

# **RESEARCH ASSIGNMENT**

## **PROJECT TITLE**

The Prevalence of Obesity and Overweight among Healthcare  
Workers in Mafikeng provincial Hospital.

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Dissertation submitted to the Discipline of Family Medicine & Primary Care, Faculty of Health Sciences, University of Stellenbosch, in partial fulfillment of the requirements for the degree of Masters in Family Medicine.

**Cape Town, 2010.**

**Declaration**

I, Dr. Chukwuma Victor Onyebukwa, hereby declare that this dissertation is my own idea and the result of my own original research; that it has not been submitted for any degree or examination at any other University, and that all the sources I have used or quoted, have been indicated and acknowledged with complete references.

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Dr Chukwuma Victor Onyebukwa

.....

**Date**

## **Acknowledgement**

I wish to express my gratitude to the management of Mafikeng Provincial Hospital for granting permission to conduct this research and also to the healthcare workers for volunteering to participate in the study.

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## **TABLE OF ABBREVIATIONS**

<b>BMI</b>	Body mass Index
<b>Cm</b>	Centimeter
<b>CI</b>	Confidence Interval
<b>Kg</b>	Kilogram
<b>M<sup>2</sup></b>	Meter squared
<b>MPH</b>	Mafikeng Provincial Hospital
<b>OD</b>	Odds Ratio
<b>SAMJ</b>	South African Medical Journal
<b>SADHS</b>	South African Demographic Health Survey
<b>WHO</b>	World Health Organization.

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## ABSTRACT

### **Background**

Obesity is one of the of the most pressing public health problems. Its prevalence has reached an epidemic proportion (>15%) in many countries. Obesity mainly results from a discrepancy between energy consumption and expenditure due to a complex interplay of behavioral and genetic factors.

Studies have shown a growing prevalence even amongst healthcare workers. In South Africa, there seem to be a dearth of information in this area, thus the motivation for this study.

### **Methods**

A descriptive cross-sectional study was conducted to determine the prevalence of overweight and obesity amongst 430 healthcare workers in Mafikeng Provincial Hospital. For each participant, weight was measured using a weight scale and height with a ruler. The Body Mass Index was the calculated using weight in kilogram divided by height in meter square. This was recorded in a questionnaire which was also used to obtain information on the knowledge, attitude and perception of the participants about overweight and obesity.

### **Results**

The prevalence of overweight and obesity was found to be 29.7% and 41.0% respectively. Also this study showed a significant association between overweight and obesity prevalence and the following risk factors: lack of or inadequate exercise ( $P<0.05$ ), eating between meals ( $P<0.05$ ), black race ( $P<0.05$ ), level of education with higher rates in those with tertiary education ( $P<0.009$ ) and advancing age starting from participants aged 30 years and above ( $P<0.00$ ).

### **Conclusion**

This research shows a high prevalence of overweight and obesity amongst the participants which was higher than that of the general adult population of South Africa. Thus we recommend the development of programmes that promote healthy lifestyle amongst healthcare workers. There is need for further studies that will be more representative of the healthcare workers in South Africa to determine the extent of this problem.

## CHAPTER ONE

### **Introduction**

Obesity is one of the most pressing public health issues affecting our society.

It results from the discrepancy between energy consumption and expenditure due to a complex interplay of behavioral and genetic factors.<sup>1</sup> According to World Health Organization (WHO), it is now an epidemic, the prevalence of which in most countries now exceeds 15%; the figure used by WHO to define the critical threshold for intervention in nutritional epidemics. The prevalence of adult Obesity has exceeded 30% in the United States, is over 20% in most European countries and is 40-70% in the Gulf States. In South Africa, the prevalence in adult female population is put at about 30%.<sup>1</sup>

Obesity is associated with a lot of complications viz; type 2 diabetes, hypertension, stroke, hyperlipidaemia, arthritis, coronary heart disease, pregnancy complications, etc and these need full medical management. The cost (personal, health and economic) of this condition is enormous and the overall social cost is seen as a major hindrance to economic development.

A larger proportion of our population is overweight with an associated morbidity. Obesity has become a huge public health problem with a growing global concern, but there seem to be apathy towards this in this part of the world as there are lots of healthcare givers with this condition and are oblivious of it.

This study is motivated by the zeal to live up to the expectations patients have of healthcare workers as not only healthcare givers but also models of healthy living. Often the researcher has been confronted with the scenario where the researcher had to motivate patients on the need for lifestyle change as a way to avoid obesity and its consequent health implications, only to be reminded that the sister or clerk who just ushered in the patient is in fact overweight or obese. This may impact negatively on the psyche of the patients, who are oblivious of it; at best the healthcare worker is seen as one who does not practice what he/she preaches. Bearing in mind that preventive healthcare is the best form of healthcare, this study is aimed at sensitizing and creating more awareness amongst healthcare workers, with the possible impact being to motivate behavioral change and encourage healthy living.

## CHAPTER TWO

### Literature Review

Obesity is a global problem, unequally distributed between and within countries; a consequence of the complex global, national and local levels, shaping how we trade, live, learn and work.<sup>2</sup> Obesity results from the discrepancy between energy consumption and expenditure. A small excess consumption of only 50-200k.cal daily will lead to weight gain of 2.20kg over a period of four to ten years.<sup>3</sup> This excess weight gain usually starts between twenty to forty years with maximum body weight being achieved at middle age.

The aetiology of obesity appears to stem from a complex interplay of behavioral factors implicated in reduced level of activity, in addition to increased food intake, and other associated factors notably; high fat diets, snacking and lack of formalized meal patterns, consumption of energy dense food and drinks, alcohol consumption and giving up smoking.

Genetically, only a few rare single gene disorders have been identified which can lead to obesity. Notably amongst them is the Prader-Will syndrome. In the general population however, the pattern of inheritance suggests a polygenic disorder with small contributions from a number of different genes as confirmed from twin and adoption studies of a genetic influence on obesity.<sup>4</sup>

Females have a higher prevalence of obesity than males and it has been suggested that this may be related to gender difference in the brain's response to hunger and satiety.<sup>5</sup> Other reasons may be that factors acting during puberty influence the risk of obesity in females.

Also, a number of studies have shown that a positive relationship exists between gestational weight gain and post partum weight retention.<sup>5</sup> In some studies, black women were twice as likely as white women to retain more than 20lb in weight post partum despite comparable weight gain during pregnancy.<sup>5</sup> Obesity has effects on both mortality and morbidity of humans. There is increased risk of death with increasing weight. For individuals between thirty to forty two years, the risk of death increases by 1% for each 0.5kg weight rise and for individuals between fifty to sixty two years, this risk increases to 2% for each 0.5kg weight gain.<sup>3</sup> Many medical complications including type 2 diabetes, hypertension, stroke, hyperlipidaemia, coronary heart disease, cancers, breathing problems, pregnancy complications, poor health status, etc are associated with obesity.<sup>6</sup>

Central obesity is one of the four major components of metabolic syndrome, others being; impaired fasting glycaemia or type 2 diabetes, hypertension and dyslipidaemia. Others define metabolic syndrome as impaired plasma insulin regulation and Body Mass Index (BMI) changes.<sup>7</sup> Which ever definition one chooses, obesity is a component of this syndrome which is associated with double risk of cardiovascular disease. In addition to these medical consequences, it also impacts profoundly on the psychosocial well being of patients.

These consequences notwithstanding, obesity is associated with some beneficial health implications as seen in osteoporosis where bone density increases with increase in weight.

From the above discussion, it is evident that obesity is a risk for non-communicable diseases and is also a global public health concern. It is estimated that >1 billion adults are overweight of which at least 300 million are obese.<sup>8</sup>

In developing countries undergoing health or epidemiological transition, a complex picture relating to nutritional status of the population is frequently found. A malnutrition pattern is predominantly characterized by under nutrition in children and in adults an ever increasing obesity is found. Countries in transition from under developed to developed such as Brazil, China, and South Africa are also affected. In South Africa, however, the pattern of malnutrition amongst adults is mainly over nutrition rather than under nutrition. According to a study by Puoane et al, on the anthropometric data and socio demographic determinants of obesity collected in 1998 in South Africa's first National Demographic and Health Survey (SADHS), mean Body Mass Index (BMI) values for men and women were 22.9 and 27.1 respectively. 29.2% of men were overweight or obese and 9.2% had abdominal obesity, whereas 56.6% of women were overweight or obese and 42% had abdominal obesity.<sup>9</sup>

The high obesity rates in adult South Africans could be attributable to changes in nutritional pattern over time and higher and higher levels of urbanization.<sup>10</sup> Also availability and affordability of unhealthy food, use of labour saving mechanized devices which influence decreased energy expenditure and availability of fast food resulting in excess calorie intake, less physical activities in urban setting are all aggravating factors. This is in consonance with what pertains in developed countries as discussed earlier. The high prevalence rates of overweight and obesity among South African populations could also be an important contributing factor to the high prevalence rates of chronic diseases.<sup>11</sup> Statistics show that hypertension prevalence rates are 13.9% for blacks, 13.6% for those of mixed ancestry and 14.8% for whites. Hypercholesterolemia prevalence rates ranges from 0 to 12.5% for blacks,

