Evaluation of Nurse Assessment of a

Patient's Weight Status at the

Time of Hospital Admission

by

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ABSTRACT

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The incidence of overweight and obesity is a rapidly growing health

concern. The effects of these conditions are worldwide and have reached

epidemic proportions here in the U.S. The results of the most recent National

Health and Nutrition Examination Survey (NHANES) show that approximately

64% of the adult population in the U.S. is either overweight or obese. It is well

noted that individuals who are overweight or obese often experience the effects

of chronic health conditions as a result of their weight. Subsequently, these

individuals often require more frequent visits to various types of health care

facilities, including hospitals. During health care visits, a patient's height and weight are obtained for various medical purposes. Few studies have evaluated the accuracy of a nurse's assessment of a patient's weight status. This two-part study was designed to evaluate the accuracy of the admitting nurse's accuracy in evaluating a patients weight status, if a nurse's perception of their own weight status agrees with their own BMI and if there is a correlation between the admitting nurse's BMI and perceived patient care. This portion of the study attempts to evaluate the accuracy of the admitting nurse's evaluation of a patient's weight status. Eighty-four medical records from a western Wisconsin hospital were obtained and evaluated to determine if the admitting nurse accurately classified the patient as underweight, normal weight or overweight. Results of this study indicate that a significant number of patients were incorrectly categorized as normal weight when they were actually either underweight or overweight. The results of this study will be evaluated in conjunction with the second part of the study in an attempt to determine if there is a correlation between the nurse's perceptions of patient care, their own weight and how they assess a patient's weight. Additionally, further research is needed to more accurately determine probable causes of these inaccuracies as well as feasible solutions to the problem.

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be fighting with the computer right now!

       To my mom and my husband, this is the last time I going back to

school…for now anyway!

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CHAPTER ONE

Introduction

Introduction

Obesity rates have accelerated very sharply since about 1980. Subsequently, obesity is emerging as the number one nutritional-related problem facing Americans as well as many other sectors of the international population (Culbertson, & Smolen, 1999; Hebl, Xu, & Mason, 2003; Jeffery, 2001; Paeratkul, White, Williamson, Ryan, & Bray, 2002; Racette, Deusinger, & Deusinger, 2003). The prevalence of obesity has increased by 57% between the late 1970's and mid-1990s (Jeffery, 2001). As a result of this substantial increase in the incidence and prevalence of obesity, the World Health Organization (WHO) now recognizes obesity as a global epidemic (Holm, Li, Spector, Hicks, Carlson, & Lanuza, 2001; Wadden, Anderson, Foster, Bennett, Steinberg, & Sarwer, 2000; World Health Organization, 1997). A National Center for Health Statistics report on the results of the 1999-2000 National Health and Nutrition Examination Survey (NHANES) indicate that approximately 64 percent of the adult population in the U.S. is either overweight or obese (U.S. Department of Health and Human Services, n.d.). As a result of the rapid escalation in the number of overweight and obese individuals, many national organizations such as WHO, American Heart Association (AHA), National Institutes of Health (NIH), and American Academy of Family Physicians (AAFP) feel that obesity should be recognized as a disease (American Obesity Association, 2002; World Health Organization, 1997).

Increasing portion size, overeating, and inactivity are only a few of the numerous factors contributing to the increased prevalence of this disease. In addition to social and lifestyle factors, genetics has also been identified as a factor contributing to an individual's risk of becoming overweight or obese. Individuals who do not seem to "fit the norm" that society sets are frequently stigmatized by negative feelings and views from others. Two similar studies report that obesity is one of the most stigmatized physical features, second to skin color (Culbertson & Smolen, 1999; Glenn & Chow, 2002). Sobal (1991) stated that society often negatively evaluates obese people, which ultimately can lead to discriminatory behaviors. Other researchers have indicated that obese individuals are often viewed as self-indulgent, unattractive, and lacking in willpower (Glenn & Chow, 2002). Other studies indicate that inaccurate perceptions of body size contribute to poor body image with negative consequences (Paeratkul, White, Williamson, Ryan, & Bray, 2002). Finally, several authors report that most individuals feel that the obese population could lose weight if they simply changed their eating and lifestyle habits (Brodie, Drew, & Jackman, 1996; Glenn & Chow, 2002; Paeratkul, White, Williamson, Ryan, & Bray, 2002).

