OBESITY IN SCHOOL-AGED CHILDREN:
PREVALENCE AND CAUSES

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ABSTRACT
The study aimed to determine the incidence and causes of obesity among elementary and high school students in Baguio City. Of the 2,823 students examined, 155 or 5.49% of them are overweight or obese. This reflects a low level of incidence when compared to the national statistics. There are more males who were identified as overweight or obese than the females. Moreover, majority of the cases belong to the 13-17 yrs. age group. Most of them do not engage in any physical activity such as walking, exercising and sports. Majority of them are engaged in computer and/or television viewing activities.

Key Words: Body Mass, Home Environment, Obesity, Overweight, Physical Activity, School-aged Children

I. INTRODUCTION
The incidence of overweight and obesity among children is slowly becoming a world-wide problem. Developed and developing countries are not spared from this health concern. The World Health Organization (2006) has made this problem a priority and is currently drawing up programs to improve the prevention and management of obesity among children and adults. The organization has recognized the impact of such problem on the future health as well as on the level of productivity and economic growth retardation of communities and nations.

Several countries in the world have reported an alarming prevalence of obesity among children. In the United States (US), it was claimed that while the incidence of obesity in children is less than in adults, the rate of increase appears to be higher for children.

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A study conducted by the Center for Disease Control (CDC) revealed that from 1976 to 2000, the incidence of obesity among American children aged 6 – 11 years has doubled and those aged 12 – 19 years has tripled (Girandola and Chin, 2004).

The prevalence of childhood obesity in other parts of North America, Europe and some parts of Asia is also high. According to Prentice (2006), Canada has a 15% prevalence rate while Germany has 21%. In Asia, Iran has a prevalence rate of 10% with children making up most of the obese population while Bahrain has 29%.

In the United Kingdom (UK), a study conducted by Stamatakis et al (2002) revealed that the prevalence of overweight and obesity among children is increasing at alarming rates across social classes. They concluded that overweight and obesity are now common across social classes in the UK with overweight being widely accepted as a norm.

In Cyprus, a study to determine the prevalence of childhood and adolescent obesity and its associated factors was conducted by Savva et al (2002). Their study revealed that the prevalence of obesity in males was 10.3% and in females 9.1%. The percentages presented a decreasing trend with age. It was also found in their research that physical activity and parental obesity on the other hand had more significant roles in the obesity of the subjects. Most obese children had reduced physical activity, including sports participation, as compared to those who are not obese. Likewise, most obese subjects have one or both parents who were obese.

In the Philippines, studies on obesity among children show that the findings reveal a pattern. The prevalence rate of obesity had been increasing through the years. The Philippine National Health Evaluation and Survey (2004) has placed the prevalence rate of obesity among Filipino children at 3.2%. This has increased to 4.9% in 2003. Opina (2005) claimed that the gradual increase in the incidence of obesity was likewise noted by the National Nutrition Council of the Philippines survey in 2003. Overweight children aged 0-5 years rose from 0.4% to 1.4%. The prevalence rate of
overweight children aged 6-10 years was almost negligible in 1998 but had a significant increase to 1.3% in 2003. Mayuga (2005) however said that the results of a survey conducted by the Food and Nutrition Research Institute (FNRI) of the Department of Science and Technology are more alarming. It was revealed that in 1989, the prevalence rate of obesity among Filipino children was at 5.7%. In 1993 it increased to 8% and in 1998 to 8.8%.

The focus on childhood obesity is clinically significant as the problem contributes to the marked decrease in children’s health. The effects of obesity are usually seen later during adult life. Cardiovascular complications such as coronary heart disease (CHD) and stroke are common among obese adults with history of childhood obesity. The relationship of cardiovascular disease and obesity was clearly shown in a study conducted by Pavel (2004).

Theoretical/Conceptual Framework

Obesity is a state of malnutrition in which there is excessive accumulation of depot fats such that functioning is disturbed. The consequences of obesity are psychological difficulties (i.e. discrimination, negative self image, decreased socialization), increased height with possible inappropriate societal expectations and increased frequency of hyperlipidemia, hypertension and abnormal glucose tolerance. The longer the child has been overweight, the more likely that this state will continue into adulthood.

