal Read’s (2006) recent examinations of gender differences in physical health suggest that women's disadvantage may be smaller than previously assumed, varying by health status measure and age. In this study using data from the 1997-2001 National Health Interview Surveys, they have examined gender-by-age differences in life-threatening medical conditions, functional limitations, and self-rated health and consider whether potential mediating mechanisms (e.g., socioeconomic status, behavioral factors) operate uniformly across health measures. The results show that the gender gap is
smallest for life-threatening medical conditions and that men do increasingly worse with age. For self-rated health, men are more likely to report excellent health at younger ages, but with increasing age this gap closes. Only for functional limitations do we find a consistent pattern of female disadvantage: Women report more functional limitations than men, and the gap increases with age. The ability of explanatory mechanisms to account for these patterns varies by the health measure examined.

Judith R. Cornelisse-Vermaat, Gerrit Antonides, Johan A. C. Van Ophem, Henriette Maassen Van Den Brink (2006) studied structural relationships between body mass index, perceived health and happiness in a survey of 700 native Dutch citizens. They found an indirect effect of body mass index on happiness, via perceived health. Age had an inverted U-shaped relationship with body mass index, and both education and smoking had a negative effect on body mass index. Being married, doing paid work, owning a house, and doing sports had positive effects on perceived health, suggesting that living a regular life may lead to a better perceived health. Being married positively affected happiness. The other socio-demographic variables either had no effects on happiness or indirect effects via body mass index and perceived health.

Dennis Raphae (2006), in the article, reviews the current status of theory and research concerning the social determinants of health. It provides an overview of current conceptualizations and evidence on the impact of various social determinants of health. The contributions of different disciplines—epidemiology, sociology, political economy, and the human rights perspective—to the field are acknowledged, but profound gaps persist in our understanding of the forces that drive the quality of various social determinants of health and why research is too infrequently translated into action. Many of these gaps in knowledge concern the political, economic, and social forces that make implementation of public policy
agendas focused on strengthening the social determinants of health problematic. The author identifies the areas of inquiry needed to help translate knowledge into action.

DAVID R. WILLIAMS (2006) considered the complex ways in which race and socioeconomic status (SES) combine to affect health. SES accounts for much of the observed racial disparities in health. Nonetheless, racial differences often persist even at “equivalent” levels of SES. Racism is an added burden for non-dominant populations. Individual and institutional discrimination, along with the stigma of inferiority, can adversely affect health by restricting socioeconomic opportunities and mobility. Racism can also directly affect health in multiple ways. Residence in poor neighbourhoods, racial bias in medical care, the stress of experiences of discrimination and the acceptance of the societal stigma of inferiority can have deleterious consequences for health.

Germano Mwabu (2007), discussed and synthesized economic models of individual and household behaviour, showing how they may be used to illuminate health policy making in low-income countries. The models could help address questions such as: How can the health of the poor be improved, and what are the economic consequences of better health? What policies would improve intra-household distribution of health outcomes? An extensive literature on health human capital and household models and on related field experiments is reviewed in an attempt to answer these questions. It is found that there are large returns to health improvements in low-income countries. Moreover, health improvements in poor nations can be achieved through implementation of simple interventions such as dietary supplements, control of parasitic diseases, and pro-poor social expenditures. The paper concludes with a discussion of these policy options.

Anura Amarasinghe, Gerard D’Souza, Cheryl Brown, and Hyungna Oh (2006-12) used a recursive system of ordered self assessed health (SAH) and a binary indicator of obesity to
investigate the impact of socioeconomic and environmental factors on health and obesity in the predominantly rural Appalachian state of West Virginia. Behavioural Risk Factor Surveillance System (BRFSS) data together with county specific socioeconomic and built environment indicators were used in estimation. Results indicate that an individual’s risk of being obese increases at a decreasing rate with per capita income and age. Marginal impacts show that as the level of education attainment increases, the probability of being obese decreases by 3%. Physical inactivity increases the risk of being obese by 9%, while smoking reduces the risk of being obese by 14%. Fruit and vegetable consumption lowers the probability of being obese by 2%, while each hour increase in commuting time raises the probability of being obese by 2.4%. In addition, individuals living in economically distressed counties are less likely to have good health. Intervention measures which stimulate human capital development and better land use planning are essential policy elements to improving health and reducing the incidence of obesity in rural Appalachia.

