Health Risks Associated to Obesity among adults in Juba

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ABSTRACT

Obesity is associated with coronary heart diseases, stroke, certain cancers, hypertension and type 2 diabetes. Concern about obesity among adults is growing, and research to examine the role of the media in raising awareness on the health risks is needed. The study examined the role of the media in raising awareness on behaviors associated with risks for increased weight in this population as well as those related to physical inactivity and diet among adults in Juba.

Data was collected using a questionnaire, weight and height was measured using a weighing scale and a height board respectively. The BMI for the adults was calculated to predict the likely hood of overweight (Body mass index, 25.0-29.9 kg/m^2) and obesity (BMI >30.0 kg/m^2) relative to healthy weight (BMI 18.5-24.9 kg/m^2). Self-reported health status of the presence of diseases like diabetes, hypertension, and stroke. Correlates were risk behaviors for chronic diseases (smoking status and alcohol intake).Diet such as consumption of fruit and vegetables, consumption of sweetened beverages and leisure-time physical activity level was also assessed.

Among the adults, prevalence of overweight was 50% and prevalence of obesity was 20%. Adults who were involved in leisure-time physical exercise were 24% compared to 76% who did not do physical exercise. Among the adults the prevalence of diseases: hypertension, diabetes, stroke, and osteoarthritis were 16%, 24%, 2%, and 12% respectively. The main source of information

for the adults is radio by 52% compared to those who said television and newspaper but 78% of the adults studied think the media is not doing enough in raising awareness on the problem of obesity.

Several risk behaviors for chronic diseases appear to be associated with overweight and obesity among adults. Modification of these behaviors has the potential to reduce weight; therefore more effort is still needed in raising awareness and advocating for the importance of healthy eating and physical exercise to improve the health of adults in Juba.

CHAPTER ONE

1.1 INTRODUCTION

Obesity can be defined as excessive body fat; with weight 20% and above average, Ruth A et al (2003).The medical standard used to define obesity is the body mass index (BMI). It is used to determine whether a person is at health risk from excess weight. The BMI is obtained by dividing weight in kilograms (kg) by height in meters squared =Weight (kg)/Height (m^2). A BMI greater than 25gg/m^2 indicates obesity and health risks (WHO 2004)

In a similar report by the World Health Organization, it estimated that by 2005, at least 1.6 billion and 400 million people aged 15 years and above was overweight and obese respectively. It further projected that by 2015, these statistics will increase to 2.3 billion for overweight and 700 million for obese (WHO 2004)

The House Of Commons report (HOC. 2001) lists the four most common health problems for obese individuals as; Heart Disease, Type 2 diabetes, High Blood pressure and Osteorthritis.The World Organization (WHO 2002) supported this and Garrow and Summer bell (2002) highlighted the risks significantly increasing when BMI is 25-30 kg/m^2 rapidly increases with values above 30kg/m^2.

Obesity can also lead to high cholesterol, which also leads to heart disease.

It is currently estimated that as much as 20-50% of urban population in Africa are classified as either overweight or obese and that by 2025,three quotas of the obese population worldwide will be in non-industrialized countries (www.biomed central).Urbanization and socioeconomic transformation comes with increased access to energy-dense foods and less strenuous jobs resulting into many people having a positive energy balance and hence becoming overweight or obese. Despite being the least urbanized continent: Africa is becoming increasingly urban and its cities are growing at unprecedented rates for example, Juba city of South Sudan.

This therefore, needs urgent intervention on the problem of obesity and one of the best approaches is awareness through the media, by creating a massive campaign on the risk factors associated to obesity as witnessed in the western countries, WHO report on obesity (1998).

Media can be defined as the means of communication-Radio and Television, Newspapers and Magazines that reach or influence people widely (Oxford Eng. Dictionary).Mass media is a communication; whether written, broadcast, or spoken, that reaches a large audience. This includes television, radio, advertising, movies, the internet, newspapers, and magazines. The message from the media promotes not only products but moods, attitudes, and a sense of what is not important. Print media in South Sudan are burdened with small staff and budget, low advertising revenue, and a national illiteracy rate of 74%, AMDISS report (2012)

Newspapers are largely concentrated in the urban areas because of the high cost of transportation and a lack of reliable infrastructure. A number of private dailies and weeklies publish regularly. Government owned South Sudan television (SSTV) and the citizen television (private) are the

sole television stations in the whole country. Radio remains the main source of news for most citizens, with several dozen stations in operation across the country and within Juba. There are no reliable statistics regarding internet use in South Sudan, penetration is low, as most of the country lack online access because of the problem of electricity and infrastructure, AMDISS (2012)

BBC media is producing radio programs to improve reproductive, maternal, and neonatal and child health and access to quality education for girls in South Sudan. In 2010 and 2011, BBC Media Action supported over 200 journalists to report on South Sudan road to independence in an accurate and balanced way (BBC Media Action report 2013). In the health sector, such programs can be driven to tackle the problem of obesity in our young new nation.

1.1 STATEMENT OF THE PROBLEM.

The growing problem of obesity-related risks such as diabetes, cancer, hypertension and heart diseases coupled with lack of awareness is concerning and needs greater attention. Many programs by Non-Governmental organizations (NGO's), civil society and the media do not often target obesity problems in our society Ama de-Graft Aikins (2013)

Obesity is a new problem on the continent and data is little. Additionally food insecurity has been an on-going problem in many African nations including south Sudan and many people on the continent still face starvation as witnessed in most parts of south Sudan .This means governments, INGO's and civil society are unlikely to focus on issues encouraging healthy diets among the adult in the middle class, UNICEF(2012).

Change in social conditions has also contributed to obesity; people are becoming more sedentary in their lifestyle and engaging less activity. In Juba today with the current population; life style is much like other parts of the world where people work 8-10 hours a day, are likely to eat lunch and breakfast at work, and even grab a takeaway on their way home. Those sorts of trends are also occurring in many African cities; While some of the factors may be global, the solution-particularly from the point of view of wellbeing-need to be tailored locally. For example, the ideal body size of a young woman in South Sudan is not so much overweight; but overweight is seen as a kind of attractiveness and beauty, thinness is really stigmatized in South Sudan and some parts of Africa. In a related study in South Africa, people prefer being overweight so that they are not associated to the HIV epidemic, Kruger et al (2005).

In our societies today, cultural attitudes have led to overweight people being admired because of the believe that large size signifies prosperity and success in life. According to de-Graft Aikins in her recent study in Ghana, she found that there are particular herbal supplements that people take, or even drink malt and milk because there is an idea that can make one gain weight or even decide not to exercise, de-Graft Aikins (2013).

In Juba today with the common cases of type 2 diabetes, Ministry of Health report (2012), adults are still unaware of the risk factors; life style in the city is commonly associated with risky eating habits and taking too much sweetened beverages and sugar several times a day and eating in fast food restaurants which mostly concentrate on foods rich in trans-fats e.g. Chicken, fish, chips deep fried in oil, all this contribute to overweight hence obesity. There is need for a greater focus

on creating awareness and decreasing obesity amongst the adults, Van Wechem et al (1997, Civill (1998), Flay and Burton (1990).

This study is therefore set out to assess the role of the media in creating awareness on the health risks associated with obesity among adults in Juba.

1.2 JUSTIFICATION OF THE STUDY.

Obesity has a significant health and economic consequences. The most serious being increased risk of death due to related sickness such as type 2 diabetes and cardiovascular disorders. Other outcomes include high medical costs due to treating sickness, this reduce lifetime earnings and ability to contribute to the national economy.

This research will try to:-

- Document the effect of unhealthy lifestyle including eating habits and inactivity among adults and how it contributes to related risk factors.
- Asses the effort of the media in creating awareness on obesity in Juba.
- Provide useful data for further research in the health and nutrition of adults in Juba.

1.4.0 OBJECTIVES OF THE STUDY

1.4.1 GENERAL OBJECTIVES

To assess the role of the media in South Sudan in fighting obesity through creating awareness on health risks associated to obesity e.g. type 2 diabetes and cardiovascular diseases among adults.

1.4.2 SPECIFIC OBJECTIVES

1- To raise and increase awareness on the dangers of overweight and obesity as a major public health threat.

2- To increase awareness and knowledge about healthy eating.

3- Increase the rate and proportion of persons who know little about health risks (hypertension, dyslipidemia, insulin resistance etc.), and diseases (type 2 diabetes, cardiovascular diseases, cancer, arthritis, asthma, disabilities) associated with overweight and obesity.

4- Increase advocacy and public support for initiatives, policies and legislation that eliminates barriers to healthy food choices and promotes physically active life style through the mass media.

5- Suggest recommendations to local and state policymakers to develop and implement guidelines and policies to ensure that foods and beverages (soda, juice and beer) available are consistent with nutritional guidelines, and support the goal of preventing excess energy intake among adults in South Sudan.

1.5 THE METHODOLOGY

1.5.1 STUDY DESIGN

The study is a cross-sectional and shall take place between April and August 2014.

A descriptive study shall use qualitative methods with a questionnaire and interview to examine the prevalence of diseases such as type 2 diabetes, cardiovascular disorders in relation to the body size (BMI) and the nutritional status of adults in Juba .The study shall also asses the effort of the media in creating awareness.

1.5.2 TARGET GROUP

The study shall target adults of age20-69 years around Juba and some media houses.

1.5.3 SAMPLE SIZE

This study shall study around 30-50 adults in the Payams of Juba city. And interview 2 to 3 programe managers of some private radio stations around Juba.

1.6.0 ORGANISATION OF THE STUDY.

This report is organized in five chapters. The first chapter describes the background of the Study, problem statement and defines the objectives and the scope of the study. The second Section shall review related literature on obesity generally and examines findings made from other authors on how the problem of obesity and its risk factors has been reduced in other countries in the world including Africa. The third section shall give a description of the methods, materials, tools and procedures used in gathering information and analyzing the results. It will also highlight the ethical and assumptions underpinning the conduct of this study. The fourth Chapter shall focus on presentation of results in the forms of tables and charts arranged in accordance with the

objectives of the study. The fifth chapter shall be on the discussion, and conclusions and recommendations. The discussion session shall elaborate on what could account for the observations made and further its implication on the management of obesity noted in the findings and also suggests what can be done by an identifiable agency to solve the problem.

CHAPTER TWO: Literature Review.

2.1 Obesity and its causes.

The World Health Organization defines obesity as a condition of abnormal or excessive fat accumulation in the adipose tissue; to the extent that health may be impaired. Chronic positive energy balance normally precipitates the accumulation of excess adipose tissue. The positive energy balance is believed to be influenced by a number of environmental and physical factors, such as high-fat and /or decreased physical activity, WHO (2004).

According to the world health organization, the escalation of international epidemics of obesity is now the most significant contributor to ill health, WHO cited in Caballero B. (2005). For example more than 30 percent of United States' adults are obese, i.e. Body Mass Index(BMI)

greater than 30kg/m^2 ,Ogden et al (2006), and it is feared that one in three children born in the early 21st century will develop diabetes with a constant reduction in lifetime expectancy.

