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The recommended ways of promoting and nurturing food and nutrition in Zambian Schools

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Abstract
This article is an extract of one of the objectives from the master study entitled "Significant skills for effective teaching of Food and Nutrition in selected secondary schools of Kitwe District of the copperbelt Province Zambia. The study was motivated by the persistence of infectious diseases and the mushrooming of non-communicable diseases due to lack of knowledge and skills in Food and Nutrition among the public in general. This is so because most Zambians take health living for granted (Begum, 2008).
The study thus called for solutions to promoting and nurturing of the practical teaching and learning of Food and Nutrition in Zambian schools. In achieving this task, the study employed a case study which adopted both quantitative and qualitative paradigms. Data for the study was collected from ten (10) secondary schools in Kitwe District including the District Education Board Secretary (DEBS) and Mukuba University. The total sample size was fifty – five (55). Questionnaire data were analyzed using Microsoft excel and STATA that were interpreted into tables, frequencies and graphs whilst qualitative data were analyzed using emerging themes and sub-themes.
The findings revealed that Health living is an easy thing taken for granted whether you live where health and nutrition is in abundance or not. The life of human is a process of growth and development, on one hand he absorbs all kinds of nutrients from food and on the other hand he is exposed to potential attacks by various pathogens. Only through balanced nutrition intake can all systems of the human body function in harmony and the immunity be enhance to keep diseases at bay (Richard, 2009).
Being merely free of any diseases based on balanced nutrition is not the only step towards health. Longitivity is built upon health metabolism helped by normal activities of cells, tissues and systems of human body. Smooth circulation ensures health growth and development of human body throughout life process which lay the foundation for longitivity.
Therefore, healthy nutrition interventions need to occur early in childhood and adolescence in order to prevent or reverse the adverse health effects of overweight and poor eating habits. Childhood and adolescence is a critical period for diets of high nutritional quality as the physiological need for nutrients is relative to energy needs. In addition, many core eating habits and behaviour patterns are developed that may persist throughout adulthood.
Hence, Schools provide an important opportunity for prevention, because they provide the most effective methods of teaching and reaching large numbers of people which includes children, youth, school staff, families and community members.
Hence, healthy food and improved nutrition should be a high priority on every school agenda because of the positive effect on the child well-being, and subsequent enhanced learning ability and academic performance. Through effective teaching of Food and Nutrition as a compulsory subject from an early stage in the revised curriculum of hands on and by creating Healthy Promoting Schools, pupils can greatly improve their life qualities and live at full potential. Pupils who learn Food and Nutrition will realise that people, who live healthy, live at full potential physically and mentally. So they will extend their love and care to people around them, to the community and to the whole Nation (Caballero, 2001).
Thus the study made the following recommendations (1). The government through the Ministry of General Education should buy the necessary equipment, materials, and ingredients needed for practical lesson in schools. (2) The government through the Ministry of General Education should make Food and Nutrition a standalone subject and make it a compulsory subject from primary level to tertiary level. (3) The government should start training teachers in Food and Nutrition as a standalone course in Colleges and Universities (4) the government should also start conducting surveys on the practical methods of Food and Nutrition.

Keywords: Food and nutrition, Healthy promotion Schools, nurturing, health education

1. Introduction

1.1 Background of the study

Diseases never come without a cause. It is not fate or our stars, nor is it often entirely due to factors beyond our control. Most diseases are due to the simple out working of the laws of cause and effect; they are mainly the result of violations of the laws of the health. It means that most health problems are preventable or at least can be postponed. However, did you know that food is among the seven factors that cause poor health? Indeed, food has the power to preserve life as well as to destroy it.

Foods make our body because we are what we eat. The weight and composition of the body entirely depends on the food we eat. The primary aim of consuming food is nourishment. Food is essential for human existence just like the air we breathe or the water we drink. The food that we eat is utilized in the body and assimilated substances are used for growth and maintenance of the tissues. A living organism is a product of nutrition. Our own choices of food and life style can lead to better health and longer life or poor health and early death. (Begum, 2008)

In the past there used to be a very different pattern of

diseases. Most illness and deaths were due to infections, poor or non-existent sanitation and public health services allowed infections to spread. Poverty and inadequate food lowed people's resistance, and limited medical understanding meant that there were few effective treatments. All these facts resulted in a high incidence of infectious diseases and premature death, as they still do much in the developing countries like Zambia.

Now the picture is changing in the developing countries, but not always for the better. The Western diet and life style are becoming more and more popular with everyone who can afford them. Sedentary work and cars are in demand, Western style high- fat- fast food outlets are multiplying, the use of tobacco and alcohol is increasing, and with all these changes, so is the incidence of degenerative disease. Thus the poorest countries in Africa Zambia inclusive now have the double burden of unconquered infectious diseases and rising incidence of degenerative illness (WHO, 2010).

There is a firm connection between life style and quality and length of life. The concept of whole person heath involves the interrelationship of all aspects of life style such as diet, exercise, substance use, stress levels and mental status. Optimal heath is not just the avoidance of all the major killer diseases (Richard, 2009) [2]. But health living is an easy thing taken for granted whether one lives where health and nutrition is in abundance or not. To realize this goal the first step is to make the pupils understand that food and nutrition as a preventive care are indispensable part of their daily life

Therefore, pupils should know that modern health and nutrition education can help them to cope and deal with unconquered infectious diseases and rising incidence of degenerative illness. The newly coming method of teaching Food and Nutrition using hands on methods will not be meaningful if teachers do not fully and effectively implement it. With the effective use of this method pupils should look forward to preserve their health and to prevent diseases. (Contento, 2011).

Despite vivid and empirical evidence of the positive role that Food and Nutrition play in peoples life concerning healthy eating habits, many questions still arise as regards the impact it has on the people who learn it. For example, how do people choose food? When they buy food, what factors influence them? Is it packaging? Price? Ease of preparation? Or just the persuasive claims in advertising? Or just the way the food looks and tastes? Making the right choices may determine whether your heath is improved or damaged (Begum, 2008).