Jocelyn Finlay (2007), in this paper, analysed the role of health in economic development via two channels: the direct labor productivity effect and the indirect incentive effect. The labor productivity hypothesis asserts that individuals who are healthier have higher returns to labor input. This is well tested in the empirical literature with mixed conclusions. The incentive effect is borne of the theoretical literature, and individuals who are healthier and have a greater life expectancy will have the incentive to invest in education as the time horizon over which returns can be earned is extended. Education is the driver of economic growth, and thus health plays an indirect role. Accounting for the simultaneous determination of the key variables: growth, education, and fertility, the results show that the indirect effect of health is positive and significant. Without recognition of the indirect role of health the economic benefits of health improvements are underestimated.
Kaushik Bose, Samiran Bisai, Priyanka Das, Swapan Dikshit and Sampa Pradhan’s 2007 paper is based on a cross-sectional study of 333 adult (> 18 years) female slum dwellers (mean age = 34.2 years) of Midnapore town, West Bengal, India. The sample is drawn to study the relationships of monthly per capita income (MPCI) with two anthropometric measures, namely body mass index (BMI) and mid-upper arm circumference (MUAC). It also investigated the association of MPCI with chronic energy deficiency (CED). Results revealed that the mean height, weight, MUAC and BMI of the subjects were 148.2 cm, 43.2 kg, 22.7 cm and 19.6 kg/m², respectively. The overall frequency of CED based on BMI (BMI < 18.5 kg/m²) and MUAC (MUAC < 22.0 cm) was 46.8 % and 43.5%, respectively. Based on the World Health Organization classification, the prevalence of CED among this population was very high (≥40%) and thus the situation is critical. Overall, MPCI was significantly (p < 0.001) positively correlated with BMI (r = 0.21) and MUAC (r = 0.25). Moreover, MUAC was very strongly correlated (r = 0.81; p < 0.0001) with BMI. Linear regression analyses showed that MPCI had significant impact (p < 0.001) on BMI (T = 3.92) and MUAC (T = 4.74). MPCI explained 4.1% and 6.1% variation in BMI and MUAC, respectively. Subjects belonging to the lowest per capita income group (PCIG) had the lowest mean BMI (18.9 kg/m²) and mean MUAC (21.9 cm) and the highest rate of CED (BMI based CED = 52.3%; MUAC based CED = 53.5%). Those in the highest PCIG had the largest mean BMI (20.7 kg/m²) and MUAC (23.9 cm) and lowest rate of CED (BMI based CED = 39.0 %; MUAC based CED = 35.4 %). There were significant PCIG differences in mean BMI (F = 4.115, p < 0.05) and MUAC (F = 6.995, p < 0.001). Moreover, there existed clear PCIG differences in CED rates using both BMI as well as MUAC. In conclusion, this study provided evidence that PCI was significantly associated with BMI, MUAC and the presence of CED. The relationships of PCI with BMI and MUAC were similar. The rate of CED was very high indicating a critical situation. These findings may have severe public
health implications. It is recommended in their study that immediate appropriate nutritional intervention programmes be initiated among this population along with serious efforts to increase their PCI.

D Romaguera, N Samman, N Farfan, M Lobo, A Pons and JA Tur 2007 have attempted to assess the nutritional status of the Andean population of Puna and Quebrada of Humahuaca, Jujuy, using anthropometric measurements. Based on a cross-sectional nutritional survey that was carried out in a representative sample (n=51236) of individuals of these regions. Children aged 2–9 years, adolescents (10–17 years) and adults ($18 years; pregnant and lactating women excluded) were considered. Height-for-age, weight-for-height and body mass index (BMI) were calculated in children and adolescents and compared with World Health Organization/National Center for Health Statistics/ Centers for Disease Control and Prevention reference standards using Z-scores or percentiles, in order to assess the prevalence of stunting, wasting/thinness and excess weight. In adults, BMI, waist circumference (WC) and waist-to-hip (WHR) ratio were used to identify obesity and central adiposity. They have found that stunting (height-for-age Z-score, –2 standard deviations) and obesity (BMI$95th percentile) were found to be major nutritional problems in children and adolescents. Stunting was prevalent in 10.7% of children and 12.4% of adolescents; 8.2% of children and 3.5% of adolescents were obese. Adults were short (mean: 155.8 cm) and values of overweight (32.3%), obesity (18.3%) and central adiposity (mean WC: 86.5 cm) were high. Older adults and those with higher economic development showed higher prevalence of obesity and central adiposity.