17% for those of mixed ancestry and 25 to 26% for whites and about 34% of all South Africans smoke.<sup>11</sup>

In South Africa, blacks are the predominant population sub group representing 77.4% of the population.<sup>12</sup> The prevalence of obesity was 31.8% in women and 6% in men<sup>13</sup> with frequency of communicable diseases. Also in other ethnic groups, the prevalence rates of obesity among women were: 26.3% in those of mixed ancestry, 21.1% in Asians and 22.7% in whites. The rates were lower in men, ranging from 6% in blacks to 18.2% in whites.<sup>10</sup>

In a study conducted on healthcare workers by Oguz et al, the frequency of abdominal obesity was 13.8% and was significantly higher in male than females (19.1% vs. 10.6%)<sup>14</sup>. It was observed that the incidence of overweight falls as educational level rises and that there is a growing incidence of overweight and obesity in subjects of working age employed in the healthcare sector. The study also found that only a minority of healthcare workers were cognizant of metabolic syndrome as a clinical syndrome and the definition of abdominal obesity.

The above finding is consistent with what pertains in developed world as can be seen in a similar study conducted in a large hospital in the province of Messina in Italy, where males showed greater susceptibility to overweight more than females (M 13.3%, F 16%), obesity was also found in both sexes (M 13.3%, F 13.6%)<sup>15</sup>. In a similar study in Botswana, 28.7% of healthcare workers were obese and 27.3% were overweight. Female gender was found to be strongly associated with obesity and the age group of 35-54 years was mostly affected.<sup>6</sup>

These studies all show that there is a growing incidence of overweight and obesity in subjects of working age employed in the healthcare sector.

In the South African context, there is however a dearth of information on obesity prevalence amongst South African healthcare workers therefore making it difficult to compare figures. Thus the need for research in this area cannot be overemphasized and it is hoped that the results of this proposed study will go a long way to provide the much needed statistical information for better comparative analysis.

#### **RESEARCH QUESTION:**

The research question is “What is the Prevalence of Obesity and Overweight amongst Healthcare Workers in Mafikeng Provincial Hospital?”

#### **AIM**

To determine the prevalence of Obesity and Overweight amongst Healthcare workers (Healthcare Providers)<sup>16</sup> in Mafikeng Provincial Hospital.

#### **OBJECTIVES**

1. To determine if the prevalence amongst Healthcare workers in Mafikeng Provincial Hospital is comparable to that of the general population.
2. To motivate behavioral modification amongst healthcare workers in Mafikeng Provincial Hospital.
3. To determine if obesity is a problem amongst Healthcare workers in Mafikeng Provincial Hospital.
4. To determine other risk factors associated with obesity.

## CHAPTER THREE

### METHODS

#### 3.1. Study Design

A descriptive cross sectional survey which is a quantitative study design was used for this study. This is primarily because a descriptive study is classically used to establish the prevalence or extent of some medical problem in a community.

Though this study design might occasionally look at two variables, it essentially looks at one variable, depicting its size, extent, and patterning. It is carried out using methods such as questionnaire, measurement or counting of events at one point in time or over a short period.

It can estimate prevalence of outcome of interest because sample is usually taken from the whole population and because it is done at one point in time, there is usually no loss to follow up and moreover, it is ethically safe.

For the purposes of this research; the prevalence of obesity and overweight, and against the backdrop of the aims and objectives enumerated above, there couldn't have been a better choice considering the fact that what is sought to be established is prevalence and the cross sectional study by its very nature basically estimates prevalence.

The relatively low cost and limited time consumption are also irresistible attractions considering the fact that the researcher has to find a way to balance the demands of the research project with work and family commitments.

### **3.2. The Study Population**

The study population is already defined in the research question, viz: healthcare workers (healthcare providers)<sup>16</sup> in Mafikeng Provincial Hospital, Mafikeng in the central district of the North West province of South Africa.

From figures obtained from the human resources department of the hospital, there are currently seven hundred and four (704) workers in their employ. Four hundred and thirty (430) out of these are healthcare workers, with the distribution being sixty seven (67) doctors, three hundred and forty one (341) nurses and twenty two (22) other healthcare workers.

The researcher used the whole four hundred and thirty (430) healthcare workers as the study population.

#### **3.2.1. Inclusion Criteria**

There is no gender or racial restriction in the study. All healthcare workers (healthcare providers) were included in the study.

#### **3.2.2. Exclusion Criteria**

Pregnant women and those within six weeks of childbirth and healthcare workers on leave during the period of data collection (study leave, annual leave, maternity leave and sick leave).

Out of the four hundred and thirty (430) healthcare workers, three hundred and thirty four (334) participated in the study, fifty one (51) were on leave, nine (9) were either pregnant or less than six weeks post delivery and thirty six (36) opted not to participate in the study.

To determine if 334 participants was a representative sample, the formula  $n = P(1-p)/S.E^2$  was used to calculate sample size. With P representing the proportion of the population with the characteristics being measured (which is the proportion with overweight/obesity).

SE = Standard Error.

Assuming P which is the testing history among the population is 30% from previous similar studies.

Using a confidence level of 95% with level of precision of 6%. Also knowing that 95% of the sample will fall within 1.96 standard error of the mean.

Therefore S.E is calculated as  $6/1.96 = 3.03$

Substituting into the formula gives:  $n = 30(100-30)/3.03 \times 3.03 = 229$ .

Thus 334 participants is a representative sample of the population of healthcare workers.

### **3.3. Instrument of Data Collection**

An anonymous questionnaire designed with close-ended questions based on information from extensive review of previous articles on similar studies was used for collection of data on demographic characteristics, Knowledge, Perception and Attitude of the participants.

For purposes of this study, the following terms are defined as follows:

- Knowledge: the state of knowing about a particular fact or situation; in this case overweight and obesity.
- Perception: a belief or an image one has as a result of how one sees or understands something.

- Attitude: the way one behaves towards something that shows how one thinks and feels.

The questionnaire was structured to collect information on risk factors that influence health such as diet and exercise, cigarette smoking, alcohol consumption and perceptions regarding body weight, etc.

Anthropometric data was obtained using standardized bathroom scale to measure weight and a metal measuring tape for measurement of height of participants. These were recorded in each participant's questionnaire and Body Mass Index (BMI) was calculated using the Quetelet index (weight in kilogram divided by height in meter square).<sup>17</sup>

- Underweight as BMI < 18.5 kg/m<sup>2</sup>
- Normal weight as BMI > 18.5 to 24.9 kg/m<sup>2</sup>
- Overweight as BMI 25 to 29.9 kg/m<sup>2</sup>
- Obese as BMI ≥ 30 kg/m<sup>2</sup>

### **3.4 Procedure of Data Collection**

The questionnaires which were self-administered, together with the informed consent forms were distributed by the researcher to the participants in the hospital wards, nurses' stations, OPD, offices, etc. Participants were requested to complete this questionnaire after a written consent has been obtained.

Weight was measured to the nearest 0.5kg, using a calibrated bathroom scale. Each participant was weighed without shoes. Height was measured using a metal tape secured against a flat wall and a flat head board placed at a right angle to the wall to ensure correct reading. Each participant was requested to stand barefoot with back and legs straight and the

back of the head placed upright against the wall. Height was measured to the nearest 0.1cm. Participants then have their BMI calculated and communicated to them. If the BMI of any participant was found to be abnormal, s/he was counseled and behavioral changed motivated. Further consultation was also negotiated with these participants.

In order to make sure that everybody was accounted for, the researcher got a compiled list of the names of the healthcare workers that constitute the study population from the Human Resources Department of Mafikeng Provincial Hospital. In the course of the data collection, after filling the anonymous questionnaire and having their measurements taken, each participant had his/her name marked in the register to show that he/she had been accounted for and to avoid duplicity.

### **3.5. Reliability and Validity of measurement / data collection instrument(s).**

Reliability refers to whether or not an instrument gives consistent results. Applying this to the research one would say that the questionnaire and the Body Mass Index (BMI) as measurement/data collection instruments are both relatively reliable and it is unlikely that the results obtained will vary over a period of time.

Validity on the other hand refers to whether the instrument measures what it purports to measure. Using the Body Mass Index (BMI) as an indicator for overweight and obesity ensures constant validity of the weight status of each participant.

### **3.6. Ethical Consideration**

The research was on obesity prevalence amongst healthcare workers which took the form of a prospective descriptive cross sectional study and thus the basic principles of research ethics were carefully adhered to and respected. Approval for this research was obtained from the ethics committee of the Stellenbosch University as well as the Policy, Planning and Research Directorate of the North West Province Department of Health and Social Development and the Clinical Manager, Mafikeng Provincial hospital.

