

Obesity among College Students in the Northern Philippines: Input for a National Policy and University Anti-obesity Program

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The prevalence of obesity in the world has been continuously increasing over the past decades. One factor that contributes to the rise in the number of obese individuals is the school environment. This paper determined the prevalence of obesity among the college students of one Higher Education Institution in the Northern Philippines and evaluated the university's anti-obesity program to strategise interventions and prevention of obesity among its students. This study made use of the quantitative descriptive-evaluative design and documentary analysis of the medical records of the students. The World Health Organization Body Mass Index standard was used to categorize weight and obesity. As triangulation techniques, inspection and observation of the food outlets both inside and outside the campus were conducted. To find out about the university health program, an unstructured interview with the health services in charge was done. The prevalence of obesity among the students of the University is higher (33%) than the Philippine prevalence of 31.1%. The lack of specific anti-obesity interventions or activities of the university health program is found to be an urgent concern to be addressed by the university. This study concluded that the prevalence of obesity among the university students is high due to the following: lack of specific anti-obesity health programs, an abundance of food outlets serving high-calorie and high-fat foods, and lack of national law about food choices to be served to students in the tertiary level in the Philippines.

Key words: *College Students, University Anti-Obesity Program, Obesity among Youth, University Health Program.*

Introduction

Obesity is fast becoming a global problem as a result of the increasing availability of fast foods (Bowman & Vinyard, 2004; Shamsudina & Esab, 2019). In developing and underdeveloped countries, people have a scarcity of food, but fast food chains are quickly sprouting offering cheap and high-calorie foods resulting in heavier individuals (World Health Organization, 2000). This is one of the paradoxes in the 21st Century. Many factors are contributing to obesity in today's world; fast foods are just one of them (Miller & Yarrish, 2013). Moreover, the advancement of technology, the existence of affordable transportation, the development of machines that make work easier for human beings, and the creation of more online jobs cause an almost sedentary lifestyle. They result in the shooting up of obesity incidence (Florentino, 2002; Ng, McMahan, Mouttapa, Tanjasiri, & Beam, 2009; Uzogara, 2016). Because of these factors, obesity has become a type of nutritional abnormality resulting from the imbalance of energy intake and expenditure of an individual (Sainsbury-Salis, 2019). In today's world, there are two essential factors that contribute to obesity: an increase in the consumption of energy-dense foods (high fat) and an increase in physical inactivity (Badrin, Daud, & Ismail, 2018; Cdc.gov, 2020; Hill, 2003; van Milgen, 2002). These changes in dietary and physical activity are a result of environmental and social development with concomitant changes in health, agriculture, food and nutrition, marketing, and education (Gao, 2018; Lakdawalla & Philipson, 2009; Sparling, 2003).

The World Health Organization (2020) considers obesity as 'overnutrition,' which is part of the malnutrition continuum. Obesity, according to WHO (2020) is measured as a function of both the height and weight of the individual termed as Body Mass Index (BMI), and although obesity is defined by the BMI of a person, there are many parameters to define it. According to the numerical value of the body mass index, one is obese when it falls on or above 25 (Apps.who.int, 2020).

The global scenario on obesity in 2008 was about 1.4 billion adults with death rates of 65% more than those people who were underweight. Because of the recognition of the health consequences of obesity, the United Nations General Assembly on Political Declaration of the High Level Meeting on the Prevention and Control of Non-communicable Diseases held a meeting in September 2011 to develop a Global Action Plan for the prevention and control of non-communicable diseases by 2013-2020 and to build a WHO framework to reduce obesity by 25% by 2025 and achieve obesity rates as those of 2010 (World Health Organization, 2020; Apps.who.int, 2020). In the United States alone in 2005, 3 out of 10 college students were overweight; one of whom is obese (Park et al., 2006). According to the 2002 study of Lowry, et al. in the US, 35% of the students are either overweight or obese; 45% are trying to lose weight with only 6 out of 10 students participating in thrice-a-week vigorous activity (HHS.gov., 2020; Lowry, et al., 2002).

A study done in Cebu, Philippines in 2005, published in *Nutritional Diabetes* in July 2013 by a collaboration of foreign and local authors, showed a trend of an increasing number of obese and overweight young adults aged 18-24 years. With the data from the study, the obesity rate in the Philippines extrapolated in 2005 was 0.5% and was related to neighbourhood urbanisation and individual level of socio-economic status (Dahly, et al., 2013).