Along with the negative social situations that may affect people suffering from obesity, these individuals have an increased risk of developing adverse health conditions and chronic diseases. An increase in body weight by as little as 20% greatly increases an individual's risk of developing hypertension, coronary artery disease, lipid disorders, non-insulin dependent diabetes mellitus, joint

problems, and arthritis (Mahan & Escott-Stump, 2000; Racette, Deusinger, & Deusinger, 2003; World Health Organization, 1997). Other conditions linked to obesity include high blood cholesterol, stroke, some forms of cancer, and breathing problems (Duyff, 1998; World Health Organization, 1997). The development of these conditions can cause a substantial increase in the amount of stress placed on an individual's body ultimately creating a situation in which the body must work harder to compensate for weaknesses caused by secondary adverse health conditions. As a result, it can be noted that developing one of the obesity-related diseases may increase an individual's predisposition to develop several of these conditions. Obesity is a common link between many of these diseases and the combined effect these health conditions decreases life expectancy and quality of life.

Along with an increased risk for chronic diseases, obesity leads to more frequent visits to health care centers by obese individuals. Health care professionals are likely to have similar perceptions regarding obese persons as is seen by the general population. Sobal (1991) indicated that several previous studies have shown that medical students have negative attitudes toward obese patients. Other researchers have noted that physicians spend approximately nine minutes less with a heavier patient than with a thinner patient, and they tend to display more negative behaviors toward heavier patients (Hebl, Xu and Mason, 2003). In addition to physicians, it has also been shown nurses can display negative attitudes toward obese individuals. Forty-two percent of Canadian nurses indicated they would choose not to care for an obese patient and

registered nursing (RN) students felt uncomfortable caring for an obese patient (Culbertson and Smolen, 1999). Furthermore, both male and female nurses hold biases against obese patients equally and it has been suggested that negative feelings held by medical professionals develop from values held by the general public and not from their training (Garner & Nicol, 1998; Sobal, 1991).

Statement of the Problem

Knowing that health care professionals have negative feelings toward overweight and obese individuals and spend less time caring for them, a study to evaluate the care of overweight and obese patients in western Wisconsin was planned. A study was designed to evaluate several objectives:

1. To determine if nurses accurately assess a patient's weight at the time of hospital admission.

2. To determine if nurse's perception of their own weight status agrees with their own BMI.

3. To determine if nurse's perception of their own weight status is correlated with how they perceive patient care is given.

4. To determine if nurse's real BMI is correlated with how they perceive patient care.

The purpose of this study, as part of a larger study, was to determine if the nurses at Hudson Medical Center (Hudson, WI) accurately evaluate a patient's weight status as underweight, normal weight, or overweight at the time of hospital admission. Data was collected by obtaining the admitting nurse's evaluation of weight status as well as heights and weights of recently admitted

patients from medical records at the medical center. All data was collected during July of 2003. The remaining objectives will be addressed in a follow-up study.

Research Questions

As part of the larger study, data collected and analyzed for this part of the study will attempt to answer one very important research question:

1. Does an admitting nurse accurately evaluate a patient's weight status (underweight, normal weight, or overweight) at the time of hospital admission?

Definition of Terms

There are several terms that need to be defined in order to understand the purpose and results of this study. They are as follows:

Body Mass Index (BMI) – a measurement which describes relative weight for height and is significantly correlated with total body fat content, in which weight in kilograms is divided by height in meters squared or, equivalently, weight in pounds divided by height in inches squared multiplied by a factor of 703. BMI is used as an index of obesity (Mahan & Escott-Stump, 2000; National Institutes of Health, 2000; Pickett, 1998).

Normal weight – for individuals age 18-64, a state in which body mass index lies between 18.50 and 24.99. For individuals age 65 and older, a state in which body mass index lies between 22.00-27.00 (American Academy of Family Physicians, 2002; National Institutes of Health, 2000).

Obesity – for individuals age 18-64, a state of adiposity in which body fatness is above the ideal; a body mass index of greater than 30.00 (National Institutes of Health, 2000).

Overweight – for individuals age 18-64, a state in which weight exceeds a standard based on height; having a body mass index of 25.00 – 29.99. For individuals age 65 and older, a state in which body mass index is greater than 27.00 (American Academy of Family Physicians, 2002; National Institutes of Health, 2000).

Underweight – for individuals age 18-64, a state in which body mass index is less than 18.50. For individuals age 65 and older, a state in which body mass index is less than 22.00 (American Academy of Family Physicians, 2002; National Institutes of Health, 2000).

Assumptions and Limitations

There are several assumptions to be considered when conducting this study. It is assumed that the patient's height and weight obtained from the medical records is accurate and is not a self-reported measure. It is also assumed that the nurses have completed all necessary forms prior to patient admission. Lastly, it is assumed that all patients in this study do not have excessive muscle mass that may cause an incorrect classification according to their BMI. Some limitations of this study include the continuous sample of medial records used in this study, the possibility that the forms containing the necessary data might not be located in the medical record and the possibility that some of the heights and weights obtained from the medical records may be self-reported.