However the following ethical issues received paramount consideration:

- **Confidentiality:** the research participants were colleagues and information was collected using anonymous questionnaires thus preserving confidentiality. It did not involve the use of information from patient files thus there was no inadvertent break of confidentiality.
- **Informed consent:** the questionnaires were accompanied by an information letter, attached as addendum, which briefly enumerated the need for the research as well as the aims and objectives of the study with a provision for the participant to either consent or not to the study after having gone through the information. This information was also personally explained to them by the researcher.
- **Protecting the interests of the research participants:**
  - Participants were enlisted in this study without coercion or inducement.
  - Privacy was also ensured during the evaluation.
  - This study was non invasive thus they were protected from harm.
  - Decision of any participant not to participate or withdraw from the study was respected.

- Freedom of the researcher to draw conclusion: this formed part of the information availed to the participants prior to obtaining informed consent from them.

## CHAPTER FOUR

### RESULTS

#### 4.1. INTRODUCTION

In this chapter the results were analyzed using statistical software SPSS 17.0. The information was presented in descriptive statistics for all variables in order to determine the distribution of variables. Categorical variables were analyzed by chi-square or Fisher's exact test. Odds ratio (OR) and 95% confidence intervals (95%CI) were calculated by logistic regression model and used as a measure of the strength of the association between the outcome variables and their predictors. The threshold for statistical significance was considered as  $p$  value  $< .05$  for all statistical analyses.

Data was collected using a questionnaire which was structured to collect information on the following sections: Anthropometric and Demographic characteristics, Knowledge, Perception and Attitude of the participants. Data from each of these sections were analyzed separately and the total number for each variable was then expressed as percentages of the sample size. Cross tabulation was calculated to test the significance of association.

#### 4.2. DEMOGRAPHIC AND ANTHROPOMETRIC CHARACTERISTICS

##### 4.2.1. Demographic distribution of healthcare workers at MPH

The demographic background of all participants is shown in Table 1, as well as Figures 1, 2 and 3.

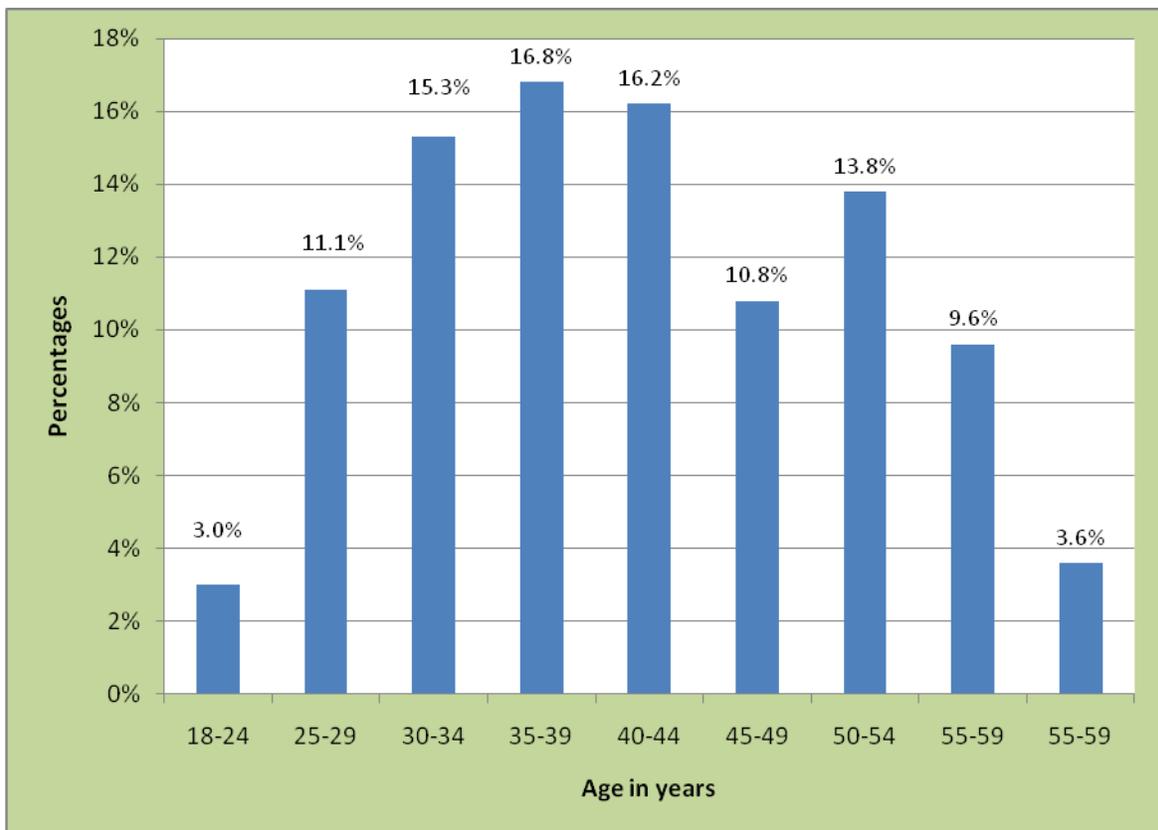
**Table I: Demographic characteristics of all subjects (n=334)**

Variables	Number	Percentages
<b>Category of Healthcare Workers</b>		
Doctor	67	20.1
Nurse	245	73.4
Other	22	6.6
<b>Level of education</b>		
Pre-Matric	26	7.8
Metric	95	28.4
Tertiary	213	63.8
<b>Religion</b>		
Christian	308	92.2
Muslim	5	1.5
Traditional African	2	.6
Atheist	1	.3
Other	10	3.0

Gender		
Male	69	20.66
Female	265	79.34

In Table 1 above, it can be seen that the majority of the healthcare workers are nurses with doctors and other healthcare workers constituting only about a quarter of the number. It is also shown that majority of the participants are females, have tertiary level of education and are Christians.

**Figure 1: Age Distribution of healthcare workers at MPH**



The age group distribution of the respondents shows that majority of the participants are aged between 25-59 years.

**Figure 2: Race distribution of healthcare workers at MPH**

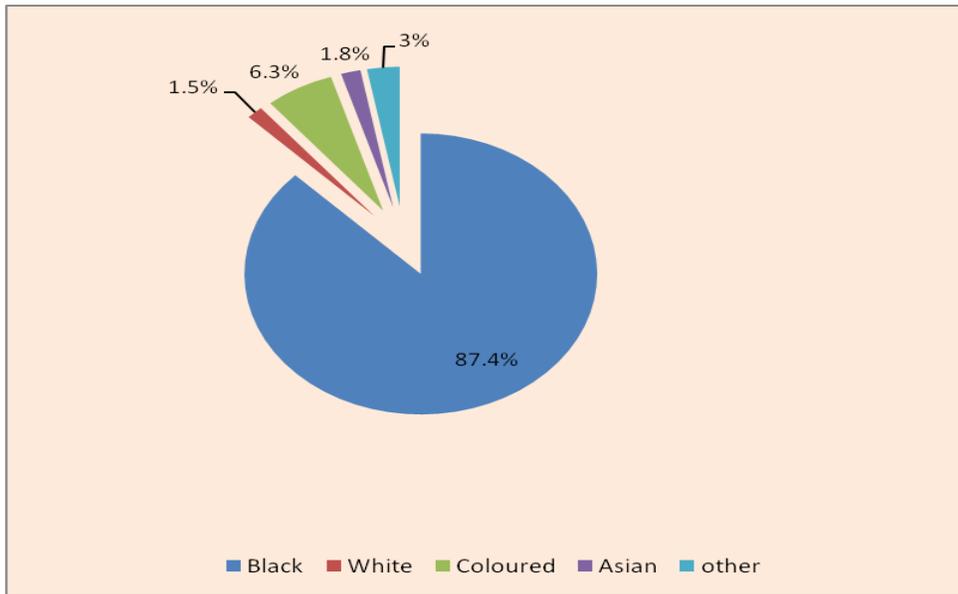
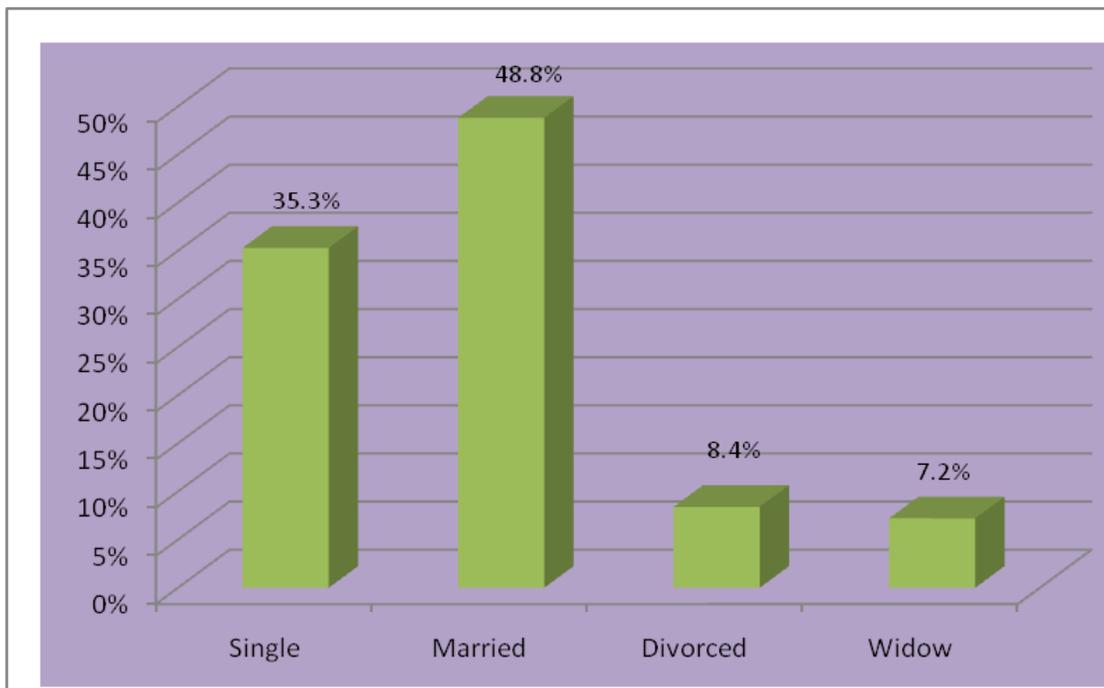