Many pieces of research (Burgoine & Monsivais, 2013; Carson, Beghlie, & Erwin, 2014; Chanchalani & Goodhand, 2014; He et al., 2012) have been undertaken on the influence of school and social factors in obesity. One was done by Harrison in 2012. He found out that the school environment encourages behavior related to diet, physical activity, and obesity. School environment includes neighbourhoods surrounding the school (Burgoine & Monsivais, 2013). Harrison's findings corroborated the study of Dabbaghian, et al. (2012), reporting that eating behaviors of students change depending on the school environment they are exposed to. The formation of groups or clusters of eating behaviors also changes through time, depending on their type of interactions – positively or negatively (Burgoine & Monsivais, 2013; Dabbaghian, et al., 2012). A higher association with dietary choices of students to their interpersonal relationships was likewise found in the study of Townsend and Foster (2011). Their study pointed to school organisational factors such as rules and regulations that have more association with unhealthy choices. This result was strengthened by the findings of Hirschman (2012) that the school food environment must be in congruence and to the standards of government regulations for food and nutrition requirements in schools for better health and nutrition of students.

In recognition of these research findings, local and foreign governments alike implemented policies dealing with weight problems (McGlynn & McGlone, 2018; Niederdeppe et al., 2013). From the public health perspective, educational institutions through their students' services department are encouraged to promote positive behavioral changes associated with diet, physical activity, drugs, and sexual issues. However, there is a gap in the focus of schools' programs because obesity is viewed more in the biological and emotional side, often with prejudices and misconceptions rather than on the preventive aspect of the problem (Cdc.gov., 2020). Among the developing countries, school health programs are limited only to the diagnosis and treatment of infectious diseases rather than on the preventive side. There are increasing concerns on focusing more on health promotion and maintenance as the World Health Organization that have set the mandate on the prevention of infectious diseases as well as lifestyle diseases like obesity (Jamieson, 2006).

As one of the developing and low-income countries, the Philippines face an increasing number of overweight citizens, giving a double burden of disease (Rappler, 2020). The Philippine government mandatorily deals with infections and undernutrition and the increasing prevalence

of non-communicable diseases (Apps.who.int., 2020). The 1987 Philippine Constitution has provided for the implementation of School Health Programs through the lead agencies, namely: the Department of Education, the Commission on Higher Educations, the Department of Health, and the Department of Labour and Employment. The focus of school health programs is more on the prevention of infectious diseases. For non-infectious diseases like obesity, these agencies only give information dissemination, and the prevention aspect is left to the individual or the family.

Moreover, the current Philippine laws and policies focus only on school health programs limited to basic education institutions (Peltzer et al., 2014; World Health Organization, 2020). In the context of tertiary and higher education institutions, food choices were left to institutional management. Hence, studies on assessing health programs on preventing obesity in the context of higher education institutions in the Philippines are scarce. This study also aimed to address this primary gap by finding out the prevalence of obesity in a University in northern Philippines and by assessing its present anti-obesity program to come up with strategies for the prevention and control of obesity among its college students.

This study aimed at answering the following research questions:

1. What is the demographic profile of college students in terms of age, sex, and BMI?
2. What is the prevalence rate of overweight and obesity?
3. What is the status of the university health program to prevent the prevalence of obesity?

Materials and Methods

One aim of this study was to describe the students' demographic profiles, including their BMI. Hence, the researchers made use of descriptive-evaluative designs. According to Bulusan, Antonio, & Dumaga (2019), descriptive data is used to describe a single phenomenon. In this study, the data from the descriptive design was used to identify the prevalence of obesity among tertiary students. It also made use of the evaluative design because it gauged the university's health program focusing on the prevalence of obesity. The design involves the making of judgment for the formulation of a program to improve a specific type of activity (Apps.who.int., 2020).

The university as the study site is situated in one large city in the northern Philippines and is a private Higher Education Institution composed of almost 5,000 students, in the heart of the urbanisation areas of the city with many fast-food chains, catering with meals for students and the community. Subjects in the study were the students who complied with the annual medical/dental examinations of the University. There were 4,250 enrolled students. Almost 3,000 students completed their annual medical and dental examinations. Such a number

equated to 66.89% of the total population of the University, thus a representative sample of the total student population. All data needed for the computations for body mass index, the department where they were enrolled, age, and gender were taken from their medical records. Height and weight measurements were taken by the height-weight scale made by the brand Detecto®, the standard equipment used by the Clinic Health providers during the medical examinations of the students. The Body Mass Indices of the subjects were computed using the WHO formula and classification standards. According to these criteria, underweight is defined as 18.49 kg/m² and below, normal weight was defined as 18.5 – 22.9kg/m², overweight was defined as 23.0 – 24.0 kg/m², obese 1 was defined as 25.0 – 29.9 kg/m² and obese 2 was defined as 30.0 kg/m² and above.

All measures were in compliance with the Data Privacy Act of the Philippines and were carefully undertaken. Moreover, a letter of request to use the medical records was sent and approved by the Health Director prior to the review of the documents. Paramount confidentiality of data was ensured in the conduct of the study.

