UNIVERSITY GRANTS COMMISSION
WESTERN REGIONAL OFFICE
GANESHKHIND, PUNE – 411007

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File No: 47-541/12(WRO)

The Accounts Officer
University Grants Commission
Ganeshkhind, Pune 411007

29 MAR 2013

Subject: Financial assistance to college teachers for undertaking Minor Research Projects
Release of first installment during XIIth Plan.

Sir/Madam,

The UGC on the recommendations of the Expert Committee has approved the Minor Research Project in the subject of Statistics entitled "A Statistical Study of Correlation between food Habit, Physical Activites in Childhood and Health in their Adulthood" to be undertaken by **Smt. Koshti V. V.** of **PADMABHUSHAN VASANTRAO DADA PATIL MAHAVIDYALAYA, KAVATHE MAHANKAL, KAVATHE MAHANKAL, SANGLI-416 405.** The financial assistance of the UGC would be limited to Rs. 130000/-(Rupees Only) for a period of two years. An amount of Rs. 97500/- (Rupees Only) is presently being sanctioned as the first installment.

Non-Recurring Grant for Two years	Amount (Rs)	Recurring grant	1st Year Amount	2nd Year Amount	Head of a/c
Books & Journals	25000	Contingency	7500	7500	4(ii)b (For General) 1.B(i)h(i)b (For SC) 1.B(i)h(i)b (For ST)
Equipment	40000	Special Needs (Lab. Jr. in Food Hygn.)	10000	10000	
		Travel/Field work	15000	15000	
		Chemicals & Glassware	0	0	
		Others	0	0	
Total (Rs.)	65000		32500	32500	

Total amount for the project- Rs. 130000/-

The grant is subject to the terms and conditions as mentioned below:

1. A Certificate of Acceptance of the conditions governing the research project should be sent immediately to this office.
2. The amount of the grant shall be drawn by the Accounts Officer (D.D.O), University Grants Commission on the grant-in-aid bill and shall be disbursed to and credited to the above-mentioned institute through D.D./ RTGS Confirmation No/ NEFT/ Transfer No.
3. The sanctioned amount is debatable to the Major Head 4(ii)b(For General), 1.B(i)h(i)b (For SC), 1.B(i)h(i)b (For ST) and is valid for payment during the financial year 2012 -2013 only.
4. The grant is subject to adjustment on the basis of Utilization Certificate in prescribed proforma submitted by University/College/Institute.

NOTE:

1. **The grant shall not be used self-financial/ non-grant/unaided courses & teachers.**
2. **Teacher already availing other Fellowship /Project from UGC/ other agency (State/Central Govt.) simultaneously on the same Subject are not permitted.**
3. **Date of implementation will be the date of sanction of first installment.**

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4. **The researcher is required to submit an Acceptance Certificate of the project in the enclosed format to the affiliating university, which would then be sent to UGC (WRO) in a bunch by the University.**
5. **Please send one copy of the project completion report to Director, INFLIBNET, Gujarat University Campus, Navrangpura, Ahmedabad for record.**

5. The statement of expenditure incurred and brief academic progress report relating to the above project is to be sent in the prescribed format to this office after completion of one year. Audited utilization certificate of full allocated amount audited statement of expenditure and final project report be submitted immediately after completion of the project.
6. The assets acquired wholly or substantially out of UGC grant shall not be disposed off or encumbered on utilized for purposes other that those for which the grant was given, without proper sanction of the UGC, Western Regional Office, Pune -07 and should at any time the college cease to function, such assets shall revert to UGC.
7. A register of the assets acquired wholly or substantially out of the grant shall be maintained by the University/College in the prescribed form.
8. The University/College shall strictly follow all the instructions issued by the Govt. of India from time to time with regard to reservation of posts for SC/ST/OBC.
9. The interest earned by the University/College/Institute will be treated as additional grant and it is required to be incorporated in the UC/Statement of Expenditure submitted to UGC, (WRO).
10. The University/College shall fully implement the office Language Policy of the Union Govt. and comply with the official Language Act, 1963 and Official language (use for official purposes of the Union) Rules, 1976 etc.
11. The sanction issues in exercise of the delegation of powers vide Commission office order No.5/92 dated may 01, 1992.
12. The funds to the extent are available under the scheme.
13. The grantee institution shall ensure the Utilization of grants-in-aid for which it is being sanction /paid. **In case non-utilization/ part utilization, simple interest @ 10% per annum** amended from time to time on unutilized amount from the date draw/to date of refund as per provisions contained in general financial Rules of Govt. of India will be charged.

Yours faithfully,

(Dr. G. Srinivasa)
Joint Secretary

Copy to:

1. **THE PRINCIPAL PADMABHUSHAN VASANTRAO DADA PATIL MAHAVIDYALAYA KAVATHE MAHANKAL KAVATHE MAHANKAL, SANGLI –416 405.**
2. **SMT. KOSHTI V. V., PADMABHUSHAN VASANTRAO DADA PATIL MAHAVIDYALAYA KAVATHE MAHANKAL, KAVATHE MAHANKAL, SANGLI –416 405.**
3. **DIRECTOR (BCUD), SHIVAJI UNIVERSITY, VIDYA NAGAR, KOLHAPUR- 416004**
4. **DIRECTOR, HIGHER EDUCATION, CENTRAL BLDG, PUNE**
5. **ACCOUNTANT GENERAL, MAHARASHTRA STATE, MUMBAI**
6. **GUARD FILE.**

(Dr. G. Srinivasa)
Joint Secretary

Chapter 1

Introduction

Early childhood food and food habit turn the wheel of health in old age (Ashokan et al, 2009). Eating behaviors are learned and established in child hood and early adolescence (Leupker and Russel, 1996) and hence it is important to maintain a healthy food and eating habit in the child hood. Evidence also indicates that dietary habits acquired in childhood persist through to adulthood (Kelder et al., 1994; Nicklas, 1995; Steptoe et al., 1995). Resaerch finding further shows that childhood food affect the adult health (Hales et al.,1991; Moller et al., 1994; Berenson et al., 1998) Overweight children are much more likely to become overweight adults unless they adopt and maintain healthier patterns of eating and exercise. In fact, 30% of adult obesity begins in childhood. Obesity accounts for more than 300,000 deaths a year and the annual cost to society for obesity is estimated at nearly $100 billion (Marcus and Baron, 2013). Recent reviews of the literature regarding the health benefits of fruits and vegetables show their consumption to be associated with reduced risks of adult onset diseases such as some cancers, heart disease, diabetes, and stroke (Steinmetz and Potter, 1996; Van Duyn and Pivonka, 2000). It is also observed that picky eating toddlers can grow up to be picky eating children and perhaps picky eating young adults (Carruth and Skinner, 2000). As food physical activities in childhood is also one of the determining factors of adulthood ailment and health. It is observed that physical activity is an important factor in the prevention of childhood obesity and can provide a protective effect into adulthood (Hills et al, 2011). CDC reports that rates of childhood obesity have more than tripled in the past 30 years, with one third of children and adolescents identified as being overweight or obese (Centers for Disease Control and Prevention, 2012). As a result of increases in sedentary lifestyle, urbanization and

changes in modes of transportation, levels of physical activity are dropping in children and youth (WHO, 2012). Declining physical activity levels in children are also predicted to have a significant future economic and societal impact due to associated chronic disease risk and increased health care costs (Tremblay et al., 2010). In order to reverse this trend, promotion of physical activity to children is paramount. The U.S. Department of Health and Human Services (2008) recommends that those 6-17 years old participate in at least 60 minutes a day in order to improve cardiorespiratory endurance and muscular fitness; bone health; cardiovascular and metabolic health biomarkers;and to improve body composition. As children are not always able to achieve these levels of activity independently, significant others are may be vital to the adoption and adherence to regular physical activity participation. One of the most important significant role in a child's life is his or her parents. Dixon, Warner and Bruening (2008) suggest that parents have the most direct impact of sport socialization, particularly in young children. Parents not only have a significant role in potential sport involvement, they can also affect a child's sport-related beliefs (Kanters, Bocarro & Casper, 2008). The majority of studies related to parental sport and physical activity involvement have demonstrated positive effects of on youth physical activity (Fridlund Dunton et al., 2012). Parental influence can impact the choice to participate in physical activity, structured exercise, or organized sports

Child food habit around the world

The pattern of childhood food habit is evolving more or less similarly all over the world. Chunk food replaces the traditional food items both in developed and developing countries. In the early childhood the good habit of food should be established and it will help to develop them in the entire life. The good food habit in the early childhood will help to reduce many

chronic ailments in the following stages of life. Otherwise adulthood and old age become a burden due to many incurable diseases. Many children in America have unhealthy eating and exercise habits, as evidenced by the growing number of overweight children (ADA, 1999). At present America have approximately 11%over weight children and 14% have body mass Index between 85th and 95th percentile, which put them at increased risk for becoming overweight (Campbell et al, 201). A survey by DCP (2012) shows that 48% girl and 26% boys do not engage in vigorous exercise on a regular basis. Many researches reveal that in Western world many children follow wrong diets. As an example, Bogalsua Heart Study in the US showed that a major portion of 10 years old exceeded the dietary recommendations provided by American Heart Association considering total fat, saturated fat and dietary cholesterol (Nicklas, 1995). Similar outcome is observed in UK, with 75% of children aged 10-11 exceeds the energy target level for percentage from fats (Butriss, 1995). Identical result also been reported by Wardle (Wardle, 1997) and Currie et al, (Currie et al, 1997). Chinese diet has been shifting towards a diet higher in fat and meat, and lower in carbohydrate and fibers (Du et al, 2004). Reports suggest that one fourth of U.S's adults total daily energy intake, similar to that of lunch and greater than the energy contribution of breakfast (NHANES 2005–200).