Figure 2 above shows that majority were black participants.

**Figure 3: Marital Status Distribution of healthcare workers at MPH**



Married and single participants constitute majority of the participants.

#### **4. 2.2. Anthropometric Characteristics of the Participants**

The anthropometric parameters of the participants is shown in Tables IIA, IIB and IIC. It can be seen from Table IIA, that majority of the respondents have their weights between 72-101kg and their heights between 162-169cm respectively. The prevalence of overweight and obesity were 29.7% and 41.0% respectively amongst healthcare workers in Mafikeng Provincial Hospital.

**Table 1IA: Distribution of Weight, Height and BMI of healthcare workers at MPH.**

Variables	Number	Percentage
<b>Weight in kg</b>		
42 – 71kg	121	36.2
72 – 101kg	174	52.1
102 – 192kg	39	11.7
<b>Height in cm</b>		
145 – 152cm	35	10.5
153 – 161cm	112	33.5

162 – 169cm	117	35.0
179 – 187cm	14	4.2
<b>BMI</b>		
<18.5 kg/m <sup>2</sup> (Underweight)	2	0.6
18.5-24.9 kg/m <sup>2</sup> . (Normal weight)	95	28.7
25-29.9 kg/m <sup>2</sup> . (Overweight)	98	29.7
>30 kg/m <sup>2</sup> . (Obesity)	138	41.0

**Table IIB: Descriptive Statistics**

	<b>N</b>	<b>Range</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Weight</b>	334	150	42	192	79.72	17.536
<b>Height</b>	334	43	145	187	163.69	8.136
<b>BMI</b>	333	50	18	68	29.55	6.597
<b>Valid N (Listwise)</b>	333					

**Table IIC: BMI of Male and Female Healthcare workers at MPH**

<b>BMI</b>	<b>Male</b>	<b>Female</b>
<b>Underweight</b>	1 (0.3%)	1 (0.3%)
<b>Normal weight</b>	27 (39.1%)	69 (26.0%)
<b>Overweight</b>	30 (43.5%)	68 (25.7%)
<b>Obesity</b>	11 (15.9%)	127 (47.9%)
<b>Total</b>	69	265

The table above shows that majority of the male participants were overweight. In the female respondents, however, the predominant BMI was the category; obesity.

### 4.3. KNOWLEDGE

The table below shows that majority of the participants 303 (90.7% have heard of the disease condition called obesity and 310 (92.8%) have heard of overweight.

Majority of the respondents 304 (91%) were aware that obesity is a risk factor for coronary heart disease and 301 (90%) had the knowledge that obese people are at risk of having diabetes. Just more than half of the respondents 178 (53.3%) were not disturbed by their weight.

**Table III: Knowledge distribution of healthcare workers at MPH**

Variables	Number	Percentages
<b>Have you ever heard of the disease condition called obesity?</b>		
Yes	303	90.7
No	28	8.4
<b>Have you ever heard of overweight?</b>		
Yes	310	92.8
No	21	6.3
<b>Are you aware that Obesity is a risk factor for Coronary Heart Disease?</b>		
Yes	304	91.0
No	25	7.5
<b>Do you know that obese people are at risk of having Diabetes?</b>		
Yes	301	90.1
No	31	9.3
<b>Are you disturbed by your weight?</b>		

Yes	152	45.5
No	178	53.3

**Figure 4: Distribution of diagnosis of obesity of healthcare workers at MPH**

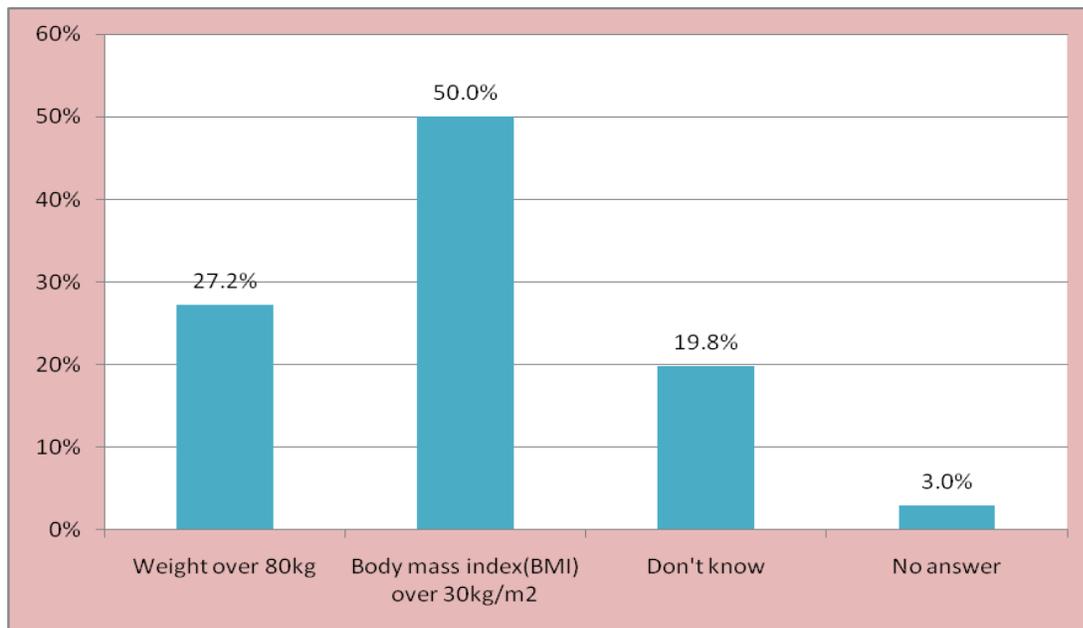
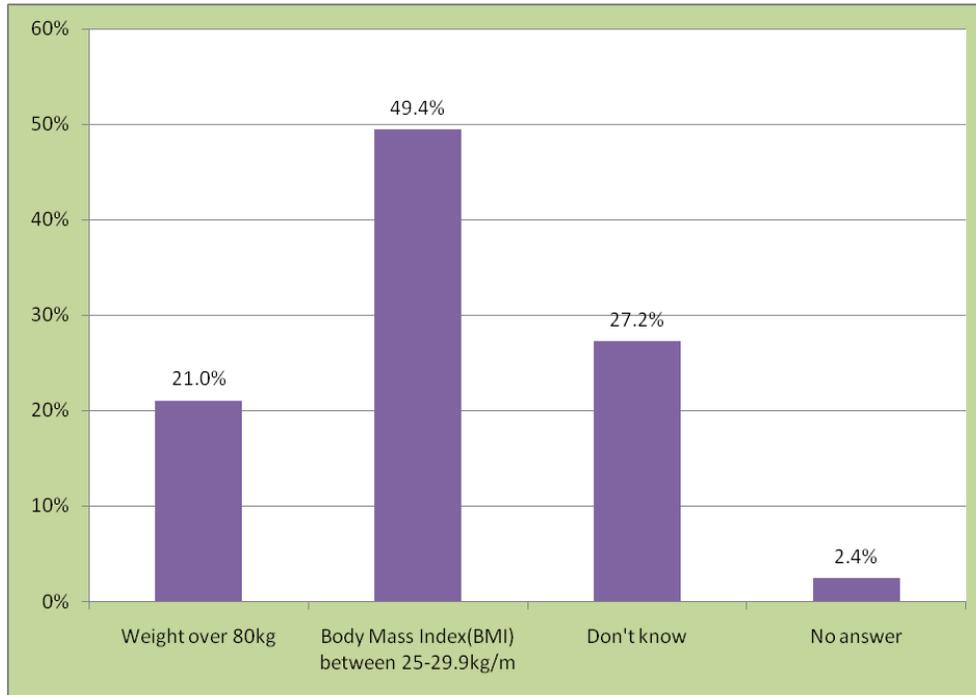