Taghrid Asfar, Balsam Ahmad, Samer Rastam, Tanja P Mulloli, Kenneth D Ward and Wasim Maziak 2007 aim to investigate and compare determinants of Self Rated Health (SRH) in adult men and women in Aleppo, Syria. A cross-sectional survey of adults 18 to 65 years old residing in Aleppo (2,500,000 inhabitants), Syria was carried out in 2004, involving 2038
household representatives (45.2% men, age range 18–65 years, response rate 86%). SRH was
categorized as excellent, normal, and poor. Odds ratios for poor and normal SRH, compared
to excellent, were calculated separately for men and women using logistic regression. In this
study it has been found that women were more likely than men to describe their health as poor. Men and women were more likely to report poor SRH if they were older, reported two or more chronic health problems, or had high self perceived functional disability. Important
gender-specific determinants of poor SRH included being married, low socioeconomic status, and not having social support for women, and smoking, low physical activity for men.

Mariza Miranda, Theme Filhal Célia Landmann Szwarcwald II Paulo Roberto, Borges de Souza Junior 2008 attempted to assess the interrelationships between self-rated healths, perceptions of long-term illness and diagnoses of chronic diseases. In the World Health Survey, carried out in Brazil in 2003, 5,000 individuals aged 18 years and over who had been selected from a three-stage stratified sample were interviewed. The original questionnaire was adapted for the Brazilian context. It covered the presence of long-term illness or disability, self-rating of health (general and in several domains) and diagnoses of six chronic diseases (arthritis, angina, asthma, depression, schizophrenia and diabetes mellitus). To compare the relationships between self-rated healths, perceptions of long-term illness and the chronic diseases evaluated the statistical test of homogeneity of proportions and multiple logistic regression models were used. In this study it is found that self-rating of health as “not good” and perceptions of having long-term illnesses were significantly more frequent among women, individuals aged 50 years and over and individuals with one or more of the diseases investigated. The interviewees with a diagnosis of diabetes mellitus presented the worst self-rated health: 70.9% reported having a long-term illness and 79.3% considered that their health was “not good”. Worse health ratings were found when two or more diseases were
present together. The effect of self rating of health on the perceptions of long-term illness was stronger than was the number of diseases.

Jeff Niederdeppe, Q. Lisa Bu, Porismita Borah, David A. Kindig, Stephanie A. Robert (2008) reviewed three message strategies that could be used to raise awareness of social determinants of health SDH and health disparities: message framing, narratives, and visual imagery. Findings: Although few studies have directly tested message strategies for raising awareness of SDH and health disparities, the accumulated evidence from other domains suggests that population health advocates should frame messages to acknowledge a role for individual decisions about behaviour but emphasize SDH. These messages might use narratives to provide examples of individuals facing structural barriers (unsafe working conditions, neighbourhood safety concerns, lack of civic opportunities) in efforts to avoid poverty, unemployment, racial discrimination, and other social determinants. Evocative visual images that invite generalizations, suggest causal interpretations, highlight contrasts, and create analogies could accompany these narratives. These narratives and images should not distract attention from SDH and population health disparities, activate negative stereotypes, or provoke counterproductive emotional responses directed at the source of the message. Conclusions: The field of communication science offers valuable insights into ways that population health advocates and researchers might develop better messages to shape public opinion and debate about the social conditions that shape the health and well-being of populations. The time has arrived to begin thinking systematically about issues in communicating about SDH and health disparities. This article offers a broad framework for these efforts and concludes with an agenda for future research to refine message strategies to raise awareness of SDH and health disparities.

Ngwenya, Elkana 2008 investigates differences in consumption behaviors of Female Headed Households and Male Headed Households, in Vietnam, assuming that the locus of decision-
making rests on the individual identified as the head of the household. Data from the Vietnamese Living Standards Survey (VLSS) are used. Calorie shares are estimated using instrumental variable (IV) regression. The results from the study confirm the general finding that FHH possess economic characteristics that are significantly different from those of MHH. The MHH in Vietnam tend to have larger families compared to FHH. The results also show difference in calorie intake and food poverty between FHH and MHH, in Vietnam. FHH in Vietnam pay slightly higher calorie prices compared to MHH. The results show that incomes in FHH and MHH lead to significantly different expenditure in Vietnam.