The present study therefore attempted to find out from administrators, teachers of Food and Nutrition and pupils taking the subject if methods used in teaching are effective and practical. And if the content taught in Food and Nutrition is able to help pupils and the society to preserve health and prevent diseases. The study further recommended ways of promoting and nurturing Food and Nutrition in Zambian Schools.

1.2 Statement of the Problem

The effect of significant skills for effective teaching of Food Nutrition in Zambia still remained un investigated this is so because most research have been done in Home Economics and not in Food and Nutrition as a component of Home Economies which is now being offered as a standalone subject in most high schools in Zambia.

This has caused concern particularly in view of the point that Food and Nutrition is the only subject that meet and deals directly with human life at family level so if effectively taught in schools most infectious and non-infectious diseases could be prevented and premature death could be reduced. Thus, Food and Nutrition studies in school does not only offer a promising career but can preserve life. This study therefore would like to find out if this subject is being effectively taught more especially that the curriculum demands hands on methods (learning by doing).

1.3 Significance of the study

This study was significant firstly because the findings provided valuable information which would be a basis for further research for the improvement of Food and Nutrition teaching in Zambia. Secondly, the findings of this research were important as they brought awareness of important teaching experiences in Food and Nutrition which would be of interest to teachers, teacher educators and to curriculum planners. It is in the interest of every educational system to ensure that teachers are competent in the subjects they teach. Perceptions' concerning distinctive qualities as characteristics of a competent Food and Nutrition teacher is important in stimulating and guiding improvements in the teaching of the subject. Therefore, identification of competencies that Food and Nutrition teachers perceived to be critical for teaching the subject is an important step towards improved learning in Food and Nutrition.

Some teachers' perceptions may not necessarily be related to effective teaching and learning. Such data, however, shall bring awareness of how Food and Nutrition teachers interpret the existing syllabus and how they interpret what is fundamental for teaching the subject. The findings helped to expand the understanding of the nature of teaching in Food and Nutrition in Zambia. Such information is useful for preparation of curriculum reviews, in-service training courses and for the planning of pre-service teacher training courses.

The information can also provide a basis for making changes in school programs. Focusing on perceptions of practicing teachers as a means of identifying critical competencies provided an opportunity to re-conceptualize the role of the Food and Nutrition teacher with regard to teaching responsibilities, professional development, and roles in curriculum and staff development. Focusing on teacher perceptions also helped revealing important elements inherent in the teaching of Food and Nutrition which would otherwise be impossible to identify if observed from an outsider's point of view. It is of prime importance that the teachers' perceptions on such issues be reflected through interpretative research.

1.4 Study site

The study was conducted in selected secondary schools of Copperbelt province. Ten schools were selected and a case study research design was used. These sites in Copperbelt Province were chosen because they had been teaching Food and Nutrition as a subject.

2. Literature Review

In 2001, non-communication diseases accounted for 60% of the estimated 56 million deaths globally and 47% of the global burden diseases. While non-communication diseases were

initially mainly limited to higher socio-economic groups in low and middle income countries, recent evidence shows that the unhealthy behaviours associated with these diseases are becoming increasingly prevalent in poor countries with parallel increases in the prevalence of Non-communicate diseases. As a result the poor countries are facing a double burden of unconquered infection diseases and rising incidence of Non-communicable diseases also known as degenerative illness (Robert, 2014). These diseases are the second leading course of death and disabilities but surprisingly they are neglected elements on the nutritional and health agenda.

The United States is experiencing an epidemic of obesity among adults and children more than 67% of America adults are either obese or overweight. The rate of adult obesity has grown from 15% in 1980 to 34% in 2001 (Ogden, 2008). Overweight and obesity rates in young children are equally alarming. More than 23 million children and adolescents in the United States are obese or overweight. (Ogden c, carol m and Flegal k, 2008)

In Europe overweight and obesity have increased drastically among children and adolescents and are considered major public health concerns. World Health Organisation (2004) [9] describes obesity as a global epidemic due to its high increasing prevalence. According to the International Obesity Task Force (IOTF) the prevalence of overweight and obese in children rated from 9% in 1980 to 24% in 2002. At present it is estimated that 14 million school children in Europe are overweight, 3 million of who are obese (IOTF, 2004)

Obesity has very long term negative consequences on the health of children and adolescents (Musonda, 2015). The most important long term consequence of childhood obesity is its persistence into adulthood. It is estimated that 50-80% of obese teenagers will remain obese adulthood (Guoetal; Lissauetal 2004). Obesity and overweight in young people have been shown to be significantly associated with long term morbidity and mortality, especially in the development of chronically illness like cardiovascular, cancer and type 2 diabetes.

Dental carries are highly prevalent in school children of European countries. The most dietary cause is sugar, particularly sucrose which is found in confectionary, soft drinks, biscuits, cake, fruits juices, honey and added sugar. The frequency of consumption as well as the total amount of the sugars consumed is important in the aetiology of carnies. (Shellem, 2001). Furthermore, the rates of dental erosion, related to extrinsic and intrinsic acids, appear to be rising. This is due to an increased consumption of acidic soft drinks (Moynihan and Petersen, 2004). Oral health is closely linked to diet and nutrition as poor dietary practises increase the risk of oral diseases. Schools by taking part in healthy nutrition initiatives which enforce healthy snacks or no sugar policies, can thereby at the same time promote children's oral healthy.

For example in Kenya according to the Ministry of Public Health and Sanitation and National Nutrition Action Plan2012-2017, malnutrition in Kenya remains a big public health problem. Kenya has high stunting rate (35%) and is currently experiencing a rise in diet related non-communicable diseases such as diabetes, cancers, kidney and liver complications that are attributed to the consumption of foods low in fibre and high in fats and sugars. This double burden on malnutrition is serious and without deliberate and concerted efforts, will lead to increased loss of productivity and lives.

According to the 2008-2009 Kenya Demographic and Health Survey (KDHS) 35% of children under age of five years are stunted, 16% are underweight and 7% are wasted. Today in Kenya as estimated 2.1 million are stunted this is a serious national development concern as these children will never reach their full physical and mental potential. Regional disparities in nutrition in Kenya are significant with North Eastern having highest proportion of children exhibiting severe wasting (8%) while Eastern has the highest level of stunted children (44%). The proportion of stunted and underweight children is negatively correlated with the level of education, health and nutrition status of the mother.

