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Il Faut Manger: A Study of Women's Body Image and Obesity in Mali

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Il Faut Manger¹:

A Study of Women's Body Image and Obesity in Mali

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30 November 2011
SIT Mali**

¹ French; English Translation: You should eat.

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Prologue

It was the end of Ramadan, our third day in Mali, and our first with our host families. I arrived at my new home around 8 in the morning, nervous but excited to finally be experiencing the real Malian lifestyle. I was greeted and shown my room, then escorted to the kitchen to assume my seat amongst the other women. Though I had already eaten at the hotel with the other students that morning, and informed my family of this, around 9 o'clock I was served my second meal of the day, an encore of eggs and baguette to the eggs and baguette I had eaten only an hour earlier. Shortly before noon, after having chopped onions for a few hours, my third meal was placed in my lap- a large plate of sauce and my third piece of baguette for the day. Upon finishing the food, I was escorted upstairs to nap, and two and a half hours later was retrieved and placed back in my spot in the kitchen.

Shortly thereafter, the main meal was served and I took my seat in a crooked beach chair, joining several sisters and cousins surrounding a large bowl of fonyia: cous-cous, meat, and sauce. Eating with my hands was a challenge; however a few minutes into my fourth meal of the day, I was full and leaned back a bit in my chair. Before my back hit the chair, my sister turned to me and uttered the phrase that would shortly become a theme of my time in Mali. "Mariam, il faut manger."

I. Introduction

Africa has long been a region of the world marked by the media as one of rickety thin children with distended bellies and older men and women with cracked and wrinkled skin sagging off their bones. Media outlets like BBC, CNN, and the New York Times focus entire sections of their websites to special reports entitled 'Famine in Africa'², 'Food Crisis in Niger'³, and 'East Africa Famine 2011'⁴. Photos of children curled up on the ground, ribs and bones protruding at every angle grace the pages of nearly every magazine and newspaper. Non-governmental organizations plead for donations and host fundraisers to end the hunger.

This is a familiar sight, one that the media has used as a common image for Africa. However, as the governments of Africa and outside forces focus their attention on malnutrition, which remains an overwhelming problem and merits the attention it receives, there is a potentially more threatening epidemic hidden beneath its veil. One that requires attention before it claims the last few countries that have escaped its grasps. One that is preventable.

Though obesity in the rest of the world is attracting much attention, the epidemic in Africa and low income countries elsewhere remains hidden, and while great strides are being made to diminish the rates of malnutrition, rates of obesity are climbing quickly and little effort is being made to stop them.

² "BBC NEWS | Special Reports | Famine in Africa." *BBC News - Home*. British Broadcasting Company, 1 Dec. 2010. Web. 02 Dec. 2011.

³ Hahn, Jane. "Food Crisis in Niger - Slide Show - NYTimes.com." *The New York Times - Breaking News, World News & Multimedia*. 03 May 2010. Web. 02 Dec. 2011.

⁴ "East African Famine 2011 (Somalia) News - The New York Times." *Times Topics - The New York Times*. The New York Times, 02 Dec. 2011. Web. 02 Dec. 2011.

Obesity as a Disease

Obesity is defined as an excess of body fat accumulation, which normally accounts for about 25% of weight in women and 18% of weight in men⁵. There are various methods used to estimate body fat and the most commonly used is the body mass index (BMI), which takes into account both height and weight and is given in kg/m².⁶ The World Health Organization (WHO) definition of obesity, which will be used as the standard in this study, is a BMI of greater than or equal to 30 kg/m².⁶ By these standards, the BMI indicating overweight is 25 kg/m².⁶

It has been estimated that with a BMI greater than 30, mortality increases by 30% and with a BMI greater than 40, by 100%⁷. Unsurprisingly, obesity and overweight are the fifth leading cause of death globally, with at least 2.8 million adults dying each year from complications related to overweight or obesity⁶. Obesity represents 44% of the diabetes burden, 23% of the ischemic heart disease burden and between 7 and 41% of certain cancer burdens⁶. Links have also been shown to exist between obesity and sleep apnea, other cardiovascular diseases, gallbladder disease, osteoarthritis⁸, hypertension, and hyperlipidemia⁹.

In addition, insufficient physical activity, obviously linked to obesity, is 4th leading risk factor for mortality. Two and a half hours of moderate physical activity each week can reduce risks of ischemic heart disease, diabetes, and breast and colon cancers between 21 and 30%¹⁰.

⁵ Bray, G. A. (1998). Contemporary diagnosis and management of obesity. Newton: PA: Handbooks in Health Care

⁶ *Obesity and Overweight*. Rep. no. 311. World Health Organization, Mar. 2011. Web. 26 Nov. 2011.