Obesity is a major factor for cardiovascular diseases, pulmonary disease (such as sleep opnoea), metabolic diseases (e.g. diabetes and dyslipidemia), and osteoarticular diseases, for several of the commonest forms of cancer and for serious psychiatric illness, Samanic et al (2006). When more calories are consumed by people than are normally burned off, the extra calories such as fats are stored by their bodies. A calorie is the energy value of food also known as kilocalorie (kcal); it is the amount of heat needed to raise the temperature of one kilogram of water by one degree Celsius, Ruth A. et al (2003).

Although a slight increase in body fats is not considered a high health risk, but when people maintain a pattern of consuming more calories than mostly burn, extra fats ultimately build up in their body. Eventually the human body reaches a point where the amount of fats in the body can have a negative impact on the health of a person. Doctors mostly use the term “obese” or overweigh to narrate the condition of a person who is in fact at a high risk of developing a specific weigh related health complexities.

Obesity is a common epidemic in the developing countries of the world more commonly witnessed in the urban centers of those countries especially in cities like Juba of South Sudan. Urbanization is a phenomenon that has received a considerable attention because of its many effects on economic and well-being. Dietary changes associated with urbanization are related to the fact that rural dwellers tend to be more self-reliant in obtaining food and also tend not to eat

traditional diets that are high in grains, fruit and vegetables, and low in fats, Phillips (1993); soloons and gross (1995); caballero and Rubenstein (1997).

Once they arrive in urban areas, these same people tend to rely more on external forces for substance, resulting in a slight change in attitude from production of their own to the purchase of processed foods, popkin (1993).

Together with these changes it has been reported that groups moving from rural to urban areas experience an increased intake of energy, sugar, refined grains and fats. Globalization is influencing food habits and dietary patterns in many parts of Africa (and the world in general) especially in urban areas. Globalization has increased free movement of processed foods and other commodities such as soft drinks, biscuits, cakes, sweets and chocolates and ready to eat foods, these have become readily available in the markets and consumption of these foods has increased significantly in urban areas of Africa, Moniteino (1992).

The dietary intake pattern is now changing rapidly from a traditional diet of high carbohydrate, high fiber and vegetables to one containing high energy fats .With increasing importation of processed and convenient food, which require less time and skill to cook compared to the traditional foods, the traditional staples and side dishes are being abandoned in favor of the new diets containing higher proportion of sugar and animal fats, WHO (2003). In urban areas and among the high income groups, traditional meals are no longer common.

In a survey carried out in Dar es Salaam, Mjawa (2003), it was observed that on average 168 people visit one street food vendor per day. This was not the situation about 20 years ago. Men,

from low income group, account for 70% of all consumers of street foods. Take away meals from street food vendors are also becoming very popular in urban areas, Nkurlu (2000). Many households buy food from vendors to save on the cost of food ingredients and cooking fuel, preparation time and to experience the new tastes and varieties, as well as getting away from monotonous diets.

This is mainly observed in the low income groups especially among men. However, the higher socio-economic groups also eat in western type fast foods. Fast foods are restaurant foods that is ready to serve before orders are taken, Ruth A et al (2003), examples of these foods includes hamburgers, cheeseburgers, French fries, milkshakes, pizza, sodas, tacos, chili, fried chicken, and onion rings. According to de-Graft Alkins (2011), sedentary lifestyles were fast becoming the norm; people become drawn to processed western foods.

Lack of physical activity is another important factor related to obesity. Many people have jobs that involve sitting at a desk most of the day. They also rely on their cars and motorbikes rather than walking or cycling. When people relax, they tend to watch TVS, browse the internet , play computer games and cards; so they rarely take regular exercise, therefore if the body is not active, it does not use the energy provided by food so extra calories are stored as fat which later results to obesity.

The world health report (2002) describes the opportunities for people to be physically active in terms of four domains of their day- today lives; at work; for transport; in domestic duties; or in

leisure time. In other countries, particularly in the developed world physical activity taken as a recreation is playing an increasing role, African regional consultation meeting report (2003).

According to studies, medical conditions can also cause obesity. The medical conditions that can cause weight gain include:-

Cushing's syndrome, a rare disorder that causes the over production of steroid hormones and an underactive thyroid gland (hypothyroidism), where the thyroid gland does not produce enough thyroid hormone, mayo clinic(2007).

Certain medicine, including some corticosteroids and antidepressants, can also contribute to weight gain. Weight gain can also be a side effect of taking the combined contraceptive pill Mayo clinic (2007).

In a report published by the mayo clinic (2007), they summarized the possible factors that can lead to obesity into seven cross-cutting predominant themes called the Foresight map (figure 1)

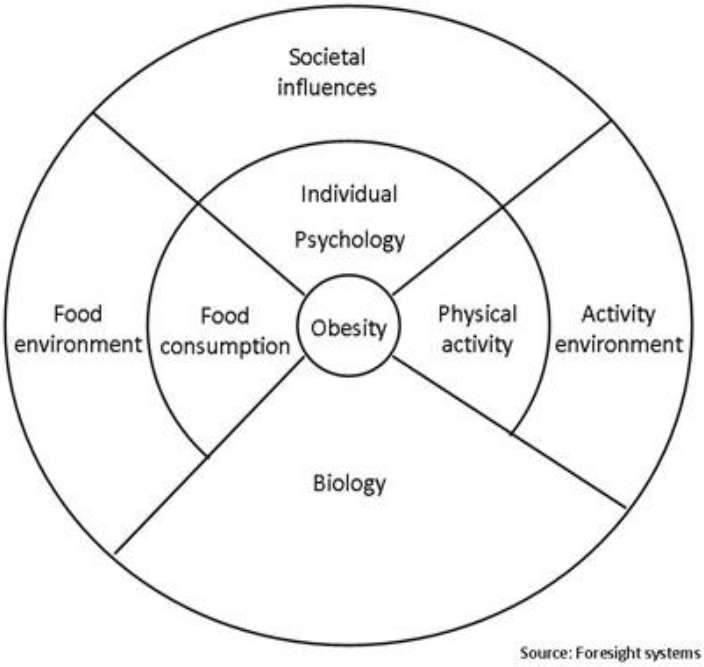


Fig.1 Source: Foresight systems map,2007.

The Foresight map has been divided into 7 cross-cutting predominant themes (Figure 1):

- **Biology**: an individual's starting point - the influence of genetics and ill health;
- **Activity environment**: the influence of the environment on an individual's activity behavior, for example a decision to cycle to work may be influenced by road safety, air pollution or provision of a cycle shelter and showers;
- **Physical Activity**: the type, frequency and intensity of activities an individual carries out, such as cycling vigorously to work every day;
- **Societal influences**: the impact of society, for example the influence of the media, education, peer pressure or culture;

- **Individual psychology**: for example a person's individual psychological drive for particular foods and consumption patterns, or physical activity patterns or preferences;
- **Food environment**: the influence of the food environment on an individual's food choices, for example a decision to eat more fruit and vegetables may be influenced by the availability and quality of fruit and vegetables near home;
- **Food consumption**: the quality, quantity (portion sizes) and frequency (snacking patterns) of an individual's diet.

2.2 Obesity prevalence in Africa

Although high prevalence of communicable diseases, food shortage and under nutrition are still being encountered in many countries in the region, African countries, like the rest of the world , are being affected by epidemiological, Nutritional and demographic transitions .Non-communicable diseases(NCDs') especially cardiovascular diseases(CVDs'), are increasing rapidly throughout the region and were estimated to have caused 22 percent of all deaths in 2001,WHO (2003).They now constitute the major health problem in some countries(e.g., Algeria,

Mauritius and Seychelles) and are as important as communicable disease in others(e.g.Cote d'ivoire,Nigeria) In Harare, prevalence in women of the risk factors of obesity (BMI greater than 30kg/m^2) is now higher than that of HIV infection, WHO report on Africa (2003).

Africa must learn from the experience of other regions and act quickly; Advocacy, coherent policies, legislation, health education and empowerment of individuals to take responsibility for their own health and commercial interest will all play a role in achieving the change needed. At the economic and social level, NCDS' are exacerbating the poverty of individuals and household that depend on them, and reducing their workforce .Health services already overburdened with cases of communicable diseases are unable to cope, and treatment of the NCDS' does not reduce their incidence and extremely expensive. For example in a WHO report on Algeria (2003), it states that prior to independence most of the population lived in rural areas with few means of transport. Manual work was the norm and men, women, children all alike were obliged to make constant physical effort. Health problems were largely related to communicable diseases, aggregated by nutritional deficiencies, particularly in children.

Following independence in 1962, people flocked to the towns in search of work and better quality of life. The rise in standard of living that came with the oil boom of the 1970 allowed many to enjoy a wider variety of foods; these changes were accompanied by a rise in NCDs, which are currently the leading causes of death and disability in the country. This could be a very important lesson for South Sudan which is still under economic and nutritional transition, Africa and NCDs,WHO (2003).According to Caballero(2006) ,Nutrition transitions is a term which describe

a global shift in dietary patterns attributed to better availability of some types of foods at lower cost, as well as reduced energy demands at work and at home.

There are many contributors towards obesity in Africa, in a study to discuss the causes of high rate of obesity in South Africa, Kruger et al (2005:493) identified that cultural factors play a role in the problem of obesity. Overweight or Obese black women generally do not view themselves as overweight; supporting this finding, Puaone et al (2002:1041) noted that there is significant difference between study participants' perceived weight and actual weight, with many participants underestimating their weight. More, moderately overweight women are seen as attractive by the community and being overweight is associated with affluence, respect and dignity, Mvo et al (1997:27-31): Goedecke,et al,(2005:65-79) It should be noted that the image of a fat person seen as a "happy" person crosses all cultures even in South Sudan.

A recent factor which contributes to the perception that being overweight or obese is "healthy" is the HIV epidemic. Women as well others see thinness as being associated with the disease; hence overweight is "healthier", Clark et al, (1999:735-737). In another study conducted in South Africa, 80 percent of the sample of black women who were overweight or obese, considered overweight or obesity as a positive sign of being healthy. To them a large body size is associated with dignity, attractiveness and with having enough money to feed their families. Those that were aware of their increased risk of non-communicable diseases due to excess weight did not want to lose weight as they did not want to risk being associated with "thinness" and its association with HIV AIDS, Matoli-Mvalo and Puoane, (2008).

Adults in an urban environment appear to be especially vulnerable to excessive increase in blood pressure, which leads to hypertension in later life, Van Rouyen et al (2002;69). As is well known, hypertension is a risk factor for cardiovascular diseases, specifically ischemic heart disease and peripheral vascular disease. Behavioral patterns in terms of food consumption and salt use have a direct influence on hypertension which is a health risk associated to obesity.