Researchers also conducted direct observations and inspection of the immediate surroundings of the University, including the neighborhood where the University was located. They investigated the presence of food establishments and other food outlets that were patronised by the students. Also, they observed using checklists and memos, especially during Physical Education classes and within the university canteens and food courts.

Simple frequency counts and percentages were used. The analysis was done through a comparison of data from each department. The percentage was used to find the rate of overweight and obesity students to compute for the prevalence of obesity. Prevalence was computed according to the Public Health Epidemiology formula of several cases divided by the total population times 1000.

Results

Demographic Characteristics & Distribution of BMI

The majority of the subjects were 16 to 18 years old in all colleges and departments. The largest slice of the population belongs to the College of Business Education, followed by the College of Medicine, Engineering, and that of Accountancy. There were 33% of the subjects who were above the normal weight, 13% overweight, 15% stage 1, and 5% stage 2 obese. Table 1 shows the demographic characteristics and distribution of BMI.

Table 1: Distribution of Body Mass indices according to Demographic Profile

BMI	Underweight	Normal	Overweight	Obese 1	Obese 2
Male n=1020	113 (11%)	467 (46%)	152 (15%)	216 (21%)	72 (7%)
Female n=1823	286 (16%)	1043 (57%)	210 (12%)	201 (11%)	83 (5%)
AGE					
15	48	106	24	11	6
16	123	346	66	62	35
17	94	307	55	70	19
18	49	253	54	73	26
19	41	187	64	72	36
20	24	150	49	46	10
21	12	76	21	38	15
22 & >	11	79	30	44	9
TOTAL	402 (14%)	1506 (53%)	363 (13%)	416 (15%)	156 (5%)

Among the male subjects, comprising of 1,020 individuals, 11% were underweight, 46% were of normal weight, 15% were overweight, 21% were obese 1, and 7% were obese 2. The mean BMI among male students is 25.3 and (SD=4.1). Among the female subjects comprising of 1823 individuals, 16% were underweight, 57% were normal weight, 12% were overweight, 11% were obese 1, and 5% were obese 2. The mean BMI among female students is 26.6 (SD=3.8). Large slice of the student population was of normal body mass index in both sexes. There were more overweight and obese male than their female counterparts. More female students were underweight. The large population of underweight and overweight students was composed of 16 years old. Obese 1 are mostly 18 years old and obese 2 are mostly 19 years old. The mean age is 18 years old, with an SD of 1.93.

Prevalence of Overweight and Obesity

The prevalence rate of overweight among the male subjects is 14.9%, obese 1 is 21.2%, and obese 2 is 7.1%. Among the female subjects: overweight is 11.5%, obese 1 is 11.0%, and obese 2 is 4.6%. The prevalence of overweight and obesity per 1000 population of males are 149 overweight, 212 obese 1 and 70.6 obese 2 and for females are 115 overweight, 110 obese 1 and 46 obese 2.

The comparative data using the total male and female population of each department showed that most overweight male students came from the College of Business Education, obese 1 males from the College of Criminology, and those that are obese 2 from the College of Arts & Sciences. Almost 43% of the male population was above the normal body mass index. On the



other hand, comparative data for female population across the different departments showed that most overweight females came from the College of Business Education, obese 1 from the three colleges with the same percentages: College of Arts & Sciences, College of Criminology and the College of Medicine & Allied Medical Programs, and obese 2 females came from the College of Information Technology. The overall percentage is 28%.

Analysis of Other Factors on Obesity Prevalence

The University is situated at the heart of a city in the northern part of the Philippines. Along the streets in front of the institution, many street food stalls are operational, in addition to the food establishments catering to the nutritional needs of the students and employees alike. The university canteen is a branch of a popular restaurant that serves almost the same fare as those on the streets outside the campus. There are other food establishments inside the campus, catering to other food items for the students and employees.

The food establishments around and inside the campus serve most often fried foods such as *tokneneng* (fried egg coated with flour), squash/pumpkin balls, *siomai* (Filipino term for steamed Chinese dumplings that are usually filled with pork, occasionally shrimp), dynamite (chili/pepper coated with rice crepe) crunchy chicken skin, *tokong* (fried chicken throat), burgers, French fries, *shanghai* (fried spring rolls) and many other food fares of high fat contents. Drinks sold include carbonated drinks, instant juices, and other concoctions of high sugar content. Meals are often of meat and meat-based recipes with minimal choices and servings of vegetables. Fruits were being sold rarely in these outlets. Snack foods such as chips, nachos, and biscuits are available in any of the food establishments inside and outside the university. Prices of these foods are within reach of an average student, so these are very much patronised. Fast-food chains are located within the city, and students just take a tricycle ride to reach them for their meals because transportation is accessible.