CHAPTER TWO

Literature Review

Introduction

This chapter will discuss several aspects of overweight and obesity. First, an overview of the problem of overweight and obesity will be discussed followed by the description of some factors known to contribute to the development of overweight and obesity. Some of the chronic conditions that are a result of excess weight will also be discussed. Attitudes of the general public as well as health care professionals toward obese individuals will be addressed next. Finally, nurse's assessment of a patient's weight status will be discussed.

Overview of Overweight and Obesity

Overweight and obesity has emerged as a worldwide health epidemic. The proportion of individuals with weight related issues have increased dramatically over the past several years. Obesity is most prevalent in developed regions such as Europe and the United States, but is becoming more of a problem in other countries as well (Holm, Li, Spector, Hicks, Carlson, & Lanuza, 2001). In some economically advanced areas of traditionally poor nations obesity rates are as high as industrialized countries (American Obesity Association, 2002). Additionally, it is noted that the prevalence of obesity has increased by about 10% - 40% in the majority of European countries over the past 10 years (American Obesity Association, 2002). As a result of the dramatic increase of overweight and obesity worldwide, the term obesity is often used interchangeably and in combination with the term of overweight, however, they do not necessarily

represent the same thing (Moyad, 2004). In the U.S., obesity rates among adults have doubled since 1980 and in 1999 an estimated 129.6 million or 64% of Americans were considered to be overweight (U.S. Department of Health and Human Services, 2004; U.S. Food and Drug Administration, 2002). Self-reported data collected in the Behavioral Risk Factor Surveillance System during 1999-2001 indicates that prevalence of obesity among U.S. adults had increase to 20.9%; a 5.6% increase over one year and a 74 percent increase since 1991 (Center for Disease Control and Prevention, n.d.). In Wisconsin, the percentage of individuals characterized as being obese rose dramatically from 12.7 in 1991 to 21.9 in 2001 (Center for Disease Control and Prevention, n.d.).

The epidemic of obesity is becoming such a great concern that it is receiving a tremendous amount of prevention efforts from the federal government. In 1990, the federal government established a set of national health goals and objectives to improve the health of the nation. The document, titled Healthy People 2000, contained a variety of goals established to improve the health of the nation, including a section on reducing the incidence of obesity. Unfortunately, these goals were not achieved during the 10-year time frame set as a guideline to work on this health problem as the incidence of obesity continued to increase despite these efforts. The overweight and obesity goals have been reestablished in an updated version called Healthy People 2010 to, once again, address the issue of obesity in the United States (U.S. Department of Health and Human Services, 2000). It has become increasingly apparent that this condition is worthy of national attention and will require the efforts of many

different individuals and organizations to slow and ultimately decrease the incidence of this epidemic.

Methods of Classifying Overweight and Obesity

There are several popular methods of classifying obesity. One method of classifying obesity is a simple skinfold thickness test. This method requires a qualified individual to accurately measure the thickness of the skin and fat mass from several sites on the body. This method, however, is inaccurate when used on individuals with extreme obesity or those who are dehydrated (Racette, Deusinger, & Deusinger, 2003). In addition, this method can vary greatly if different individuals take the measurements or as a result of the individual conducting the measurements incorrectly taking the measurement from the improper location (Moyard, 2004). Even with several limitations, this method provides a good measure of an individual's adiposity when used in combination with other methods.

Another method of determining obesity is waist circumference. Waist circumference is measured using a tape measure to provide an estimate of abdominal fat mass. As with skinfold thickness, this method is also limited by proper location of the measurement site. Individuals with a waist circumference greater than 35 inches (88 centimeters) for women and 40 inches (102 centimeters) for men are at an increased risk of developing adverse health problems (Centers for Disease Control and Prevention, n.d.).

Finally, another popular method of determining obesity is body mass index (BMI), originally known as Quetelet's Index. BMI is determined by dividing an

individual's weight in kilograms by the square of their height in meters. This method of determining obesity has been established as a convenient and reliable indicator of obesity (Garrow & Webster, 1985). However, this method is limited by the fact that the results do not distinguish between fat mass and muscle mass. Because of this, many individuals with large muscle masses may be incorrectly classified as overweight (Racette, Deusinger, & Deusinger, 2003). This method of estimating an individual's weight status is best when used in combination with other measurements such as waist circumference and skinfold thickness. Even with the limitations, health care professionals frequently use BMI as a quick and cost effective method of determining a patient's risk for developing chronic diseases because it requires no specialized equipment to make the calculations and it is a good estimator of an individual's current weight status. Numerical classification for overweight and obesity is as follows: individuals with a BMI between 25.00-29.99 are classified as overweight and those with a BMI greater than 30 are classified as obese (Holm, Li, Spector, Hicks, Carlson, & Lanuza, 2001; National Institutes of Health, 2000; Racette, Deusinger, & Deusinger, 2003).