2.3 Health risks associated with obesity

Obesity is a significant risk factor for a range of non-communicable diseases including cardiovascular, gastrointestinal gallbladder, liver disease, sleep apnea and diabetes mellitus. According to the international council of nurses (2003), obesity is the second leading cause of preventable death after smoking.

The high-risk adult population includes those at increased risk of developing weight-related chronic diseases, including type 2 diabetes and cardiovascular disease. This population includes both overweight and obese adults, and those with other risk factors for chronic disease, such as hypertension or high cholesterol. Obesity is considered both a risk factor for arrange of chronic diseases, as well as a disease in its own right. Obesity is associated with the cluster of preventable chronic disease that is responsible for the major portion of morbidity and mortality.

Cardiovascular diseases (CVD's) and type 2 diabetes are significant health risks for South Sudanese, and overweight and obese people are at greater risk of developing these conditions

.A study in Australia, found that despite major improvements in the cardiovascular health of Australians and falling death rates over the past 30 years, coronary heart diseases and stroke remain the leading causes of death in Australia (Australian Institute of Health and Welfare - AIHW 2004).Overweight and obesity are also associated with increased risk for other conditions including certain cancer, osteoarthritis, incontinence, gallbladder diseases and depression, Dobson et al :in press(2005).

Cardiovascular diseases (CVD) are the most expensive group of diseases in terms of direct health care expenditure. In Australia, CVD were responsible for 11 percent of total allocated health system expenditure-5.48 million dollars in 2000-1, the cost of cardiovascular drugs was 1.546 million dollars(34 percent of all prescribed PBS drugs dispensed through pharmacies). Health system expenditure on diabetes in 2000-01 was estimated at 784 million dollars(1.7 percent of allocated recurrent health expenditure), AIHW (2004).

There is also growing evidence that weight gain is associated with risk of disease stroke and post-menopausal breast cancer, independent of initial body mass. Weight gain has also been independently associated with decreased physical functioning and vitality among women, and cause mortality in middle-age. Dobson et al: in press (2005).

Estimates of the proportion of cancer attributed to obesity range 3 percent to 20 percent of all cancer deaths. Taken together, excess body weight and physical inactivity account approximately one quarter to one third of cancers of the colon, breast (in postmenopausal women), endometrial, kidney and esophagus/gastric cardia, and as such, adiposity and physical inactivity are the most

important available causes of these cancers, International Obesity Taskforce (2009).however research shows excess weight is a risk factor for the development of some cancers independent of other factors such as physical activity levels (AIHW 2004).

Obesity has a far-ranging negative effect on health. The health effects associated with obesity include, but are not limited to, the following:

High blood pressure - Additional fat tissue in the body needs oxygen and nutrients in order to live, which requires the blood vessels to circulate more blood to the fat tissue. This increases the workload of the heart because it must pump more blood through additional blood vessels. More circulating blood also means more pressure on the artery walls. Higher pressure on the artery walls increases the blood pressure. In addition, extra weight can raise the heart rate and reduce the body's ability to transport blood through the vessels (Biomed Central 2007).

South Sudan is thought to be undergoing an epidemiological transition with an increasing burden of non-communicable diseases such as hypertension. No current data exist on the prevalence of these diseases. In a study conducted by Rachel Wake and Charles Mazinda, (2012).Blood pressure readings of 5660 blood donors during 2010-12 at Juba Teaching Hospital were analyzed. Prevalence of hypertension was 19.3%, positively associated with older age and being male. Although hypertension remains more prevalent in economically developed countries (37.3%) compared to developing nations (22.9%), it is a much bigger problem in developing countries, in terms of actual numbers, awareness, treatment and complications, Kearney et al (2005).

Prevalence is also rising more rapidly across developing countries where it is estimated that three quarters (1.17 billion) of cases will exist by 2025. Recent studies from African countries have shown prevalence to be 15-50%, and higher in urban than in rural populations, Mittal BV (2010).

Although no data exist from South Sudanese populations, a study in Khartoum in 1990 estimated prevalence to be 7.5%, with a positive correlation between blood pressure and age, weight, body mass index and duration of urban residence, Elbagir et al cited in Rachel et al (2012). More recently, data from the Sudan Household Survey in 2006 and STEPS survey of chronic disease risk factors in Khartoum found hypertension prevalence to be 20.1% and 20.4% respectively. Of concern are the poor rates of knowledge and control of hypertension in sub-Saharan Africa. A systematic review of 25 studies across the region found that less than 40% of people knew they were hypertensive, less than 30% were on treatment and less than 20% of those on treatment had a controlled blood pressure, Abdor (2007). In Kassala, Eastern Sudan, knowledge of hypertension was poor, compliance with anti-hypertensive drug treatment was 59%, and 36.8% said they could not afford to buy the drugs they were prescribed, Elsubeir et al (2012).

A recent article in the Sudan Tribune warned that rising levels of non-communicable diseases and an ageing population will have major implications for health and socio-economic development in the world's newest nation, Uma JN (2012).

Diabetes - Obesity is the major cause of type 2 diabetes. This type of diabetes usually begins in adulthood but, is now actually occurring in children. Obesity can cause resistance to insulin, the hormone that regulates blood sugar. When obesity causes insulin resistance, the blood sugar

becomes elevated. Even moderate obesity dramatically increases the risk of diabetes. In the Nurses' Health Study, which followed 114,000 middle-age women for 14 years, the risk of developing diabetes was 93 times higher among women who had a body mass index (BMI) of 35 or higher at the start of the study, compared with women with BMIs lower than 22, Colditz GA et al (1997) Weight gain during adulthood also increased diabetes risk, even among women with Body Mass Index in the healthy range. The Health Professionals Follow-Up Study found a similar association in men, Koh et al (2004)

Heart disease - Atherosclerosis (hardening of the arteries) is present 10 times more often in obese people compared to those who are not obese. Coronary artery disease is also more prevalent because fatty deposits build up in arteries that supply the heart. Narrowed arteries and reduced blood flow to the heart can cause chest pain (angina) or a heart attack. Blood clots can also form in narrowed arteries and cause a stroke (AIHW 2003).

Joint problems, including osteoarthritis - Obesity can affect the knees and hips because of the stress placed on the joints by extra weight. Joint replacement surgery, while commonly performed on damaged joints, may not be an advisable option for an obese person because the artificial joint has a higher risk of loosening and causing further damage, Ruth et al (2003).

Sleep apnea and respiratory problems - Sleep apnea, which causes people to stop breathing for brief periods, interrupts sleep throughout the night and causes sleepiness during the day. It also causes heavy snoring. Respiratory problems associated with obesity occur when added weight of

the chest wall squeezes the lungs and causes restricted breathing. Sleep apnea is also associated with high blood pressure (BMC 2003).

Cancer - In women, being overweight contributes to an increased risk for a variety of cancers including breast, colon, gallbladder, and uterus. Men who are overweight have a higher risk of colon and prostate cancers. In an exhaustive review of the data, released in 2007, an expert panel assembled by the World Cancer Research Fund and the American Institute for Cancer Research concluded that there was convincing evidence of an association between obesity and cancers of the esophagus, pancreas, colon and rectum, breast, endometrium, and kidney, and a probable association between obesity and gallbladder cancer, American institute for cancer research (2007)

Abdominal obesity and weight gain during adulthood were also linked with several cancers. A later systematic review and meta-analysis confirmed direct associations between obesity and cancers of the breast, colon and rectum, endometrial, esophagus, kidney, ovary, and pancreas, BMC public health (2009). Encouragingly, the Nurses' Health Study has found that for overweight women who have never used hormone replacement therapy, losing weight after menopause—and keeping it off—cut their risk of post-menopausal breast cancer in half, cited in Eliassen et el (2006)

Metabolic syndrome - The National Cholesterol Education Program has identified metabolic syndrome as a complex risk factor for cardiovascular disease. Metabolic syndrome consists of six major components: abdominal obesity, elevated blood cholesterol, and elevated blood pressure, insulin resistance with or without glucose intolerance, elevation of certain blood components that

indicate inflammation, and elevation of certain clotting factors in the blood. In the US, approximately one-third of overweight or obese persons exhibit metabolic syndrome, US center for disease control (2009).

Psychosocial effects - In a culture where often the idea of physical attractiveness is to be overly thin, people who are overweight or obese frequently suffer disadvantages. Overweight and obese persons are often blamed for their condition and may be considered to be lazy or weak-willed. It is not uncommon for overweight or obese conditions to result in persons having lower incomes or having fewer or no romantic relationships. Disapproval of overweight persons expressed by some individuals may progress to bias, discrimination, and even torment, the Open Obesity Journal (2013).

2.4 How unhealthy life style and eating habits contribute to obesity

Unhealthy lifestyle is that behavior which contributes to health risk for example, weight gain due to physical inactivity, drinking too much alcohol, smoking, and eating habits such as eating large portions of food, consuming a lot of fats and sugary drinks.

Obesity and overweight is caused by lack of energy balance. Energy balance means that your energy IN equals your energy OUT, www.pubmed.org.(2009) Energy IN is the amount of energy or calorie you get from food or drinks. Energy OUT is the amount of energy the body uses for things like breathing, digesting, and being physically active.

To maintain a healthy weight, energy IN and OUT, don't have to balance exactly every day, it's the balance overtime that helps one maintain a healthy weight, mayo clinic (2010).Overweight and obesity happens over time when one takes in more calories than uses. Therefore, unhealthy life style could include an inactive lifestyle. One study in America found that most Americans are not physically active; one reason for this is that many people spend hours in front of televisions and computers doing work, school work, and leisure activities. In fact more than two hours a day of regular television viewing time has been linked to obesity, www.Biomed Central (2011).

Other reasons for not being active include; relying on cars instead of walking, fewer physical demands at work or and at home because of modern technologies and conveniences, and lack of physical education classes in schools. People who are inactive are more likely to gain weight because they don't burn the calories that they take from food and drinks.

Oversized food portions also contribute to obesity, one study found that Americans are exposed to huge food portions in gas stations, fast food places, supermarkets and even at home. Some of these meals or snacks can feed two people or more people. Eating large portions means too much energy IN; or overtime, this will cause weight gain if it is not balanced with physical activity (WHO 2004).

Lack of access to healthy foods. Some people don't live in neighborhoods that have supermarkets that sell healthy foods, such as fresh fruits and vegetable or for some people these healthy foods are even too expensive or costly and will tend to neglect.

Some people gain weight when they quit smoking. According to studies, food often taste and smells better after quitting smoking. Another reason is because nicotine raises the rate at which the body burns calories, so you burn fewer calories when you stop smoking; however, smoking is a serious health risk, and quitting is more important than possible weight gain, mayo clinic (2010).

Eating in fast food restaurants or consuming food rich in Tran's fats, salt, skipping breakfast, and drinking high calorie beverages such as beer can lead to weight gain hence obesity. In a related study, it was found that few hours of sleep can cause weight gain (obesity), few hours of sleep cause changes in hormones that increase your appetite. You may also crave foods high in calories and carbohydrates, which can contribute to weight gain, Biomed central (2009).