Childhood food habit in India

Childhood obesity is increase alarmingly in India and consequently adult diseases in youth, like diabetes (Type-2), heart diseases, high blood pressure and osteoporosis. This may lead to generation having lower lifespan than that of parents in the history (http://www.indianexpress.com/news/healthy-eating-habit-vital-for-curbing-childhood-obesity/1156310/1). In India anti junk food campaign is already started about 7 years before. It has been reported that 50-70 percent obese children are likely to be obese adult. Food habits, in general are culture specific, but in the last few decades dynamic changes have occurred due to the fast growing economy, a shift from traditional to modern technologies, globalization, and industrialization, constant travels across the world, evolving tastes and increased demands for "fast" and processed foods throughout our country. We have a social divide and therefore, the consequences also vary widely. On the one hand, we have poverty and hunger causing under nutrition and related disorders while on the other hand, a substantial increase in the intake of fats and refined foods such as white rice, maida based items, sugars, and salt leading to over nutrition related disorders such as obesity (www.teachersplus.org). In India the problem of childhood nutrition and adulthood disease more based on poverty. Many millions of children in India resides in rural area without access to proper school facility and health resorts. This leads to unhealthy children and unhealthy adulthood and diseased old age.

Wrong food habit and related disease

Food eaten by a child make what he/she is in the adult is now become more vivid. Chinese for an example is a good example for this un-proven question. Chinese food even at early age begins with more fats like chicken, mutton, and other form of meat and they used it mores oil fried form with low carbohydrate and fibers, consequently over weight, obese and diet related diseases are more prevalent their comparing to other country which use less amount of fats. (Popkin eta l, 1993; Du eta l, 2002;2004).The study among a group of students in china has proved that wrong food habit defiantly leads to many health related complications (Amamoto et al, 2004), they further reported that theses students were totally unknown about body mass index (BMI). Recent studies by 26 years follow up of NHS (Nurse's Health Study) indicate that red meat and high-fat dairy products like cheese, butter, milk, paneer were significantly associated with an increased risk of coronary diseases, but high intake of poultry, fish, and nut, which are low fat products, correlated with a lower risk of coronary heart disease (CHD) (Bernstein, et al 2010). Relation of high HDL-C in cases with high fat intake is also observed by many (Hu eta l, 2012; Hession et al, 2013). But all these studies are appropriately blame not only the fat but also the lack of physical exercise properly. Long –term high fat dairy food consumption cause pathogenesis of type II diabetes due to the promoting of β-cell apotosis (Melnik et al, 2011) and increased cardio vascular disease (CVD) due to hyperlipidemia. This

negative effect of diary product may be due to the increased insulin like growth factor in the milk (Cordain et al, 2005; Pfeuffer, 2007;Melnik, 2009) and saturated fat of dairy food (Nestel, 2008; Noakes, 1996; Biong, 2004) with poor physical activities.

Old age diseases in India

According to the UN, the population of elderly persons is the fastest growing around the world and the number of elderly people by 2050 will be close to 2 billion. The World Health Organization has taken the initiative to draw attention to ageing as this imposes many challenges for individuals and authorities, like coping with health care, employment, housing, social security and other issues concerning the elderly. Aging is an inevitable process and many factors like genes, lifestyles, diet and environment determine longevity. Though life expectancy has increased in modern times thanks to advances in science, technology and medicine, the grinds of daily life take a heavy toll on our bodies.

For most of us, taking care of our health is the last thing on our mind as we are too busy. Eventually negligence takes its toll on our body and manifests itself through a serious illness or in rapid physical deterioration in old age. As humans grow older, physical conditions decline which lead to many illnesses and ailments. Some of the common health problems affecting the aged are:

Eye Diseases: Senior persons are usually beset with eye problems such as cataract, age-related macular degeneration, etc. Cataract develops

in the crystalline lens of the eye, obstructing the passage of light. It can be corrected through surgery or topical treatment. AMD is caused by damage to the retina due to abnormal blood vessel growth or breakdown of light-sensitive cells.

**Alzheimer`s Disease**: Alzheimer`s Disease is an incurable and degenerative disease and is mostly diagnosed in people over the age of 65 years. It is the most common form of dementia with nearly 3 million sufferers worldwide. Alzheimer's greatly affects a patient's emotional, mental and behavioral abilities.

Depression: Elderly persons are susceptible to depression due to changes in their lifestyles, loss of loved ones, isolation, etc. It can lead to memory impairment, fatigue, lethargy, and other physical problems.

Cardiovascular disease: Heart disease is caused by disorders of the heart and blood vessels. It is the biggest cause of death worldwide. Around 87% of coronary heart disease deaths are found among 60 years and older. It includes raised blood pressure, coronary heart disease, cerebrovascular disease, peripheral artery disease, rheumatic heart disease, congenital heart disease and heart failure.

Bones and joints diseases: Osteoporosis is a disease in which the bone mineral density (BMD) is reduced and can lead to an increased risk of fracture. It can occur due to lack of vitamin D, calcium, physical activity, hormonal changes or diseases such as hypothyroidism, hyperparathyroidism.

Arthritis is the inflammation of the joints. There are more than 100 types of arthritis of which Osteoarthritis is the most common. It is a degenerative and chronic condition ranging from very mild to very severe.

Prostrate Enlargement: It is a common disease for male seniors in which the prostrate gland becomes enlarged with age. This causes urination problems like frequent, weak, interrupted flows, etc. It can lead to conditions such as urinary tract infections, kidney or bladder damage, incontinence, and acute urinary retention.

Diabetes: Diabetes is a metabolic disease in which a person has high blood sugar, either because the body does not produce or respond to insulin. It is incurable but can be controlled through changes in diet, lifestyle ad medication.

Cancer: Cancer is a term for a group of more than a hundred diseases involving unregulated cell growth. Though cancer can affect all age groups, cancers of the prostrate, colon and breast are the most common among the elderly.

BMI in Old age and food habit in Childhood

Body mass index (BMI), which is the ratio of weight in kilogram to height in meter square, was used to assess body weight status. According to the National Institutes of Health (NIH), adults were classified based on their BMI to underweight (BMI < 18.5), normal (BMI = 18.524.9), overweight (BMI = 25-29.9), or obese (BMI = 30). Furthermore, obesity was

subdivided to three grades: Grade 1 (BMI = 30-34.9), Grade 2 (BMI = 35-39.9) and Grade 3 or extreme obesity (BMI = 40) .

Obesity is often defined as a condition of abnormal and excessive fat accumulation in adipose tissue to the extent that health may be adversely affected. The prevalence of obesity is increasing worldwide at an alarming rate in both developing and developed countries. It has become a serious epidemic health problem, estimated to be the fifth leading cause of mortality at global level. Moreover, it is a risk factor for many diseases such as certain cancers, hypertension, type II diabetes mellitus, dyslipidemia, metabolic syndrome and coronary heart disease. The rapid cultural and social changes that have occurred in India, since independence, were associated with an alarming increase in obesity. One of the major causes of obesity is the changes in the diet, in terms of quantity and quality, which has become more “Westernized”. In India, recent studies revealed increasing consumption of animal products and refined foods in the diet at the expense of vegetables and fruits. These dietary changes were accused for increasing the prevalence of both overweight and obesity observed among Indians.

Relevance of the subject

The overall literature survey revealed that, a great proportion of Indian population including Sangli and its rural localities are more indulged to readymade food items to subsist. The staple food items are now a day’s remain only on the name and most of the populations are depends on

refined food that is available in the market. The use of milk products and animal products like meat, mutton, chicken is a common occurrence right from the early childhood to old age. Vegetable foods and its availability in pure form without insecticide and other organic and inorganic residues remain a long dream to many. Fast food including fried, oily and excess spicy food is a daily habit in people residing in urban area as compared to rural one. This change in food and food habit not only affect the adult people but also influence the early childhood people due to their frequent visit to the urban area for many commodities that is not easily available in the rural background. Kavathe Mahankal, a tehesil in Sangli district lies on the boundary of Karnataka. People depends more on agriculture, but due to the lack of proper rainfall for the last many decades forced them to depends on urban area like Miraj and Sangli proper. Their food habit becomes slowly changed to urban mode. These changes in food and food habit coupled with lack of proper exercise make them prone to many diseases like hart problems, anaemia, high BP, diabetes, hemicranias, head ache, fever, and common cold and like allergies. The lack of proper physical activities and unscientific food habit make a major portion of the population pushed into modern cultural disease as mentioned above. Therefore, in this contest the study we have taken “A statistical study of correlation between food habit, physical activities in childhood and health in their adulthood” is well justified.

Chapter 2

Materials and Methods

The method adopted for this research is questionnaires method. Questionnaires method is a common interface method applied in social science research. Structured questioners lend themselves to large quantitative surveys that collect factual data, such as census. They are used commonly for perception studies and provide a base for systematic longitudinal studies. Questioners are often used as face –to-face interview schedules. The questions used in questioners method is of two types-open response type and closed response type. We, here, employed closed response type. Closed response questions have pre-determined options for answers. Sample and sample size is one of the basic criterions for a good questioner's method. The selection of the sample is followed by face to face meeting of the individuals of the sample for collecting response. This is followed by analyzing the sample by statistical parameters and drawing conclusions.

Sample

In the present study the sample is randomly selected rural and urban people. The sample consists of 400 adult people with age group 40 years and above. The group consists of randomly selected male and female subjects. The samples were selected by confirming that they will give accurate and true information as per the questioners. Those subject not or unwilling to give true facts are rejected after casual discussion with them.

Thos are willing to give elaborate answer to the questioners are subjected for collecting answer for the pre-framed questioners. Half of the sample was residents of urban background and the remaining was rural. The sample were included both educated and illiterates. It also included poor and wealthy peoples, and common man and sophisticated one.

Sampling area

The samples were collected form Sangli district proper and Kavathe Mahankal tehesil. Sangli district is a district of Maharashtra state in west-central India. Sangli city is the district headquarters. The district is 24.51% urban. Sangli District is located in the western part of Maharashtra. It is bounded by Satara and Solapur districts to the north, Bijapur District, Karnataka to the east, Kolhapur and Belgaum, Karnataka districts to the south, and Ratnagiri District to the west Sangli district is situated in the river basins of the Warna and Krishna rivers. Other small rivers, such as the Warana and the Panchganga, flow into the River Krishna. Land in the region is suitable for agriculture. According to the 2011 census Sangli district has a population of 2,820,575 (District Census 2014), roughly equal to the nation of Jamaica (US Directorate of Intelligence) or the US state of Kansas ("2010 Resident Population Data") (U. S. Census Bureau) . This gives it a ranking of 137th in India (out of a total of 640) (District Census 2014). The district has a population density of 329 inhabitants per square kilometer (850 /sq mi) (District Census 2014). Its population growth rate over the decade 2001-2011 was 9.18% (District Census 2014).