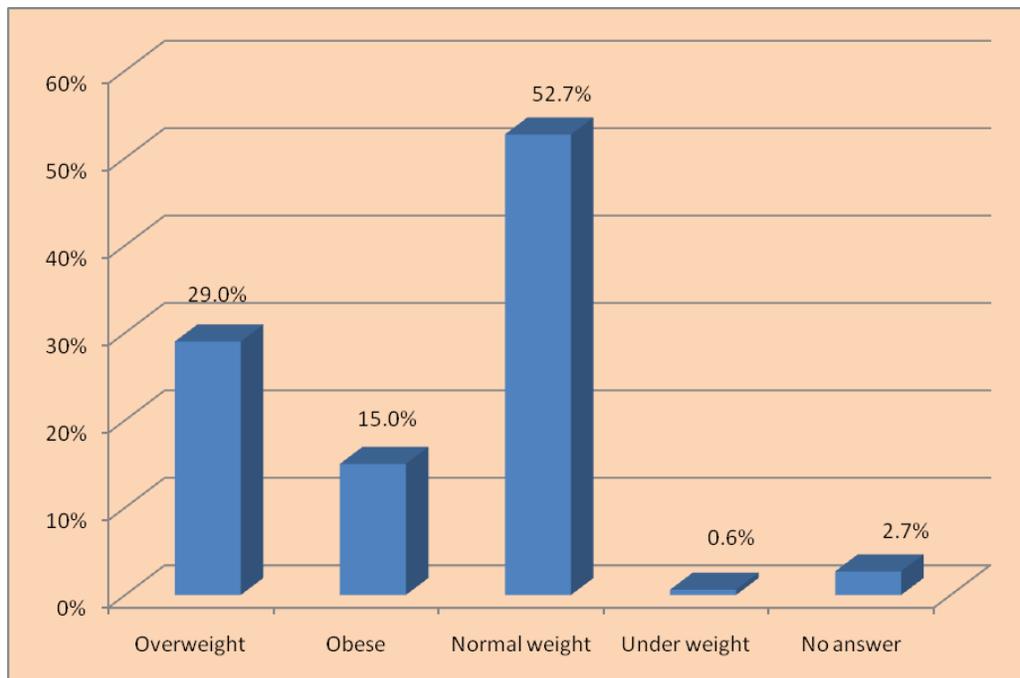
Figure 4 shows the distribution of response when participants were asked how the diagnosis of obesity is made. Only about half of the participants know how obesity is diagnosed.

**Figure 5: Distribution of diagnosis of overweight**



When a similar question was asked on how the diagnosis of overweight is made, figure 5 above shows that about half of the participants know how to make diagnosis of overweight.

**Figure 6: Distribution of self-classification of healthcare workers at MPH**



When respondents were asked to use their knowledge to classify their weight status, a majority classified themselves as normal weight. See figure 6 above.

#### 4.4. PERCEPTION

In this section, data on the perception of participants about overweight and obesity was analyzed.

**Table IV: Distribution of Perception of healthcare workers at MPH**

Variables	Yes		No	
	Number	Percentages	Number	Percentages
Do you think obesity is a problem amongst healthcare workers?	250	(74.9%)	84	(25.1%)
Do you think healthcare workers are taking enough care to prevent obesity?	120	(45.9%)	214	(64.1%)
Do you think regular exercise can help prevent /reduce obesity?	309	(92.5%)	25	(7.5%)
Do you believe that cultural values have any impact on obesity and overweight?	226	(67.7%)	108	(32.3%)
Some cultures believe that being obese is a sign of healthy living, do you agree with them?	63	(18.9%)	271	(81.1%)

Some people believe that weight gain is evidence of good living. Do you agree?	66 (19.8%)	268 (80.2%)
Do you believe that being Obese or Overweight is an indication of good health?	20 (6.0%)	314 (94.0%)

From Table IV above, it can be seen that a large proportion 250 (74.9%) of the respondents were aware that obesity is a problem amongst healthcare workers. When participants were asked whether healthcare workers are taking enough care to prevent obesity, majority 214 (64.1%) disagreed, 309 (92.5%) responded positively when asked whether regular exercise can help prevent/reduce obesity. Majority of the participants 226 (67.7%) believe that cultural values has an impact on obesity and overweight. Majority 271 (81.1%) disagreed when asked whether they agree with some cultures that believe being obese is a sign of good living. 80.2% (n=268) of the participants also do not believe that weight gain is a sign of health living. Approximately 94% (n=314) of the respondents do not believe that being obese or overweight is an indication of good health.

#### 4.5. ATTITUDE

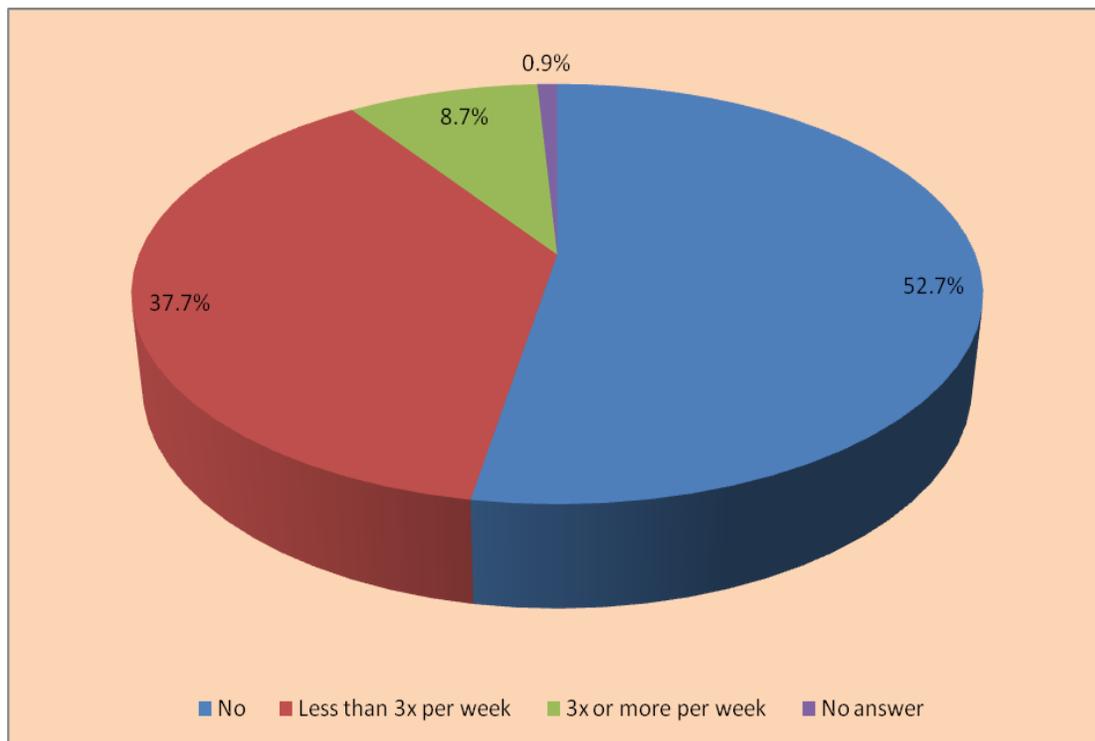
**Table V: Distribution of Attitude of healthcare workers at MPH**

Variables	Yes		No	
	Number	Percentages	umber	Percentages
Do you take alcoholic drinks?	132	(39.5%)	203	(60.5%)
Do you smoke cigarette?	52	(15.6%)	282	(84.4%)

Do you take snacks or beverages in between meals?	224 (67.1%)	110 (32.9%)
Do you think healthcare workers are aware of the need to fight obesity and overweight?	226 (67.7%)	108 (32.3%)
Do you think healthcare workers should do more to fight obesity and overweight?	317 (94.9%)	17 (5.1%)

Table V above shows that majority 203(60.5%) of the respondents do not drink alcohol and 282(84.4%) do not smoke. About 224(67.1%) respondents do take snacks or beverages in between meals and 226(67.7%) responded positively when asked whether healthcare workers are aware of the need to fight obesity and overweight. 94.9% (n=317) of the respondents also think that healthcare workers should do more to fight obesity and overweight.