2.5 How other Governments tried to reduce obesity in their countries.

A key role for governments that has been identified by WHO in the Global Strategy on Diet, Physical Activity and Health (2004) is that they provide 'accurate and balanced information' to the general population regarding diet and nutrition as well as physical activity. This can range from raising awareness through mass media campaigns, improving adult literacy and cooking Competency skills, to regulating the marketing and advertising of food-related information and product labels.

Obesity has become a common problem in the developed countries as well as in the developing countries, the governments of those countries has been tackling the problem in many ways.

As Nestle and Jacobson puts (2000: 15), obesity is not a new condition to the public health agenda in the world, especially in America; it has been a goal of National Public Health Policy since 1980. However, past initiatives on the American government's part have been to encourage and publicize prevention of obesity, but not implement any programme to reduce obesity in the general population. Most federal and state interventions aiming to curb obesity levels in the United States has been directed at the individual despite the fact that 85 percent of Americans believe that obesity is an epidemic and that most citizens believe that the government should play some role in addressing the issue of obesity, Trust for America's Health, (2007).

Campaigns to encourage healthy behavior have been taken on by most American states. This has been motivated largely by the 'Healthy States Grant Program' which offers funding for states for their community or worksite wellness efforts. In New York City, restaurants have been mandated to provide increased nutritional information to their patrons. A ban on trans-fats for restaurants in the area has also been initiated. Seventeen American states have laws which tax foods with low nutritional quality, although controversy over the efficiency of this practice continues.

In the United Kingdom a large part of the government's response to this has been behavior change communication campaigns. Campaigns which encourage 5 servings of fruit and vegetables per individual per day have had some success and a multimedia campaign, "Change for Life" encourages healthy lifestyles through its slogan "eat well, move more, and live longer". In addition, food labeling on the front of food packages has "become the norm" and schools have

improved the food they offer and uptake in school sport has occurred according to the Minister of Public Health in 2006, UK Government's Foresight programme for science (2006).

Australia has taken several interventions on obesity throughout its states through the following programs:-

Smoking, nutrition, alcohol and physical activity (SNAP) 2001. The SNAP Framework has been developed by Joint Advisory Group on General Practice and Population in conjunction with Chairs of National Population Health Strategies, to guide the implementation of integrated approaches to behavioral risk factor modification in general practice focusing on smoking, nutrition, alcohol and physical activity (SNAP). A wide range of patients in any practice may present with one or more of these risk factors. The SNAP Framework develops a system-wide approach to supporting general practice in the management of these behavioral risk factors with patients.

• **10,000 steps Rock Hampton** – a whole community multi-strategy approach that increased levels in women by 5% above baseline levels .This project was guided by the social ecological framework which emphasizes intervention at multiple levels (social marketing, advice from healthcare providers and environmental strategies) to address physical inactivity in Queensland city, Brown et al (2009)

• **Travel smart.** A joint initiative of Australian, State and Territory Governments. Program is about reducing reliance on cars and making smart choices about other forms of transport.

Resource kits are available to assist schools, universities and special events managers to plan better travel access.

• **Heart Health Awards for Local Government (National Heart Foundation of Australia):** The Heart Foundation -Local Government Awards gave recognition to local governments working with their communities to impact health and encourage healthier lifestyles. Since 1992, these Awards have celebrated the important role that local governments have in fostering the health of individuals and members of their community. They have been presented to local governments and collaborative projects that support and improve heart health, which involved initiatives that typically encouraged healthy eating, physical activity and recreation. The Awards aimed to encourage local governments to continue to work towards improving the heart health of their communities.

• **"Concord: A great place to be active" (Central Sydney AHS):** This was a community-based multi-strategic health promotion intervention promoting physical activity in women aged 20 –50 years conducted by Central Sydney health promotion unit in partnership with Concord local government. The intervention involved local social marketing campaign, Community walking events and council for environmental projects that made walking paths and maps of walking routes. Conducted over a 2 year period, the intervention was effective in producing statistically significant reductions (6.4%) in the proportion of sedentary women. These findings demonstrate that a community-based intervention targeting a specific population can achieve positive changes

in physical activity and that a local government has the capacity to be involved in and sustain physical activity interventions, Wen et al., (2002).

• **1% or Less Campaign**: (Centre for Science in the Public Interest, www.cspinet.org/kids.) Multiple messages and activities are used to influence communities to increase consumption of low-fat milk. A feature of the campaign is the 1% or Less School Kit, which contains materials for primary and secondary school students: idea sheets, fact sheets, marketing strategies, model press releases, handouts, posters, and instructions for conducting taste tests. Prepared by NSW Centre for Overweight & Obesity for the Australian Government Department of Health & Ageing.

At present, three drugs are currently licensed in the UK for the treatment of obesity, Wilding, (2007). In clinical trials, these drugs have been shown to result in greater weight loss than interventions that focus solely on lifestyle changes. More importantly, they have a positive impact on weight loss maintenance, which is notoriously difficult to achieve, Sjostrom et al, (1998), James et al, (2000) and Pi-Sunyer et al (2006).

Scotland has also taken a prominent lead in developing an evidence-based programme for weight management within routine NHS primary care through the Counterweight Programme, www.counterweight.org (2008). In addition to providing nutritious school meals, there have been efforts to remove junk food in schools particularly in vending machines. Legislation was passed in 2007 banning junk food from Scotland's schools, BBC, (2007).

2.6 The role of the media in creating awareness on the health risks associated with obesity.

Earlier on in the timeline of the media industry's evolution (1930's and 1940's) it was generally assumed that the media had a direct effect on human behavior and recipients of these messages were seen as passive. Today media audiences are understood to be more selective about what they view and are not seen as the passive, influential "blank slate" audience which was described in the past, Fourie, (2007: 232- 234).There is a need to communicate and disseminate information to the general public about the impact of overweight and obesity throughout the developing regions including south Sudan. For this reason, mass media campaigns have primarily been aimed at raising awareness, providing knowledge and changing attitudes, with the aim of contributing to potential behavior change, Noar, (2006).

Fourie describes some of the ways in which long-term behavior can be affected by the media. The "Modeling Theory" illustrates how some media users may model their behavior on the depiction of people in the media, de Fleur and Dennis, (1994: 585), cited in Fourie, (2007: 240-241). The mass media is an important part of the socio-cultural environment. Agenda-setting theory illustrates how mass media are instrumental in setting the public agenda, determining the issues to which people are exposed, and what information they receive about those issues, McCombs (2005). The mass media reflect, reinforce and shape common culture, including public health-related beliefs and behaviors, McCombs (2005), Swinbul et al (1999). Media interest in obesity has grown quickly over the past two decades, Hilton et al (2006), coexisting with increases in the incidence of overweight and obesity in the UK and worldwide, Wardle et al (2007). The increasing quantity of reporting about obesity, coupled with ability of mass media to

help define public understandings of health issues, means that the media represent an important element of the obesogenic environment.

One way that mass media could influence public understandings and perceptions of obesity is by contributing to its normalization.

Normalization of obesity is a cyclical process by which shifting public perceptions of weight lead to increases in population adiposity, exacerbating the obesity problem, Jonson et al (2007). Underpinning this theory is the concept that as average body mass increases within a population, so does that population's familiarity with, and acceptance of, increased body mass. Increased acceptance may prevent individuals from recognizing, and attempting to regulate, unhealthy adiposity in them, exacerbating the prevalence of obesity and likely increasing population mortality and morbidity, Jebbs (2004).

Keightley and colleagues, (2011), described how normalization might condition individuals to rationalize obesity in themselves: Much media interest stemmed from concerns raised by the World Health Organization which, using data from worldwide surveys, issued a global health warning that: "obesity's impact is so diverse and extreme that it should now be regarded as one of the greatest neglected public health problems of our time" (WHO 1997). In the intervening years the WHO spearheaded a series of expert consultations to sensitize policymakers, academics, and experts to the problem, estimating that more than 400 million adults (9.8%) are obese world-wide (WHO 2000).

In January 1999, the British Broadcasting Corporation (BBC) launched its largest ever health education campaign, `Fighting Fat, Fighting Fit' (FFFF), to explicitly target rising levels of obesity by educating and encouraging people to eat more healthily and become more active. In line with WHO recommendations, its main message was intended to encourage viewers and listeners to make small and permanent changes to their diet and lifestyle rather than to aim for rapid short-term weight loss; it was one of the successful media campaigns, such campaigns could be used by the media in South Sudan (BBC 2010).

A review of the policy documents reveals that all developed regions recognize the need for Information While it is well known that provision of information alone cannot induce behavior change; individuals clearly need information on how to modify their behavior and what comprises desirable behavior if they are to be expected to engage in behavior change.

Across the UK, mass media campaigns have been launched to raise awareness about the need to increase fruit and vegetable consumption under the (at least) 5-A-Day campaign. In England, a one year follow up of pilot projects indicated the campaign had stemmed a fall in fruit and vegetable intake against the national trend, Department of Health, (2003). Mass media campaigns have also been launched to raise awareness about the need to reduce salt intake.

With regards to communicating information to the public about overweight and obesity, evidence suggests that there remains scope to achieve more. For example, distorted perceptions of what qualifies as normal and excess body weight, particularly in relation to the parents of overweight and obese children, have been found to be a significant issue. In one study in England, only 1.9

percent and 17.1 percent of parents of overweight and obese children respectively, identified their children as such, Carnell, (2005). In a further study, only a quarter of parents of overweight children identified their children as overweight, Jeffrey et al, (2005). Social marketing has great potential in the fight against obesity. It has a proven track record in changing both dietary and exercise behavior; it can inform the debate on how the obesogenic commercial environment should be addressed; and it can bring new ideas to the inequalities debate.' Scotland has deployed a social marketing approach in the development of its Healthy Living brand, which is used to communicate information and messages about healthy eating and physical activities. This includes TV and radio advertising, programming, written material, a health advice and information telephone service and website.

The English government pledges to invest in an integrated marketing programme to 'inform, support and empower' parents to make changes in particular to their children's diets and levels of physical activity, Department of Health, (2008). This would include universal messages for all families as well as tailored messages for at risk families. Social marketing-based public health campaigns in which multiple themes about obesity are targeted to specific demographic groups to raise awareness and improve knowledge may fill this gap.

Food and drinks companies spend significant resources marketing, advertising and promoting their products as well as on sponsorships. For example, globally in 2004 Coca Cola and Pepsi spent a combined $3.9 billion and McDonald's spent $720 million on these activities, Lang et al,

(2006). In its obesity strategy, the English government has outlined that it will invest £75 million over a three year period on an 'integrated' marketing programs.

Furthermore, a call had been made by public health advocates to have a total ban on junk food advertising on television before 9 pm, British Heart Foundation, (2007)

CHAPTER THREE

3.1 Study Design

The study was a cross-sectional study, which was focused on the health risks associated with obesity among adults in Juba city of South Sudan. This epidemiological survey was conducted to find out the role of the media in raising awareness on the health risks associated to obesity among adults in Juba.