According to Nigeria Health sector component of Nutritional Food and Nutrition Policy and the National Strategic Plan of Action for nutrition 2014-2019, malnutrition and nutrition related diseases continue to be problems of great public health importance in Nigeria.

Despite being a middle low income country Nigeria has the highest number of stunted children under age of five in sub-Sahara Africa, and second highest in the world, with 37% of all children under five classified as stunted, 19% as severe stunted. Additionally, micronutrient deficiencies, which may be hidden to the naked eye, are pervasive throughout in Nigeria with vitamin A deficiency 50% (VAD), 63% of women are anaemic, 31% are iodine deficient, 20% are zinc deficient [Nigeria Demographic and Health Survey (NDHS), 2013].There are many causes of malnutrition in Nigeria, but the most obvious ones are poor infant and child feeding practices, lack of access to health care, water and sanitation and high level of poverty. Also of public concern is the rising prevalence of overweight and obesity, which is affecting more and more Nigerians. About 5million Nigerians may die of non –communicable diseases by 2015 and diabetes alone is projected to cause about 52% of mortality by 2015, at that time 8 million suffered from hypertension, 4 million had diabetes. Researchers have empirically identified the link between non-communicable diseases and globalization, urbanization, lifestyle, social cultural factors, poverty, poor maternal, fatal and infant nutrition.

The situation analysis of nutrition status in Zambia shows that the common nutrition problems are protein-energy malnutrition (PEM), micronutrient deficiencies, low birth weight as well as the rising incidence of degenerative illness. Protein-energy malnutrition is presented as stunting, wasting, underweight and low birth weight, while micronutrient deficiencies include vitamin A deficiency, iron deficiency, anaemia and iodine deficiency disorders.

Stunting or linear growth retardation is the most prevalent form of protein-energy malnutrition in Zambia. The prevalence of stunting currently stands at an average of 53% among children under five years of age (CSO/UNICEF, 2000). Wasting rates have remained between 4% and 7% for the under five children in the 1990 with urban areas being slightly worse off than rural areas. The prevalence of underweight in Zambia has remained between 23% and 27%. (District Health Survey, 1992). According to WHO's Severity Index, Zambia is rated critical for stunting, medium for wasting and serious for underweight.

Overall, an estimated 10% to 13% of children born in Zambia have low birth weight. This incidence is related to poor maternal nutrition before and during pregnancy. According to Zambia Demographic Health Survey (ZDHS, 1996), 10% of

all women of reproduction age surveyed had a low body mass index [BMI: weight (kg)/height (m)]. About 9% of the Zambian mothers of children under 3 years of age are malnourished, with Body Mass Index of less than 18.5, represent one of the lowest rates among the sub-Sahara countries (DHS, 1996).

Vitamin A deficiency is a public health problem in Zambia affecting especially the poor due to inadequate dietary intake. A 1997 National Survey showed a prevalence of vitamin A deficiency of 65.7% and 21.5% in children and women respectively. Night blindness rates were 6.2% for children and 11.6% for women.

Anaemia is prevalent in Zambia with up to 50% of women attending antenatal clinics and 15% of children fewer than five years of age estimated to be affected. A National baseline study on the prevalence and an aetiology of anaemia conducted in 1998 showed that 68% of children, 39% of women and 23% of men are anaemic. Iodine deficiency is also common health problems in Zambia. A1993 National Sample Survey of school primary children found a goitre prevalence of between 8% and 9% with national average of 32%.

The Food and Nutrition Strategic Plan for Zambia 2011-2015 and the National Food and Nutrition Commission of Zambia reports shows that Zambia is one of the countries with prevalence of non-communicable diseases (NCD's). The results from the 2008 study conducted by the Ministry of Health and WHO shows that70 000 people had suffered from diabetes mellitus in Zambia in 2000. The number is expected to rise to 186 000 by 2030. Hypertension was estimated around 608 034from the same population. Non-communicable diseases are increasingly become a problem in the communities especially in urban areas. The association of diet to increased risks of non-communicable diseases needs to be fully understood in Zambian context. For example, more information needs to be disseminated to the public on diabetes, heart disease, obesity, hypertension, cancer and other conditions.

Programs to prevent and control nutrition related diseases are insufficient, due mainly to focus on curative care at the expense of preventive health care services, lack of epidemiological studies, lack of nutrition surveillance, inadequate nutritional information and lack of assessment of the cost-effective of nutrition intervention.

However, the Ministry of Health plays an important role in effecting improvements in nutrition. Lot of nutrition programs are implemented directly by the Ministry of Health which includes primary health care activities like immunizations, growth monitoring and promoting micronutrient supplementation, breastfeeding and complementary and supplementary feeding. The Ministry of Health has several statutory bodies under its jurisdiction including the Food and Nutrition Commission of Zambia.

Since 1992, Ministry of Health has been implanting the health reform programmes through which it is intended to take health care as close to the family as possible. Although nutrition has been included as part of the minimum package of basic health services to be delivered as close to the family as possible, the objectives, strategies and activities that have been identified are narrow and unlikely to tackle the broader nutritional issues within health setting. There seem to be a lack of understanding of what should constitute nutritional activities in the health sector.

Another sector is the Ministry of Agriculture and co-operative (MACO) which is directly responsible for Food and Nutrition improvement. It covers the production of food and to some extent its utilization, storage and preservation. Activities to incorporate nutrition components have been implemented mainly through the department of women and youth and the farming systems research. The incorporation nutrition into mainstream agricultural sector objectives is still far from being achieved. The critical problem has been the lack of systematic institutional collaboration and cooperation between MACO and NFNC.

According to NFNC, behaviour change communication is an important component of nutrition interventions that aim at creating awareness and change behaviours for Food and Nutrition improvements. Since its existence, the NFNC has being developing and disseminating various education and information messages through the electronic and print media. These messages created awareness and changed behaviours to varying levels. Unfortunately, these activities have stalled largely due to diminishing resources. Consequently, this has had a negative effect in behaviour change communication activities.