Other methods that are sometimes used to classify an individual's weight status are bioelectrical impedance, densitometry, and DEXA. These methods require specialized equipment and cost considerably more money to conduct. Therefore, they are not used as frequently as other methods to evaluate an individual's weight status.

Factors Contributing to Overweight and Obesity

Overweight and obesity are extremely complex conditions involving many different factors, all of which contribute in some way to its development. In the United States, socioeconomic status, inactivity, and food choices largely contribute to the high incidence of this condition. These factors contribute to, but are not the only causes for the increase in the incidence of overweight and obesity. Genetics also plays a roll in the development of obesity.

One of the many complex factors contributing to the problem of overweight and obesity is an individual's socioeconomic status. Sobal (1991) related that an individual with a higher level of income allows for a greater ability to purchase food and, therefore, can lead to an increased consumption of calories. He further stated that on a physical level, fatness is thought of by many individuals as a sign of unattractiveness, which results in the placement of the obese person lower on the social hierarchy (Sobal, 1991). Therefore, the prevalence of obesity seems to be the most prevalent in middle-class individuals; those who are not extremely high on the social hierarchy scale, but are not so extremely destitute they are unable to purchase adequate food. Overall, the concept of the interaction between socioeconomic statuses is extremely complex, but provides additional information into the numerous factors contributing to obesity.

A second factor in the development of overweight and obesity is multi-factorial inactivity. The advancement of technology has initiated the development of careers that require many hours sitting at a desk or in front of a computer.

Manual labor and jobs that require physical work are becoming less and less prevalent. Jeffery (2001) also stated that conveniences such as microwaves, VCRs, cable television, and home computers have made or have contributed to this sedentary lifestyle. A direct result of sedentary lifestyles is a decrease in physical activity. Despite an increased interest in physical activity and fitness, the amount of exercise does not appear to be adequate to counter sedentary lifestyles (Centers for Disease Control and Prevention, 2003; Racette, Deusinger, & Deusinger, 2003). Racette, Deusinger and Deusinger (2003) went on to further state the proportion of those who engage in physical activity on a regular basis is relatively small in relation to the general population. Holm, Li, Spector, Hicks, Carlson, and Lanuza (2001) also stated that people engage in too little physical activity despite efforts by public health officials to counteract the problem. In general, we are contributing to the problem of overweight and obesity by modifying our lifestyle to include less physical activities and more sedentary activities.

Food choices contribute to the increasing prevalence of overweight and obesity. In the mid-1900's, men were considered the head of the household and women were responsible for maintaining the home environments. In today's society, more women are choosing to enter the workforce for many reasons. As a result, the amount of meals consumed outside of the home has increased by 70% since the 1950's (Jeffery, 2001). In addition, a shift in the consumption of the unprocessed to processed foods has changed the way society eats and perhaps has contributed to this problem. Jeffery (2001) stated that the availability

of most dietary nutrients has increased since 1970, with total food energy available in the marketplace increasing by 15%. Other resources also communicate similar findings (Holm, Li, Spector, Hicks, Carlson, & Lanuza, 2001; Sobal, 1991). In addition, the availability of high fat, convenience foods is also contributing to increasing obesity rates. Holm, Li, Spector, Hicks, Carlson, and Lanuza, (2001) reported that the consumption of high fat and high calorie foods have become more available to a greater portion of the population in European countries. Data collected also indicates obesity rates are increasing more in wealthy men and middle-income women as a result of the greater availability of high fat and high calorie foods (Centers for Disease Control and Prevention, 2003; Holm, Li, Spector, Hicks, Carlson, & Lanuza, 2001).

Genetics can also play a role in the development of obesity. Gene mutations can cause diseases such as Bardet-Biedl and Prader-Willi syndrome, which cause an individual to be overweight (Centers for Disease Control and Prevention, 2003). In addition to genetic mutations, recent research has also uncovered more information about a hormone, leptin, which appears to be related to the amount of fat stored in an individual's body. Obese individuals appear to have more serum leptin indicating the possibility of "leptin resistance" a situation in which an individual continues to produces leptin, but the leptin is not as effective, resulting in weight gain. (Mahan & Escott-Stump, (2000). Researchers are currently studying other possible connections between genetics and obesity.