It is acknowledged that several factors contribute to the prevalence of obesity. Many assert that obesity is multidimensional and involves physical aspects, such as genetics and metabolism, as well as psychological schemas and environmental conditions. Childhood obesity is seen as resulting from a combination of family, social, and individual experiences that interact and impact one another.

Health authorities suggest that leading a sedentary (inactive) life can have negative impact on one’s health. They claimed that a
person should be physically active for at least one hour per day to be able to maintain his or her physical health. Thus, children who are physically inactive are more prone to health problems like obesity or other health-related difficulties. But why are children sedentary? Children are faced with sedentary attractions that are present in everyday life. These include television, video games, computers, and recently the internet, among others. These conveniences give children very little opportunities to be physically active.

A study was done in Athens, Greece on the role of TV viewing among obese patients (K. Vassiliki, et al, 2002). The results showed that TV time was positively correlated with increased weight and snacking in front of the TV. Patients who viewed were heavier, had greater waist circumference, more total and abdominal fat%, ate more snacks and had less physical activity when compared to those who spend less time watching television.

The quality of family life is also claimed to contribute to the health status of children. A favorable family relationship leads to more health and active lifestyle whereas poor family relationship may lead to psychological and health difficulties. The family environment is where children first experience the social world: the place and time where they develop a sense of self and explore their prospects for the future. Subsequently, these early years are a critical period for the developing child, and the messages that the family provides surely shape and direct that child. Some developmental theories argue that obesity begins in infancy where food is used to reduce stress, which ultimately becomes a learned coping behavior used in childhood. For children overwhelmed by chaotic family dynamics and lacking resilience, food consumption becomes a means of emotional survival, which results in disturbed eating patterns throughout a child’s life.

According to Mellin, et al (2002), family connectedness has been found to be a salient theme in well-adjusted children who are overweight. Family connectedness involves open communication between parents and their children, children perceiving their parents
love and relate to them, and family participation in recreational activities. It was revealed in their study that overweight adolescent girls who scored high on family connectedness ate breakfast, did better in school and were less anxious. Overweight boys rated similarly, with high scores on healthy behaviors and fewer psychological difficulties. There was also a moderate correlation between high family connectedness and less excessive dieting among overweight children. Mellin and his associates also pointed out that parental attitudes and expectations also play an important role in the success of establishing and maintaining an effective perspective on weight loss and health development. The parents of overweight children who expected higher school performance and a successful educational future for their children had children who participated in more health-related behaviors, engaged in less extreme dieting and exhibited fewer emotional problems. However, very high or very low ratings on parental expectations had the reverse effect.

With this research framework, the study aimed to determine the prevalence and causes of obesity among school-age children in Baguio City. Specifically, it sought answers to three (3) specific questions:

1. What is the prevalence of obesity among school-aged children in the city?
2. What are the perceived causes of obesity?
3. What measures are to be undertaken to prevent and manage obesity among school-age children?

## II. METHODOLOGY

The descriptive–survey method of research was adopted in this study. According to Best (1993), descriptive research describes and interprets what is. Moreover, Sanchez (1998) claimed that descriptive research includes all studies that aims to present facts concerning the nature and status of any phenomenon. On the other hand, survey is a process of collecting information on people,
events, objects and other topics of interest to the researcher (Vizcarra, 2003).

Sample Population

The sample population consisted of 2,823 children aged 6 to 17 years. Permission to screen the children was obtained following a request letter addressed to the School Principal or Academic Head of each institution. The subjects then were randomly chosen from the following schools:

1. University of the Cordilleras (grade school and high school)
2. St. Louis University Laboratory School (grade school and high school)
3. University of Baguio Preparatory High School
4. Baguio City National High School
5. Don Bosco Elementary School

Of the 2,823 elementary pupils tested, one thousand and three hundred eight (1308) or 46.33% are males whereas one thousand five hundred fifteen (1515) or 53.67% are females. To classify them according to age group, the following was considered: 6-9 yrs old (middle childhood stage group), 10-12 yrs. old (late childhood stage group) and 13-17 yrs. old (the adolescent stage group).