⁷ Manson, J. E., Willett, W. C., Stampfer, M. J., Colditz, G. A., Hunter, D. J., Hankinson, S. E., et al. Body weight and mortality among women. *New England Journal of Medicine*, 1995; 333, 677–685.

⁸ Wadden, T. A., Brownell, K. D., Foster, G. D. Obesity: Responding to the Global Epidemic. *Journal of Consulting and Clinic Psychology*, 2002; 70, 510-525.

⁹ Pi-Sunyer FX. Health implications of obesity. *Am J Clin. Nutr.* 1991;53 (6):1595S– 603S.

¹⁰ Alwan, Ala. *Global Status Report on Non-Communicable Diseases*. Rep. World Health Organization, 2011. Web. 25 Nov. 2011.

Obesity in the Developing World

Once a disease only common in high-income countries, obesity now has a place in every region in the world. Of the 43 million children under the age of five who were overweight in 2010, close to 35 million were in developing countries⁶. The increase in obesity rates is accompanied by an increase in obesity related diseases. More people now die of heart disease, diabetes, and some cancers in the developing world than in the developed¹¹, with over 80% of cardiovascular disease and diabetes related deaths occurring in low and middle income countries¹⁰.

This trend towards obesity in low-income countries can be explained, in part, by the nutrition transition. The nutrition transition has been divided into three stages: receding famine, degenerative disease, and behavioral change¹². In the first stage, diets are comprised of mainly plant and grain based dishes and much physical activity is required in the harvesting and preparation of food¹². In the second stage, diets are derived from an increasing amount of animal products, fat content, including vegetable and saturated oils, and sugar¹². As technologies and appliances are introduced, meals are produced with much less effort than required during stage one¹². In the third stage, vegetables are reintroduced into the diet with fruits and whole grains, while fats are decreased¹². Physical activity generally increases again, not due to required energy expenditure in food production but as voluntary activity¹². Not only is this nutrition transition occurring, but it is occurring quickly. Data suggests that fat intake has been increasing rapidly in low and middle-income countries since the 1980s¹⁰, and these changes that took decades or even

¹¹ Ramakrishnan U, Huffman SL. Multiple micronutrient malnutrition. In: Semba RD, Bloem MW, eds. *Nutrition and Health in Developing Countries*. Totowa, NJ: Humana Press; 2001:365.

¹² Popkin, B. M., Gordon-Larsen, P. The Nutrition Transition: Worldwide Obesity Dynamics and their Determinants. *International Journal of Obesity* 2004; 28, S2-S9.

centuries to develop in Europe or the United States are occurring within ten or twenty years in most developing countries¹³.

As obesity increases in these developing nations, a phenomenon called the double burden occurs. This is when under- and over-nutrition exist simultaneously within one society. However, as obesity is no longer a problem only for high socioeconomic groups in developing nations, the double burden is increasingly found within homes¹⁴. This presents a challenge for creating effective prevention strategies, as many interventions cannot be targeted to a national population.

Goals of the Study

This study focuses on obesity and body image of women in Mali, West Africa. In nearly all developing countries, women are disproportionately affected by obesity, and this study seeks to understand the central causes of obesity for Malian women specifically. Using the information collected, suggestions will be made to prevent the spread of the obesity epidemic in Mali. That said, there are three central goals of this project:

- (1) To prove the existence of an obesity problem for women in Mali and the demonstrate the urgency of the problem;
- (2) To identify barriers to obesity prevention in Mali specific to women;
- (3) To propose possible obesity prevention methods for future intervention.

The results of this research have important implications for the future. It is impractical and impossible to develop effective prevention strategies without first fully understanding the problem and the potential barriers to prevention. This study will bring to light several facts vital to combatting obesity in women in Mali.

¹³ Popkin, B. M. The shift in Stages of the Nutrition Transition in the Developing World Differs from Past Experiences! *Public Health Nutrition* 2002; 5(1A), 205-214.

¹⁴ Popkin, B. M. The Nutrition Transition and Obesity in the Developing World. *The Journal of Nutrition* 2001; 871S-873S.

II. Methodologies

To accomplish the aims of this study, four methods of research were employed: an extensive literature review, cultural observations, interviews conducted with health care professionals, and a questionnaire. The study was conducted in four locations throughout Mali: Bamako, Selengue, Kita, and Sanankoroba. In each of the cities, there was a main contact or guide who organized questionnaire respondents and arranged interviews and, in the case of Sanankoroba, served as the translator.