In summary, it can be stated that the problem of obesity is extremely complex. Most literature concurs that a variety of factors need to be considered when addressing the causes of obesity. In addition, there are many other unknown or under-researched factors that could be listed as potential contributors to this growing epidemic.

Adverse Health Conditions Resulting from Overweight and Obesity

Along with psychological and emotional factors that result from overweight and obesity, research has shown that numerous chronic health conditions are also a direct result from excess pounds. Overweight and obesity are killing Americans. A study documenting the actual causes of death in the U.S. finds that 400,000 deaths in the year 2000 were related to poor diet and physical inactivity (U.S. Department of Health and Human Services, 2004). Since 1990, most other preventable causes of death showed a decline or no change in number of deaths, deaths as a result of poor diet and inactivity increased 33% (U.S. Department of Health and Human Services, 2004). Total direct and indirect costs attributed to overweight and obesity in 2000 are estimated at $117 billion (U.S. Food and Drug Administration, 2002).

Conditions such as heart disease, diabetes, cancer, breathing problems, arthritis, and reproductive complications all have ties to being overweight (Office of the U.S. Surgeon General, n.d.). In addition, conditions such as hypertension, dyslipidemia, type 2 diabetes, insulin resistance, glucose intolerance, hyperinsulinemia, coronary artery disease, angina pectoris, congestive heart failure, stroke, gallstones, cholescystitis, cholelithiasis, gout, bladder control

problems, sleep apnea, pancreatitis, stroke, and uric acid nephrolithiasis are also emerging conditions with direct correlations to overweight and obesity (American Obesity Association, 2002; Centers for Disease Control and Prevention, n.d.; Mahan & Escott-Stump, 2000; National Institutes of Health,1998). In many cases, these conditions have a compounded adverse effect on the overweight individual's health.

Attitudes and Perceptions of Overweight and Obese Individuals

Besides the adverse health conditions that negatively affect an individual's well being, members of society often have a very different opinion of overweight and obese people. Several studies have been conducted that evaluate the perceptions of others toward overweight and obese individuals. Wright and Whitehead (1987) stated that researchers often use technical information to assess obesity while the average lay person makes a subjective assessment based upon "looks" and ultimately classifies an individual as overweight or obese. Occupation can also influence an individual's perception of an individual's weight status. Research by Brodie, Drew and Jackman (1996) concluded that preconceived body images influence perceptions of body shapes. They conducted a study in which healthy females were classified into four groups based upon amount of activity and body mass index. They were then shown photographs of the same person dressed as a model, student, and cook. The researchers discovered that each group of participants rated the model to be the slimmest, the student was in the middle and the cook was rated the fattest.

Individuals who are overweight have a different perception of what is considered overweight or obese. Interestingly, a perception-of-body-image study conducted by Brodie, Drew and Jackman (1996) also concluded that obese individuals classified the model, student, and cook as slimmer than those participants who were non-obese. An individual's perception of their own weight can vary greatly from the medical definitions using BMI classifications. An Australian study that analyzed data collected from the National Health Survey and the National Nutrition Survey, conducted by the Australian Bureau of Statistics in 1995, found that only 49.3% of men and 72.0% of women with a BMI ≥ 25 considered themselves to be overweight (Donath, 2000). In comparison, Caccamese, Koldoner, and Wright (2002) surveyed patients at an internal medicine clinic and also reported that 21% of overweight patients incorrectly categorized themselves as being normal weight. The results of these studies suggest that the personal definition of overweight differs considerably from that of the medical definition.

Health Care Workers Attitudes and Perceptions of Obese Individuals

As a result of chronic health conditions, overweight and obese individuals often require more visits to health care facilities. Registered nurses often provide the majority of care to patients in health care settings. Studies have looked at their beliefs and perceptions about obese individuals and care provided to them. A study conducted in London evaluated nurses' beliefs about obesity of patients they cared for and for whom they provided weight loss advice. Overall, the practice nurses feel that obesity is more closely related to lifestyle factors rather

than biological factors (Hoppe and Ogden, 1997). The same study indicated that the practice nurses were confident about the weight loss advice they were giving but were less optimistic about the patients actually losing weight (Hoppe and Ogden, 1997).