University Health Program against Obesity

The university institutionalises a health program, however, there is no specific component that combats the prevalence of obesity in the university. The nearest component of the university health program includes counselling, health education, and weight monitoring activity. The university also lacks a policy on what food should be sold to the students and the employees, as long as the stalls and food preparation passed the standards of the City Health Office. Physical activity within the campus is dominated by those in the curriculum. For instance, the most common physical activity is the one offered by the Physical Education classes for the first and second-year levels only and the National Service Training Program for first-year students. There is a slight increase in the physical activity about one to two months before the foundation day of the University because of the street and cheer dance competitions among the departments and colleges.

Discussion and Conclusion

Looking into the total population of the subjects, one may surmise that more male college students are beyond the normal BMI (Dahly, et al., 2013) than females who are beyond the normal BMI (Apps.who.int., 2020). This phenomenon can be explained by their genetic, psychological, and physical makeup as well as the reaction of their bodies to the social and environmental influences of food and physical activities (van der Merwe, 2007). In the developing and underdeveloped countries, like the Philippines, females usually mark a higher obesity rate than males, which is approximately double (Ahmed et al., 2015). Male, on the other hand, possesses greater lean mass, which provides for a better metabolic activity for energy expenditures, cultural background of male dominance for heavier and more strenuous physical activity, and more engagement in sports (Bogg & Roberts, 2004; Rasmussen, Johansson, & Hansen, 2007; vanPutte et al., 2019). However, with the changes of the times and more significant gender sensitivity issues of today, more women are engaging in male-dominated activities, thus increasing energy expenditures. Also, more males are engaging in female-dominated activities like homemaking, lessening their energy consumption and creating an almost equal prevalence in overweight and obesity (Bombak, 2015).

Younger students are underweight due to high metabolic activity during adolescence. Of note, metabolic activity starts to stabilise as one reaches adulthood (vanPutte et al., 2019). There is less physical activity with older age group students (Peltzer et al., 2017; Tapera et al., 2017) since there are no more Physical Education classes starting from the third-year level (Lowry, et al., 2002; Sparling, 2003). Among Filipinos, the decrease in physical activity was noted to be the leading cause of obesity, not the urbanisation or the lack of policies to combat this growing epidemic of weight problems.

College life predisposes students to factors favoring the occurrence of obesity. For one, it is a time when a person is exposed to social, environmental, personal, and mental changes that may lead to unhealthy lifestyles (Tapera et al, 2017). College students are considered adults so that tertiary level institutions do not usually provide an environment that is conducive for weight management schemes (Huang et al., 2003; Park, 2006; Rasmussen, 2007). It is imperative, therefore, that a university health program be formulated not only to prevent infectious diseases but also to help control lifestyle illnesses such as obesity (Townsend, 2013; Wilksch, 2011). This situation in the tertiary level education needs outreach programs for obesity prevention for college students (Sira & Pawlak, 2010).

School Health Programs include nutrition and healthy lifestyles; however, there is no distinct or specific program on preventing or controlling obesity (Hirschman & Chriqui, 2012; Story, Kaphingst, & French, 2006). Former Philippine Senator Jinggoy Estrada filed a bill to address the ballooning problem of obesity in the Philippines. Bill 2873, known as the Proposed Anti-



Obesity Program, seeks the inclusion of play, traditional games, and other physical activities in the pre-school, elementary, and high school to combat obesity among children (Gita, 2020). However, the bill was never passed and was lost in the process. Although the Philippine Department of Education came up with Department Order 13 s.2017 and guidelines on school canteens in 2008 (Deped.gov.ph., 2020), the Philippines lack any national statute to guide schools on how to prevent obesity, especially in higher education institutions. This may be one health concern that could be addressed in the Philippine context today.

With the university's prevalence rate of obesity at 33% being higher than the national prevalence rate of 2015 of 31.1% by the Philippine FNRI-DOST (Gumaru, 2020), reviewing the current strategy of the university health program is deemed needed (Townsend & Foster, 2017). The Philippine Congress might also want to consider creating a law to combat obesity. Such law must be inclusive of the higher education institutions and of deregulation of the marketing of energy-dense and nutrient-poor foods because Filipinos are at greater risk of obesity as a result of increasing urbanisation and lifestyle changes (Peltzer et al., 2014; Rappler, 2020).

It is noteworthy to view the findings of the study by its limitations. Inferences were basically interpreted using the available data, noting the cultural and ethnic background of the students whose records were used as data. The standards used were that of the WHO standards to which results may differ if it were the Asian standards because gender and ethnicity are known to affect BMI (Sira, 2010). Finally, future studies might want to consider replicating this study by comparing other university health programs on combating the prevalence of obesity in the Philippines and in Asia.

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