M.H. Suryanarayana’s 2008 study examines the economic profiles of morbidity by disease in Kerala and all-India by estimating Engel elasticity for diseases and classifying them as between those associated with affluence and deprivation. Morbidity rates, in general, are more for the rich than for the poor. There could be factors other than income, which influence the morbidity rates as revealed by horizontal pseudo-Lorenz curves for distribution of reported total morbidity across households. That morbidity rates are higher for the rich than for the poor households does not hold uniformly valid at the level of individual diseases. This is borne out by pseudo-Lorenz curves for disease specific morbidity. Pseudo-Lorenz curves lay above/below the Line of Equal Distribution depending upon the nature of diseases. The sub-set of undiagnosed diseases is a poor man’s disease in both rural and urban all-India but only in urban Kerala. To avoid Type II errors in targeting medical facilities, it would be useful to identify those diseases, which afflict the rich proportionately more, that is, diseases with Engel elasticity more than one. Such diseases are virtually insignificant in Kerala. They account for 1.23 and 1.75 per cent of reported morbidity cases in rural and urban Kerala respectively. As regards all-India, they have significant presence. Their respective shares in total rural and urban morbidity cases are 7.83 and 6.83 per cent. Generally coronary heart diseases, diabetes and hypertension are considered as life style diseases. Among them, only
diabetes mellitus has elasticity greater than one for rural and urban all-India; heart disease and hypertension too have elasticity greater than one only for rural all-India. As regards Kerala, none of them are luxury diseases. This could also be interpreted to represent a process whereby the diseases of affluence and deprivation converge in Kerala. In other words, this may represent a shift a in the epidemiology of diseases in Kerala.

Soumitra Ghosh and P. Arokiasamy’s 2009 study indicates that various demographic, social and economic characteristics are important determinants of ill health in India. Significant gender inequality is observed in morbidity prevalence with females at greater risk of ill health than males. This is inconsistent with the findings of other studies that had used the earlier rounds of NSS. This means that the present round of NSS gives better estimates of morbidity for females than the earlier rounds. However, it could be possible that even the present level of morbidity among the females is under-reported.

It is observed that prevalence of illness increase with age. While acute ailments is responsible for high morbidity prevalence among the children, chronic ailments has caused the rise in morbidity prevalence among the elderly. The high prevalence rate of chronic illness among the aged population points to the need for special targeting of health care services for the elderly.

Prevalence of ailments varied significantly among different social groups. People from the scheduled tribes and scheduled castes communities reported lower prevalence of ailments than people belonging to all other social groups. The scheduled tribe communities are mostly concentrated in areas where the availability of health care services is minimal, even non-existent. Therefore, low literacy, limited exposure to media and lack of health care services may lead to underreporting of ailments among the SC/ST people. Surprisingly, it is found that the burden of the ailments is reported to be higher among better-off sections than the poor. This could be again largely due to underreporting of morbidity by
the poor people. Furthermore, the higher reported prevalence of chronic diseases resulting from higher prevalence of life-style related diseases among the rich people could also have contributed to the greater burden of illness among them. Seasonal variations are observed, with morbidity being highest between January and March. Regional differences are striking, as the reported prevalence of ailments is higher in southern region followed by northern states compared to other regions in India. The greater social and economic development, coupled with greater accessibility of health care services could be responsible for the regional variations observed during the study. The rural-urban differences in reporting illness indicate that health conditions of the rural people are poorer than their urban counterparts.

The aim of the study of Paul A Bourne 2009 is to develop models that can be used to examine (or evaluate) the health of Jamaican elderly, middle-aged and young adults. The current study used data from a cross-sectional survey which was conducted between July and October of 2002. Stratified random probability sampling technique was used to collect the data from 25,018 respondents across the island. The non-response rate for the survey was 29.7% with 20.5% who did not respond to particular questions, 9.0% who did not participate in the survey and another 0.2% who were rejected due to data cleaning. Logistic regression analyses were used to model the health status of Jamaican young adults, middle-aged adults and the elderly. The predictive power of the model was tested using the Omnibus Test of Model Coefficients and the Hosmer-Lemeshow Test (24) was used to examine goodness of fit of the model. The correlation matrix was examined in order to ascertain whether autocorrelation (or multi-collinearity) existed between variables. Using logistic regression analysis, eleven variables emerged as statistically significant predictors of current good health status of Jamaicans (p<0.05). The factors are retirement income (95% CI=0.487-0.958), logged medical expenditure (95% Confidence Interval, CI=0.907-0.993), marital status (separated or widowed or divorced: 95% CI=0.309-0.464; married: 95% CI=0.495-0.667;
never married), health insurance (95% CI=0.029-0.046), area of residence (other towns: 95% CI=1.052-1.455; rural area:), education (secondary: 95% CI=1.167-1.576; tertiary: 95% CI=1.466-2.820; primary or below: OR=1.00), social support (95% CI=0.745-0.964), gender (95% CI=1.281-1.706), psychological affective conditions (negative affective: 95% CI=0.939-0.980; positive affective: 95% CI:1.047-1.107), number of males in household (95% CI:1.066-1.235), number of children in household (95% CI=1.117-1.266) and previous health status. The study concludes that good health status across the three age cohorts can be modelled using data for Jamaicans. Health status is determined by a number of non-biological factors, and poor health status is difficult to model as a low proportion of the data was correctly classified. Public health requires research with which to make more informed decisions, which means that this study offers an understanding of Jamaicans as well as young adults; middle-aged adults and the elderly.