3.2 Study Area

This study was conducted around Juba, targeting places where adults could gather especially market, Hotels and offices around Juba city

3.3 Study population

The study was epidemiological study involving adults of juba city, the population was both men and women aged 20-69 years old were included in this study

3.4 Study subjects

Inclusion criteria

Both men and women who were the inhabitants of Juba city and were willing to participate in this study were included

3.5 Sample size

The sample size for the study was 50 adults both men and women who were willing to participate in the study were included and selected randomly

3.6 Data collection procedures

A questionnaire was used for obtaining information on the respondent's socio-demographic status, physical activity level, dietary status and general health status as well as the use and understanding of the media in South Sudan. The questionnaire was simplified with simple close ended questions to allow the respondents to choose either yes or no from the given options, which allowed even those from non-English background to easily understand and give precised information required for the study.

Some key interview was conducted with some program managers of private fm radios operating within Juba to assess the role and effort of the media in creating awareness on health.

3.7.0 Anthropometric measurements

3.7.1 Height

The measurement of the standing height by a tape measure attached to a straight wall was used. Participants were asked to stand upright on a flat surface. The position of the eyes and the ears lobes was horizontal, feet was together, knees straight and heels, buttocks and shoulders blades was in contact with the vertical surface of the tape measure. Arms were hanging loosely at the sides with palm facing the tights. The head was not necessarily in contact with the vertical surface; It may be necessary, to hold the heels to ensure that they did not leave the ground. Subjects were asked to take a breath and stand erect to aid the straightening of the spine. Shoulders were relaxed. Height was recorded to the nearest centimeter. If the reading fell between two values, the lower reading was recorded. Later the reading was converted into meters.

3.7.2 Weight

The balance was placed on a hard flat surface and adjusted for zero balance before each measurement. The subjects were stood in the center of the platform, look straight ahead and wearing light cloths. Weight was recorded to the nearest 0.1 kg.

3.7.3 The Body Mass Index (BMI)

The Body Mass Index was calculated using the formulae: BMI = Weight (kg)/Height (m) $^{2.}$, adopted from the World Health Organization standard for BMI calculation

3.7.4 Weight, height and perceived overweight

Weight and height were measured and BMI calculated. Overweight status was defined as a BMI between 25kg/m^2 and 29.99kg/m^2, and obesity as a BMI over 30kg/m^2. Respondents were also asked of their desired weight and if they think their weight is proportional to their height.

3.7.5 Weight control behavior

Respondents were asked to say which of the following descriptions applied best to them: “have you thought of increasing your physical activity level?”.” Have you thought of improving your diet and eating more healthfully?”

3.7.6 Health behaviors and restrictive dietary practices

Smoking status and alcohol consumption was assessed with the single question “Do you smoke cigarettes?” Do you consume alcoholic beverages? Vigorous physical activity was also asked with a single question (Do you regularly do vigorous activity for at least 20 minutes, 3 times a week?). Early in the interview, before any mention had been made of weight control, respondents were asked whether they regularly practice: The dietary habits (“limit the amount of food you eat at meal times”, “limit the amount of desert, cakes and sweets that you eat”, “avoid or limit snacks between meals”, “avoid or limit fat and fatty foods”, “avoid or limit sugar and sugary foods and drinks”, “avoid or limit fried foods” and “choose low fat or diet versions of foods where possible”) had been shown to load on to a single factor in a factor analysis, identified as a “restrictive dietary habits” score.

Overall health status was assessed by questions like, “Have you lost activity days due to ill health”?, where you told by a medical doctor that you were overweight”?,Were you diagnosed with one of the following dieses diabetes, hypertension and stroke”?,and one generalized question for respondents if they think their health is generally good, very good ,excellent and poor”

The role if the media was assessed by the following questions:Respondents’main source of information, the programs they like in the media, whether respondents heard of a health program targeting weight related problems and if they think the media is doing enough in trying to raise awareness on the problem of obesity”?.

Key interview

A key interview was also conducted with some Radio program managers from three main fm radios operating within Juba city, namely Bakhita radio and City Fm.Interview questions mainly included the frequency of broadcasting health information and whether some of their programs included healthy eating and dieting guide as well as passing information on medical problems related to obesity to their listeners in the city.

CHAPTER FOUR

Introduction.

This chapter presents an analysis of data obtained from the study. The presented data is descriptive and presented in tables and pie-charts to clearly show the results obtained for easy analysis and understanding of the results obtained from the study.

4 DATA ANALYSIS

Results were analyzed using analysis of variance and logistic regression from spss for the continuous and categorical variables respectively, to compare

Anthropometric, attitudinal and behavioral differences as well as the role of the media in raising awareness on the health risks associated to obesity among adults in Juba.

4.1.0 Socio-demographic data of respondents

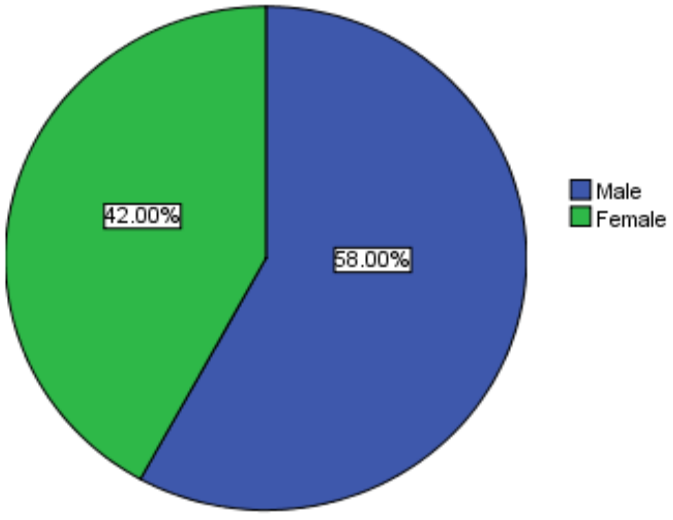
4.1.1 Gender of the of the respondents

The table below shows the number of respondents interviewed based on their gender.

Table 4.1

Gender	Frequency	%	Valid %	Cumulative %
Male	29	58.0	58.0	58.0
Female	21	42.0	42.0	100.0
Total	50	100.0	100.0	

Fig. 4.1



From the table 4.1, the results show that men and women participated in the study by 58% and 42% respectively. This implies that the study presented both men and women fairly.

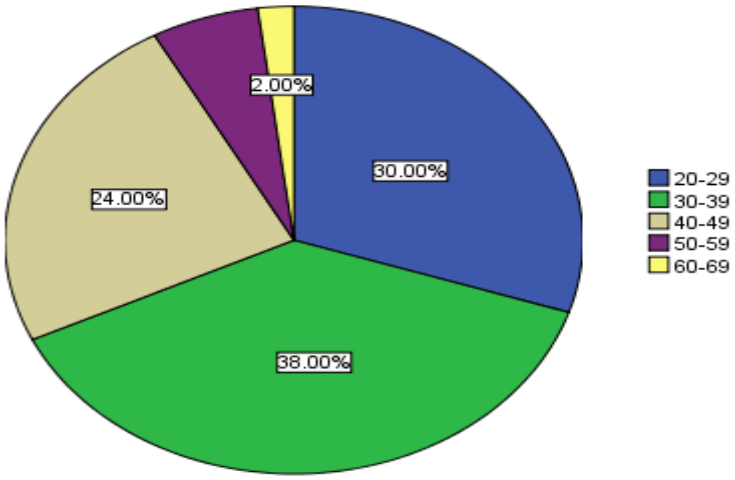
4.1.2 The ages of respondents

Table 4.1.2

The table below shows the age range of the respondents interviewed in the study.

Age range	Frequency	%	Valid %	Cumulative %
20-29	15	30.0	30.0	30.0
30-39	19	38.0	38.0	68.0
40-49	12	24.0	24.0	92.0
50-59	3	6.0	6.0	98.0
60-69	1	2.0	2.0	100.0
Total	50	100.0	100.0	

Fig.4.2



4.1.3 The marital status of the respondents.

Table 4.1.3.

Marital status	Frequency	%	Valid %	Cumulative %	
single	15	30.0	30.0	30.0	
married	24	48.0	48.0	78.0	
widowed / separated	11	22.0	22.0	100.0	

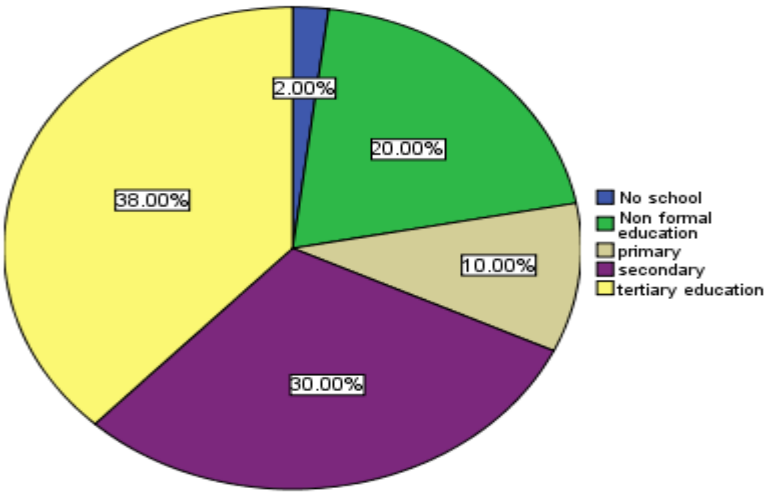
The table 4.3 above shows that 48% of the respondents are married compared to 30% who are living single.

4.1.4 Education level of respondents

Table 4.4 showing the education level of respondents.

Education level	Frequency	%	Valid %	Cumulative %
No school	1	2.0	2.0	2.0
Non formal education	10	20.0	20.0	22.0
primary	5	10.0	10.0	32.0
secondary	15	30.0	30.0	62.0
tertiary education	19	38.0	38.0	100.0
Total	50	100.0	100.0	

Fig.4.4.



The results from the figure above shows that 38% of the respondents reached tertiary education level compared to only2% who did not attain any education.

4.1.5 The residents of the respondent by payams.

The table 4.1.5 showing the residence of the respondents from the Payams of Juba city

payam	Frequency	%	Valid %	Cumulative %
Munuki	15	30.0	30.0	30.0
Kator	16	32.0	32.0	62.0
N.Bari	11	22.0	22.0	84.0
Juba	8	16.0	16.0	100.0
Total	50	100.0	100.0	30.0

The results above shows that respondents were from the main Payams constituting Juba city and fairly represented the inhabitants of the city.

4.2.0 ANTHROPOMETRIC MEASUREMENTS.

Table 4.2.1Weight of the respondents.