Sources of Data and Measures

Heights and weights were either measured or obtained from the medical records of children 6 to 17 years from representative schools. Measurements were used to compute the Body Mass Index (BMI) of children by dividing the weight (Kilograms) by the square of the height (meters):

\[
\text{BMI} = \frac{\text{Weight in Kg}}{\text{Height in m}^2}
\]
Parents or guardians of the overweight or obese children were then given a letter requesting them to answer a structured questionnaire to obtain information on the level of physical activity, nutritional habits and other factors that may be contributory to the development of overweight and obesity of their children. The survey form was designed based on the International Physical Activity Questionnaire and consisted of two parts. Part one dealt on the nature and extent of physical activities of each child. Part two consisted of questions and choices reflecting the eating patterns and food preferences of each subject. The questionnaire was pre-tested to a similar population of grade school and high school parents.

Treatment of Data

Descriptive statistics were used to treat the data. The obtained data were tabulated according to frequency counts and percentage. Weighted mean was also used. To determine if the child is overweight or obese, the CDC and International Obesity Task Force standards for BMI were used. Children with a BMI of 25.00 – 29.99 were considered as overweight while those with BMI ≥ 30 were classified as obese.

III. RESULTS AND DISCUSSION

Table 1 shows a frequency and percentage distribution found to be obese or overweight. As revealed, 155 or 5.49% of the 2,823 students tested are considered overweight and obese because their BMI is above normal (BMI ≥25). This percentage is slightly higher than the result of the national survey conducted by the National Nutrition Health Evaluation and Survey (NNHES) in 2003 which is 4.9%. It is also reflected in the table that among the total number of children whose BMI is above normal, 4.39% (124) are overweight and only 1.09% (31) are obese. The degree of overweight and obesity among the subjects do not seem to be severe, however. The mean BMI for overweight children is 28.08. This is midway in the range of overweight BMI which is from 25.00 to 29.99. Likewise the
degree of obesity is not at its worse. The mean value of BMI among those obese is 31.8. The value is slightly above the minimum for obesity which is BMI 30. Although the percentage of obese subjects is lower than that of overweight children, the latter are still considered predisposed to becoming obese in the future.

Table 1. Frequency and Percentage Distribution of Obese and Overweight Children

<table>
<thead>
<tr>
<th>BMI</th>
<th>f</th>
<th>% to N (N= 2,823)</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.00 – 29.99 (Overweight)</td>
<td>124</td>
<td>4.39</td>
<td>28.08</td>
</tr>
<tr>
<td>≥ 30.00 (Obese)</td>
<td>31</td>
<td>5.48</td>
<td>31.80</td>
</tr>
<tr>
<td>Total</td>
<td>155</td>
<td>5.49</td>
<td>28.82</td>
</tr>
</tbody>
</table>

Table 2 reveals the prevalence overweight and obesity among the children according to sex. As reflected, the incidence of overweight is noted to be higher in males, 79 out of 124 or 63.70%, as compared to the females who accounted for 36.29% or 45 out of 124. As to the percentage of obese children, it is shown that males accounted for 67.74% while 32.25% were females. This means that the prevalence of obesity among male children is much higher than that of the female. This finding is different from the results of the national study where females have a slightly higher incidence in obesity. This implies that apparently, male children are engaged in activities that contribute to their gaining more weight as compared to the females. This finding is contrary to the results of a research conducted by Savva et al, (2000) to determine the prevalence of childhood and adolescent obesity in Cyprus. In the study, it was revealed that the prevalence of obesity in males is higher than the females.

Table 2. Frequency and Percentage Distribution of Overweight and Obese Subjects by Sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Overweight</th>
<th>Obese</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>79</td>
<td>63.71</td>
</tr>
<tr>
<td>Female</td>
<td>45</td>
<td>36.29</td>
</tr>
<tr>
<td>Total</td>
<td>124</td>
<td>100.00</td>
</tr>
</tbody>
</table>
According to age group, table 3 indicates that children belonging to the 13-17 years accounted for most of those who were overweight (59.68%), followed by children belonging to the age group 10-12 years (33.87%). The least number of (8 or 6.45%) overweight children was seen in the age group 6-9 years. The age groups 10-12 years and 13-17 years had the most number of overweight subjects as children in these age groups are perhaps are increasingly having less and less adult supervision in terms of selection of food preferences and the nature of the physical activity they engage in.