**Figure 7: Distribution of Regular Exercise of healthcare workers at MPH**



More than half of the respondents 176 (52.7%) do not exercise regularly, 126 (37.7%) exercise less than 3x per week and only 8.7% (n=29) exercise regularly; more than three times per week.

#### 4.6. Further Analysis

In the analysis below, study gender was taken as explanatory variables, overweight, obesity, normal body weight and underweight were taken as outcome variables, and simple logistic regression was applied to obtain the Odds Ratio (OR).

**Table IV (a): Weight Status and Healthcare Workers.**

Weight status	Healthcare workers		CHI-Square	P-Value
	Male	Female		
Underweight	1(0.3%)	1(0.3%)	43.439	0.004
Normal weight	27(39.1%)	69(26.0%)		
Overweight	30(43.5%)	68(25.7%)		
Obesity	11(15.9%)	127(47.9%)		
Total	69	265		

Significant at ( $\alpha = 0.05$ )

**Table IV (b): Weight Status and Gender**

		Mean	SD	OR	95%CI	
<b>Male</b>	Overweight	1.06	0.232	1.46	1.12	1.46
	Obesity	1.27	0.248	2.34	1.49	2.88
<b>Female</b>	Overweight	1.90	0.496	2.10	1.84	3.01
	Obesity	2.01	0.737	4.89	3.54	6.70

Tests have shown a statistically significant association between body weight categories and gender with  $p=0.004$ . The prevalence of overweight and obesity were 29.7% and 41.0% respectively among healthcare workers. The simple logistic regression results illustrated that the overweight population had two times higher risk than the normal body weight people among both gender, for obesity it was more than four times higher.

The times of risk for overweight in males were (OR=1.46, mean=1.06, SD=0.232 & CI=1.12-1.46). For obesity, males were (OR=2.34, mean=1.27, SD=0.248 & CI=1.49-2.88).

For overweight, females were (OR=2.10, mean=1.90, SD=2.10 & CI=1.84-3.01). For obesity, females were (OR=4.89, mean=2.01, SD=0.737 & CI=3.54-6.70). It was obvious that obesity had the highest risk in females than males.

**Table VII: Gender and Healthcare workers by weight status**

Gender	Health Workers	Underweight	Normal weight	Overweight	Obese	CHI-Square	P-Value
<b>Male</b>	Doctor	1(0.3%)	13(48.1%)	19(63.3%)	7(63.6%)	51.76	0.144
	Nurse	0	10((37.0%)	7(23.3%)	4(36.4%)		
	Other	0	2(7.4%)	4(13.3%)	0		
	<b>Total</b>	<b>1</b>	<b>27</b>	<b>30</b>	<b>11</b>		
<b>Female</b>	Doctor	0	10(14.5%)	7(10.3%)	15(11.8%)	235	0.000
	Nurse	0	56(81.2%)	56(82.4%)	108(85.0%)		
	Other	1(0.3%)	3(4.4%)	5(7.3%)	4(3.1%)		
	<b>Total</b>	<b>2</b>	<b>69</b>	<b>68</b>	<b>127</b>		

Table VII above indicated that the total prevalence of obesity for female for nurses was significantly higher than that in male, 15.9% vs. 47.7  $P= 0.000$ .

**Table VIII: Weight Status of healthcare workers at MPH by Age Distribution**

<b>BMI</b>	<b>Age in years</b>			
	<b>18-29yrs</b>	<b>30-39yrs</b>	<b>40-49yrs</b>	<b>&gt;50yrs</b>
<b>Underweight</b>	1(0.3%)	1(0.3%)	0	0
<b>Normal weight</b>	33(34.4%)	42(43.8%)	15(15.6%)	6(6.25%)
<b>Overweight</b>	9(9.2%)	33(33.7%)	27(27.6%)	29(29.6%)
<b>Obesity</b>	5(3.6%)	34(24.6%)	47(34.1%)	52(37.7%)

According to the table above, in the relative younger age group of 18-29, there is no significant difference, (0.3%,34.4%,9.2%,5%  $P>0.05$  respectively). The prevalence of overweight and obesity in relative older age group, indicated that there is a significant difference between the age group of 30-39 years,40-49 years and >50 years, (42.8% vs. 36.2%,  $P=0.05$ ; 50.2% vs. 36.5%,  $P<0.00$ ,respectively). The prevalence of overweight and obesity increased with age.

**Table IX: Overweight and Obesity prevalence; Effects of risk factors in health workers**

<b>Overweight</b>					<b>Obesity</b>			
Risk factor	Prevalence (%)	OR	95%CI	P-value	Prevalence (%)	OR	95%CI	P-value
<b>Race</b>								
Black	85.7	5.2	2.01-3.90	0.053	93.5	7.2	1.21-3.88	0.000
White	2.0	-	0.31-1.22		0.7	-	0.10-0.44	
Coloured	7.1	0.1	1.42-1.53		2.9	-	0.20-0.51	
Asian	3.1	-	0.43-1.32		1.4	-	0.33-0.12	
Other	2.0	-	0.23-1.02		1.4	-	0.21-0.30	
<b>Marital Status</b>								
Single	24.5	1.2	1.02-1.43	0.000	26.1	1.3	1.32-1.62	0.000
Married	26.1	1.4	1.11-1.54		47.8	1.5	1.41-1.99	
Divorced	8.2	0.3	0.43-1.81		13.0	0.1	0.21-0.91	
Widowed	6.1	0.1	0.36-		13.0	0.1	0.12-	

			0.82				0.87	
<b>Level of education</b>								
Pre-Matric	12.2	0.5	1.41- 1.91	0.712	8.7	0.2	1.04- 1.66	0.009
Matric	22.4	1.2	1.58- 2.55		34.8	03	1.51- 3.82	
Tertiary	65.3	3.8	1.66- 3.51		56.5	3.5	1.22- 3.01	
<b>Regular Exercise</b>								
No exercise	55.1	2.1	1.22- 2.41	0.023	61.6	3.4	1.22- 2.76	0.000
Less than 3x per week	36.7	0.4	0.55- 1.69		31.2	1.0	1.00- 1.82	
3x or more per week	8.2	0.2	1.20- 1.98		5.8	0.2	0.40- 0.81	
<b>Take alcohol</b>								
Yes	40.8	0.01	1.38- 2.22	0.314	32.6	0.4	1.41- 2.10	0.24
No	59.2	0.2	1.04- 2.54		67.4	0.3	1.02- 3.41	
<b>Smoke cigarette</b>								
Yes	17.3	0.2	0.20-	0.438	21.7	0.1	0.27-	0.257

			1.00				1.66	
No	82.7	3.3	1.08- 1.50		85.5	6.2	1.20- 2.19	
<b>Take snacks or beverages between meals</b>								
Yes	72.4	4.2	1.54- 3.14	0.002	75.4	4.5	1.24- 2.01	0.000
No	25.5	0.5	0.15- 1.62		24.6	0.3	0.41- 1.62	

Various independent risk factors relating to overweight and obesity were identified. A high risk of overweight and obesity prevalence among blacks was also observed; ( $p < 0.05$ ) with OR (5.2, 95% CI: 2.01-3.90) and obesity was almost seven times higher (95%CI: 1.21-3.88). Single and married health workers were also at risk with  $p < 0.05$ . It was found that there is a large number of cases of overweight in different levels of education, but this was not statistically significant.

Obesity rates in those with tertiary level of education was four times higher than in other levels of education (95% CI: 1.22-3.1)  $P = 0.009$ . The results indicated that participants who do not exercise are more likely to suffer from obesity and overweight with  $P < 0.05$ . There was no significant difference of overweight and obesity prevalence among participants who take alcohol and also for those who smoke cigarettes. The times of risk for overweight for those who take snacks or beverages between meals were 4.5 and 0.5, for obesity 4.5 and 0.3. This shows that participants who take snacks or beverages in between meals were at higher risk of overweight and obesity with P value  $< 0.05$ .

## CHAPTER FIVE

### DISCUSSION

This study showed a high prevalence of overweight and obesity at 29.7% and 41.0% (mean BMI 29.55kg/m<sup>2</sup>) respectively amongst healthcare workers in Mafikeng Provincial Hospital. This could not be compared with other healthcare workers in South Africa because literature search did not reveal any such study. However, our findings on prevalence are similar to, but higher than that in health workers at Kanye Seventh-day Adventist Hospital, Botswana, where 27.3% and 28.7% were overweight and obese respectively.<sup>7</sup> Our overweight and obesity prevalence was also higher than that in healthcare workers in the United States, Canada and Turkey.<sup>18</sup> Abbate et al<sup>15</sup> found that 13.6% and 13.3% of male and female healthcare workers in the United States were obese respectively. The mean BMI of 51, 529 health professionals in the United State Health Professionals Follow-Up Study was 25kg/m<sup>2</sup>.