Sangli has a sex ratio of 964 females for every 1000 males (District Census 2014), and a literacy rate of 82.62%. (District Census 2014) is the main language, Kannada is also spoken widely.

Fig 2.1: Sangli district in Maharashtra

Kavathe Mahankal

Kavathemahankal (Fig2.1) is a Tehisil in Sangli District of Maharashtra State, India. Kavathemahankal Tehisil Head Quarters is Kavathe Mahankal town. It belongs to western Maharashtra region. It belongs to Pune Division. It is located 40 KM towards East from District head quarters Sangli. 360 KM from State capital Mumbai towards North. Kavathemahankal Tehisil is bounded by Tasgaon Tehisil towards west,

Miraj Tehisil towards west, Khanapur-Vita Tehisil towards North, Sangli Tehisil towards west. Tasgaon City, Miraj City, Sangli City, Sangole City are the nearby Cities to Kavathemahankal.

Garjewadi is the smallest Village and Kavathe Mahankal is the biggest Village. It is in the 611 m elevation (altitude). Marathi is the Local Language here. Also People Speaks Kannada. It is Hot in summer. Kavathemahankal summer highest day temperature is in between 33 ° C to 41° C. Average temperatures of January is 25 ° C , February is 26 ° C , March is 29 ° C , April is 31 ° C , May is 31 ° C . Peoples in Kavathe Mahankal are mostly involved in traditional business like farming and other small cottage industries. For the last many decades it was in severe drought condition due to the lack of proper rain in quantity and timing. A major portion of the people is now migrated to Mumbai, Pune and some major cities In search of better job opportunities. The study was concentrated on Kavathe Mahankal as rural area.

Research Method

Questionnaires method is employed to collect the response from the population. A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. The questionnaire was invented by Sir Francis Galton.

Questionnaires have advantages over some other types of surveys in that they are cheap, do not require as much effort from the questioner as verbal or telephone surveys, and often have standardized

answers that make it simple to compile data. However, such standardized answers may frustrate users. Questionnaires are also sharply limited by the fact that respondents must be able to read the questions and respond to them.

A distinction can be made between questionnaires with questions that measure separate variables, and questionnaires with questions that are aggregated into either a scale or index.[1] Questionnaires within the former category are commonly part of surveys, whereas questionnaires in the latter category are commonly part of tests.

Questionnaires with questions that measure separate variables could for instance include questions on:

- preferences (e.g. political party)
- behaviors (e.g. food consumption)
- facts (e.g. gender)

Questionnaires with questions that are aggregated into either a scale or index, include for instance questions that measure:

- latent traits (e.g. personality traits such as extroversion)
- attitudes (e.g. towards immigration)
- an index (e.g. Social Economic Status)

Examples

- A food frequency questionnaire (FFQ) is a questionnaire to assess the type of diet consumed in people, and may be used as a research

instrument. Examples of usages include assessment of intake of vitamins or toxins such as acryl amide.[2][3]

Question types

Usually, a questionnaire consists of a number of questions that the respondent has to answer in a set format. A distinction is made between open-ended and closed-ended questions. An open-ended question asks the respondent to formulate his own answer, whereas a closed-ended question has the respondent pick an answer from a given number of options. The response options for a closed-ended question should be exhaustive and mutually exclusive. Four types of response scales for closed-ended questions are distinguished:

- Dichotomous, where the respondent has two options
- Nominal-polytomous, where the respondent has more than two unordered options
- Ordinal-polytomous, where the respondent has more than two ordered options
- (Bounded)Continuous, where the respondent is presented with a continuous scale

A respondent's answer to an open-ended question is coded into a response scale afterwards. An example of an open-ended question is a question where the testee has to complete a sentence (sentence completion item).[1]

Question sequence

In general, questions should flow logically from one to the next. To achieve the best response rates, questions should flow from the least sensitive to the most sensitive, from the factual and behavioral to the attitudinal, and from the more general to the more specific.

There typically is a flow that should be followed when constructing a questionnaire in regards to the order that the questions are asked. The order is as follows:

1. Screens
2. Warm-ups
3. Transitions
4. Skips
5. Difficult
6. Changing Formula

Screens are used as a screening method to find out early whether or not someone should complete the questionnaire. **Warm-ups** are simple to answer, help capture interest in the survey, and may not even pertain to research objectives. **Transition** questions are used to make different areas flow well together. **Skips** include questions similar to "If yes, then answer question 3. If no, then continue to question 5." **Difficult** questions are towards the end because the respondent is in "response mode." Also, when completing an online questionnaire, the progress bars lets the respondent know that they are almost done so they are more willing to answer more

difficult questions. **Classification** or demographic question should be at the end because typically they can feel like personal questions which will make respondents uncomfortable and not willing to finish survey.

Basic rules for questionnaire item construction

- Use statements which are interpreted in the same way by members of different subpopulations of the population of interest.
- Use statements where persons that have different opinions or traits will give different answers.
- Think of having an "open" answer category after a list of possible answers.
- Use only one aspect of the construct you are interested in per item.
- Use positive statements and avoid negatives or double negatives.
- Do not make assumptions about the respondent.
- Use clear and comprehensible wording, easily understandable for all educational levels
- Use correct spelling, grammar and punctuation.
- Avoid items that contain more than one question per item (e.g. Do you like strawberries and potatoes?).
- Question should not be biased or even leading the participant towards an answer.

Questionnaire administration modes

Main modes of questionnaire administration are: (Mellenbergh, G.J. (2008).

- Face-to-face questionnaire administration, where an interviewer presents the items orally.
- Paper-and-pencil questionnaire administration, where the items are presented on paper.
- Computerized questionnaire administration, where the items are presented on the computer.
- Adaptive computerized questionnaire administration, where a selection of items is presented on the computer, and based on the answers on those items, the computer selects following items optimized for the testee's estimated ability or trait.

Concerns with questionnaires

While questionnaires are inexpensive, quick, and easy to analyze, often the questionnaire can have more problems than benefits. For example, unlike interviews, the people conducting the research may never know if the respondent understood the question that was being asked. Also, because the questions are so specific to what the researchers are asking, the information gained can be minimal (Kaplan & Saccuzzo, 2009). Psychological testing: Principles, applications, and issues. Belmont, CA: Wadsworth). Often, questionnaires such as the Myers-Briggs Type Indicator, give too few options to answer; respondents can answer either option but must choose only one response. Questionnaires also produce very low return rates, whether they are mail or online questionnaires. The other problem associated with return rates is that often the people that do

return the questionnaire are those that have a really positive or a really negative viewpoint and want their opinion heard. The people that are most likely unbiased either way typically don't respond because it is not worth their time.

Some questionnaires have questions addressing the participant's gender. Seeing someone as male or female is something we all do unconsciously, we don't give much important to one's sex or gender as most people mindlessly use the terms 'sex' and 'gender' interchangeably, unaware that they are not synonyms (Fausto-Sterling, 200). Gender is a term to exemplify the attributes that a society or culture constitutes as masculine or feminine. Although your sex as male or female stands at a biological fact that is identical in any culture, what that specific sex means in reference to your gender role as a 'woman' or 'man' in society varies cross culturally according to what things are considered to be *masculine* or *feminine*. The survey question should really be what is your sex. Sex is traditionally split into two categories, which we typically don't have control over, you were either born a girl or born a boy and that's decided by nature (Birke, Lynda, 2001). There's also a population of the world that are Intersex which is disregarded in the North American society as a sex. Intersex refers to the group of people that don't perfectly fall under the category or male or female. They are still a part of our community, however not many questionnaires have a box for people that

fall under Intersex (Fausto-Sterling, 200). These are some small things that can be misinterpreted or ignored in questionnaires.

By considering all the facts we selected the questionnaires method for the present study. We prepared elaborate q questionnaires as given in the appendix-1. The response was collected by discussion with the subjects individually by visiting their home by a pre-permission by phone call. The questionnaires were double checked by consulting the other grown up peoples in the family. Maximum care was taken to collect accurate response from the people.

Statistical analysis

The data collected was analyzed statistically by using Open stat software. Open Stat contains a large variety of parametric, nonparametric, multivariate, measurement, statistical process control, financial and other procedures. One can also simulate a variety of data for tests, theoretical distributions, multivariate data, etc. A variety of options exist for saving and opening data files. The preferred method is to use the file extension .TEX which saves not only the data from the grid but also the definition of the variables in the grid. Tab files are useful for importing data from other programs (for example Excel files) or for exporting a file to another program. Under the Analyses main menu are listed a number of major sub-menus. Many of the descriptive and analyses procedures produce graphical output. By using this software we analyzed correlations and various graphs.

Chapter 3

Result

A. Various food items Included by urban and rural people in Sangli district

1. **Chapatti:** The major nutrients and caloric value of chaptti is given below. Carbohydrate outweighs the other primary constitutes like protein and fats. But the calorie provider is fat as usual. The lack of sugar makes it an ideal one for diabetics and no cholesterol for blood pressure patients. Comparatively high sodium warns the kidney patients to an extent.