National Food and Nutrition Commission further stipulate that the Ministry of General Education provides the best opportunity to provide health and nutrition education and ultimately influence nutrition behaviour of the population if the collaboration between the Ministry of General Education and NFNC can be strong. Currently, consultations between the two institutions in nutrition curriculum development or nutrition expertise requirements of the Ministry are minimal. Other area of concern is the lack of supplementary feeding programmes in most schools which is mainly known to contribute to improved academic performance.

According to Smith (1999), one way to help prevent eating disorders is to educate children about the importance of health eating habits during their adolescent years. That is why; Food and Nutrition programs in schools are seen as indispensable by many educators.

A school is an institution of education and research supports the role nutrition education plays in education. This relationship supports the idea that schools have the vital role in providing pupils healthy eating opportunities and the tools to make health choices no matter where they are. Therefore the goal of the Ministry of General Education must be to teach all pupils the meaning and importance of good nutrition so that they are able to develop good eating habits that will support a lifetime of maximizing their full potential.

Research shows that eating a healthy diet in itself does not guarantee good health. A healthy diet is however an important part of a healthy life style and that also includes physical exercise, not using tobacco in any form, not drinking alcoholic beverages in excess and not abusing drugs (Musonda, 2015). All of these issues should thus be addressed by schools in an organized and complementary manner.

The importance of addressing lifestyle holistically is clearly illustrated in the linkage between nutrition and active living. Physical exercise, recreation and sport help individuals acquire and maintain physical fitness and serve as a health means of self-expression and social development. Expending energy in physical exercise and sport balances the intake of energy from food, especially in regions that do not incorporate physical activity into daily living through farming, herding

animals, walking long distances or other activities.

Thus physical activity and nutrition must be addressed in a complementary manner when integrated into components of healthy promoting school. Children and adults should have the opportunity to attain the healthful benefits of exercise, games, dance, sport or an active lifestyle (Vigilio and Stephen, 1997). In region where over nutrition is prevalent, efforts to promote physical activity sport should stress the benefits of reducing the risk of obesity and related disorders since negative health consequences of overweight and obesity are likely to be more serious in sedentary than active obese people (Begum, 2008). Thus, physical exercise and sport, together with health nutrition, can help reduce the effects of age and chronic disease on heart, lungs and muscles; reduce fatigue, mild anxiety and depressions; and diminish the loss of bone calcium while creating vigour, stamina and other fundamental requirements for well-being.

Initiatives targeting obesity in schools could be incorporated into existing health promotion programmes or combined with other interventions encouraging health eating; the messages and strategies will complement and reinforce each other. In order to focus on healthy eating rather than on slimming or dieting, school based interventions should emphasise on healthy nutrition in obese as well as normal-weight children (Lissau *et al.* 2001).

In1995 Europe, launched the world Health organisation's Global School Health initiative, with the mandate to use schools as a means of strengthening health promotion and education activities at local, national, regional global levels in order to improve the health of students, families and all members of the community. The term health promotion schools' was developed to recognise educational institutions that constantly strengthens its capacity as a healthy setting for living, learning and working (WHO, 2006).

The concept of a health promotion school is based on a social model of health, emphasizing the needs of the individual at the centre of the entire organisation. Using a holistic approach, supportive setting is created influencing the perceptions and actions of all involved with the school, from parents to caterers and food providers, [The European Network of Health Promotion Schools (ENHPS), 2006].This is particularly important when addressing child nutrition and health, as all stakeholders involved in the provision of the school food influence the real nutritional quality and therefore diets of young consumers.

Therefore, according to Scriven and Stiddard (2003), schools and education institutions have been identified as one of the fundamental settings for health promotion and establishment of health eating and life style patterns. However, tackling nutrition issues in childhood requires coherent action in the school setting, as the hierarchical culture may inhibit achievement and empowerment. Improved school health is achieved by the development of Food and Nutrition policy. A written policy document should be produced based on a situation analysis specific to the context and agreed upon by all the different stakeholders involved.

Social factors influence dietary intake especially during adolescence. Eating habits, food choice and meal patterns of young people reflect the weakening influence of the family and increasing peer pressure. Changes in eating habits can be associated with the need to express freedom from parental control and the forging of identity. Many adolescents and children feel pressured into having an ideal body shape. The desire to be thin and the stigma of obesity may have a significant effect on body language and self- esteem in young people (WHO, 2004a).

Healthy nutrition improves child well- being and learning ability, leading to better academic performance. Evidence shows positive links between children who are well nourished and improve learning, attendance, behaviour and consequent child- teacher relationships (The food commission, 2001). Good nutrition also foster mental, social and physical well-being, contributing to increased self-esteem and positive body image.

Therefore, school and educational institution provide a key environmental setting in which to facilitate actions that promote healthy choices as the norm. Focusing on establishing a whole school approach to health, and through targeting the wider community, a concrete food and nutrition policy in schools cannot only bring short- term improvements in the daily lives of young people, but also establish health attitudes and preventing the onset of obesity and chronic disease in later life.

A whole school approach to healthy eating can provide children and adolescents with both the opportunity to learn food and nutrition skills and how best to implement them both within and outside the school setting. Schools must not only teach children and adolescents about healthy lifestyles but also how to implement the recommendations (Snyder *et al.* 1999). Pupils learn how to choose a healthy diet through the meals and snacks provided at school and develop a range of consumer based skills including food growing, healthy, preparation and cooking. It is important to ensure that food and nutrition messages are consistent and not contradictory. In addition, in order to support pupils, teachers must be given the opportunity to improve their knowledge and skills in food education.

Interventions targeted at healthy nutrition need to occur early in childhood and adolescent in order to prevent or reverse the adverse health effects of overweight and poor eating habits (st-onge, Keller and Heymsfield, 2002). As the prevalence of child obesity continues to increase rapidly worldwide it has been suggested that aggressive approaches to prevention and treatment are required to limit the substantial and long lasting health and social consequences of obesity.