Table 3. Frequency and Percentage of Overweight Subjects by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 – 9 years</td>
<td>8</td>
<td>6.45</td>
</tr>
<tr>
<td>10 – 12 years</td>
<td>42</td>
<td>33.87</td>
</tr>
<tr>
<td>13 – 17 years</td>
<td>74</td>
<td>59.68</td>
</tr>
<tr>
<td>Total</td>
<td>124</td>
<td>100.00</td>
</tr>
</tbody>
</table>

The incidence of children in Baguio City with BMI above normal in this study is interestingly progressive from 6 years to 17 years as shown in table 4. As revealed, none of the subjects belonging to the 6-9 years group were noted to have a BMI $\geq 30$. Most subjects with BMI $\geq 30$ belonged to the age group 13 – 17 years with a percentage of 67.74. This observation is probably due to the fact that in this age group (13-17 years) the selection of physical activity as well as the quality and quantity of the food taken is done by the children themselves. The independence from adult supervision is not at all an advantage. The incidence of obesity in the age group 10-12 years was noted to be 32.26%. This finding is similar with the results of a study conducted by NNHS in 2003.

Table 4. Frequency and Percentage of Obesity by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 – 9 years</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10 – 12 years</td>
<td>10</td>
<td>32.26</td>
</tr>
<tr>
<td>13 – 17 years</td>
<td>21</td>
<td>67.74</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Physical Activity and Incidence of Obesity/Overweight

The role of decreased physical activity and the choice of food eaten are factors that contribute to the development of overweight and obesity among children. In all the age groups, there appears to be a significant degree of inactivity. Even if there is performance of physical activity the frequency of either vigorous or moderate intensity activities remain to be low. Table 5 shows the percentage of overweight and obese pupils who are engaged in physical activity. Among the children who were either overweight or obese and responded to the questionnaire ($N = 102$), 29.41% (30) engaged in vigorous forms of activity such as fast running and bicycling, and playing tennis, and 23.52% (24) performed moderate intensity physical activities like dancing, bicycling at regular pace, and engaging in martial arts activities. Most obese or overweight subjects (47.05%), however, had no form of physical activity whatsoever. This finding supports the view of Girandola and Chin (2004) that the end-result of sedentary (inactive) life is positive caloric balance which leads to obesity. Moreover, they claimed that today, generally, the amount of energy expended at work, transportation, personal chores and other aspects of life continue to decrease.

### Table 5  Frequency and percentage of Overweight / Obese Subjects Engaged in Physical Activity

<table>
<thead>
<tr>
<th>Physical Activity</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigorous</td>
<td>30</td>
<td>29.41</td>
</tr>
<tr>
<td>Moderate</td>
<td>24</td>
<td>23.53</td>
</tr>
<tr>
<td>No Activity</td>
<td>48</td>
<td>47.06</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>102</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 6 shows the frequency of physical activity among overweight and obese subjects. Even if majority of the subjects (77.78%) engaged in physical activities the frequency of such activities remains to be low (once to twice a week). There were 14.81% who reported that they engage in physical activity, 3-4 days a week and only 7.41% performed physical activity almost everyday.
This finding implies that majority of the children are preoccupied with activities that do not require movements for a long period of time.

Table 6. Frequency of Physical Activity Among Obese and Overweight Subjects

<table>
<thead>
<tr>
<th>Frequency (Days/Wk)</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 2</td>
<td>42</td>
<td>77.78</td>
</tr>
<tr>
<td>3 – 4</td>
<td>8</td>
<td>14.81</td>
</tr>
<tr>
<td>5 – 6</td>
<td>4</td>
<td>7.41</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Physical Activity in school has likewise decreased. In our interview with physical education teachers of the schools, physical education activities had been reduced to a minimum since the Department of Education abolished the Bureau of Physical Education. Physical education has since been incorporated with arts, music and health. The end result in most schools: PE is now conducted once a week. Most of the time PE classes covered the theoretical aspects of specific sports. Physical activity is conducted with rarity. To compound the problem, the conduct of physical activities is likewise limited not only by time but also by the lack of adequate facilities. Participation in either recreational or organized sports among the subjects was then low. Among the respondents in our survey (N = 102), 60.78% indicated their child did not participate in any form of sport activity while 39.22% participated (Table 7). Of these, 52.93% (54) had either vigorous or moderate intensity physical activities.