Caloric value in chapti

Per Serving	% Daily Value*
Calories 120	
Calories from Fat 27	
Total Fat 3g	5%
Saturated Fat 1g	5%
Cholesterol 0mg	0%
Sodium 190mg	8%
Carbohydrates 20g	7%
Dietary Fiber 3g	12%
Sugars 0g	
Protein 4g	

Serving size 1 chaptai 50g

Source: http://caloriecount.about.com retrieved on 20th July 2014

2. Rice: The major nutrients and caloric value of chaptti is given below. Saturated fats and Trans fat and cholesterol and sodium is zero. This make the food is ideal for maintaining good health. But due to the abundance of carbohydrate makes it unsuitable for diabetics and obese people. It is easily digestible and provide instant energy, hence is belongs to the light food category. It is good for children and old age people likely. Patients with digestive problem and other gastrointestinal disorder it is good one. It is staple food for the majority of states in India and world. It is a good source of some vitamins and carbohydrate.

caloric values in Rice

Serving Size 165 g

Amount Per Serving			
Calories 193		Calories from Fat 7	
			% Daily Value*
Total Fat 1g			1%
Saturated Fat 0g			0%
Trans Fat			
Cholesterol 0mg			0%
Sodium 7mg			0%
Total Carbohydrate 44g			15%
Dietary Fiber 1g			4%
Sugars 0g			
Protein 4g			
Vitamin A	0%	• Vitamin C	0%
Calcium	1%	• Iron	16%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Source: nutritionData.com

3. Baakri: The food contains all the constituents in lower and high percentage. Caloric value is less than the wheat roti, but saturated, mono-

saturated and poly-saturated fats are in good amount. Cholesterol, sodium and potassium also present in considerable percentage. High percentage of fiber makes it ideal for constipation patients.

Caloric values in Baakri

Serving Size 1 roti (71 g)

Per Serving	% Daily Value*
Calories 173	
Calories from Fat 53	
Total Fat 5.9g	**9%**
Saturated Fat 3.1g	**15%**
Polyunsaturated Fat 0.8g	
Monounsaturated Fat 1.5g	
Cholesterol 12mg	**4%**
Sodium 46mg	**2%**
Potassium 106mg	**3%**
Carbohydrates 28.1g	**9%**
Dietary Fiber 2.7g	**11%**
Sugars 0.2g	
Protein 3g	

Vitamin A 4% · Vitamin C 5%
Source: http://caloriecount.about.com

The other food items with high fat contents are

4. Mutton

5. Milk

6. Dhal

7. Milk products

8. Gram and cereals.

9. Fish

10. Chicken etc

The food items with carbohydrate consents are

11. Pohe

12. Upit

13. Idli

14. Dosa etc.

Food with vitamins and fiber contents are

15. Leafy vegetables

16. Vegetables

17. Fruits etc.

The various food items included in the daily serving of urban and rural peoples are listed (Table1).The study reveals that urban population eats more food in the breakfast than rural people. The breakfast includes upitt, Idli, dosa, chaptai, shira, pohe, milk, sweet, coffee and tea. All these items are about double consumed by urban people than rural one (Table1). This may be due to the fast and hurry life style of the people who mostly involved in small scale or large scale employment in rural area. These people get more time in the morning by getting early. But in the rural background they get up later and involved mostly in the farm and other such duties.

When we analyze the food items consumed in the meal it shows it shows that rural people consume all the items like upitt, Idli, dosa, chaptai, shira, pohe, milk, sweet, coffee and tea more comparing to urban people. Some of the items shows double in quantity that the urban population (Table 1). This may be due to the fact that urban people get out of their

home for the purpose of job and getting less time to prepare the food for their wards in the meal section. Most of the under aged wards are depends on outside food.

Table1: Different Food items in urban and rural children under the age group 3-15

Breakfast	Food Items ⟶	Upit (1unit= 200g)	Idli (1unit=50g)	Dosa (1unit =100g)	Chapati (1unit= 200g)	Shira (1unit= 100g)	Pohe (1unit= 100g)	Milk (1 unit=100ml)	Sweet (gm)	Coffee (ml) (1Unit= 575ml	Tea (ml) (1Unit= 575ml	
	Urban	1.07 (214)	1.93 (96.5)	1.18 (118)	1.59 (318)	1.23 (123)	1.17 (117)	1.00 (100)	1.9 (106)	1.22 (91.5)	2.19 (164.25)	
	Rural	0.934 (185)	1.54 (50)	1.02 (100)	1.3 (256.8)	1.12 (226.32)	1.1 (188)	0.9 (179)	1.7 (103.3)	1.1 (575)	2.9 (1012)	
Meal	Food Items ⟶	Rice (1unit= 200g)	Chapati (1unit=200g)	Dhal (1unit =50g)	Veg gm	Butter (1unit= 50g)	Papd (1unit= 5g)					
	Urban	1.20 (240)	1.67 (334)	1.06 (53)	1.2 (127.06)	1.16 (58)	1.09 (5.45)					
	Rural	1.76 (352)	1.78 (356)	1.38 (69)	1.1 (175)	1.07 (53.5)	1.19 (5.95)					
Dinner	Food Items ⟶	Rice Rice (1unit= 200g	Chapati (1unit=200g)	Baakri (1unit =200g)	Egg (1unit= 100g)	Fish gm	Mutton gm	Dhal (1unit =50g)	Veg gm	Butter (1unit= 50g)	Papad (1unit= 5g)	Pickle (1unit=20g)
	Urban	1.16 (232)	1.51 (302)	1.27 (254)	1.15 (115)	1.23 (134.04)	1.6 (179.18)	1.01 (50.5)	1.7 (110.24)	1.17 (58.5)	1.39 (6.95)	1.163 (23.26)
	Rural	1.3 (260)	1.14 (228)	1.84 (368)	1.87 (187)	1.1 (190.9)	1.2 (198.8)	1,76 (88)	1.3 (176.3)	2.91 (145.5)	1.01 (5.05)	1.01 (20.2)

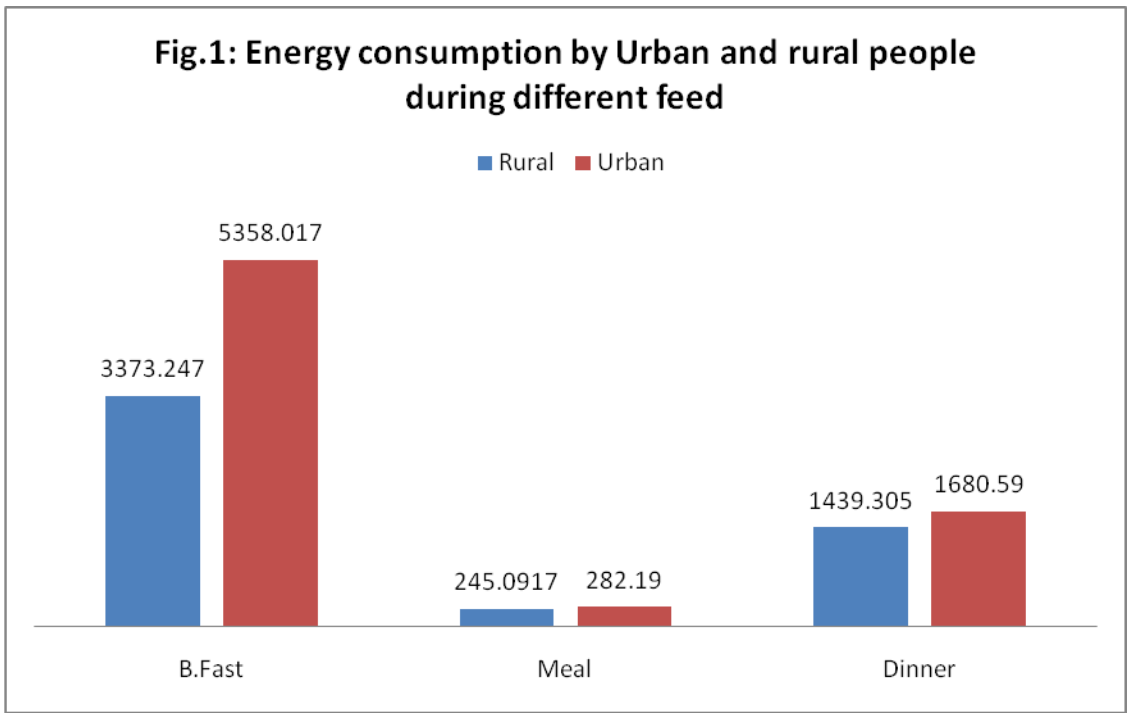
Parenthesis indicate the quantity of food

When we analyze the dinner, it shows urban people getting more food comparing to rural one (Table 1). The reason may correlate the batter time management by urban people to make better food for their ward to compensate the poor food of their wards in the meal. Rural background lack proper electricity supply and lack of amenities may cause less importance for the dinner.

The energy consumption also shows the same trend (Table 2 and Fig.1). The energy consumption by urban population is more comparing to the rural one. It appears 25% more energy is consuming by urban people during the breakfast and 5 % more in the dinner. During the meal the energy consumption appears to be more or less same (Fig1).

Table2: Comparison of energy consumption between urban and rural children under the age group 3-15

Breakfast	Food Items →	Upit (1g=0.00322g)	Idli (1unit=50g)	Dosa (1unit=100g)	Chapati (1unit=200g)	Shira (1unit=100g)	Pohe (1unit=100g)	Milk (1 unit=100ml)	Sweet (gm)	Coffee (ml) (1Unit=575ml	Tea (ml) (1Unit=575 ml	
	Urban	68.9 kcal	413 kcal	531Kcal	954kcal	27.43kcal	31590kcal	62kcal	16kcal	35.7kcal	34.44Kcal	
	Rural	93.4kcal	345kcal	450Kcal	771Kcal	50.4 kcal	51700kcal	111kcal	15.45Kcal	22.4kcal	21.52kcal	
Meal	Food Items →	Rice (1unit=200g)	Chapati (1unit=200g)	Dhal (1unit=50g)	Veg gm	Butter (1unit=50g)	Papd (1unit=5g)					
	Urban	314kcal	1002kcal	38.7kcal	102Kcal	8.4kcal	5.45 kcal					
	Rural	461.12kcal	1068Kcal	50.37Kcal	100kcal	7.7kcal	5.95kcal					
Dinner	Food Items →	Rice Rice (1unit=200g	Chapati (1unit=200g)	Baakri (1unit=200g)	Egg (1unit=100g)	Fish gm	Mutton gm	Dhal (1unit=50g)	Veg gm	Butter (1unit=50g)	Papad (1unit=5g)	Pickle (1unit=20g)
	Urban	303.9kcal	762kcal	663kcal	1794kcal	134 kcal	11828kcal	200.1kcal	110.24 Kcal	8.4kcal	5.45 kcal	23.26kcal
	Rural	340.6kcal	684kcal	960.5kcal	2917kcal	190kcal	13120kcal	64.24kcal	176.3Kcal	7.7kcal	5.95kcal	20.2kcal