Oguz et al reported the mean BMI in healthcare workers in Turkey to be 23.9 kg/m<sup>2</sup>. This difference could be due to racial differences but could also be that regulatory programmes like mandatory regular exercise and medical check-ups are better applied there.

The prevalence of overweight and obesity in this study is higher than that reported for South Africans (national average for 15-65 year olds).<sup>11</sup> The prevalence of overweight and obesity in our male healthcare workers is 43.5% and 15.9% compared to 21% and 7.5% in the

general population. In our female Healthcare workers, overweight and obesity prevalence is 25.7% and 47.9% while that in the general population is 26.6% and 30%.<sup>9</sup> The discrepancy in obesity prevalence could be because in this study, height and weight were actually measured as against some studies where they were self reported with a tendency for under-reporting.

Senekal et al found the prevalence of obesity in economically active South African population to be 20.3% in males (our study 15.9%) and 40% in females (our study 47.9%).<sup>11</sup> Our data showed an increase in the prevalence of overweight and obesity among healthcare workers who seem to be better educated and financially more privileged than the general South African population. This is correlated by findings in the Senekal et al study and this can possibly be explained by the well documented positive association between improves socio-economic status and increased BMI.<sup>11 19</sup> Work arrangement could be contributory to this as it has been documented that arrangements such as shift work and excessive working hours were associated with obesity.<sup>16</sup>

While comparison between obesity prevalence in this study and other studies is interesting and useful in many ways, it is important to note that meeting the national trend rates is not the goal to which healthcare workers should aspire because the national obesity rate is higher than the acceptable goal. The Healthy People 2010 Obesity Prevalence Goal, regardless of race and ethnicity is 15%.<sup>6</sup>

Another important finding from this study is the fact that overweight and obesity is more common in participants greater than 29 years of age. From the age of 30, there is an increasing prevalence of overweight and obesity with advance in age, which is in consonance

with previous studies that obesity increases with age<sup>5</sup>. This trend is particularly worrisome in view of the fact that the risk of death increases by between 1-2% for every 0.5kg weight rise in those between 30 to 62years<sup>4</sup> (This is the age range expected to have a higher prevalence of hypertension, abnormal cholesterol, etc). This trend could possibly be explained by findings from previous studies that obesity rates increases with advancing age especially from middle age<sup>9</sup> and this must be borne in mind by policy makers in formulating intervention programmes aimed at addressing overweight and obesity.

In view of the growing obesity prevalence which is fast assuming a global dimension, it is perhaps not surprising that many of the factors found to be associated with overweight and obesity in this study are similar to those found in both developing and developed countries. These include the most commonly reported factors namely: level of education, ethnicity, inactivity and dietary pattern. This study showed that obesity is four times higher in those with tertiary level of education than in participants with lower levels of education (P=0.000). This is in contrast with some studies done elsewhere where it has been shown that the level of education is inversely associated with obesity especially in women.<sup>5,16</sup> On the other hand, in a national obesity survey in South Africa, a multi-variate regression analysis demonstrated that women with greater than 12yrs of education had higher BMI than women with 1-12yrs of education. A possible explanation for this phenomenon is that women in the latter group tend to perform higher levels of manual labour than the more educated women.<sup>5</sup>

Our findings show a high prevalence of obesity in blacks with the highest prevalence in black females (P=0.000). This is in keeping with the national trend and may be due to cultural perception of body size amongst other reasons. Studies have shown that being overweight

and obese has many positive connotations in the African community in South Africa.<sup>9</sup> It has been identified that being overweight and obese is seen as a reflection of wealth and happiness and in a married woman that the husband is able to care for her<sup>9</sup>. This is correlated in this study where 53.3% of the participants were not disturbed by their weight despite 70.7% being either overweight or obese. Similarly, another 67.7% believe that cultural values have an impact on obesity and overweight. This inaccurate perception of body weight by healthcare workers is worrisome as they are aware that obesity predisposes to diabetes (90% of respondents) and coronary heart disease (91% of respondents). Again due to the high prevalence of HIV/AIDS in our society, people tend to connote obese/overweight persons as being healthy and without AIDS.<sup>9</sup> This attitude was not tested in this study.

The eating pattern of participants has been found to have a correlation with being obese and overweight as participants who take snacks or beverages between meals were at a higher risk of overweight and obesity with P-value < 0.05. Another worrisome discovery was that most participants either do not exercise at all (52.7%) or do not exercise regularly (37.7%) and this was despite majority (92.5%) acknowledging that exercise can help reduce or prevent obesity. When matched for significance, it was found that participants who do not exercise are at greater risk of developing overweight and obesity with P-value 0.005. This is in keeping with the trend from other studies that obesity and overweight are largely due to lack of or inadequate level of physical activity<sup>6,11,10</sup>.

## CONCLUSION

This study found a considerably high prevalence of overweight and obesity amongst healthcare workers in Mafikeng Provincial Hospital. The prevalence of overweight and obesity were 29.7% (N=98) and 41.0% (N=139) respectively, with a mean BMI of 29.55kg/m<sup>2</sup>. In male participants, 43.5% were overweight and 15.9% were obese, while 25.7% and 47.9% of the female participants were overweight and obese respectively. Thus the predominant pattern of malnutrition in healthcare workers in this study was found to be one of overweight and obesity. The overweight and obesity prevalence found in this study was higher than that of the general South African adult population but similar to that of the economically active South African population.

The risk factors found to be associated with overweight and obesity in this study were: black race, female gender, advancing age, attainment of tertiary level of education, lack of or inadequate exercise and eating between meals. These factors should be taken into consideration by policy makers when formulating intervention measures to combat overweight and obesity in healthcare workers. This study has helped create awareness about overweight and obesity in healthcare workers in the sense that participants who hitherto did not know their BMI were made aware of it and those whose BMI were abnormal were counseled and behavioral change motivated, but whether this effect will be sustained is beyond the scope of this study.

## RECOMMENDATIONS

In view of the findings of this study on healthcare workers who are responsible for promoting health and health values and behavior among the general population, it is recommended as follows:

- That awareness be generated early that certain ethnic groups (Blacks) might be more prone to the development of overweight and obesity.
- In the development of targeted intervention programmes, specific ethnic characteristics (example eating habits, obesity tolerant attitudes) should be taken into consideration.
- The government should put in place modalities for regular awareness campaign about obesity, its risk factors and the importance of maintenance of adequate physical activity for health\ throughout life and good dietary habits.
- Programmes that promote healthy lifestyle amongst healthcare workers like the provision of fitness gymnasias in hospitals, encouragement of workers to use these facilities and creation of more flexible working hours should be instituted by the government.
- That there is a need for further studies be conducted on this subject which will be more representative of all healthcare workers in South Africa.

Bearing in mind the limitations of this study, being the first of its kind in Mafikeng Provincial Hospital, comprising a relatively small and specific group of health workers, the results may not necessarily be extrapolated to hospital staff throughout the country, let alone

the general population. Rather it strives to bridge the knowledge gap identified in this area and serves as a basis for further research.

## ADDENDA

### ADDENDUM 1

#### QUESTIONNAIRE

##### TITLE

The prevalence of Obesity and Overweight amongst Healthcare workers in Mafikeng Provincial Hospital.

##### ADDRESS

This Questionnaire is to be completed and handed back to:

Dr C.V Onyebukwa,  
Department of Family Medicine,  
Mafikeng Provincial Hospital,  
Mafikeng.

##### INSTRUCTIONS

We are conducting a research project on the prevalence of obesity and overweight amongst healthcare workers in Mafikeng Provincial Hospital, and your cooperation will be highly appreciated.

Please answer the questions below truthfully by ticking the correct responses in the appropriate box.

In addition, your height and weight will also be measured by the researcher or any of the field workers, and entered in the column provided below.

Weight in kg

Height in cm

BMI

#### QUESTIONS

##### 1. Demographic data.

Gender

Male

female

Age

18-24yrs

25-29yrs

30-34yrs

35-39yrs

40-44yrs

45-49yrs

50-54yrs

55-59yrs

60 and above

Race

Black

White

Coloured

Asian

others please specify

.....

Marital status

Single

Married

Divorced

Widowed

Category of health worker

Doctor  Nurse  others please specify  
 .....

Level of education

Pre-Matric  Matric  Tertiary

Religion

Christian  Muslim  Traditional African  Atheist  others  
 .....