Table 7. Percentage of Sports Participation Among Overweight and Obese Subjects

<table>
<thead>
<tr>
<th>Sports Participation</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40</td>
<td>39.22</td>
</tr>
<tr>
<td>No</td>
<td>62</td>
<td>60.78</td>
</tr>
<tr>
<td>Total</td>
<td>102</td>
<td>100.00</td>
</tr>
</tbody>
</table>

The home environment is not helpful either. In most of the respondents, there were no organized physical activities within the family. On weekends, where the child is not in school, most of the time is spent in front of the TV or computer or playing electronic
games. A few do engage in their sports like basketball (which is the most popular), volleyball, the martial arts and cycling. The other forms of physical activity during weekends include shopping and doing minor household chores.

Table 8 shows the percentage of overweight and obese children engaged in TV or computer activities. As indicated, majority (95.10%) of the obese and overweight children (95.10%) spend a lot of time in front of the TV and computer. Only 4.90% were reported not to have engaged in computer work or very minimal TV time.

Table 8. Percentage of Obese and Overweight Children Engaged in Computer or TV Activities

<table>
<thead>
<tr>
<th>TV &amp; Computer Activities</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>97</td>
<td>95.10</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>4.90</td>
</tr>
<tr>
<td>Total</td>
<td>102</td>
<td>100.00</td>
</tr>
</tbody>
</table>

The frequency (days per week) and duration (hours per day) of computer work or TV time among overweight and obese children is presented in Tables 9 and 10. An overwhelming number of the subjects (72.55%) were in front of the computer or TV set from 6 to 7 days a week. Only 1.96% had very limited exposure (less than a day) to the computer or TV set per week.

Table 9. Frequency of Computer and TV Activities Among Overweight and Obese Children

<table>
<thead>
<tr>
<th>Frequency (Days/ wk)</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 – 7</td>
<td>74</td>
<td>72.55</td>
</tr>
<tr>
<td>4 – 5</td>
<td>18</td>
<td>17.65</td>
</tr>
<tr>
<td>2 – 3</td>
<td>8</td>
<td>7.84</td>
</tr>
<tr>
<td>≤ 1</td>
<td>2</td>
<td>1.96</td>
</tr>
<tr>
<td>Total</td>
<td>102</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 10 reveals that majority of the students (68.48%) did computer work or TV viewing for 1 – 3 hours a day was consumed while 31.52% spent 4-6 hours a day. According to the National Institute of Health (2002), almost half of the children aged 8-16 years watch three to five hours of television a day. With time consumed in
computer activities, physical activity has been compromised, making
the child more likely to become overweight or obese. In the United
States, children who watch more than 4 hours a day of television
have a greater BMI and greater body fat than those who watch less
than 2 hours a day (Anderson et al, 1998).

Table 10. Duration of Computer Work among Overweight And
Obese Children

<table>
<thead>
<tr>
<th>Duration (Hours/ day)</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 3</td>
<td>63</td>
<td>68.48</td>
</tr>
<tr>
<td>4 – 6</td>
<td>29</td>
<td>31.52</td>
</tr>
<tr>
<td>≥ 7</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>100.00</td>
</tr>
</tbody>
</table>

The amount of food intake does not seem to be of
significance as most of the subjects eat meals three times a day and
snacks twice a day. Children need more calories because of their
high metabolic demand while in their growth years. The choice of
food may, however, be of significance. The average meal of the
subjects consisted of rice, meat, fish or vegetable dishes. But the
choices for what is eaten during snack time may be the difference.
The survey study showed that the top choices for snacks were fried
chicken, noodles or pastas, “junk foods”, French fries, and ice cream
and shakes. These are usually taken with bottled juices or tea or
soft drinks. These have increased the caloric intake beyond the
recommended values as one can see that the food choices for
snacks are rich in fat and sugar content.

Eating in fast-food outlets is a common practice among the
study’s overweight and obese children. Dining in these places was
commonly done once or twice a week. On top of this, most parents
of the subjects indicated that eating outside of the home has become
an occasional reward for their children.
IV. CONCLUSIONS AND RECOMMENDATIONS

The incidence of overweight and obesity among children in Baguio City is slightly higher than the national average in 2003. The actual incidence of obesity is low. The incidence of overweight and obesity are highest among males who are within the age group of 13–17 years. The major cause of obesity is decreased physical activity. Most of our overweight and obese children have sedentary lives with physical activities being performed for an accumulated period of 30 minutes to one hour per day. There is lack of physical activities both in school and within the home environment. The advances of technology has caused this factor together with the security risk that the children are exposed to whenever they are away from home. Walking and outdoor physical activities are then limited. The inadequacy of facilities where children can safely engage in physical activities, both in school and in the community, likewise contribute to the problem.