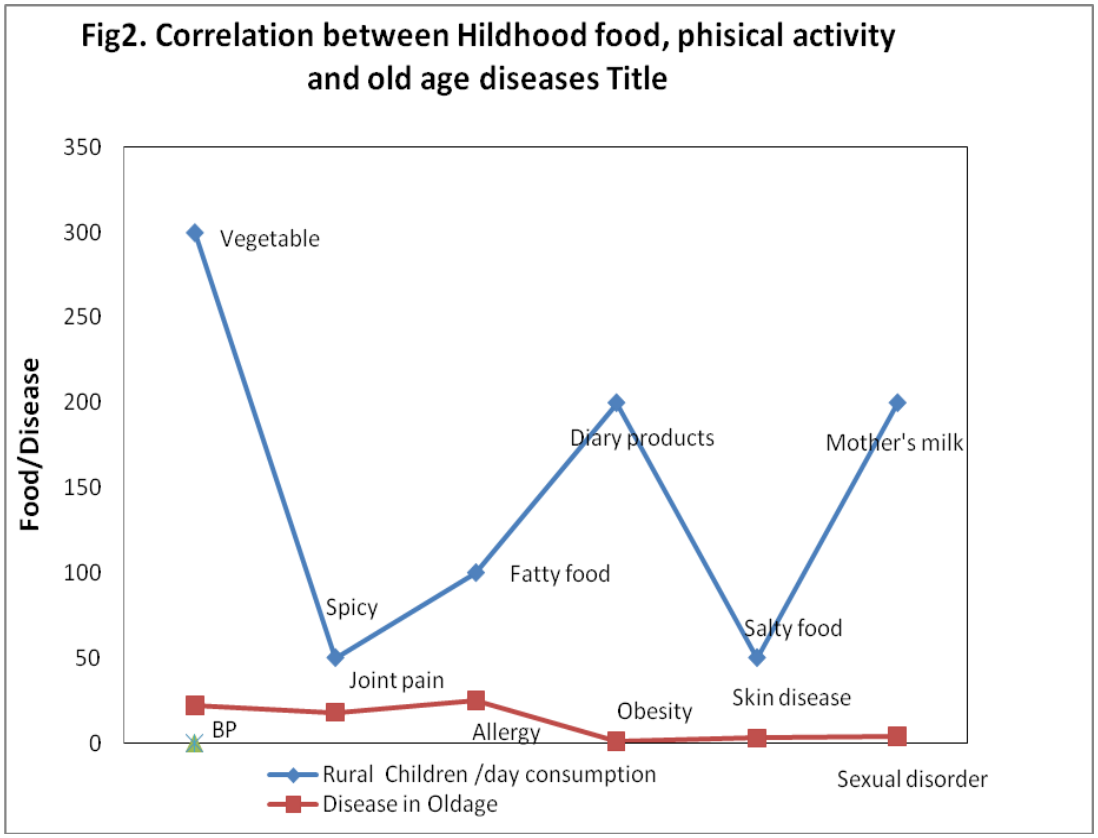


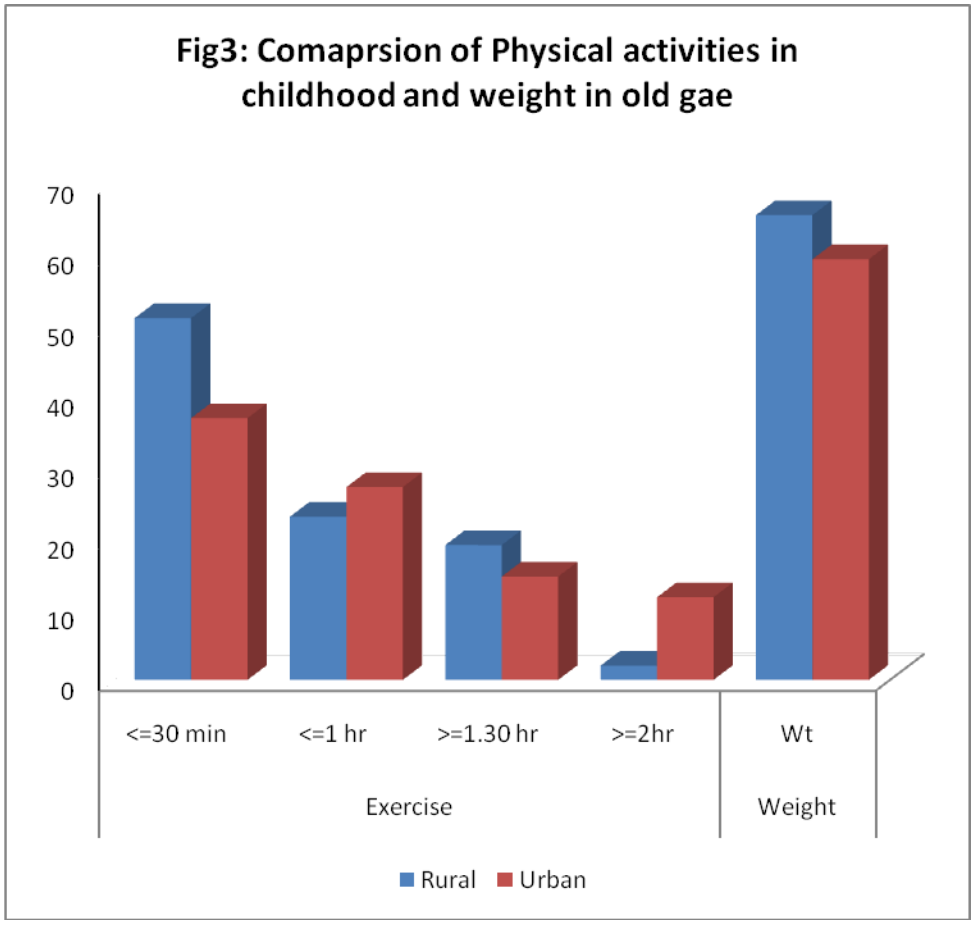
B. Physical activities in urban and rural children

Our study indicates that urban children involved in physical activities less time comparing to rural one (51, 37 minutes) respectively for less than 30 minutes. But rural people involved in physical activities greater than 1 hour or two hour is more. This shows that rural children getting better physical work than the urban counterpart (Table 3). This difference in physical activity will correlate the old age disease (Fig2 and 3).

Table3: Comparison of Physical activities among children of Urban and Rural area

Population	<=30min In %	<=1hr In %	<-1.30hr In %	>=2hr In %
Urban	51	23	19	2
Rural	36.9	27.18	14.56	11.65





C. Milk feeding duration and old age diseases

Milk feeding duration is more in rural children as compared to urban (1.99 yrs, 1.55 yrs) respectively. This difference in the milk feeding behavior correlates the weight gain in the old age as urban average shows 65.52 kg and rural old age shows 59.31 kg (Table4 and Fig 4). This correlation must be cross checked with other factors responsible for the weight gain the urban population. Urban population with weight in between 70kg and 100 kg is more as compared to rural population. In rural background the weight is swinging between 50 kg and 70 kg. This also

may correlate the physical more activities and long duration of breast feeding in rural children.

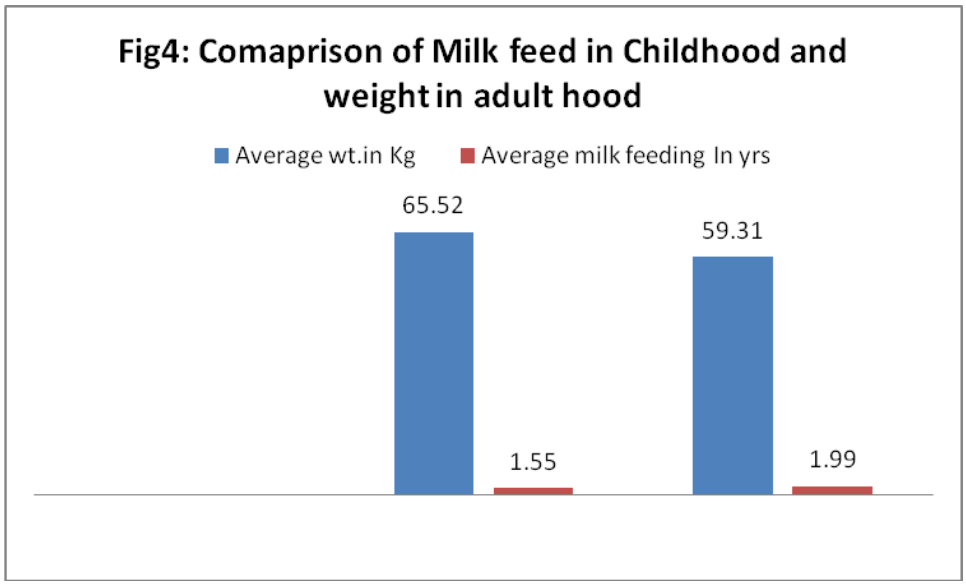
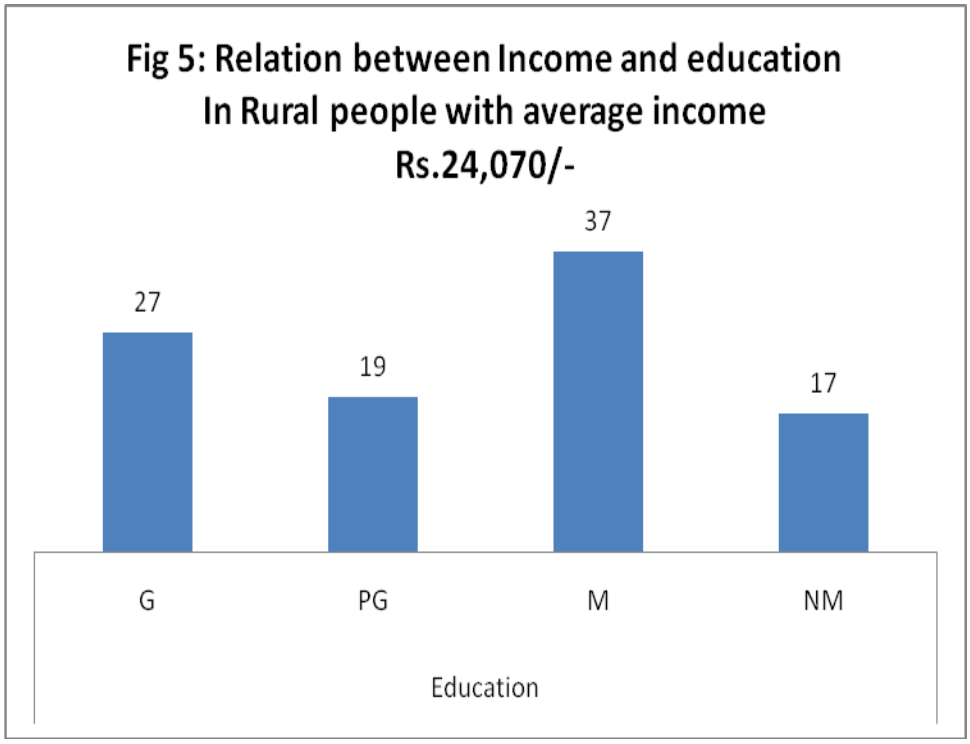