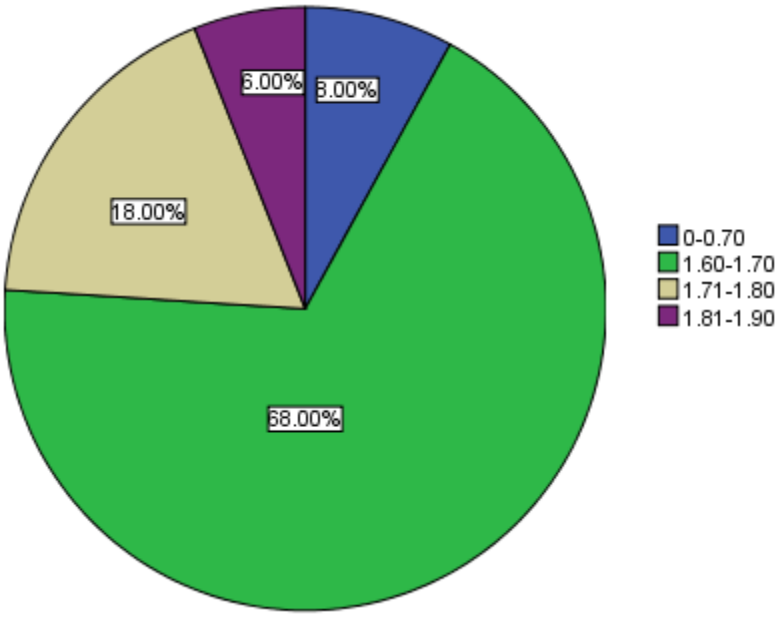
weight	Frequency	%	Valid %	Cumulative %
50-59	4	8.0	8.0	8.0
60-69	10	20.0	20.0	28.0
70-79	21	42.0	42.0	70.0
80-89	15	30.0	30.0	100.0
Total	50	100.0	100.0	

The results of the weight measurements indicated that most of the respondents weight at least 60kg and 70kg, representing 30% and 40% of the respondent's weight respectively.

4.2.2 Height of the respondents.

Table 4.2.2 showing the height of the respondents.

		Frequency	%	Valid %	Cumulative %
Valid	0-1.59	4	8.0	8.0	8.0
	1.60-1.70	34	68.0	68.0	76.0
	1.71-1.80	9	18.0	18.0	94.0
	1.81-1.90	3	6.0	6.0	100.0
	Total	50	100.0	100.0	

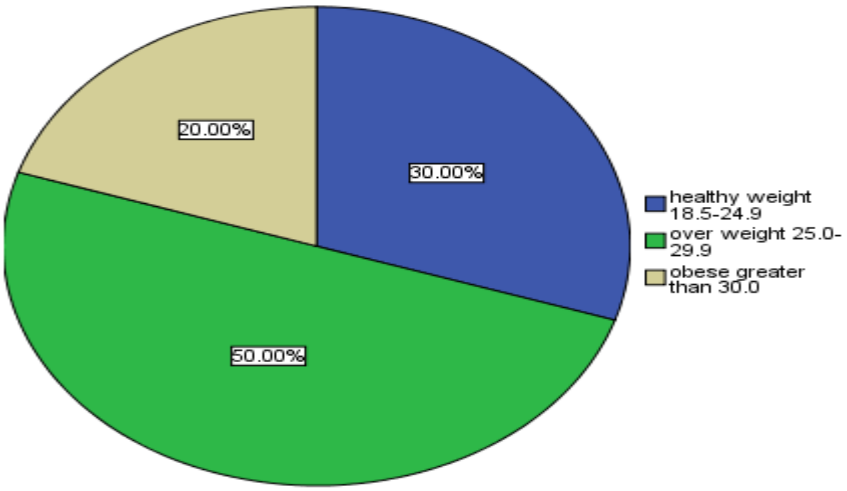


The figure above shows that most of the respondents 'height was ranging from 1.6-1.7 meters presenting 58% of the population studied.

4.2.3 BMI of the respondents

Table showing BMI of the respondents.

BMI Range	Frequency	%	Valid %	Cumulative %
healthy weight 18.5-24.9	15	30.0	30.0	30.0
overweight 25.0-29.9	25	50.0	50.0	80.0
obese greater than 30.0	10	20.0	20.0	100.0
Total	50	100.0	100.0	



The BMI results of the correspondents shows that 50% of the population studied are overweight compared to 30% of those with healthy weight and 20% are obese.

4.2.4 The last time respondent's weight

The table 4.2.4 showing the last time respondents weight before the study weighting.

time weight	Frequency	%	Valid %	Cumulative %
one month ago	3	6.0	6.0	6.0
more than two months	13	26.0	26.0	32.0
more than one year	24	48.0	48.0	80.0
not remember	10	20.0	20.0	100.0
Total	50	100.0	100.0	

From the results shown above, most of the responednts weight themselves more than one year, with only few 6% who weight in the last one month.

4.2.5 What respondents think of their weight in relation to their height.

Table 4.2.5 showing the responses of the popultion studied of whether they think their weight is proportional to their height.

	Frequency	%	Valid %	Cumulative %
Yes	19	38.0	38.0	38.0
No	31	62.0	62.0	100.0
Total	50	100.0	100.0	

From the results shown in the table above, it was clear that the respondents feel their weight is proportional to their height.

4.2.6 The desired weight of the respondents

Table 4.2.6 showing the responds of the desired weight of the respondents.

weight	Frequency	%	Valid %	Cumulative %
50-59	3	6.0	6.0	6.0
60-69	14	28.0	28.0	34.0
70-79	23	46.0	46.0	80.0
80-89	10	20.0	20.0	100.0
Total	50	100.0	100.0	

The table above shows that most of the respodents desired weight ranges from70-79,46% of the studied polation.

4.3.0 Exercise and physical activity

4.3.1 Nature of job of the respondence.

Table 4.3.1 showing the nature of the job category of respondents.

Job	Frequency	%	Valid %	Cumulative %
Physically active job	13	26.0	26.0	26.0
Not physically active	37	74.0	74.0	100.0
Total	50	100.0	100.0	

The table above shows that most of the respondents does not have physically active job,74% compared to only 26% of those having a phyiscally active job.

4.3.2 What respondents do to relax or during their leisure time.

Table 4.3.2 showing how respodents spend their leisure time.

activity	Frequency	%	Valid %	Cumulative %
read novel	12	24.0	24.0	24.0
walking	6	12.0	12.0	36.0
exercise / gim	12	24.0	24.0	60.0
sleep	5	10.0	10.0	70.0
watch movies/football	15	30.0	30.0	100.0
Total	50	100.0	100.0	

The results shows that most of the respondents spend much of their leisure time in reading and watching movies compared to only 12% of those who spend in doing physical exercise.

4.3.3 Time spend for physical exercise in a week.

Table 4.3.3 showing the time spent for physical exercise per week.

Hours	Frequency	%	Valid %	Cumulative %
2 hrs	15	30.0	30.0	30.0
2-4 hrs	8	16.0	16.0	46.0
4-6 hrs	6	12.0	12.0	58.0
more than 6 hrs	4	8.0	8.0	66.0
None	17	34.0	34.0	100.0
Total	50	100.0	100.0	

From the results shown in the table above, most of the respondents are not doing physical exercise by 34% compared to 30% who do for at least 2 hours per week.

4.3.4 Availability of safe and convenient place for physical exercise in the community.

Table showing the availability of safe and convenient place for physical exercise in the community.

	Frequency	%	Valid %	Cumulative %
Yes	28	56.0	56.0	56.0
No	22	44.0	44.0	100.0
Total	50	100.0	100.0	

From the results above,56% of the respondents agreed that there is a safe and convenient place for physical exercise at least in the community.

4.3.5 Assessing if respondents think of increasing the level of their physical exercise activity

The table 4.3.5 showing the numer of respondents who thought of increasing their physical exercise activity level.

	Frequency	%	Valid %	Cumulative %
yes	24	48.0	48.0	48.0
no	26	52.0	52.0	100.0
Total	50	100.0	100.0	

48% of the respondents thought of increasing their physical exercise activity level compared to 26% of those who don't think of increasing their activity level.

4.4.0 Diet and eating habits.

4.4.1 Number of meals eaten per day

Table 4.4.1 showing the number of meals eaten per day

	Frequency	%	Valid %	Cumulative %
Two meals per day	12	24.0	24.0	24.0
One meal per day	6	12.0	12.0	36.0
All	32	64.0	64.0	100.0
Total	50	100.0	100.0	

From the table, the results shows that most of the respondents eat all three meals per day i.e breakfast,lunch and supper.

4.4.2 Finding the rate of eating out(away from home)

The table 4.4.2 showing where respondents get their food.

	Frequency	%	Valid %	Cumulative %
Home	20	40.0	40.0	40.0
Fast food restaurant	15	30.0	30.0	70.0
Hotel	8	16.0	16.0	86.0
Street vender	7	14.0	14.0	100.0
Total	50	100.0	100.0	

From the results at least 40% of the respondents get and eat their food at home compared to 30% of those who get their food from fast food restuarants.

4.4.3 The frequency of fast food consumption in a week.

The table 4.4.3 showing the frequency of fast food consumption per week

	Frequency	%	Valid %	Cumulative %
once / rarely	12	24.0	24.0	24.0
twice	4	8.0	8.0	32.0
three - four times	15	30.0	30.0	62.0
daily	10	20.0	20.0	82.0
none	9	18.0	18.0	100.0
Total	50	100.0	100.0	

From the table above the results shows that 30% of the respondents eat fast food atleast 3-4 times per week compared to 18% who does not eat fast food in a week.

4.4.4 The frequency of consumption of processed/prepacked food per week.

The table showing the frequency of consumption of processed or prepacked food per week.

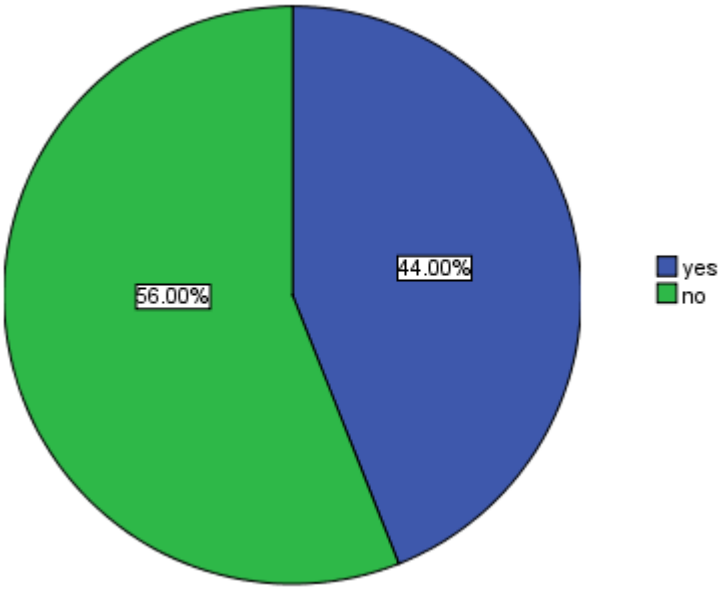
	Frequency	%	Valid %	Cumulative %
once	11	22.0	22.0	22.0
more than 2 times	13	26.0	26.0	48.0
daily	11	22.0	22.0	70.0
none	15	30.0	30.0	100.0
Total	50	100.0	100.0	

Atleast 26% of the respondents consume processed food per week more than two times.