Schools can play an important role in the prevention of obesity. Reaching children and adolescents at an age when behaviours are shaped, and the onset of disease prevented, may be the best method of intervention. Nutrition intervention are policies, services, learning experiences and other actions implemented by schools, individuals or groups to make healthy nutrition a way of daily life. Nutrition interventions are designed to promote health and decrease the risk of diseases. In a Health- Promoting School nutrition interventions are integrated into all aspects of the school and community life, such as the physical and psychological environment; a wide variety of educational opportunities; school/ community projects; school health services; health promotion for school staff; counselling and social support programmes; physical exercise, recreation and sport; and food programmes. (FAO/ WHO, 1992).

School feeding programmes are one example of intervention aiming at increasing food availability while promoting healthy eating. These programmes might provide breakfast, lunch and

snacks at reduced price or free of charge, providing calories, protein and micronutrients to school children without adequate food. Feeding programmes have been shown to increase weight in some cases also school attendance and achievement. The composition of provided meals in terms of food terms and nutritional value has been shown to play a role in educational achievement. For example, research with elementary and high school students in Chile showed improvements in educational accomplishment with more frequent consumption of daily products and with more nutrient intake in particular protein and calcium (Ivanovic, 1992).

Diets deficient in essential vitamins and minerals can have enormous health impact. Thus, micronutrient supplementation is another example of nutrition intervention to prevent specific deficiency diseases individuals and to promote well-being. This intervention method supplies micronutrients separately from normal diet. Children who receive supplements must obtain them regularly; therefore, schools are an appropriate place to distribute them. These supplements may include vitamin A capsules to prevent blindness, iron tablets to prevent anaemia and iodized salt to prevent goitre and mental retardation. Ample evidence exists of the value of treating micronutrient deficiencies resulting in improved performance at school or at work and reduced burden of illness, disability and death.

Although, the problems identified above will not be overcome by the efforts of the educational system alone, schools provide an important opportunity for prevention (Carter, 2002) as they offer the most effective way of communicating key health messages to large population groups including children, youth, school staff, families and community members. Healthy nutrition during childhood and adolescence lays a foundation for healthy adulthood. Therefore, the multiple benefits of healthy food and nutrition in childhood and adolescence reinforce the need for these issues to be a high priority on school agendas.

3. Methodology

The study undertook triangulation methodology approach where both qualitative and quantitative methods were used to collect data.

3.1 Research design

The study used a case study employed qualitative and quantitative methodologies in order for the study to establish significant skills for effective teaching of Food and Nutrition in selected secondary schools. The case study was used because it was manageable both in terms of time and cost. Moreover, it was easier to use multiple data collection techniques; questionnaires, interviews and classroom observations. A case study research design helped in obtaining in-depth information on the significant skills for effective teaching of Food and Nutrition in selected secondary schools of Kitwe district.

3.2 Population

The study comprised of pupils, Food and Nutrition teachers, administrators, the DEBS, the DESO and one Mukuba University lecturer all from Copperbelt Province.

3.3 Sample size

The sample size comprised fifty-five (55) respondents who included seven (7) secondary school head teachers, three (3) deputy head teachers, ten (10) secondary school Food and Nutrition teachers, ten (10) H.O.Ds, one (1) guidance teacher, twenty-one (21) pupils all drawn from secondary schools offering Food and Nutrition, one (1) DEBS and one (1) DESO, one (1) lecturer from the Home Economics department of Mukuba University.

3.4 Sampling Procedure

The simple random technique was used to select head teachers, teachers and pupils. The quota sampling technique was further used to select pupils in order to accord both the male and female pupils equal opportunities to participate in the study. Furthermore, the purposive sampling technique was used to select the DEBS, the DESO, and the lecturer because they are holders of valuable data that was required for the study.

3.5 Instruments for data collection

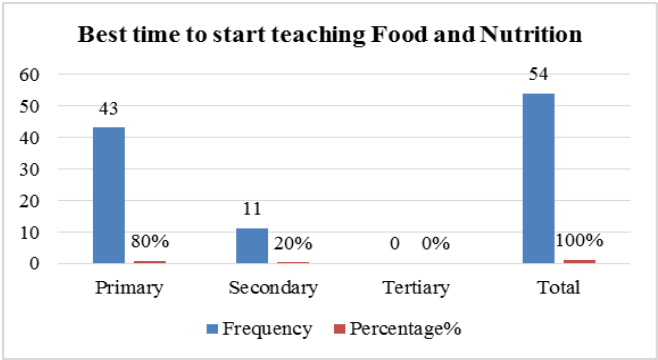
The study used questionnaires, interview schedules, class observations and corporative review of curriculum documents. The questionnaires were used to collect data from pupils and teachers who were the majority. Further, questionnaires were used because the sample composed of secondary school teachers and pupils who were literate. Furthermore, questionnaires were used as they were friendly, save time and suitable when dealing with quantitative data. However the inadequacies of using questionnaires were supplemented by employing interview schedules. The interview unlike the questionnaires helped in collecting in-depth and comprehensive data from teachers and administrators.

3.6 Data analysis

The statistical package (STATA) was used to analyze the quantitative data that was later interpreted into tables and graphs. The qualitative data was analyzed thematically under their respective emerging themes and sub themes. Further, ethical issues were also taken into consideration by obtaining participants consent and permission from relevant school head teachers. In addition, the respondents' identities were kept anonymous as a way of enhancing confidentiality and privacy.

4. Findings and Discussions

In establishing the recommended ways of promoting and nurturing Food and Nutrition in Zambian schools all respondents were asked what could be the best time to start teaching Food and Nutrition. The responses are shown in Figure 1 below:



Source: Field data, 2016.

Fig 1

Figure-1 above shows that 43(80%) of the respondents said that the best time to start teaching Food and Nutrition was at primary level, while 7(18%) said that the best time to start was at secondary level, and 1 (2%) did not express his or her views on when is the best time to start teaching Food and Nutrition. No one recommended tertiary level as the beat time to start teaching Food and Nutrition.

Food and Nutrition a subject for females.