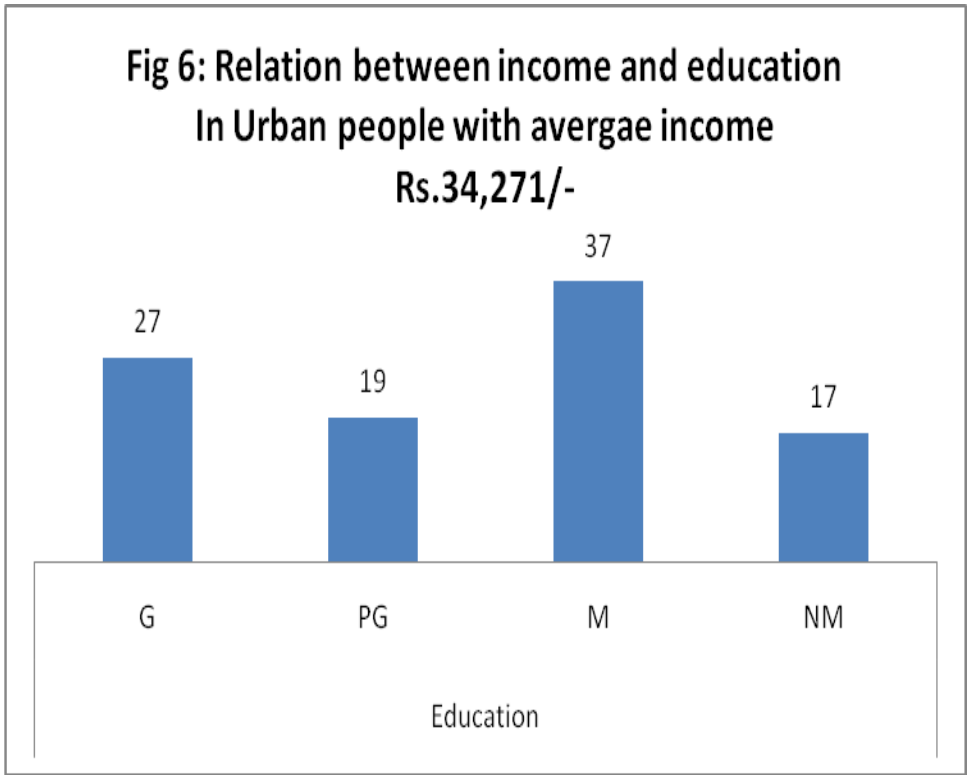
Table4: Comparison of Weight at adulthood and milk feeding duration between urban And rural people

Population	Wt.in Adult In %					Average wt.in Kg	Average milk feeding In yrs
	<=50kg	<=70kg	<=80kg	<=90kg	>=100kg		
Urban	5	82	9	4	5	65.52	1.55
Rural	20.39	64.08	0.097	0,0097	0.0097	59.31	1.99

D.Relation between income and education in rural and urban population

The study reveals that income has affect on the education. Both low income and high income category of rural and urban population attain the sane range of education right from metric to post graduation.





E. Vegetable and non-vegetable food consumption

To find out more reason behind the weight gain and old age diseases in urban people we analyzed the correlation of type of food they eaten (Table 5). The leafy vegetable and non-leafy vegetable consumption is more by rural children as compared to urban, but underground stem consumption is more by urban children than rural one. Fish and mutton consumption is also more in the case of urban children as compared to rural children. The consumption of chicken is less in urban children as compared to rural children. This difference in the underground stem and non-vegetable food consumption may be reason behind the excess weight gain and more old age diseases in the urban area. These facts must be cross checked with other factors for better interpretation.

Table5: Comparison of vegetable and non-vegetable food consumption between Urban and rural under the age group 3-15

Sl.No	Vegetables	Quantity: Average /day in gm		Non-vegetable	Quantity Average/Day in gm	
		Urban	Rural		Urban	Rural
1	Leafy	200g	500	Fish	100	nil
2	Non leafy	200	400	Mutton	50	100
3	Underground stem/ root	200	100	Chicken	100	200

F. Diseases in old age

Old age diseases commonly observed in Sangli district (Urban) and Kavathe Mahankal (Rural) area are blood pressure, diabetes, joint pain/ body pain, weakness and allergy (Table6). Blood pressure appears more and about twice in urban area comparing to rural population. Joint pain and body pain also shows the same trend but three times more in urban area than in rural area. Weakness and allergy is near about same both condition. Diabetes shows no variation in urban and rural back ground. High energy consumption shows positive relation with blood pressure. The same relationship is observed in diabetes, weakness, allergy, body pain and joint pain.

Table6: Comparison of energy consumption in childhood and diseases developed in adulthood of Urban and rural population

Sl.No	Energy consumption		Disease in old age		
	Urban	Rural	Disease	Urban in %	Rural
Break fast	3373.247 Kcal	5358.017 Kcal	Blood pressure	26	12
Meal	245.0917 Kcal	282.19 Kcal	Diabetes	04	4
Dinner	1439.305 Kcal	1680.59 Kcal	Joint pain/ Body pain	15	6
Average energy consumption	1685.881	2440.266	Weakness/ allergy	10	7

The relation between breast feeding and old age diseases (Table. 7)shows negative correlation. Urban people shows average 1.5 years of breast feeding and diseases developed is 13.75%, but in rural population diseases in old age is less (7.25%). Thus breast feeding in early age give protection from many old age diseases.

The correlation between income and old age disease shows more income less disease i.e. a negative correlation (Table.8). The relation between education and diseases also shows the same trend (Table.9)

Table7: Correlation between Breast feeding and old age Diseases in urban and rural population

Population	Duration of breast feeding-average	Disease
Urban	1.5yrs	13.75%
Rural	2 years	7.25%

Table8: Correlation between income and disease in urban And rural population

Population	Average Income in Rs	Disease
Urban	34,271	7.5%
Rural	24,070	13.5%

Table9: Correlation between Education and Old age diseases in Urban and rural Population

Population	Education				Disease
	UG	PG	Metric	Non-metric	
Urban	27	19	37	17	7.5%
Rural	8	1	52	39	13.5%

G. BMI related study

Basal Metabolic Index (BMI) study in rural and urban population shows some exciting results. The study shows that vegetable food (60%/day) consumers of urban background having 24 BMI affected some disease like allergic (20%) and joint pain 5%. The same study on fatty food consumers (45% /day) shows BMI 36 and they are affected with joint pain 70%, BP 55% and 45% allergic. This reveals a positive relation between fatty food consumption in childhood and disease development in old age. It also reveals the high BMI adult hood is related with high fatty food intake in childhood (Table 10). This fact also reveals a parallel study in rural area. In rural area vegetable (79%/day) consumption causes BMI equal to those in urban area having only 60%/day consumption of vegetable. But fatty food consumption of about 50%/day is causing 26.5 BMI in adult hood. The same study also reveals increasing GMI cause increase in disease as people with 24 BMI shows low percentage of joint pain and allergic diseases, but people with 26.5 BMI shows high percentage of BP (12%), joint pain (28%) and allergic disease (11%). Thus there is a positive correlation between fatty food intake in childhood and high BMI and disease development old age (Table 10,11 and 12).

Table 10: Correlation between BMI and childhood food habit

Population –Adult >= 40 yrs old	BMI	Childhood food	Disease
Urban	24	Vegetable food 60% /day consumption	Allergic 20% Joint pain 05%
	36	Fatty food 45% /day consumption	Joint pain 70% BP 55% Allergic 45%
Rural	24	Vegetable food 79%/day consumption	Joint pain 5% BP8% Allergic 18%
	26.5	Fatty food 50%/Day consumption	BP12% Joint pain 28% Allergic 11%

Table11: Comparison of BMI of urban and rural population

Population –Adult >= 40 yrs old	BMI	
	Urban	Rural
Urban	24	24
	36	26.5

Table 12: Comparison of old age diseases in urban and Rural population

Diseases	Urban in %	Rural
Joint pain	42	11
Diabetes	21	10
Blood pressure	43	21
Allergy	56	16
Obesity	5	1
Urinary infection	9	8

Chapter 4

Discussion

Surprising new research by University of Calgary, Faculty of Kinesiology researcher Dr. Raylene Reimer, published in an international journal, indicates a direct connection between an adult's propensity to put on weight and our early childhood diet. Researchers in this area believe our pre-natal and early childhood environment influences our future risk of developing conditions like cardio vascular disease, obesity and diabetes (Reimer, 2009). This finding is substantiated by our research observation I both urban and rural part of Sangli district. It is observed that those children eat more fatty food consequently develop many life threatening diseases like obesity, BP, many other heat ailments, diabetes, joint pain , body ache etc. We studied the various items of food included by urban and rural people. It is observed that a considerable difference in the diet patterns of urban and rural children is existed. These changes in diet pattern and lack of proper physical exercise cause considerable difference in the health of urban and rural people in the late part of the life.