Several studies have been conducted to evaluate nurses and nursing students perceptions and attitudes toward caring for overweight and obese patients. Similar studies conducted by Culbertson and Smolen (1999) and Maroney and Goulub (1992) assessed the attitudes of registered nursing students and registered nurses toward caring for obese patients. The results of these studies indicated that over half of the students and nurses felt obese adults have poor food selection and obese individuals could lose weight if they changed their eating habits. Culbertson and Smolen (1999) further stated that 58% of the nursing students felt that caring for an obese patient was physically exhausting and if they were given the choice, 28% would opt not to care for them. Petermelj-Taylor (1989) also reported that Canadian nursing students had similar feelings toward obese individuals. In summary, these researchers all conclude that many nurses find caring for obese patients to be challenging and that many do not like to provide health care services to them.

Nurse's Assessment of a Patient's Weight Status

Few studies have been conducted that evaluate a nurse's assessment of a patient's weight status. Research by Wright (1998) in the United Kingdom found that nurses who practiced in emergency and intensive care departments did not assess a patient's size in any formal way. If a weight was required for

anesthetic purposes, estimates were made or the information was obtained from previous records. Additionally, height was not measured. The results of the survey indicate that most assessments of height and weight by nurses are based upon subjective information.

CHAPTER THREE

Methodology

Introduction

This chapter includes information about the population, how the sample was selected, and a description of the sample. Finally, data collection and analysis procedures are outlined, along with limitations of the methods.

Population and Selection of the Sample

The sample for this study consisted of 84 medical records of patients 18 years of age and older that were admitted to the Medical/Surgical Unit of Hudson Medical Center located in Hudson, WI from June 5, 2003 to July 8, 2003. In addition, this study includes all nurses completing the Hudson Hospital Adolescent/Adult/Geriatric Nutrition and Functional Screening Tool; a data collection form used by the medical center to gather pertinent patient data. One section of this collection form allows the nurse collecting the data to "check" boxes indicating if a person is underweight or overweight. If no box in this section is "checked", it is assumed that the person is of normal weight. At the time of data collection, there were 61 full- and part-time nurses, both male and female, employed by the facility.

Instrumentation

Data for this study was collected using a form designed specifically for this study to facilitated the collection of the following information: date of admission, patient's age, patient's sex, patient's height in inches, patient's weight in pounds,

patient's BMI (calculated by the researcher to be used in the results section), and nurse's evaluation of the patient's weight status at the time of admission.

Data Collection

Before completing any data collection, approval from the University of Wisconsin-Stout Institutional Review Board (IRB) was received. Data was collected at the Hudson Medical Center during July 2003 after permission from the site had been granted from the Director of Quality, the Nutrition Services Manager, and the Medical Records Department. Data was collected during normal operating hours at the convenience of the staff in the Medical Records Department and the researcher.

Medical records of recently admitted patients were located with the assistance of the medical records staff and taken to a viewing room. At this location, each medical record was evaluated to determine if the patient met the criteria for inclusion in this study. The patient's sex and age were obtained from the admission form. Next, the Hudson Hospital Adolescent/Adult/Geriatric Nutrition and Functional Screening Tool was located and the admitting nurse's weight status assessment was obtained. Finally, the patient's height and weight were obtained from the discharge planning form, the admission form or from the progress notes section of the medical record. All of the information collected was recorded on the data collection sheet. This process was repeated in a continuous format, beginning with the most recent medical records and continued until an adequate amount of data had been collected.

Data Analysis

        Data collected in this study was organized and analyzed using Microsoft Excel. All appropriate descriptive statistics were calculated for the data generated from the medical records. The measurements for height and weight were used to calculate BMI according to the following formula: [weight (lbs)/ height (in)^2] x 705 (National Institutes of Health, 2000). Data analyzed is ratio in nature and is not normally distributed; therefore, Chi-squared was calculated using the following formula (Roscoe, 1975):

$$X^2 = \sum \frac{(O - E)^2}{E}$$

        Residuals were calculated by taking the square root of the above formula and noting that any residual with a square root greater than an absolute value of two greatly contributes to the significance of the Chi-squared.

Limitations

        There are some limitations of this study. One limitation of this study is the accuracy of the heights and weights obtained from the patient's medical record. Frequently, these measures are self-reported by the patient. This may influence the accuracy of the BMI calculation. Another limitation is the proper completion of all admission forms by the admitting nurse. Several medical records viewed for inclusion in this study were missing documents containing necessary information and thus, some data were omitted from analysis. An additional limitation is that the hospital is located in a semi-rural setting and most of the patients admitted to the hospital are older in age. Finally, the use of only one hospital for this study is

a limiting factor. The use of results from this study to make inferences about other health care facilities should be used cautiously.

CHAPTER FOUR

Results

Introduction

This chapter will include the results of the study. Demographic information will be discussed as well as descriptive statistics results will be discussed. In addition, the relationship between the research question and the data collected will be addressed.