Using the Households, Income and Labour Dynamics in Australia (HILDA) survey, the study of Hielke Buddelmeyer and Lixin Cai 2009 examines the joint dynamics of health and poverty of Australian families. Taking advantage of panel data, the modelling approach used in this study allows a better estimation of the causal relation between health and poverty. The results indicate that the causality runs both ways and the relationship could be confounded by unobserved heterogeneity. In particular, it is found that families headed by a person in ill-health are more likely to be in poverty compared with families headed by a person with good health. On the other hand, a family head whose family is in poverty in the current year is more likely to be in ill-health in the next year compared with a family head whose family is not in poverty. In addition, there is evidence that health and poverty are affected by correlated unobserved determinants, causing health to be endogenous to poverty. Consequently, treating health as exogenous in a poverty equation would produce a biased estimate for its effect.
Satwanti Kapoor, Renu Tyagi, Kiran Saluja, Anumeha Chaturvedi and A.K. Kapoor’s 2009 study was conducted among Saharia, a primitive tribe of central India, with an objective to assess the nutritional profile and associated socio-economic factors. A cross sectional sample of 364 adult males and females aged 18-60 years was studied. Stature, body weight, skinfold thickness, circumferences, fat percent, grip strength and blood pressure were measured on each subject. Body mass index, Trunk extremity ratio and Grand mean thickness were computed statistically. A higher percentage of chronic energy deficient (CED) males and female subjects indicated a poor nutritional status of Saharias. A few overweight males were also found. More females were found to be undernourished than males as per the cut off values of MUAC. All the subjects were found to have normal blood pressure with the exception of a few hypertensive cases among males in overweight category. An influence of changing life style among Saharia males was more noticeable.

P. Ramesh 2009 attempts to examine the trends in the shift from underweight to overweight and identify the major determinants of the co-existence of ‘double burden’ of malnutrition among women of reproductive age 15-49 years in Kerala using the data from National Nutrition Monitoring Bureau (NNMB) and the Second National Family Health Survey (NFHS-2, 1998-99). The results of the multivariate logistic regression analyses show that household standard of living, religion and age are significantly associated with both underweight and overweight/obesity. On the other hand, woman’s education, work status, residence and caste are not significant on women’s nutritional status. In summary, both chronic energy deficiency and overweight/obesity are widespread in Kerala.

Fikrewold H. Bitew Daniel S. Telake 2010 focuses on undernutrition in Ethiopia to assess levels and socio-demographic differentials between rural and urban areas, and to analyze determinants. The paper uses the population-level data sets from the 2000 and 2005 Ethiopian
Demographic and Health Surveys (EDHS), comprising 13,057 and 5,677 non pregnant and nonpostpartum women age 15-49, respectively. Women’s body mass index (BMI) (kg/m²) is used as a measure of women’s nutritional status, and those with a BMI value less than 18.5 are considered to be at risk of chronic energy deficiency (CED). A logistic regression model was employed to identify important determinant factors of women’s undernutrition.

The study finds that 30.5% of women in the 2000 EDHS and 26.9% of the women in the 2005 survey were undernourished, of whom in the 2000 survey 19.4% were moderately undernourished and 11.1% were severely undernourished. Similarly, in the 2005 survey 18.0% were moderately undernourished and 8.9% severely undernourished. The levels of undernutrition were almost 1.5 times higher for rural than urban women. There seems to be some improvement in women’s undernutrition status between 2000 and 2005. Age, marital status, religion, occupation, wealth index and region of residence were found to significantly affect chronic energy deficiency for women in 2000 survey year, while in 2005 religion and region of residence were no longer factors influencing women’s undernutrition. In 2000 undernutrition in rural areas was significantly associated with age, marital status, occupation and region, while in 2005 marital status was no longer a determinant. In urban areas, marital status, education (in 2000 only), wealth and region were found to significantly affect women’s level of under-nutrition in the two survey years. Among the regions, women in Tigray, Afar, Somali, Gambella and Ben-Gumuz were highly likely to be undernourished. In these regions more than one-third of women experience under-nutrition.