4.4.5 Inclusion of fruits in the serving of meals.

The table 4.5.5 showing wether respondents include fruits in their serving of meals.

Response	Frequency	%	Valid %	Cumulative %
yes	22	44.0	44.0	44.0
no	28	56.0	56.0	100.0
Total	50	100.0	100.0	



From the results shown, 56% of the respondents did not doesn't include fruits in their serving of meals compared to 44% who include fruits in their servings

4.4.6 Availability of a convenient store in the neighborhood where frozen vegetables and fresh fruits are sold.

Table 4.4.6 showing the results of the availability of convenient stores where vegetables and fresh fruits are sold in the community.

	Frequency	%	Valid %	Cumulative %
yes	19	38.0	38.0	38.0
no	31	62.0	62.0	100.0
Total	50	100.0	100.0	

From the results shown above 62% of the respondents said there is no convenient store for fresh fruits and vegetables in the communitywhile 38% said they have a store in their community.

4.4.7 Frequency of consumption of sweetened beverages including sweetened tea or fruit juice per week.

The table 4.5.7 showing frequency of consumption of sweetened bevereges per week.

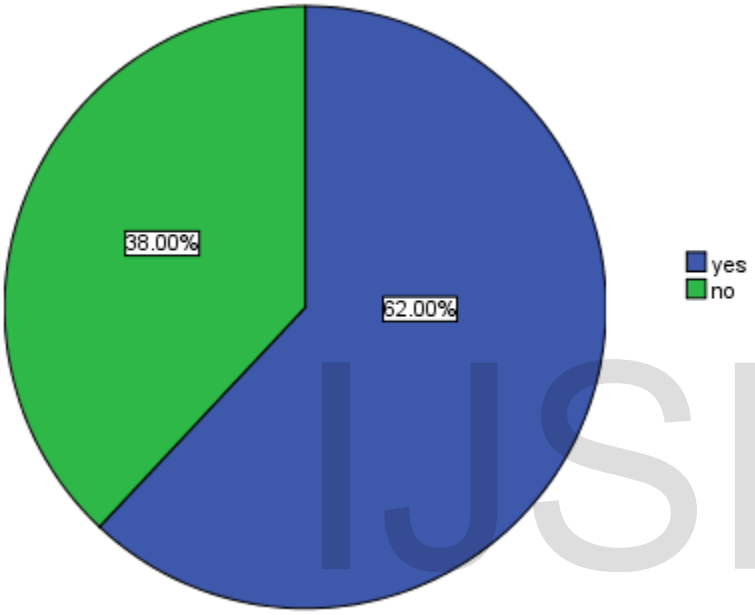
	Frequency	%	Valid %	Cumulative %
daily 2 time	17	34.0	34.0	34.0
daily more than 2 times	4	8.0	8.0	42.0
one in 2 days	5	10.0	10.0	52.0
every day	18	36.0	36.0	88.0
never	6	12.0	12.0	100.0
Total	50	100.0	100.0	

From the results shown in table 4.5.7 above, indicated that 34% of the respondents consume sweetened bevereges atleast two times daily compared to 36% who consume once daily.

4.4.8 The consumption of alcoholic beverages

Table 4.4.8 showing the number of respondents who consume alcoholic bevereges.

	Frequency	%	Valid %	Cumulative %
yes	31	62.0	62.0	62.0
no	19	38.0	38.0	100.0
Total	50	100.0	100.0	



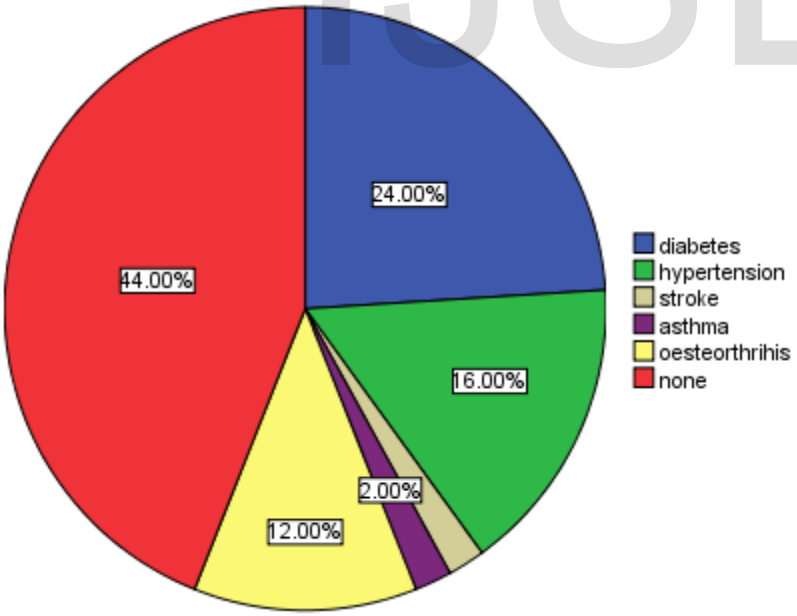
The results shows that 62% of the respondents consume alcoholic beverages and 38% don't consume.

4.5.0 Health status of respondents and the prevalence of diseases associated with obesity

4.5.1 Respondents who were diagnosed with any of the diseases associated to obesity.

Table 4.5.1 showing the number of respondents who were diagnosed with the selected diseases associated with obesity

	Frequency	%	Valid %	Cumulative %
diabetes	12	24.0	24.0	24.0
hypertension	8	16.0	16.0	40.0
stroke	1	2.0	2.0	42.0
asthma	1	2.0	2.0	44.0
osteoarthritis	6	12.0	12.0	56.0
none	22	44.0	44.0	100.0
Total	50	100.0	100.0	



The results from the table 4.6.1 shows that 24% and 16% of the respondents are diabetics and hypertensive respectively, compared to 44% who are healthy.

4.5.2 Loss of activity days due to ill health

The table4.5.2 showing the number of respondents who loss activity days due to ill health

	Frequency	%	Valid %	Cumulative %
yes	16	32.0	32.0	32.0
no	34	68.0	68.0	100.0
Total	50	100.0	100.0	

From the table above 32% of the respondents lose actvity days due to illness compared to 68% who does not lose activity days

4.5.3 Number of respondents who were told are overweight by a medical doctor.

Table 4.5.3 showing the number of respondence who were told that they are overweight by a medical doctor.

	Frequency	%	Valid %	Cumulative %
yes	17	34.0	34.0	34.0
no	33	66.0	66.0	100.0
Total	50	100.0	100.0	

From the table 4.6.4 above 17% of the respondents were once told are overweight by a medical doctor, compared to 66% of the respondents.

4.5.4The general perspection of the respondennts' own health status.

Table 4.5.4 below shows how respondents feel their health status is generally.

	Frequency	%	Valid %	Cumulative %
Excellent	1	2.0	2.0	2.0
very good	12	24.0	24.0	26.0
good	27	54.0	54.0	80.0
poor	5	10.0	10.0	90.0
don't know	5	10.0	10.0	100.0
Total	50	100.0	100.0	

54% of the respondents feel their health status is generally good,compared to 10% who feel thiers is generally poor and 2% feel thiers is excellent.

4.6.0 The media and its role in raising awareness on the health risks associatedwith obesity.

4.6.1 The respondents'main source of information.

The table below shows the main source of information for the respondent.

	Frequency	%	Valid %	Cumulative %
Radio	26	52.0	52.0	52.0
TV	16	32.0	32.0	84.0
Newspaper	5	10.0	10.0	94.0
none	3	6.0	6.0	100.0
Total	50	100.0	100.0	

From the results shown in the table above,52% of the respondence rely on radio as their main source of information tallying up to the heighest source of information compared to 32% and 10% for television and newspapers respectively.

4.6.2 The programs most liked by the respondents in the media.

The table 4.6.2 showing the type of program like by the respondents in the media.

	Frequency	%	Valid %	Cumulative %
News	24	48.0	48.0	48.0
music	13	26.0	26.0	74.0
health	13	26.0	26.0	100.0
Total	50	100.0	100.0	

The results suggest that most of the respondentsenjoy news by 48% while music and health information balance by 26% and 26% respectively.

4.6.3 Wether respondents heard of a health information being braodcasted on the media.

The table 4.6.3 showing the the number of respondents who had heard of a health information on the media.

	Frequency	%	Valid %	Cumulative %
yes	32	64.0	64.0	64.0
no	18	36.0	36.0	100.0
Total	50	100.0	100.0	

The results tabulated above shows that 64% of the respondents heard of a health information on the media.

4.6.4 The respondents' view on whether being overweight can contribute to the health risks such as diabetes, hypertension and so on.

The table 4.6.4 showing the results of the respondents 'view on whether being overweight can contribute to the health risks mentioned above.

	Frequency	%	Valid %	Cumulative %
yes	32	64.0	64.0	64.0
no	18	36.0	36.0	100.0
Total	50	100.0	100.0	

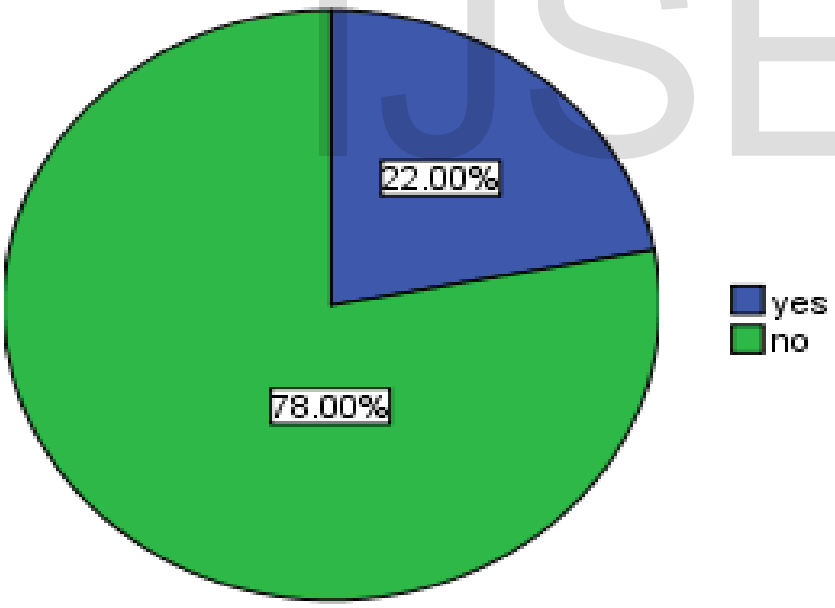
From the results of shown above 64% of the respondents are aware that bieng being over weight increases the risks of medical conditions such as diabetes and hypertension.