Though the overall incidence of overweight and obesity among school children in Baguio City remains low, one cannot afford to have an indifferent attitude towards this as the environment for developing the problem in other children is present. Technology has contributed many wonderful conveniences in our society but at the expense of creating a remarkably sedentary lifestyle with no end in sight. It is all up to us to make our children more physically active and in many ways develop in them the wisdom to choose more properly the kind of food they eat.

Based on the findings of this study, the following recommendations are forwarded to manage the problem of obesity and overweight among children:

1. Parents should make time for the family to engage in sports activities and other regular physical activities like walking or hiking, swimming, and bicycling. Also, they must encourage children to perform household chores that will make them more physically active.
2. Schools must provide opportunities for daily physical education and comprehensive health education. P.E. classes should incorporate aerobic exercises and recreational activities.

3. In these times where consumers are bombarded with exotic, fancy and mouth-watering food concoctions, it remains a challenge to attain or even maintain good health by building adequate meals through a variety of foods. Good health starts with eating properly. Certain foods are for liberal consumption and others are for moderate consumption. Attaining ideal health means sparingly enjoying other foods.

The Food and Nutrition Research Institute (FNRI) has developed a food pyramid (see figure 2), a simple and easy-to-follow daily eating guide for Filipinos. The food guide pyramid is a graphic translation of the current "Your Guide to Good Nutrition" based on the usual dietary pattern of Filipinos in general. The usual Filipino diet consists mainly of rice. It contributes the major part of the carbohydrates in the diet together with bread, corn and rootcrops such as sweet potato, cassava and gabi. Therefore, carbohydrate foods are at the base of the pyramid and are for liberal consumption to meet 55 to 70% of energy needs. A viand or ulam is a combination of vegetables and fish or other animal protein sources, capped by fruits. Vegetables and fruits constitute the second level of the pyramid. Leafy greens and vitamin C rich fruits are the best sources of vitamins and minerals, plus dietary fiber or roughage. You are advised to eat more of these foods. The third level consists of animal protein foods like fish, meat, poultry, seafood, milk and dairy products, as well as dried beans and nuts. These foods are recommended for moderate consumption as they supply high quality protein, vitamins and minerals. Finally, at the tip of the pyramid are the fats and oils that are to be taken just enough. In general, however, the Filipino diet is lacking in fat. On the average, Filipinos are only taking 15% of the calories from fat, which is one of the reasons why the total caloric intake is very low. You can improve caloric intake by consuming enough visible fats such as margarine.
and butter, as well as invisible fats contained in animal foods and some fruits and nuts. The Food Guide Pyramid teaches the principle of eating a variety of foods every day at the right amounts. Rice and other cereals occupy the major bulk in the diet, while fats and oils share the least in volume and bulk. Vegetables take up a bigger area than fruits in volume and bulk. The guide teaches moderation in some while emphasizing the importance of other foods. The Food Guide Pyramid is but one of the many nutritional and dietary tools and guidelines developed by the FNRI to help the Filipino achieve good health and nutrition.

Figure 2. Food Guide Pyramid for Filipinos
Figure 3. Physical Activity Pyramid

- Everyday (as often as possible)
  - Play outside
  - Take the stairs instead of the elevator
  - Help around the house or yard
  - Bath your pet
  - Pick up your keys
  - Walk to the store
  - Go for a walk

- 3-5 times a week
  - Aerobic Exercises (at least 20 minutes)
    - Roller blading
    - Swimming
    - Running
    - Skateboarding
    - Rope climbing
  - Recreational activities (at least 20 minutes)
    - Volleyball
    - Kickball
    - Basketball
    - Field hockey
    - Soccer
    - Swing

- 2-3 times a week
  - Physical Activities
    - Swinging
    - Concealing
    - Tumbling
    - Miniature golf

- Cut down on
  - TV watching
  - Video and computer games
  - Sitting more than 30 minutes at a time
REFERENCES