Urban children get nutritious food in the breakfast as compared to the rural one. This may be due to the change in the life style. Rural people get up early and went to their daily routine like caring cattle, watering the farm and other farm related work. This causes less care to their wards. But in the case of urban area people getting everything ready to prepare in the

next mooring because they have preplan to go their office duty on time in the next day. So everything is planned in the rural area but that is not practicable in the rural area.

The same pattern is found in the case dinner. In rural area due to the lack of proper electricity and lack of easy access to the readymade grocery items make them to sleep their wards with available food. But in the case of urban area the parents have ample time to prepare their wards better nutrient foods after their daily office work.

In Rural area the children get their food better in the meal section, but as they are in the school and getting midterm meals in the school parents are again careless to their wards. The after all effect is poor, and unhealthy rural children. This discrepancy reflects in the health of the older generation in the rural area with more ailments including diabetes, joint pain, BP and other boy problems.

The energy consumption also shows the same trend as the urban children get more energy food as compared to the rural. Therefore an action plan from the Government bodies and NGOs is needed to upgrade the health of children and their by the health of adults and old in the future.

Considering the physical activities, it is observed that urban children getting more physical exercise as compared to the rural children. The main reason for this may be urban people has planned life and they find more time to provide their children proper exercises like running,

swimming, golfing and other such activities. In urban back ground all these are available easily. In the case of rural area the availability of this facility is limited as they are more involved in farming and other such activities. An extensive counseling for the rural population considering this aspect is essential.

The study shows that there is a well established correlation between physical activities, early childhood food and diseases in the later part of the life. Those children getting good food and physical activities shows better diseases free life in the old age and vice versa. Non-vegetarian getting more disease that vegetarian is also a fining of this project.

Lack of proper physical activities and low calorie food in the rural children causes diseased adult generation in rural area. But in the urban the condition is reverse as they get better food, good physical activities and medical care, the old age diseases are low as compared to the urban. It is a warning to the Government to provide better food and physical activity facility in the rural areas like primary and secondary schools.

A, exciting observation in our study is that the breast feeding in average is better in rural area as compared to the urban. This may be due to the inconvenience of mothers in rural area as they are mostly engaged in various Government and non-Government firms. But due to better medical accessibility they protect their wards from unseen consequence in the future. Lack of proper duration of exercise leads to overweight and

obesity in children is an observed fact. The obesity affects the children both mentally and physically (AAP, 203; Banis, 1998; Barlow & Dietz,1998; Dietz,1998; Ebbeling,2002). The various psychological and health problems in children due to obesity are the following (Adopted from, AAP, 203):

Potential Negative Psychological Outcomes:

1. Depressive symptoms
2. Poor Body Image
3. Low Self-Concept
4. Risk for Eating Disorders
5. Behavior and Learning Problems

Negative Health Consequences:

1. Insulin Resistance
2. Type 2 Diabetes
3. Asthma
4. Hypertension
5. High Total and LDL Cholesterol and triglyceride levels in the blood
6. Low HDL Cholesterol levels in the blood
7. Sleep Apnea
8. Early puberty
9. Orthopedic problems such as Blount's disease and slipped capital femoral epiphysis

10. Non-alcoholic steatohepatitis (fatty infiltration and inflammation of the liver)

Further, obese children are more likely to be obese as adults (Barlow & Dietz, 1998); hence they are at increased risk for a number of diseases including: stroke, cardiovascular disease, hypertension, diabetes, and some cancers (Ebbeling, 2002).

The effect of breast feeding affects the adult hood disease pronouncedly because there is positive correlation between breast feeding and disease in adult hood. Breastfeeding is the feeding of an infant or young child with breast milk directly from female human breasts (i.e., via lactation) rather than using infant formula. Babies have a sucking reflex that enables them to suck and swallow milk. Experts recommend that children be breastfed within one hour of birth, exclusively breastfed for the first six months, and then breastfed until age two with age-appropriate, nutritionally adequate and safe complementary foods (Kramer and Kakuma, 2002; Baker, 2003; Agostoni and Haschke, 2003; Awatef et al, 2010). We observed that the breast feeding is average 1.5 years in urban and 2 years in rural area. This difference is observed in immunity related diseases; like allergy, common cold, and cough. All these complications are predominant in urban adults and comparatively less in rural adults.

The study related with income and disease shows that income has negative correlation with disease. Urban population has more income comparing to rural one and is reflected in the development of less disease

in urban adults and more in rural adults. The correlation here also found negative as high income people have healthy children and low health problems in the adult stage. Many studies substantiate this finding world over (Judge, 1995; Judge, *et al.*, 1998; Mellor and Milyo, 2001; Lynch *et al.* 2000; Deaton and Lubotsky, 2009).

In our study we find no correlation between education and adulthood disease. World studies correlate education and health problems have negative correlation (Arendt, 2004; Clark, D. and H. Royer, 2008). The no correlation in our study may be due to the fact that even though difference in education exists between urban and rural population the difference is not considerable. It means that education in rural back ground is not below average level. Low education along with Low income and poverty may cause high risk of diseases as observed in many study indicated above.

The study on BMI shows that in both rural and urban area vegetarian have low BMI than non-vegetarians. The reason is straight more fat cause more weight gain comparing to vegetarian. Low BMI reflects in the disease development in old age. Old age people with vegetarian food in childhood have shown low frequency than non vegetarians.

Disease development in old age shows urban people suffer more than the rural people. It may be due to the sluggishness in the later part of

the life. People residing in the urban become idler due to day long work in the office and hurry life in the home with their wards.

Chapter 5

Conclusion

The study conducted in Sangli district proper as urban area and Kavathe Mahankal is Tehesil proper as rural area. The well prepared questioners given to the subject and collected the response within a time bound period is the success behind this project. The questioners were subjected for double blind checking from expert in this field population study. The questioners were provided only after green signal form the expert. The study revealed some of the exciting results along with some expected and unexpected results.

We observed that people form Sangli and Kavathe Mahankal area used to subsist near about same food commodities, but their quantity and consuming pattern is different in these localities. Along with food pattern the nature of exercise and other physical activities are also different in these two areas. Urban children were involved in more physical activities as opposite our thought. The reason behind this controversial result is the transformation of rural area by copying the urban as a role model. But urban parents aware of their wards regarding the poor facility of natural play and play ground; hence they forced the wards to enroll in institute which provide good physical activities after their school timing. In rural area parents forcing their wards to study hard without allowing them to take part in traditional play like chini dhandi, kabadi, cycling, swimming

and other nameless plays local population playing time immemorial. This leads children of rural area remain more idle than urban area. This lack of physical activities reflected in the diseases development in the later part of the life. Hence we conclude that childhood food habit and physical activities have pronounced influence on the health of the adulthood and old age.

Another exciting result is the correlation between income and childhood health and old age diseases. We found that income has no role in the child hood health and old age diseases. This is due to the fact that present day income of the rural population is sufficient to feed their wards adequately. Rural people make balance of the income and requirement in a good manner.

Education and health of children and old age disease also has no specific relation. This may be due to the fact that education is well popularized anywhere in such a way that anybody can take education as per the choice. And educational institutes are sporadicating day by day even in the rural part of India, a good sign of India's progressive achievement in last few decades.

The BMI shows little pronounced difference between the two areas of the study. This difference may be due to the un-healthy food habit performed during the adulthood itself and not due to the wrong food habit in the childhood.

So we recommend that healthy food habit with proper physical activities in the child hood along with good parental care definitely brings healthy adulthood and disease free old age population in India. Government and NOG bodies should propagate these ideas through various media to maintain the good healthy senior citizens by providing good healthy childhood food habit, physical activities and proper education right from the preprimary stage.

Some suggestions for better childhood food habit

Sample day of meals for six year old child

What's for dinner? And breakfast, lunch, and snack… Wondering what your school-aged child should be eating? Below is a sample day of meals, along with tips on feeding your healthy, happy, 6-year old. Your child probably has pretty established food preferences by now, but children's tastes can continue to evolve—you never know when an avid broccoli hater may start demanding it for dinner! The key is to offer a variety of healthy foods consistently (http://www.superkidsnutrition.com).

You know that childhood obesity is a big problem in this country, but there's also lots of research on what works to curb obesity and overweight in children. Eating fruits and vegetables every day and choosing milk or water over soda are the two biggest dietary habits linked to a lower risk of childhood obesity. Getting enough physical activity—at least 60 minutes a day for kids and parents—is another key to a healthy weight. However, it's important to keep the focus on enjoying fruits, vegetables, and physical activity for their own sake, not

to stay a healthy weight. So make sure you model good attitudes toward food and fitness.

Some other tips for feeding your 6-year old:

- Now that your child is running off to school in the morning, it's especially important to make time for breakfast. A good breakfast fuels their day and helps them focus at school and is linked to a healthier body weight.
- Turning off the television not only gets rid of distractions at family meals, but also encourages your kids to play in a more physical way. Children this age should get at least 60 minutes of physical activity each day—playing tag, having a play room dance party, and playing on a jungle gym are all fun ways to get moving. Getting your kids active can be fun for the whole family!
- Have children participate in making meals: have they set the table, peeling carrots and potatoes, measure liquids. There are lots of ways to get kids in the kitchen.
- At the age of 5 children become like adults in that they eat more when served more. Serve smaller portions and give children second helpings when they ask for it.
- Boys start having higher energy needs than girls around 4; you'll see an extra serving each of vegetables, meat/beans, and grains for boys, but use your child's appetite as a guide and, again, get them moving! Read more common sense tips on parenting food.

Children of this age can really get into the "eat the rainbow" idea.

Challenge them to eat some fruit or vegetable from every color each day—

white, yellow, orange, red, purple, and green. Here are fun activities with foods of different colors.