4.6.5 Assesing the level of the media in creating awareness on the health risks associated to obesity.

Table 4.7.5 showing the results of the number of respondents who think the media is doing enough or not enough in fighting obesity and it associated health risks.

Table 4.7.5

Responses	Frequency	%	Valid %	Cumulative %
Yes	11	22.0	22.0	22.0
No	39	78.0	78.0	100.0
Total	50	100.0	100.0	



The results in the table and pie-chat presented above indicates that78% of the respondents commented that the media is not really doing enough in raising awareness on the health risks associated to obesity.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMENDATIONS.

Discussion

Morbidities associated with overweight or obesity often is consequences of lifestyle choices and environmental factors. After adjusting for demographics, measures of functional health, and various behavioral risk factors, overweight and obesity were associated with positive attitude towards being overweight, lack of physical exercise or leisure time physical activity (LTPA) and consumption of sweetened beverages and alcohol, as well as lack of consumption of fruits and vegetables among adults in juba. Given the increased interest in preventing weight gain and encouraging weight loss among adults, a better understanding of the health risk behaviors

associated with overweight and obesity, particularly among older adults who are overweight or obese, is important.

This study of 58% men and 42% women aged 20-69 years, carried in Juba city comprising of 30% single, 48% married and 22% widowed/separated adults of whom 38% and 30% attained tertiary and secondary education are residents of Juba city's main Payams in which 32% of the respondents are found in Kator Payam while 30%, 22% and 16% are from Munuki, Northern Bari and Juba Payams respectively.

The anthropometric measurements of weight and height found that 42% of the respondent weight70-79 kgs compared to 30% and 20% who weight80-89 kgs and 60-69 kgs respectively. Relating their height, 68% measured 1.60-1.70 meters compared to 18% and 6% whose height ranged from 1.70-1.80 and 1.80-1.90 respectively.

This study found that 50% of the adults are overweight with BMI ranging from 25.0-29.0 kg/m^2 and only 30% living with a healthy weight of BMI 18.5-24.9 kg/m^2 compared to 20% of the adults who are obese, BMI greater than30kg/m^2

Regular physical activity increases muscular strength and endurance and improves gait and balance at all ages, for both sexes. The findings indicated variability in the types of physical activity adult men and women engage in. Regular physical activity can help manage body weight and prevent weight gain and longitudinal research suggests that adults who become overweight are likely to maintain a higher weight during their lifetime and to report less leisure-time or sports activity than those who were never overweight. This study found that only 26% of the respondents

have physically active jobs compared to 74% of those who have less physically active jobs. Despite the greater percentage of those who do not have a physically active job(74%) only 30% reported to have been doing physical exercise for at least 2 hours weekly, the recommended maximum physical activity level for a healthy living, center for diseases control (2004). It is also clear from the results of the finding that most of the respondents,30% and24% spent their leisure time in watching television and reading, compared to 24% the total number who spent their leisure time doing physical exercise.

The dietary guidelines also proposes calorie-lowering strategies that include eating foods low (per weight or volume) in calories and high in fiber content which are characteristic of many types of fruits and vegetables. Moreover, fruits and vegetables contain many beneficial vitamins, minerals and photochemical, which are thought to protect against several chronic diseases, such as cardiovascular diseases and diabetes. The study found that 30% of the respondents eat fast food3-4 times per week and 34% consumed sweetened beverages between meals daily at least two times, these indicates positive energy/ calorie intake among the adults compared to their energy expenditure. It is also clear from the results that 56% fo the respondents did not include fruits in their servings compared to only 44% who include fruits in their serving. Mean while the result also indicated that 62% of the adults consumed alcohol compared to the38% who does not consume alcoholic products. Alcohol is an energy dense nutrient (7 kcal/g) and because of lace at the top of oxidative hierarchy, its potential for sparing fat oxidation and promoting fat storage is significant. However, dietary intake surveys tend to show that energy from alcohol is additive to food energy intake such that total energy intake is higher with higher alcohol consumption.

Hypertension and diabetes is likely to pose a significant public health problem in South Sudan. The prevalence of hypertension and diabetes in this study, 16% and 24% of the respondents reported to have been diagnosed with hypertension and diabetes respectively while 12% and 2% reported to have suffered from osteoarthritis and stroke respectively compared to 44% who did not suffer from any of the health risks associated with obesity. This result is similar to that found in neighboring Sudan in 2006 (20.1-20.4%), Suliman (2011), but not as high as that reported in rural Uganda (30.5%, with a 95% confidence interval of 26.6-34.3%),Wamala (2009). As found elsewhere in sub-Saharan Africa, it is significantly associated with older age.

This result of the prevalence of diabetes and hypertension and its relations with being overweight and obese in South Sudan is therefore not possible to determine if it is increasing or remains stable since there is limited data and report on health risks in the country. It is likely however, that this relatively high prevalence rate is related to urbanization and the related change in lifestyle within South Sudan, which would suggest that prevalence is increasing. With the health sector in South Sudan, making a transition from providing an emergency response in conflict and infection-related health problems, to one that provide a more holistic and sustainable services. In doing this health policy makers must consider the parallel epidemiological transition that is occurring, as has been witnessed in many other sub-Saharan countries, Cappucio (2004), South Sudan is likely to be developing a double burden of diseases, with infectious diseases remaining the main cause of morbidity and mortality but non-communicable diseases becoming more prevalent.

The media in many developed countries have been leading in the fight to reduce obesity .public health campaigns have targeted obesity through a number of factors including physical activity, fruit and vegetable intake, portion sizes and sugar-sweetened beverages consumption, example of such campaigns was change 4life which targeted both activity and nutrition, Piggin (2011) and fighting fat, fighting fit (FFFF).

This study found that, the main source of information for the adults in Juba is radio: 52% compared to those who get information through television and news papers. But 48% of the respondents mostly attend to news compared to 26%who like music and the other26% like general information on radio including health information. In assessing the role the media is playing in health, 64% of the respondents said they have ever heard of a health program being broadcast on the radio or television. While 36% said they did not get any information on health. Supporting this finding, the results got from the interview held with the radio managers of the two radio stations (bakhita radio and city fm) found that in both stations there is health program in their weekly broadcasting at least twice a week. These programs tackled general health issues affecting the communities including emergency outbreaks of epidemic like the recent cholera outbreak and some social problems affecting the population. There is also special program on city fm called health tips that runs daily for few minutes with direct information on health and the lunch hour mix which gives tips on nutrition and eating; but the manager also confirmed that the massage given may not be enough to inform the public since the information is passed by a journalist who is just a communicator but not a public health expert. In our society today, the radio plays a

number roles as well as collaborating with the ministry of health on tackling diseases out break as witnessed in the recent cholera outbreak. The private radio stations also promote health by reducing the cost of air time for radio talk shows for government experts to broadcast health information to the public as explained by one of the managers, these indicates the commitment of the local radio stations towards the promotion of health in south Sudan. Despite these efforts the radio is trying, 78% of the respondents said the media in South Sudan is not doing enough in tackling the problem of obesity

The findings of this study are limited by it being based on self-reported information on the dieting behavior and presence of the associated disease, as respondents could report on the best part of their eating behavior and may not report the presence of a disease: it is common in our society in South Sudan that people normally do not come out openly when suffering from certain disease unless one is a medical doctor. However as the focus of this study was to investigate the prevalence of obesity and overweight in relation to the media's role in raising awareness, the BMI results were correct since anthropometric measurements of weight and height were taken from the time of the study not self-reported, the short comings of the reported presence of health risks associated to obesity are not likely to affect the conclusion.

Generalization of the study is also limited by the fact that the response rate of older adults aged 50-69 for the survey was around 8% compared to the age group of 20-49 years which was 98%.Which reflects the general trend within survey data that these groups are always complaining of lack of time for the study or are unwilling to participate in research surveys.

The study has the advantage of taking the measurements of height and weight at the time of collection of data, so it is probable that there was a more accurate attainment and calculation of the BMI of the respondents which directly reflects the health status of the respondents based on their BMI range as categorized. All respondents were asked to fill in the questionnaire which includes the general objectives of the study so that it is possible to look at variation in weight control behaviors in relation to the prevalence of obesity and its related health risks and the media's role. The sample was also large and fairly representative of the juba city population, so within the limits of the methods, it would seem reasonable to conclude that:-

Conclusion

The high prevalence of overweight among the growing adult population in south Sudan underscores the importance of initiatives in risk reduction and health promotion. Modification of several common behaviors, such as an increased consumption of fruits and vegetables and regular physical activity, may help reduce the risk of overweight and obesity. The findings suggest that lifestyle changes to reduce behavioral risk factors for overweight and obesity among adults should be promoted by both the media and the central government. The knowledge of the effects of specific behavioral risk factors on the prevalence of overweight and obesity in the older adult population can be improved through continued public health surveillance efforts, and prevalence could well be reduced considerably by effective lifestyle modification programs that target risk factors such as excess consumption of sugar-sweetened beverages, fast foods and alcohol at the

population level. Population-based studies are needed to further enhance the understanding of the behaviors that are potentially useful for reducing overweight and obesity. A better understanding of barriers to reducing health risk behaviors and increasing health-promoting behaviors in the adult population is needed, especially for those who are currently overweight or obese.

RECOMMENDATIONS

Based on these conclusions, the following recommendations arised:

1. There is need for the media to increase awareness and key massages targeting obesity, which will keep adults informed about healthy eating and the importance of physical activity for adults not only in Juba but in the whole of the country.
2. There is need for health information targeting to change the perceptions that overweight, tasty high risk foods, and sedentariness represents a ‘good life’. Health educators should plan with clients on how to overcome barriers to lifestyle change especially in ways familiar to the predominantly urban communities.

3. Given the gross challenges our health systems faces, integration of measures like community education, selective risk evaluation, counseling of high risk people and improved treatment of people with diabetes, hypertension, and stroke require a re-organization of existing primary care services packages and their delivery mode. Innovative ‘smart health systems’ that shift some of these responsibilities to affected individuals and communities are needed.
4. The government should promote awareness at the highest political level across all sectors of: the emerging epidemic of NCDs; their risk factors; the extremely high costs of treating NCDs which can drain the resource of the citizens; and cost-effective measures available for preventing NCDs.
5. There is need to review agricultural policies with a view to increasing local production of healthy and affordable foods.
6. There is also need to undertake knowledge, beliefs, attitude and practices surveys on diet, physical activity and health (including perceptions of overweight and obesity, traditional food preparation and use, and benefits of physical exercise, especially among adolescents and adults) with a view to promoting changes in behaviors that are favorable to health
7. There is need to conduct the body composition studies and prospective studies needed to define equivalent (equivalent body composition/equivalent diseases risk) BMI values across different ethnic groups and define ethnic-specific cut-off points.

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