Bamako is the largest city of the four, with a population of over 1.6 million, and is the capital city of the country¹⁵. Kita is a *cercle*, or region, of over 40,000 people, located approximately 175 kilometers to the northeast of Bamako¹⁶. Sanankoroba is a village of over 30,000 people, located 35 km from Bamako¹⁶ in the region of Koulikoro, and Selengue is a town located 140 km from Bamako¹⁷ in the region of Sikasso.

Literature Review

The literature review was conducted through online search databases and includes articles and statistics dating through several decades up to present day. Because very little literature is available on Mali, especially pertaining to obesity and body image, various sources documenting West Africa or Africa as a region in general have sometimes been applied to Mali throughout this study.

Having background information on which to base suggestions and assumptions is vital in this type of study. It is absolutely necessary to have a comprehensive review of successful and unsuccessful case studies, and to be able to compare the environment of Mali with those places in which interventions have taken place.

¹⁵ The World Factbook: Mali." *CIA World Factbook*. Central Intelligence Agency, 10 Nov. 2011. Web. 15 Nov. 2011.

¹⁶ Mali. 2009. Web 20 Nov 2011. <<http://instat.gov.ml/documentation/koulikoro.pdf>>.

¹⁷ Coulibaly, Modibo. Personal Interview. 28 November 2011.

Cultural Observation

Cultural observations were made over a three month period through everyday observations and interactions with various communities. This included the eating of regular meals with various home stay families, participation in preparation of meals, casual discussion with women regarding health and body image, and general observation of the media and atmosphere as regards to beauty throughout Mali.

There are obvious biases associated with this type of research. Being an outsider observing a foreign culture does have advantages in that it is easier to see aspects that may appear more obvious to those embedded in the culture. However, it is also very easy to project the ideals and viewpoints of one's culture onto that which is being studied. Every attempt is made to objectively portray the Malian culture throughout this paper, though inherent bias is unavoidable in cultural observations.

Interviews

Short interviews were conducted with three health professionals; one in Selengue, and two in Kita. All interviews took place at a community health center or CSCOM (*Centre de Santé Communautaire*). Interviewees include a female matron, male radiologist, and male chief doctor for a CSCOM. During the interviews, the health professionals were asked questions used to gauge not only their own opinions and knowledge, but also their perception of the average Malian women's knowledge and attitudes. Questions posed were similar to those found on the questionnaire with several additional medically related questions. The interviews were between fifteen and forty minutes long and were conducted in French without the use of a translator.

Any quotes cited throughout this paper have been translated into English from the original French. While the originally intended meanings of the quotes have not been altered, it is possible that through translation, small changes have occurred.

Questionnaire

The questionnaire is comprised of sixteen questions developed through modifying available surveys found in past literature¹⁸. The questionnaire was first written in English (Appendix A) and then translated into French (Appendix B). The sixteen questions are divided into sections according to common topics. The majority of questions provide choices for the participant, so as to avoid any difficulties with participants being reluctant or shy in providing their opinions.

At the beginning of the questionnaire, women were asked to provide demographic information, including age, profession, education level, marital status, and whether they self-identified as being more traditional or modern.

The first six questions involve the use of the Stunkard Body Scale which depicts nine images of female bodies of increasing size¹⁹ (Appendix C). Participants were asked to choose their ideal body type, what they believe to be the body type most attractive to men, their current body type, and images that are representative of underweight, normal weight, and overweight women. The second section asks participants to self-report their weight and height. In addition, a small percentage of the women were weighed and their actual weights were recorded. In any analyses regarding weight, actual weights are used where available. The third section of the questionnaire asks survey respondents if they have ever attempted to lose weight, if so, how, and to list other examples of weight loss methods. This section also asks how often the respondent thinks about her size or weight, with choices of never, sometimes, often, and always. The fourth section was developed in an attempt to learn whether women understand the relationship between obesity and health. Nine illnesses, both related and unrelated to obesity, are named and

¹⁸ Fitzgibbon, M. L., Blackman, L. R., Avellone, M. E. The relationship between body image discrepancy and body mass index across ethnic groups. *Obes Res.* 2000;8:582–589.

¹⁹ Stunkard, AJ, Sorenson T, Schlusinger F. Use of Danish Adoption Register for the Study of Obesity and Thinness. In: S. Kety, LP Rowland, RL Sidman, SW Matthyse, *The Genetics of Neurological and Psychiatric Disorders*. New York: Raven Press.

participants were asked to identify if each is or is not caused by obesity. The fifth section asks women to name the meals they eat most frequently, and then to list examples of healthy and unhealthy foods. Multiple answers are permitted and encouraged, and when participants provided only one answer, they were encouraged to explain further or give other examples. The last section was developed to determine the effect of social pressures on body size. Women are asked if they have ever been encouraged to lose weight and if they have ever been encouraged to gain weight and if so, by whom.