Sample Day of Meals for a 6-year Old:

Table 13: Sample Day of Meals for a 6-year Old

Breakfast	1 c. whole grain cereal* ½ c. skim or lowfat milk ½ banana	2 oz. whole grains ½ c. dairy ½ c. fruit
Snack	1 large celery stick with 1 T. light cream cheese or almond butter and 1 T. raisins	¼ c. vegetables ½ oz. meat/beans ¼ c. fruit
Lunch	1 c. skim milk Whole wheat pita with 1 thick slice (2 oz.) roasted chicken, ¼ avocado, 5 slices cucumber, and 1 leaf lettuce, and honey-mustard 1 medium orange	1 c. dairy 2 oz. whole grains 2 oz. roast chicken ¾ c. vegetables ¾ c. fruit
Snack	½ c. sliced apple and ½ c. cinnamon-sprinkled plain yogurt	½ c. fruit ½ c. dairy
Dinner	½ baked sweet potato ½ c. broccoli—raw with low fat salad dressing or steamed with 1 T. grated parmesan cheese 2 oz. herb-marinated grilled lean steak** or tempeh 1 whole wheat roll	1 c. vegetables 2 oz. meat/beans 1 oz. whole grains

** Always look for "100% whole grains" rather than "made with whole grains," which can have mostly refined grains in them.*
*** When serving red meat or other sources of iron (leafy greans, tofu, beans), pair it with a food high in vitamin C, like sweet potatoes or tomatoes—it helps your body take in the iron*

Many of the Old Age Problems Are Results of Young Age Negligence

If your parents have not taken health care tips in your childhood and if you have not followed certain healthy living rules in your youth, you will face old age problems.

Here is list of tips that parents should have given to the child

- check up genetic health issues that the child may inherit like BP, diabetes which are major hindrance as you grow old

- Do not grow the child under fear. If it is healthy without inherited problems teach him swimming (improves lung power), cycling (improves bone structure), exercises and acrobatics (keeps fit)
- Educate the child on healthy habits and teach him why the child should be healthy
- Encourage child to learn other arts like music, dance, martial arts (which ever the child likes). Do not force him
- Inculcate the habit to be disciplined. Discipline is getting up early at the same time of the day, doing meditation, performing breathing and warmup exercise. See that the child will not slip these activities even a single day. When the child slips on any day remind them that their own body will not slip heart beat, sleep, hunger and other body functions even a second.

Old Age Problems - How to Overcome

Every one becomes old only after crossing so many phases from childhood. Many of the old age problems starts from the childhood. Neglecting child's growth plan by parents will end up in many old age age problems.

What are the old age problems and how to overcome?

1. Old age itself: The more you think that you are getting old, you are inviting problems. Divert your attention to some other activity. Whenever you feel that you are getting old mix up with children - you become young.
2. Bone Decay problems: Normal problem when you become old is bone decay. Bone decay is a natural phenomena. Nothing can be done about it.

Take care and do not fall in bathrooms and other vulnerable places. You will live longer

3. indigestion problem: You have to change your food habit. Remember you are growing old and it is natural. Change your food habits to light and digestible foods. Eat early at least 3 hours before going to bed or nap. You live linger.
4. Seasonal problems: Seasons will create problems in old age. Take minimum precautions in different seasons. In winter cover up your body with warm cloths. Do not expose to cold weather. In summer drink more butter milk and avoid dehydration. In rainy season do not drench in rain like children. You will be healthy
5. Social problems: Go along with social changes. Do not argue on what you were in your times. You are going to live with new generations. Gain their confidence before forcing your ideas on them. You feel better
6. Children problems: Do not worry about your children. You have done what all you can for them. If you have done something to your children it is your responsibility. Do not expect returns from them. If you do not insist affection and extra care you get it. It is the great paradox in life. You will be more confident
7. Fear for death problem: Do not worry about the inevitable death. One day everyone has to face. Face it boldly. Remember you have come by accident. You death is just another incident. Why worry?

Do Not Fight Against the Inevitable? Accept Reality

However care you take, you still become old and body stops functioning as time passes leading to death. It is inevitable. Why worry about it. There must be

reason for death. A slip in the bath room and hurting arms and legs is a common cause to become bedridden. Once you are bedridden, you will be alone feel more lonely. You will become a burden to others as you need their help for your routine daily activities. In spite of your perfect health condition till then, stress starts and deteriorates your health condition. Depression and many other ill feelings occupy your mind and suddenly you realize you are old. That is it. You develop a strong feeling to die and try rude methods like rejecting food, getting anger on people, brooding over past. Remember even death is not in your hands. So do not get unhealthy ideas even at the crucial periods.

Healthy Principles from Childhood Helps You Tackle Old Age Issues

1. Practice healthy principles from the childhood. Healthy principles are not complicated. They are simple and follow able. Healthy principles are
2. Preparing a daily timetable and following it meticulously.
3. However busy you are you will be free in the early morning hours. That time is yours. So practice getting up at 4.00am in the morning. That is the time you can do many things without worldly disturbances.
4. Practice Morning walk. Depending on the age 5 kilometers to 1 kilometer is advised.
5. Avoid smoking and alcohol. if it is not possible regulate them, minimize them and stick on to it.
6. Do no consume alcohol in depression. The depression bounces and doubles after the effect of the drink.
7. Do not bring official problems to the house. House and office are different.

What is Old Age?

Old age is biological age or calendar age. The aging process is beyond human control and it is a biological reality. But each country has got its own definition old age and categorized on chronology change in social role (i.e. change in work patterns, adult status of children and menopause) change in capabilities (i.e. invalid status, senility and change in physical characteristics). When the preferred definition was chronological, it was most often accompanied by an additional definition. Source World Health Organization

Chapter 6

Summary

Background

Early childhood food and food habit turn the wheel of health in old age. Eating behaviors are learned and established in child hood and early adolescence and hence it is important to maintain a healthy food and eating habit in the child hood. The old age ailment determine the healthy childhood. This project idea was got from our previous study on the related topic and a paper published me along with some co-authors. We made an attempt to correlate the physical activities and childhood food habit to the progressive development of many diseases in the adulthood and old age.

Methodology and Sample

Questionnaire method is employed to collect the data from adulthood peoples by visiting house to house contact. We collected responses to pre-prepared questionnaire from 400 adult people with age group 40 years and above, included both male and female randomly. The sampling area is Kavathe Mahankal villages as rural sample and Sangli city as urban area. The data were analyzed by using software's like sigma plot, open stat and Smart draw and some manually.

Result

We analyzed the food values of common food items (24 items) that are used by childhood population in the said areas and correlated its energy content to the old age diseases. The physical activities of childhood population in both areas are also correlated with adulthood and old age disease. The result shows that those children eat moderately less fat and sluggish, developed disease like heart disease, obesity, diabetes and other ailment in the adult hood more. But the correlation shows that there is no considerable difference between urban and rural population. A positive correlation and between physical activities and wrong food habit in the childhood leads to adulthood ailment is established partially. Another exciting result is the correlation between income and childhood health and old age diseases. We found that income has no role in the child hood health and old age diseases. Education and health of children and old age

disease also has no specific relation. The BMI shows little pronounced difference between the two areas of the study.

Conclusion

With the support we drawn from our study we recommend that healthy food habit with proper physical activities in the child hood along with good parental care definitely brings healthy adulthood and disease free old age population in India.

Further study

Similar type of study by selecting more urban and city areas with more sample size in Maharashtra and so in other state is essential to establish this relation more concretely.

Implication of the study

This study will help the educationist and ministry and human resources development and other Government and non government authorities to re assess their policy for the better childhood and there by better adulthood. It also directly benefit the school management and parents to recheck the food items they unusually giving to their ward s and how to improve the physical activities for the better lively hood in the adult and old age.

Chapter 7

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Appendix I

UGC-Sponsored Project
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Department of Statistics
2013-2015

Questionnaires

Person having age group more than 40 is requested to answer the question related with his food habit at the age 01-18

Name:
Residential: Urban / Rural
Gender: Male / Female
Breast feeding: ----------Months/Years
Weight at birth: ----------Kg
Weight at present: ----------Kg
Height at present:----------Meter
Food in Breakfast:

Upit	Roti	Fruits
Poha	Nonveg	Milk
Sira	Dal	Coffee
Sweet	Dosa	Tea
Egg	Idli	Dry fruit
Rice	Poori	
Chapati	Vegetable	

Other food items:

Food in Meal:

Rice:	1 wati	2 wati	3 wati		
Chapati	1	2	3	4	
Roti	1	2	3	4	
Dal	1 Wati	2 Wati			
Meat	50 g	100 g	200g		
Fish	200g	300g	500g		
Vegetable	100g	200g	300g		
Egg	1	2	3		
Kheer	1Wati	2wati	3Wati		
Sweet	50g	100g	200g		
Tak	1 wati		2 Wati		3Wati
Dahi	1Wati		2Wati		
Papd	1		2		
Pickle	one piece		2 piece		

Food in Dinner:

Rice:	1 wati	2 wati	3 wati	
Chapati	1	2	3	4
Roti	1	2	3	4
Dal	1 Wati	2 Wati		
Meat	50 g	100 g	200g	
Fish	200g	300g	500g	
Vegetable	100g	200g	300g	
Egg	1	2	3	
Kheer	1Wati	2wati	3Wati	
Sweet	50g	100g	200g	
Tak	1 wati		2 Wati	3Wati
Dahi	1Wati		2WatiI	
Papd	1		2	
Pickle	one piece		2 piece	

Childhood ailments:

1.	5.	9.
2.	6.	10.
3.	7.	
4.	8.	

Ailment at present:

1.	5.	9.
2.	6.	10.
3.	7.	
4.	8.	

Physical activities:

1.	5.	9.
2.	6.	10.
3.	7.	
4.	8.	

Income per month: >10,000 >50000 >100000

Education: Graduate Post graduate HSC SSC

General suggestion about own health

Appendix II

Publications

1. V.V. Koshti1 and K.V. Ashokan. (2014) Correlation between childhood food and physical activities on the old age health in Sangli district, *International Journal of Applied Sciences and Biotechnology, Vol 2(3): 238-242.*

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