The researcher found out from the pupils if they considered Food and Nutrition as a subject for females. 20(95%) of the respondent did not agree that Food and Nutrition is the subject for females. They gave the following reasons for their response.

> "*Food and Nutrition is a gender issue so both male and female should learn about this subject,*
> *Most chefs in hotels are men so they should learn how to balance meals, it is for everyone since*
> *It tackles the aspect of health".*

One respondent did not express his or views on the matter. The 13(100%) administrators interviewed did not also agree that it is a subject for females, so to help more males breaking away from the bondage of traditions,

They said:

> *"This must start from homes parents should involve boys in household chores and talk positively about Food and Nutrition, at school teachers should sensitize pupils on the benefits the subject, make the subject compulsory in all the schools for selected classes and to introduce Food and Nutrition to boys' schools".*

The respondents further said that the above suggestion will even contribute to having more male teachers of Food and Nutrition.

To appreciate the point of starting teaching food and nutrition early (grade1) Bandura in his social theory of learning states that while some pupils are able to acquire new knowledge or new skill immediately, others may require additional time or alternative learning methods before they are able to demonstrate mastery. The Food and Nutrition curriculum is a spiral curriculum whose focus starts from individual and his family, through the community, the nation to the international community hence pupils are made to study the widening circles of humanity. This means that the same themes are taught at different level except that it moved from simple in lower grades to being more detailed at secondary level and being more complex at tertiary level. Consequently, the spiral curriculum is a good springboard for mastery learning. In fact, in Europe and the United States of America Food and Nutrition education starts from nursery or kindergarten to tertiary level (Caballero, 2001).

Not only do people vary in their abilities to absorb new material but individuals learn best in different ways; through spoken, written, or visual means. Mastery learning takes these differences into account and uses a variety of teaching and learning methods. The mastery learning approach also enables the pupils to have self-directed learning experiences. This is achieved by having a teacher who serves as a facilitator.

Hands on methods therefore, incorporates mastery training which is based on principles of adult learning which means that learning is participating, relevant and practical. It builds on what pupils already know or has experience and provides opportunity for practicing new skills. So acquiring a skill needs a mastery approach of learning which assures that all pupils can master the required knowledge, attitudes, values and skills provided sufficient time is allowed and appropriate teaching methods are used, only then can skill proficiency occurs. The goal of mastery learning is that 100% of those being taught will master the knowledge and skills on which the teaching is based. Mastery learning uses behaviour modelling, it is competence based and it incorporates humanistic training techniques.

Surely, this would help since if we start at the tender age pupils would learn to live by principles of food and nutrition hence grow up responsible citizens. Even the Bible at proverbs 22:6, says train up a boy according to the way for him; even when he grows old he will not depart from it. So healthy nutrition interventions need to occur early in childhood and adolescence in order to prevent or reverse the adverse health effects of overweight and poor eating habits. In addition, at this stage many core eating habits and behaviour patterns are developed that may persist throughout adulthood.

Among healthy nourished people, acute disease and illness tend to be less frequent, less severe and of short duration thus providing increased capacities to perform daily activities. A healthy diet can also contribute to more morbidity in older age. For instance, it is likely that youth is a unique time to acquire the strongest possible bones to decrease the risk of osteoporosis in old age. Diets rich in calcium can help build stronger bones while diets rich in protein and salt increase the chances of losing bone density later in life (International food policy research institute/ World food program, 2013).

Thus, it is important to enable children to establish or reinforce personal skills, health perceptions and useful knowledge in nutrition to promote their own health and the health of those they care for. It is beneficial to teach persons healthy eating patterns when they are young since eating patterns are established early in life and are difficult to change when they developed during youth.

Many of the problems of childbirth, such as haemorrhage, infection and obstructed labor, can be reduced in severity by adequate nutrition earlier in life. For instance, small stature, which may be related to under nutrition, is a well- known risk factor for obstructed labour. Anaemia which can result from inadequate intake of iron-rich foods, lack of iron supplements or parasite infection, is kwon to cause about one-fifth of maternal deaths during pregnancy and maternal birth.

Studies show that early indications of chronic diseases begin in youth. For instance avoiding obesity in childhood and youth is important because once attained, obesity tends to continue in adulthood, contributing to chronic diseases. Furthermore, the hardening of arteries and high blood cholesterol levels, which make a major contribution to coronary heart disease, are influenced by nutrition and lifestyle.

These chronic diseases are difficult and expensive to treat. Modern scientific medicine depends on advanced technology and skilled specialists. Even the most prosperous societies find it difficult to meet the demands of advancing medicine in the battle with degenerative disease. And according to the United States of America, government funding to address non-communicable diseases in low and middle countries are not designed by congress and are not easily indefinable at agency level, where they are identifiable it remains relatively small without significant efforts to address the key risk factors of

non-communicable diseases. Consequently, the number of people affected by NCDs will continue to grow in developing countries (WHO, 2011).

How then can societies with poorly-developed economies begin to cope with such a burden? Fortunately, prevention is a great deal simpler and cheaper than cure, and knowing the causes of the problems enables us to learn how to prevent and often even reverse them, and this is a real solution to the dilemma Just as cars perform best when the makers instructions are followed, so our bodies perform best when we obey the laws of health. Food fuel comes in three different forms: protein, carbohydrate and fat. For optimal health we need them in the right proportions for our own particular needs, depending on our age, occupation, state of health, and even the climate we live in.

Thus, adequate nutrition and physical activity starting from childhood and adolescence are likely to have a long- term health benefits in reducing the growing number of diet related, non-communicable diseases. Nutrition education has been shown to have a significant effect in fostering healthful eating habits. Schools therefore, can contribute greatly to reducing these nutrition- related problems by integrating nutrition interventions into comprehensive approach to school healthy, as illustrated by the healthy promoting school. Schools also provide an important opportunity for prevention, because they provide the most effective methods of teaching and reaching large numbers of people which include children, youth, school staff, families and community members.