S.I. Orewa and 2C.O. Iyanbe 2010 attempt to empirically identify the socio-economic and household characteristics that have major impact on the level of food calorie intakes of rural and low-income urban households in Nigeria. Primary data used for the study were derived from a cross-sectional survey of 90 households (made up of 384 household members) in two Local Government Areas (LGAs) of Edo State in Nigeria. The LGAs were Orhionmwon
(representing the Rural Area) and Ikpoba-okha (representing the Low-Income Urban Area). A 48-hour recall method was used in obtaining information on the type and quantity of food each household member consumed the previous day and a day after per meal and per day. The calorie content in each food item consumed was determined and used in estimating the proportion in the total food intake of the household members. To identify the variables that had significant influence on household member’s daily per capita calorie intake, the Ordinary Least Squares (OLS) multiple regression analysis was carried out. The result of the analysis revealed a significant positive relationship between daily per capita calorie intake and household size, age, education level, sex and salary income earners. On the other hand a negative significant relationship was observed between daily per capita calorie intake and dependency ratio and non-engagement in farming. The study recommends that government should launch a major programme to educate the inhabitants on how to improve their daily diets while also encouraging them to take on occupations or businesses that guarantee a steady and reliable monthly income all year round. It also recommends the participation of urban households in farming.

The aim of the paper of Sakineh Nouri Saeidlou, Türkan Kutlay Merdol, Peyman Mikaili1, Yenar Bektaş 2011 was to determine the socio-economic and health factors affecting on nutritional statistics among elderly people living at nursing home in Urmia, Iran. This study was carried out on elderly people (106 cases; ages > 65), living at nursing homes in Urmia, Iran. In this study, data of 106 elderly people were collected with a structured questionnaire that was divided into four parts: 1) Mini Nutritional Assessment (MNA) questionnaire, 2) Socioeconomic status questionnaire, 4) Health status questionnaire. It is found that among the elderly people living at nursing home, 12.26% were well nourished, 49.06% malnourished and 38.68% at risk of malnutrition. The prevalence of malnutrition in female subjects was more than male ones (65.4% vs. 34.6%; \( p<0.05 \), in the ones having children more than 4
than less than 4 (51.9% vs. 48.1%; p<0.05), in non educated ones than educated (82.4% vs. 17.3%; p<0.001), in smoking ones than no smoking (80.8% vs. 19.2 %), in lonely living ones than living with family before starting to live at nursing home (75% vs. 25%; p<0.05), in married ones than un married (94.2% vs. 5.8%; p<0.05) in the ones having psychological problems than having no psychological problems (88.4% vs. 11.6%; p<0.05), in the ones having no diseases than having diseases (90.4% vs. 9.6%; p<0.05). The results of the logistic regression analysis of the model showed lower score on MNA was independently associated with female gender, low level education, high number of child, having a disease and psychological problems (r=1.178, 1.808, -1.481, 1.795, -1.009 respectively). This study confirmed that malnutrition remains a common problem among older people living in nursing homes in Urmia, Iran. Malnutrition is an increasing hazard especially for women, for people having a disease, psychological problems, low level education and high number of child.

Aigbe, Gladys Osariemen Aliu, Ibrahim Rotimi (2011) observe that eradication of poverty and hunger is a key goal of the United Nations Millennium Development Goals (MDGs) and the target is to attain by 2015, at least 50 per cent reduction in the proportion of the people living on less than US $ 1 a day and the proportion of people that suffer from acute hunger. However, recent development on global food crisis raises serious doubt on the possibility of achieving this target especially in developing countries like Nigeria, where more than 60 percent of the population live below poverty line. The challenge of inadequate nutrition and malnutrition remains the most critical indicator of grinding poverty in Nigeria. Given this situation, this paper examines the nutritional status of the urban poor in Ajegunle community of Lagos State. The methodology captured the state of poverty as well as dietary pattern of the residents. The findings show that poverty is severe as the Gini coefficients of 0.2077 and 0.480 for male and female indicate. Also strong positive correlations (R=0.834 for calorie and R=0.818 for protein) existed between socio economic indices and nutritional quality.