The method used for choosing participants for the questionnaire varied between cities. The main contact in Bamako, and the advisor for this project, is an employee at one of the government ministries, so women of various ministries were first briefed on the nature of the survey and were later approached in their offices to participate. In Selengue, the two respondents were acquaintances of the city contact. The first was approached and asked to participate, and the second was a friend of the first respondent. In Kita, a small group of friends were invited by the contact's daughter to her home to participate and several female health workers were approached at the local CSCOM. Lastly, in Sanankoroba, several women were invited to the translator's house to respond and other women were approached at their homes or roadside food stands. In total, fifty-two women participated in the survey (Appendix D).

Every effort was made to create an environment in which the participants felt comfortable sharing information. The majority of interviews were conducted in private, so that the opinions of one woman, or the presence of another person, would not influence the answers provided. In addition, interviews were conducted in either French or Bambara, with a female translator serving for interviews conducted in Bambara.

However, despite these efforts, there are several biases that must be considered when analyzing this data. The first is that, because the questionnaire was not translated into Bambara, the translator was charged with making decisions about her choice of words. While this should

not have entirely changed the meaning of any questions, a slight shift in wording is able to create a response bias.

The next is that there is always the possibility of misunderstandings to occur throughout the survey, especially when working with uneducated populations. There were often times when it seemed as though a woman did not understand the true meaning of the question, and in these cases, every effort was made to clarify. However, it is impossible to know whether every woman understood the questions as they were intended; therefore, the assumption is made throughout this study and analysis that all responses were given with the intended question in mind. One example of this type of error was common in question eleven, which asks respondents about health complications. Each disease or sickness was read individually and the participants were asked if it is or is not related to obesity. Many times women responded with “No, I have never experienced that”. Again, every effort was made in these situations to clarify, but it is impossible to know if every woman was providing an answer to the same question.

III. The Goals

A. Goal One: To prove the existence of an obesity problem for women in Mali and demonstrate the urgency of the problem

Current statistics pertaining specifically to overweight and obesity prevalences in Mali are difficult to find and often vary greatly. The earliest estimates for overweight and obesity, from 1996, show that 7.2 and 1.2 percent of women were overweight and obese, respectively²⁰. A study conducted in 2002 showed rates of overweight to vary between 19.5% and 21.1% among adult women, depending on age group²¹. A study conducted the next year shows rates of overweight of 33.8% and obesity at 5.1%²². In contrast, rates of underweight amongst women were only 2%. WHO data for 2006 and 2008 show rates of overweight of 17.6% and 24.10% and rates of obesity of 5.6% and 6.8% for women 15 through 49 years old^{23,10}. Comparing these two results from the same source shows a forty percent increase in rates of overweight and a twenty percent increase in obesity rates for women in only two years.

In addition, there is evidence that the determinants of obesity and obesity related diseases are prevalent throughout Mali. In 2008, over twenty percent of females over the age of 15 were not getting sufficient physical activity¹⁰. In addition, 2003 studies show that over 80% of females were not receiving 5 servings of fruits and vegetables each day, and that 36% were not receiving any¹⁰. These determinants have led to the rise in many non-communicable diseases (NCDs). The WHO reported in 2004 that the estimated proportional mortality of NCDs was 27.4%¹⁰. Included

²⁰ Martorell, R et. al. "Obesity in Women From Developing Countries." *European Journal of Clinical Nutrition* 54 (2000): 247-52. Web. 10 Nov. 2011.

²¹ Goedecke, Julia, Courtney Jennings, and Estelle Lambert. "Chapter 7: Obesity in South Africa." *Chronic Diseases of Lifestyle in South Africa since 1995-2005*. 65-79. Web.

²² Moore, S et al. "Global and National Socioeconomic Disparities in Obesity, Overweight, and Underweight Status". *Journal of Obesity*. 2010: 11 pages. Web.

²³ *World Health Statistics 2006*. World Health Organization, 2011. Web. 25 Nov. 2011.

in this category are several obesity-related diseases, including cardiovascular diseases, cancers, and diabetes.

Two of the three health professionals interviewed acknowledged the existence of an obesity problem in Mali. When asked to provide a percentage of the female population in Mali that is overweight or obese, one doctor estimated that 50 to 60% of women were overweight or obese²⁴. Another declined to provide an estimate, but did share concern with the levels of obesity in Malian women²⁵. The third doctor interviewed estimated the rate of overweight and obesity in women to be only about 5%, and believed that obesity was not a serious problem in Mali, and that attention should be instead focused on malnutrition²⁶.