4.1 Food and Nutrition a subject for females only

Nutrition and health are gender issues that affect both male and female. Hence, it will be easy to deal with nutrition related diseases when both male and female understand the prevailing situation. Therefore, parents should help male children to understand health and nutrition issues by involving them at home when preparing meals and when budgeting for food. This would really help the children because at school they will be building on what they already know and issues of stereotype would be long gone. In line with gender, the study revealed that the selected schools are doing fine since most classes have equal numbers of boys and girls and one of them is a boy's school but it is offering food and nutrition. In future we may have more male teachers unlike now there is no male teacher offering Food and Nutrition in visited schools.

4.2 Creating a health-promoting school

The study also revealed that almost all secondary schools visited focused only on teaching of Food and Nutrition as a means of nutrition interventions in supporting good health and nutrition leaving other components that also promote optimal healthy. Components of nutrition intervention include school health education, nutrition and food programmes, community and family involvement, physical exercise, recreation and sport, counselling and social support, and health promotion for school staff. According to the European Network of Health Promotion Schools (2006), it is important to address child nutrition and health using a holistic approach where all stakeholders are involved. This holistic approach will embrace almost all the nutrition intervention aspects mentioned above.

Therefore, a health promoting school offers many opportunities to promote nutrition as an essential element for the attainment of health. It strives to use the school's full organizational capacity to improve the health of pupils, school personnel, families and community members. Thus, nutrition interventions can serve as an entry point for development of policies, planning groups and various aspects which serve as a framework for a health promoting school.

(a) School health education

Nutrition education is defined as any combination of education strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other Food and Nutrition related behaviours conducive to healthy and well-being; nutrition education is delivered through multiple venues and involves activities at the individual, community and policy levels (Contento, 2001).

Contento further states that nutrition education is more likely to be effective when it focus on behaviour/ action (rather than knowledge only) and systematically links relevant theory, research and practice. Nutrition education gets children excited about eating the healthy food, provided through child nutrition programs and making other health food choices, provides children with knowledge and skills for living healthy lives, and creates an environment where healthy choices are the easy choices.

Through nutrition education, children gain experience in cooking, tasting, gardening and learning about food to become empowered to responsibility for their own well-being. Nutrition education is also effective in increasing preference and creating positive attitude towards fruits and vegetables among children.

The primary goals of school health education are to help individuals adopt behaviours and to create conditions that are conducive to health. School health education must be designed to help pupils acquire the knowledge, attitudes, beliefs and skills which are needed to make informed decisions, practices healthy behaviours and create conditions that are conducive to health. It should provide opportunities to pupils to practice important skills, such as decision making about food choices. Learning experiences must be related to food preferences and other motivational factors that guide pupils to their nutrition and that of their family and community, and must also teach that lifestyle influences a person's food requirements.

The curricula must be designed to address the emotional and social cultural aspects of health eating along with informational and skill-building learning experiences. School health education should be provided as a planned sequential course of instruction from the primary through the secondary levels, addressing physical, mental, emotion and social dimensions of health. Nutrition education will enhance the overall framework of a health promoting school if it is integrated into other school health components, such as physical activity and health promotion for staff, as well as in the school health education component. Nutrition education should be combined with efforts addressing other health issues, such as reproductive health, life skills, and alcohol and drug use prevention so that the learning experiences will complement and reinforce each other.

(b) Community and parent involvement

To achieve a good nutrition education the school should involve pupils, parents, teachers and community members in collaborative and integrated efforts. These should take part in planning and decision making, attending school projects such

as health fairs and drama, supplying financial and material donations. Since parents and other caregivers play an important role in their child's life in their roles as nurturer, teacher, disciplinarian, role model and supervisor, and they control most of the food choices at home. It is essential therefore that they understand and reinforce what the healthy promoting school seeks to achieve. Thus the school should provide the parents with information, resources and skills about important principles of health nutrition in an effort to enhance and extend the programme in the pupil's home.

Community awareness and collaboration with local schools can prove beneficial in improving the diets of pupils and raise awareness among families and community groups (Begum, 2008). Using health promotion and food as a focal aspect can act as a successful means of providing healthy lifestyles in all age groups. A programme in Portugal 'soup land' provides evidence of the improvements in community nutrition that can be achieved when despite including a variety of stakeholders, the scheme remains fundamentally child focused. The programme developed around traditional dish vegetable soups includes educational sessions to teach practical cookery skills to pupils and nutrition advice to parents. This also encourages educators to develop recipes from local available food resources

(c) Healthy school environment

Adequate sanitation contributes to reducing the risk for food borne and other infectious related health and nutrition, hence school buildings, classrooms, eating facilities and water must be clean and safe. Outsider vendors should be encouraged to offer nutritious food choices in order to encourage the schools health promotion efforts, for example instead of selling freezes vendors should sell fruits like bananas and oranges or wild fruits available in that area. The school cafeteria or tack shop offer a variety of health food choices and limit the availability of food with low nutritional value to help pupils apply skills taught in the classroom. The food supply from the tuck shop should be based on the National dietary guidelines. (International food policy research institute/world food program, 2013)

Food from the school gardens, local stores, farmers or businesses should be used to keep costs low and collaborate with different sectors in the community. Creating partnerships and involving local and retailers offer multiple benefits to both children and general understanding of food concepts. School trips to local farms enable pupils to learn firsthand about food production and the food chain. Further, collaboration between primary and secondary schools in close vicinities could produce an avenue for peer based education and life style promotion.

The school should also have practical nutrition- related activities such as food preparation, food experiments and growing food (Campbell and Fosktt, 2012). School gardens are a suitable venture that has proved popular and successful in enabling children to learn about origin of food. In many European countries, cultivation, harvesting and preservation of food is still part of the school curriculum. One of the schools that the researcher visited did give the assignment to grade twelve pupils to preserve different types of food and during a practical lesson the class used the same food staffs.

The psychosocial environment incorporates the cultural norms and expectations regarding food and eating patterns as expressed by friends, parents and school personnel. Therefore, teachers should play an important role as adult role models and as mentors by encouraging pupils to follow a healthy way of life by demonstrating healthy eating. Pupils can also provide positive reinforcement to their peers by advising and reminding each other of healthy eating habits.