**Knowledge**

1. Have you ever heard of the disease condition called obesity?

Yes  No

2. How is the diagnosis made?

Weight over 80Kg  
 Body mass index (BMI) over 30 kg/m<sup>2</sup>  
 Don't know

3. Have you ever heard of overweight?

Yes  No

4. How is the diagnosis of overweight made?

Weight over 50kg  
 Body Mass Index (BMI) between 25-29.9kg/m<sup>2</sup>  
 Don't know

5. Using your knowledge from the answers above, where would you classify yourself?

Overweight  Obese  Normal weight  Under weight

6. Are you aware that Obesity is a risk factor for Coronary Heart Disease?

Yes  No

7. Do you know that obese people are at risk of having Diabetes?

Yes  No

8. Are you disturbed by your weight?

Yes  No

**Perception**

1. Do you think obesity is a problem amongst healthcare workers?

Yes  No

2. Do you think healthcare workers are taking enough care to prevent obesity?

Yes  No

3. Do you think regular exercise can help prevent /reduce obesity?

Yes  No

4. Do you believe that cultural values have any impact on obesity and overweight?

Yes  No

5. Some cultures believe that being obese is a sign of healthy living, do you agree with them?

Yes  No

6. Some people believe that weight gain is evidence of good living. Do you agree?

Yes No

7. Do you believe that being Obese or Overweight is an indication of good health?

Yes  No

**Attitude**

1. Do you exercise regularly?

No  Less than 3x per week  3x or more per week

2. Do you take alcoholic drinks?

Yes  No

3. Do you smoke cigarette?

Yes  No

4. Do you take snacks or beverages in between meals?

Yes  No

5. Do you think healthcare workers are aware of the need to fight obesity and overweight?

Yes  No

6. Do you think healthcare workers should do more to fight obesity and overweight?

Yes  No

7. Any other comments?

.....  
.....  
.....

Thank you for your active participation.

## ADDENDUM 2

### RESEARCH PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

**TITLE OF THE RESEARCH PROJECT:**

**The prevalence of obesity and overweight amongst healthcare workers in Mafikeng provincial hospital.**

**REFERENCE NUMBER:**

**PRINCIPAL INVESTIGATOR: Dr CV Onyebukwa**

**ADDRESS: Department of Family Medicine, Mafikeng provincial hospital, private bag X2031, Mafikeng 2745**

**CONTACT NUMBER: 076 290 4100**

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask *the researcher* any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the **Committee for Human Research at Stellenbosch University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

#### **What is this research study all about?**

- This study will be conducted in Mafikeng provincial hospital and will involve a total number of 406 participants all of whom are healthcare workers in Mafikeng provincial hospital.
- In the light of growing global concern on the ever increasing rate of lifestyle diseases obesity being paramount amongst them, this study is aimed at

assessing how much of a problem this condition is amongst healthcare workers particularly **at this** facility.

- The participants will be required to fill out anonymous questionnaires in addition to having their height and weight measured and recorded on the completed questionnaires.

### **Why have you been invited to participate?**

- Participation in the study is basically for all healthcare workers in Mafikeng provincial hospital.

### **What will your responsibilities be?**

- Participants will be required to fill the questionnaires and have their height and weight measured by the researcher.

### **Will you benefit from taking part in this research?**

- This research is going to be of both personal and public benefit. The participant by being a part of this study will have the opportunity to assess his/her weight status to determine if it is normal or not thus creating more awareness about obesity and overweight.
- ***The results of the measurements will be communicated and discussed with the participant. Where the Body Mass Index (BMI) of the participant is abnormal, behavioural change will be motivated by counselling And scheduling of further consultations.***
- On the public aspect, the findings from this research together with the recommendations will be sent to the department of health for possible implementation.
- Also considering the fact that there is a dearth of publication regarding the issue of obesity research in South Africa, the researcher intends to make these findings available for possible publication.

### **Are there in risks involved in your taking part in this research?**

- There are little or no risks involved in taking part in this research as non-invasive procedure will be done.

### **If you do not agree to take part, what alternatives do you have?**

- Participation in this research is entirely optional. Participants are free to decline at any stage if they do not feel inclined to participate further..

### Who will have access to your medical records?

- All information and data collected will be treated as confidential and protected and in the event that the findings will be published the identity of the participant will remain anonymous.

### What will happen in the unlikely event of some form injury occurring as a direct result of your taking part in this research study?

- This research study is entirely risk free and so there is no likelihood of any injury occurring.

### Will you be paid to take part in this study and are there any costs involved?

No you will not be paid to take part in the study and there will be no costs involved for you, if you do take part.

### Is there any thing else that you should know or do?

- You can contact Dr CV Onyebukwa at 076 290 4100 if you have any further queries or encounter any problems.
- You can contact the Committee for Human Research at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by your study doctor.
- You will receive a copy of this information and consent form for your own records.

### Declaration by participant

By signing below, I ..... agree to take part in a research study entitled *The prevalence of obesity and overweight amongst healthcare workers in Mafikeng provincial hospital.*

I declare that:

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.

- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) ..... on (*date*) ..... 2010.

.....  
**Signature of participant**

.....  
**Signature of witness**

### **Declaration by investigator**

I ..... declare that:

- I explained the information in this document to the participant
- I encouraged him/her to ask questions and took adequate time to answer them.



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29 June 2010

**MAILED**

Dr C.V. Onyebukwa  
Family medicine  
3rd floor Fisan building  
Tygerberg campus

Dear Dr Onyebukwa

**Prevalence of obesity and overweight amongst healthcare workers in Mafikeng Provincial Hospital**

**ETHICS REFERENCE NO: N10/03/077**

**RE : APPROVAL**

A panel of the Health Research Ethics Committee reviewed this project on 12 March and 7 June 2010; the above project was approved on condition that further information is submitted.

This information was supplied and the project was finally approved on 29 June 2010 for a period of one year from this date. This project is therefore now registered and you can proceed with the work.

Please quote the above-mentioned project number in ALL future correspondence.

Please note that a progress report (obtainable on the website of our Division: [www.sun.ac.za/rds](http://www.sun.ac.za/rds)) should be submitted to the Committee before the year has expired. The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly and subjected to an external audit. Translations of the consent document in the languages applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372  
Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

Please note that for research at a primary or secondary healthcare facility permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Department of Health ([healthres@pgwc.gov.za](mailto:healthres@pgwc.gov.za) Tel: +27 21 483 9907) and Dr H el ene Visser at City Health ([Helene.Visser@capetown.gov.za](mailto:Helene.Visser@capetown.gov.za) Tel: +27 21 400 3981). Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

Approval Date: 29 June 2010

Expiry Date: 29 June 2011

29 June 2010 08:30

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Fakulteit Gesondheidswetenskappe • Faculty of Health Sciences



Verbind tot Optimale Gesondheid • Committed to Optimal Health  
Afdeling Navorsingsontwikkeling en -steun • Division of Research Development and Support  
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**Health & Soc Dev**

Department:  
Health & Social Development  
North West Provincial Government  
**REPUBLIC OF SOUTH AFRICA**



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Dr. Albert Luthuli Drive  
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Private Bag X2068  
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**DIRECTORATE POLICY, PLANNING AND RESEARCH**

Enq -Tel: (018) 387 5757  
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To : Dr C.V Onyebukwa  
University of Stellenbosch

From : Director: Policy, Planning & Research Directorate  
Mr K.Rabanye

Date : 05 August 2010

Subject: Request for approval: **Prevalence of obesity and overweight amongst health care workers in Mafikeng Provincial Hospital.**

The above stated subject matter bears reference

This communiqué serves to inform your good office that permission to undertake the above mentioned study has been granted by the North West Department of Health and Social Development.

Arrangements with managers at appropriate level shall be facilitated by the researcher. We shall be delighted to receive a final report in this regard.

Yours truly

Mr K.Rabanye

Chairperson: PHRC –Health Branch

North West Department of Health and Social Development

~ 1 ~

Flat 5, Doctor's Residence,  
Mafikeng Provincial Hospital  
Private Bag X2031,  
Mafikeng 2745.  
17<sup>th</sup> September 2009.

The Clinical Manager,  
Mafikeng Provincial Hospital,  
Mafikeng.

Dear Sir,

PERMISSION TO CONDUCT A SURVEY ON THE PREVALENCE OF  
OBESITY AND OVERWEIGHT AMONGST HEALTHCARE WORKERS IN  
MAFIKENG PROVINCIAL HOSPITAL.

I am Dr. CV Onyebukwa, an M.Fam.Med student at the University of Stellenbosch and presently also, a staff of the hospital.

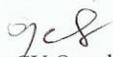
I wish to use this medium to ask for your permission to conduct a non-invasive survey on the healthcare workers in the hospital as part of the requirement for the conferment of the MFamMed degree.

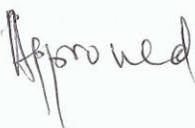
As mentioned earlier, the nature of the survey is non-invasive and will involve the measurement of only the weight and height of participants as well as distribution of well structured questionnaires to capture demographic data.

I guarantee that should this permission be granted, I will observe all the rules and ethics involved in the conduct of a survey, ensuring that all participants do so voluntarily and respecting the confidentiality of all information obtained.

Thank you in anticipation of your cooperation.

Yours faithfully,

  
Dr. CV Onyebukwa.





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