Demographic Information

There were 91 medical records from which data were collected. From this, 3 records were omitted after analysis because of missing information. Another 4 medical records were omitted due to the fact the patients were under 18 years of age. The remaining 84 records were used for data analysis in this study.

Of the 84 medical records containing adequate information, 50 (60%) were female and 34 (40%) were male. The age range for all patients was 18 to 91. The mean height for females was 64 inches (SD 3.44) and for males was 69 inches (SD 3.42). The mean weight for females was 155 pounds (SD 37.13) and for males was 201 pounds (SD 46.12). Calculated BMI's for all patients ranged from 17.28 to 58.13. Mean BMI for males was 29.62 (SD 7.78) and mean BMI for females was 26.53 (SD 5.87). Table 1 describes in greater detail the descriptive statistics calculated on the data.

Table 1

Descriptive Statistics of Female and Male Patients

	Age			Height			Weight			BMI		
	Mean	Range	SD	Mean	Range	SD	Mean	Range	SD	Mean	Range	SD
Female	70	27-91	16.80	64	57-79	3.44	155	103-290	37.13	26.53	17.28-46.89	5.87
Male	59	18-91	20.15	69	61-83	3.41	201	134-338	46.12	29.62	17.40-58.43	7.78
Total	66	18-91	18.96	66	57-83	4.30	174	103-338	46.80	27.78	17.28-58.43	6.88

Research Questions

The data collected in this study was targeted to answer one very specific question:

1. Does an admitting nurse accurately evaluate a patient's weight status (underweight, normal weight, or overweight) at the time of hospital admission?

Table 2

Accuracy of Nurses Assessment of Patient's Weight Status

	Number of Patients	Correctly Assessed		Incorrectly Assessed	
		Number	Percent	Number	Assessed As
Underweight by BMI	13	1	8	12	Normal Weight
				0	Overweight
Normal Weight by BMI	33	30	91	1	Underweight
				2	Overweight
Overweight by BMI	38	7	18	0	Underweight
				31	Normal Weight

*Note that the patient's classification of weight status by BMI is age dependant; see the definitions for each classification for specific information.

Although most patients who were normal weight were not accurately assessed as normal weight by the admitting nurse significant errors in accuracy occurred for both under weight and overweight patients. Statistical analysis of the data collected revealed that the admitting nurses incorrectly assessed a patients weight status at the time of hospital admission (Chi-squared = 36.64, df = 2, p = 0.01). It should be noted that a significant number of patients were incorrectly categorized as normal weight when they were actually underweight. Additionally, over 80% of the overweight patients were categorized as normal weight.

CHAPTER FIVE

Discussion, Conclusions, and Recommendations

Introduction

This chapter will include a discussion and conclusion based on the results of the study. Recommendations for future use of the results as well as gaps in the data and the need for further studies will be included. Finally, an overall summary of the study in perspective of the recommendations will be included in this section.

Discussion

Previous research on the subject of nurse's assessment of a patient's weight status in a hospital setting is limited. As noted in the literature review of this paper, only one study previously conducted attempted to evaluate similar a similar situation. Wright (1998) found that nurses did not use any objective measures to assess a patient's height or weight but rather they relied solely on subjective measures such as the patient's stated weight or information obtained from previous medical records. The results of this study indicate similar findings; the admitting nurses did not accurately assess the majority of the underweight and overweight patient's weight at the time of hospital admission.

Statistical analysis of the data collected in this study revealed that nurses incorrectly classified a patient as normal weight when, in fact, they were actually underweight. Individuals who are underweight often experience chronic health problems as a result of their low body weight. Similarly, patients who are overweight by definition of BMI were incorrectly assessed as normal weight.

Individuals who are either overweight or underweight have an increased risk of developing serious chronic health conditions. In both instances, correctly assessing a patients weight status ultimately improves the interventions provided for the patient as a way to improve their health status.