(d) School healthy services

School healthy services help to prevent, reduce, monitor or treat important health problems or conditions as well as foster health and wellbeing. Models for providing school healthy services vary tremendously, not only from developed to developing countries but also among and with Nations themselves. School healthy services can be designed to be responsible for first aid, a trained school nurse or a school healthy team. Their roles can include screening for supplements and parasite medications, supply health and nutrition information to teachers and pupils and to help them make healthy decisions and to educate others about healthy nutrition

(e) Physical activity, recreation and sport

The human body is basically a machine, which, by definition, means that it is a device for doing work. Machines must be maintained; they must be cared for, they must be serviced. There is need for freely moving joints, for muscles which produce sufficient force to move the weights they act upon, and furthermore there is need for an adequate supply of energy. Whatever your lifestyle, current physical health, age or gender, you can benefit from regular exercise.

Regular vigorous activity helps people of all ages to stay health. It helps you control your weight. It makes many body systems work better. It stretches and strengthens your, muscles, particularly the heart muscle. In all these ways, regular exercise makes you physically fit. That is, it makes your body able to work at its best. Physical fitness helps you feel good about yourself.

Research shows that eating a healthy diet does not in itself guarantee good health (Richard, 2009) [2]. A healthy diet is however an important part of a healthy lifestyle and that also includes physical exercise. Therefore increased activity should be promoted to pupils of all ages. Healthy eating and regular physical activity contribute to a healthy body. Active children and adolescents have increased metabolism and subsequently better appetites.

Active children are more likely to be active adults, thereby reducing the risk of degenerative illness and chronic diseases in later life. Regular, vigorous exercise expands your blood vessels so that blood can flow more easily. Exercise keeps cholesterol and blood fats from building up on inside walls of blood vessels. Continuing to exercise regularly can help your blood pressure stay normal all your life. Blood pressure is the force of blood against the walls of your arteries.

Schools therefore must incorporate physical activity frameworks into the whole school approach to health. Children's ability to practice physical activity is related to their development. It cater for the physical, mental, social and emotional needs of the pupil because: it helps the pupil to acquire social virtues such as self-control, humility, empathy, sympathy and responsibility. It also helps pupils to relax their minds after active learning. Therefore, it is a prerequisite to mental fitness. Therefore, the type and intensity of the activity

should match age and ability.

(f) Using the mass media

Mass media are methods and organizations used to convey messages to large, widely dispersed audiences. Mass media includes television, radio, newspapers and newsletters, magazines, books journals and films. Language and communication are fundamental to education and the acquisition of knowledge. The mass media enhances the acquisition of language, skills of listening and self-expression.

Generating media and publicity encourages community involvement and raises awareness of health promotion campaigns. One way of generating publicity is to encourage the local media to cover the school Food and Nutrition initiative with press release sent to newspapers, radio and television. While within the school and the community special letters and regular newsletters may offer an important evidence for communication. Pupils should be involved in writing newsletters, contribute articles, recipes, poems and artworks. It is also important to promote the heath Food and Nutrition recommendations and projects achievement on the school website. A further way of communicating with parents and the local community would be to organize concerts, plays, exhibitions or fairs.

Health promotion messages and nutritional education should be positive and consistent throughout the school environment. Advertising and marketing especially of branded products should be minimized within the school setting. Focusing on healthy lifestyles and confronting any discrimination and stigmatization regarding food choices, body shape and size should be included in school policy and tackled with affirmative action.

(g) Nutrition and food programmes

A healthy promoting school integrates efforts to ensure pupils nutritional adequacy into a variety of its health promotion intervention where possible the school provide nutritious meals or micronutrients supplements that help relieve some of the food related problems. School feeding programmes are one example of interventions aiming at increasing food availability while promoting healthy eating. These programmes might provide breakfast, lunch or snacks at reduced price or free of charge, providing calories, protein and micronutrients to school children without adequate food (Begum, 2008). In Zambia such programmes are restricted to selected primary, but most day secondary schools should have benefited to school feeding programmes since most of the pupils go to school without breakfast and stay the whole day without lunch.

5. Conclusion and Recommendations

5.1 Conclusion

Nutrition has a powerful influence on growth, development and the productive life of every individual. It is also essential for increasing the efficiency of medications, such as antiretroviral drugs and vaccines, and plays a critical role in the strategies for the prevention, treatment and care of HIV/AIDS. Optimal nutrition at each stage of the lifecycle is therefore a fundamental human right with non-communicable diseases being viewed as a denial to that right. Nutrition related challenges however, result from either under nutrition or over nutrition. Under nutrition can result from inadequate dietary intake, where a person receives insufficient nutrients which are then compounded by common infectious diseases such as diarrhoea and pneumonia. Over nutrition on the other hand, results from excess consumption of food and is associated with a number of diet related non-communicable diseases such as cancer, diabetes mellitus and malnutrition. Early years settings, such as playgrounds and nurseries, and primary skills have important contributions to make in this regard alongside parents and career. Therefore, the curricula must be designed to address the emotional and social cultural aspects of health eating along with informational and skill-building learning experiences. School health education should be provided as a planned sequential course of instruction from the primary through the secondary levels, addressing physical, mental, emotion and social dimensions of health. Nutrition education will enhance the overall framework of a health promoting school if it is integrated into other school health components, such as physical activity and health promotion for staff, as well as in the school health education component. Nutrition education should be combined with efforts addressing other health issues, such as reproductive health, life skills, and alcohol and drug use prevention so that the learning experiences will complement and reinforce each other.

5.2 Recommendations

Based on the finding the following recommendations emerged from this study;

5.2.1 Recommendations to the Ministry of General Education

a. The government through the ministry of general education should fund schools so that they buy equipment, materials and ingredients needed for practical lessons.
b. The government through the Ministry of General Education should make food and nutrition a compulsory subject from primary level.
c. The government through the Ministry of General Education should start training teachers in food and nutrition as a stand- alone course in colleges and universities.
d. The government through the Ministry of General Education should start conducting surveys on the practical methods of teaching food and nutrition.
e. The government through the Ministry of General Education should carry out the needs assessment to determine how well Food and Nutrition education meet the needs of the pupils and society.

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