A rough estimate of obesity and overweight percentages was also gleaned from the questionnaire results. Weight and height data was collected for 20 of the 52 women surveyed, with all heights and thirteen of the weights being self reported. Five women self reported weights and then were weighed, and two women were weighed without having self reported a weight. The average BMI for these women, using thirteen self reported weights and seven actual weights, was 28.5, considered to be overweight by WHO standards. In addition, thirteen of the women (65%) were overweight or obese.

²⁴ Doumbia, Korotoum. Personal Interview. 12 November 2011.

²⁵ Keita, Modibo. Personal Interview. 16 November 2011.

²⁶ Kamissoko, Adama. Personal Interview. 16 November 2011.

B. Goal Two: To identify barriers to obesity prevention in Mali specific to women

Through the questionnaires, cultural notes, and interviews, several central barriers to obesity prevention were found for Malian women. These barriers have been divided into three categories: ideals of beauty, knowledge, and feasibility. The first describes the pressures, both internal and external, to have a certain ideal body type that is seen as most beautiful in Malian society. The second explores the effect that knowledge of normalcy, nutrition, the health impacts of obesity, self-awareness and healthy ways to lose weight may have on obesity prevention. Lastly, the third section explores the feasibility of changes to both diet and exercise as applies to women within the context of the Malian society.

Goal Two: Ideals of Beauty

Internal Pressures

Questionnaire

When asked to identify the body type they would most like to have, women responded with a variety of answers, ranging from 2 to 7, with the average being 4.28. However, the most frequent responses were 5, which is the smallest overweight image presented, and 2, which represents an underweight woman. Women under the age of 20 were most likely to choose smaller body types, while women between 31 and 40 years old had the highest average of 5.1. In addition, the average choice for married women was slightly higher than that for non-married women, with averages of 4.5 and 3.9, respectively.

Interviews

The health professionals believed that it was most desired by women to be a healthy, medium weight. The female health provider interviewed stated, “A thin woman here, that’s not good. But too fat also is not good.”²⁴ This was the general trend throughout the three interviews, that the ‘African way’²⁶ is to not be too thin, but also not to be too large.

External Pressures

Questionnaire

The questionnaire included three questions regarding external pressures for women. The first of these asked which body type men find most attractive. The average response was 4.47, indicating a normal weight body type. However, 21 women responded to this question with numbers higher than their choice for ideal body type, and only 14 reported that men preferred smaller body types than they themselves preferred.

Two other questions ask whether women have ever been encouraged to lose weight and whether they have ever been encouraged to gain weight. (Participants who responded with ‘yes’ to either of these questions were then asked to list those people who had encouraged them.) Slightly more women reported being encouraged to lose weight than gain weight (23 and 22). Of those women who reported being encouraged to lose weight, the most common people they cited as having told them that were mother, friends, doctor, sister, and spouse. Of those who reported being encouraged to gain weight, friends was the most frequent response, followed by sister, mother, and doctor.

There are two interesting correlations between the likelihood of being told to lose or gain weight and select demographic information. The first is the difference between age groups. The age group most likely to report being encouraged to lose weight was the 50+ age group, with 4 of the 5 women having been told to lose weight. Women in the 31-40 age group were the most likely to be told to gain weight, with 60% responding affirmatively. The second notable connection is between weight classification (obese, overweight, normal weight, or under weight) and outside influence. For the nine obese respondents, all nine reported having been told to lose weight. However, four of the nine also reported being told to gain weight. Of the three overweight women, two reported being encouraged to lose weight, while all three reported being told to gain weight. Three of the five normal weight participants had been encouraged to lose weight, and three had been encouraged to gain weight.

Cultural Notes

Part of the external pressure is being applied in an unspoken manner, through depictions in media and on magazines. Television shows and commercials regularly depict overweight and obese women, as do posters and magazines for clothing found at tailors. However, in recent beauty pageants shown on the national television channel, ORTM, winners were almost exclusively underweight and normal weight women. As the name of each winner is announced on the nightly program, their height and weight are also announced.

Interviews

Two of the health professionals interviewed, one male and one female, were asked about men's preferences in regards to female body size. The man responded, speaking generally, that men do prefer larger women, and that men enjoy looking at women's *feses* (buttocks) as they move. He also noted that there is a popular opinion that if a man is a good husband, he will be able to feed his wife and that she should become larger after being married²⁶.

The female matron interviewed responded that men preferred women who were larger, and identified image 7 (obese) on the Stunkard body image scale as the one that best corresponded with male's preferred body type²⁴. During this interview, the male guide was also present and she deferred the question to him. He answered that in most cases when women marry, they are thin because they are young. With age and childbirth, most women gain weight, and it is their husband's job to ensure that they are healthy enough to support a child.