Several possible reasons exist for the inaccurate assessment. One possibility is that the nurses are unaware of what constitutes underweight, normal weight and overweight using BMI standards. Lack of knowledge of the appropriate classifications would greatly contribute to the inaccuracies in correctly classifying a patient's weight status using only subjective measures. Another possibility is that the nurse had limited time to spend with the patient and did not have adequate time to complete the assessment. Given the circumstances in which some patients are admitted (i.e. conditions that require a rapid admission such as emergency surgery) would prohibit the nurse from accurately completing certain sections of the assessment form while with the patient. A review of the literature indicated that there are several methods of determining a patient's weight status. BMI is not the only measure available to assess a patient's weight status and BMI should ideally be used in combination with other methods in an effort to gain a better understanding of the patient's weight status. Therefore, admitting nurses may feel that additional information or an alternate evaluation method would help them to better assess the patient's weight. In addition, it is possible that this portion of the Adolescent/Adult/Geriatric Nutrition and Functional Screening Tool is not considered by the nurses to be a valuable portion of the initial assessment. Admitting nurses may feel that it would

be more beneficial to assess a patient's weight status in partnership with another member of the health care team. Needless to say, the actual reasons for the inaccuracies in the nurse's assessment of a patient's weight status at the time of hospital admission is unknown at this time.

Conclusions

From the results of this study, it can be concluded that the admitting nurses do not accurately assess a patient's weight status at the time of hospital admission. At this time it is unknown the reasons behind the inaccuracies. However, the data generated by the nursing staff is a vital part of the patient's care plan and is utilized by other members of the health care team. Accurate data collection is vital in caring for the patient.

Recommendations

The results of the second part of this study should be evaluated in conjunction with the results of this study to determine potential causes of nurse inaccuracies when an admitting nurse evaluates a patient's weight status at the time of hospital admission. Further studies including other facilities would be beneficial in determining what factors most contribute to inaccuracies in assessment errors. Implementation of a standardized BMI table could assist the admitting nurse to accurately determine a patient's BMI while completing the admission form. Additionally, training of the nursing staff would be beneficial in improving the accuracy of weight assessment.

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APPENDIX A: IRB Approval Letter

Date: May 15, 2003

To: Elizabeth Zasoski
                     Tammy Klink

                     cc: Ann Parsons
                      Biology

From: Sue Foxwell, Research Administrator and Human
                     Protections Administrator, UW-Stout Institutional
                     Review Board for the Protection of Human
                     Subjects in Research (IRB)

Subject: **Protection of Human Subjects--Expedited Review**

Your project, "Evaluation of nurses' perceptions of patients' weight status in relation to their own Body Mass Index (BMI)," has been approved by the IRB through the expedited review process. This protocol has been <u>approved provided the following items are addressed</u>. Then the measures you have taken to protect human subjects are adequate to protect everyone involved, including subjects and researchers.

- On #10 strike the words "unless otherwise agreed upon by the participating nurse. Anyone with additional weight related questions or concerns will be referred to one of the dietitians on staff at the medical center." No hospital staff should know who volunteer nurses are. This referral, if written, will identify them. Also, the presence of others during measurement recording could put them at additional risk of being identified.
- Hospital staff can not know who volunteers are for this research. Hospital staff should not be present when volunteers are asked for. They should not see the researchers with only these nurses (volunteers) or see any list of names of those who volunteered.
- Every possible effort should be taken to conceal the identity of the nurses who volunteer. Not only in the data, but especially in the selection process of asking for volunteers and the weighing process. For example; because your sample is voluntary, if only one overweight nurse volunteers, and she is seen by hospital staff with the researchers; and if the resulting data shows negative reactions by her toward patients, the hospital may unwittingly put undue negative pressure on her.

This project is approved through May 14, 2004. Research not completed by this date must be submitted again outlining changes, expansions, etc. Annual review and approval by the IRB is required.

Thank you for your cooperation with the IRB and best wishes with your project.

*NOTE: This is the only notice you will receive – no paper copy will be sent.

SF:ls

APPENDIX B: Hudson Hospital Project Approval Letter

Nutrition Services
Hudson Hospital
400 Wisconsin St.
Hudson, WI 54016

May 13, 2004

Tammy Klink
S4355 Oak Knoll Rd.
Fall Creek, WI 54742

Dear Sir or Madam:

Tammy Klink and Liz Zaroski met with me to discuss a project for their Dietetic Internship Program. Tammy and Liz will review weights in Patient Care records and note the caregiver's perception of the patient's weight. I have asked our Director of Quality, Louise Cunningham about the Interns doing this project and was given a verbal approval. Tammy and Liz plan to complete this project over the summer. If additional information needs to be provided for Tammy and Liz to proceed, please contact by phone at 715-386-0159 or e-mail jweiler@hudsonhospital.org.

Sincerely,

Jean Weiler M.Ed., RD
Manager, Nutrition Services

APPENDIX C: Data Collection Form

Evaluation of Nurse Assessment of a Patient's Weight Status at the Time of Hospital Admission Data Collection Form

Date of Admission	Nurse's Sex	Patient's Sex	Patient's Height	Patient's Weight	Calculated BMI	Nurse's Evaluation of Patients Weight