Goal Two: Knowledge

Normal

Questionnaire

Three questions referring to the Stunkard Body Image Scale asked respondents to choose the images that represented underweight, normal weight, and overweight women. Women were encouraged to give multiple answers, however many of them simply listed one number. Overall, the average response women gave for an image that was underweight was 1.8 (underweight), 4.7 (normal weight) for a normal weight individual, and 7.8 (obese) for an overweight individual. Answers for the first question ranged from 1 to 4 being underweight, while answers for the second question included every possible choice, and the range of answers for the third question was 5 to 9. No noteworthy correlations were found to exist between this perception of ‘normalcy’ and age, marital status, or tradition vs. modern.

Interviews

Two of the health care professionals were shown the Stunkard body image scale and asked to identify those images that corresponded to underweight, normal weight, and overweight women. One responded that images 1 through 5 corresponded to a healthy woman, while images 6 and above were too large²⁶. The other believed that 1 through 4 were too thin, 5 through 7 were healthy, and 8 and 9 were too large²⁴.

Nutrition

Questionnaire

The two questions regarding healthy and unhealthy foods were two of the most difficult for women to answer. Of the 52 women surveyed, four could not provide any examples. For the others, it often took a long time to produce an answer, and then many women stated that healthy food depended on the person who cooked it. When asked to elaborate, they stated that it was important for that person to have clean hands and for the preparation area to be *propre*, or clean.

Only women three listed fruits as healthy foods and only five mentioned salad or vegetables. The most common responses, after *propre*, were rice and *to*, a Malian dish made from millet, corn, or rice often accompanied by an okra and fish sauce.

When asked to list unhealthy foods, the most common response was *non propre* (not clean) or *nourriture couché* (leftovers). Of the 46 response (six women were unable to provide an example of an unhealthy food), seven mentioned foods containing too much oil, six mentioned foods containing too much sugar, and two mentioned foods containing too much salt.

Interviews

All three health care providers believed that women in Mali know what foods are good for them and what they should not be eating. They suggested that it was more an issue of means, as healthy foods cost more than the staples of the Malian diet, including rice and millet. When asked to list example of healthy and unhealthy foods, they included green leaves, cereals, grains, fish, and eggs as healthy foods and oil, salt, meat in excess, and lipids as being unhealthy.

Health Impacts of Obesity

Questionnaire

Participant's knowledge of the health impacts of obesity was measured on a scale from 0 to 9 based on the answers provided for question twelve, which lists illnesses and asks if they are related to obesity. A score of 9 signifies that the respondent correctly identified whether every disease is or is not related to obesity. The average score for this question was 5.58, with the range being 1 to 9. While married women scored slightly higher than non-married women and there was some variation between traditional and modern women, the greatest correlation is found between age and the score. Women in age groups 31-40 and 41-50 scored the highest, with averages of 6.1 and 6.5 respectively. This is compared with the 15-20, 21-30, and 50+ age groups, who had scores of 5.4, 5.1, and 5.2.

The disease that was most often incorrectly identified as being related to obesity was headaches, which nearly half of the respondents believed was related to obesity. The disease that was most often incorrectly identified as not being related to obesity was cancer, which over half of the respondents said was not related. With the exception of sleep apnea, which a quarter of the women did not know of, the other diseases were generally correctly categorized.

Interviews

The health care professionals interviewed were, as to be expected, very knowledgeable about the health consequences of obesity. They listed hypertension, diabetes, muscular pain, and heart problems as some of the most common complications. One doctor also noted that, in his experience, older women are often the most likely to attempt to lose weight if obese because they have begun to experience some of these problems²⁶. He explained that because younger women have not yet begun to suffer from these consequences, they are less likely to attempt to lose weight if obese.

Self Awareness

Questionnaire

Two sections of the questionnaire contained information regarding women's self awareness. The first is question 11, which asks women how often they think about their weight. Thirty percent of women responded with 'a lot', while slightly more responded with 'never'. Women above the age of 31 were more likely to respond that they thought about their weight 'a lot', with over 50% of respondents choosing that option in the 31-40, 41-50, and 51+ age groups. In addition non-married women reported thinking about their weight significantly less than married women. Ten percent of non married women, compared to over forty percent of married women, reported thinking about their weight 'a lot'. In contrast, nearly half of non married women reported thinking about their weight 'never, compared to less than a quarter of married women.

Another interesting comparison to make with this question is comparing those of different BMI classifications. After eliminating any women who declined to answer this question or for whom a BMI classification was not recorded, there were 19 responses to consider. Of the eight obese women included, six responded that they thought about their weight ‘a lot’. A majority of overweight women also responded with ‘a lot’. With normal and underweight women, the majority responded with ‘never’.

The second revealing section regarding self awareness was a comparison between the body type that women chose as being representative of their current weight and their self reported or actual weights. First, a comparison between the reported weights and actual weights can be made. Of the 52 women surveyed, there are five who both self-reported weight and agreed to be weighed. Four of these five women underreported their weights, by an average of 3.5 kilograms, or 7.7 pounds. The fifth woman overestimated her weight by one kilogram.

In addition, a comparison can be made between BMIs, either self reported or actual, and responses to question three, which asks participants to choose the Stunkard body image that is most similar to their current size. This information is available for twenty of the fifty-two participants. Reported BMIs were translated into Stunkard body images using a conversion system created in a 2005 study²⁷. Eight of the twenty women, or forty percent, underestimated their body size by an average of one and a half images. Seven women accurately reported their sizes, and five overestimated their sizes, by an average of one and a half images. Obese women were most likely to under represent their size, with nearly half of women doing so.

Cultural Notes

One aspect of Malian culture that may be impairing women’s self awareness and self perception is the style of dress. Traditional attire for women in Mali consists of a three piece *complet*: a head wrap, a top, and a *pagne*, or long skirt. These *complets* are created in such a way

²⁷ Bulik, CM. "Relating Body Mass Index to Figural Stimuli: Population Based Normative Data for Caucasians." *International Journal of Obesity and Related Metabolic Disorders*. 25,10 (2005): 1517-1524. Web. 14 Nov. 2011.

that they are able to be worn by women of various sizes. The tops are secured in the back using a zipper that runs the length of the shirt. For smaller women, the zipper can be zipped to the top of the shirt and for larger women, the zipper can be zipped only part of the way up. The *pagnes* are long wrap-around pieces of fabric that are either tucked or tied at the waist with strings.

These outfits have two effects on women's self perception. The first is that, because they are essentially one size fits all, women do not need to purchase new clothing when they gain weight. In many other countries, this is a way for a woman to gauge her body size. If her clothes no longer fit, she realizes she has gained weight. With this traditional Malian style, the clothing fit test is of no use.

The second effect that traditional Malian attire has on body image self awareness is that many women wear flowing scarves draping over their shoulders and much of their body. This is used to keep a modest appearance, and in doing so, it prevents the women's bodies from attaining a noticeable shape. In contrast with tight or more revealing clothing, this attire may possibly inhibit a woman's ability to correctly identify her body type.

Interviews

The female health professional interviewed noted several times throughout the interview that her body type was ideal- not too large and not too thin. Of the available options on the Stunkard Body Scale, she identified herself as image 5, which represents an overweight woman. However, when she provided her weight and height information and BMI was calculated, her BMI was nearly four points higher than that of image 5. When this is translated into kilograms and pounds, this becomes an underestimation of 11.5 kilograms, or roughly 25 pounds.

Ways to Combat Obesity

Questionnaire

There are two questions in the survey that address weight loss: one asking women if they have ever attempted to lose weight, and another asking women to provide a list of healthy ways

to lose weight. Of the fifty-two responses, eighteen women responded that they had attempted to lose weight, with half of those women responding that they used a *régime*, or diet. Other responses included using tea (either Lipton with citrus or a Chinese tea sold at the pharmacy), running or exercising, and thinking too much (possibly translated as stress). There were no notable differences in this answer across age groups, marital status, or traditional status.

When asked to provide other ways one might lose weight, women most often responded with dieting and exercising (30 and 17 responses, respectively). Other responses included illness, visiting the doctor, thinking too much/stress, eating yogurt, or generally eating healthier foods.

For both of these questions, women were asked to clarify what was meant by ‘diet’. For most of the women, this meant skipping dinner or eating only once a day.

Interviews

The female matron interviewed, during the part of the conversation regarding exercising and sport, noted that while she was not able to run or exercise in the typical way, her work was her sport. As a matron, she is often walking back and forth between patients, and during births is on her feet for extended periods of time. She also reported that she occasionally walks to work or to the market if her motorcycle is not available, and that is how she gets adequate exercise.

Goal Two: Feasibility

Diet

Questionnaire

While women were not questioned on the reasons for the food choices they make, they were asked to list the two or three meals they most frequently consume. The most common response, with 46 of 51 women, was rice, followed by *to* (22 responses), *bouille* (11 responses), and bread (10 responses). *Bouille* is a porridge-like substance, usually with added sugar and powdered milk.

Cultural Notes

There are several aspects of the eating culture in Mali that lend themselves to obesity. During a typical meal, men and women sit in small separate circles around large communal bowls of food. They eat the meal either using their hands or a loaf of bread that is ripped into smaller pieces and used as a spoon to pick up the food. When using their hands, Malians grab large handfuls of food, roll the food in the right hand to make it stick together, and eat. Meat is generally previously cut and is placed in the center of the bowl with vegetables. Throughout the meal, one of the women in the circle may distribute some of the meat and vegetables in front of the other women.

This style of eating leads women to eat more food for several reasons. First, it is much more difficult to determine portion sizes and how much one is eating when using large serving dishes or utensils (including ones' hands)²⁸. Second, when eating quickly, which is enabled by using ones' hands, it is more difficult to determine when one is full, which leads to continued eating past the point of hunger. In addition, eating without stopping to cut pieces of food or take drinks of water, which is common in Malian society, also causes increased intake of food. Lastly, there have been studies conducted on the effect of eating in groups. It has been shown that

²⁸ Wansink B, van Ittersum K, Painter J. Ice Cream Illusions: Bowls, Spoons, and Self-Served Portion Sizes. *American Journal of Preventative Medicine*. 2006;31 (3):240-243

people are more likely to continue eating even after they are no longer hungry if others around them continue to eat.

Interviews

Every health professional noted that much of the difficulty of eating healthily stems from a lack of means to purchase the food. “If someone has the money, he is well nourished. When you don’t have the money, you feed yourself depending on what you have.”²⁴ The three interviewees all acknowledged that women understand what foods they should be purchasing, but that they simply do not have enough money to purchase the healthier, more expensive foods. “They know what is good. But it’s the means that are often lacking.”²⁴

Exercise

Questionnaire

During a survey, one woman expressed her frustration at the difficulty of exercising. She works in an office, and because of her job and the tasks she must tend to around the house when she returns from work, she has little time to exercise. She explained that she hopes to buy a stationary bicycle, so that she would be able to exercise at her house at hours that are most convenient for her²⁹.

Cultural Notes

There are two important cultural aspects that contribute to difficulty for women to exercise regularly. The first is the differing gender roles for men and women. In Malian society, women are the primary caretakers of the home and the children. They wake early to begin cooking and cleaning the house and are occupied for the majority of the day caring for the children and their husband. This leaves very little time for women to exercise, especially when that is not one of their main priorities.

²⁹ Personal Interview. Anonymous Survey. 25 November 2011.

Muslim culture, and consequentially, Malian culture, dictates that women should be modestly dressed. For many women in Mali, this translates to shoulders and knees being covered, and for some women, the face. It is very difficult, if a woman should find the time, to exercise with these clothing restraints. In the hot temperatures of Mali, many men exercising wear shorts that fall above the knees and short sleeved shirts. In addition to the challenge of appropriate attire, or perhaps because of it, it is not common to see women running through the streets or exercising in public, which could possibly further discourage women from exercising.

Interviews

Two of the interviewees touched on the issue of the difficulty of exercising for women. One discussed the issue of time, but suggested that women could do daily chores to get some exercise. When asked about women who hold office jobs and are not able to exercise during the day, the interviewee provided examples of other exercises these women could do, such as walking .5 kilometers at night, walking to visit neighbors, going to the market, and cutting vegetables for sauces²⁶.

The female interviewee discussed the difficulties for women to exercise in public in Mali. “What you do during the day, that’s your sport. But to put on work-out clothes and go running, or to go do exercises? You can’t do that. If you do that, it’s not good here. A married woman, even a non-married woman, maybe a young girl can do that here, but the others, when you do that here, people will look at you and say, ‘Is she crazy?’”²⁴

Goal Two: Conclusion

Of the three central barriers to obesity prevention in Mali, it seems that the most significant are knowledge and feasibility. While many women surveyed did prefer larger body types and most indicated that they believed men preferred larger body types, on average, both women's ideal body type and what women believed to be men's preferred body type were of normal weight figures. One troubling statistic is that which shows how many women have been encouraged to gain weight. Though this number represented less than half of women surveyed, even obese and overweight women reported being told to gain weight.

One of the main problems seems to lie in the amount of information that women have. While women showed generally to have been able to correctly identify figures of various weight classes, there seems to be a disconnect between what women know and what they are able to see in themselves. For example, the health professional surveyed believed herself to be of an ideal weight; however, she is actually obese and roughly 25 pounds heavier than the image she chose as being representative of her current weight. This may be partially attributable to the style of dress which prevents women from obtaining a discernible shape. In addition, there is a disconcerting disconnect occurring between what doctors believe women know and what women actually know, specifically pertaining to nutrition. If health providers are assuming this knowledge, there are likely many women who have never been educated on healthy food choices. It is interesting to note that those foods that are marketed as being healthiest, fruits and vegetables, were not common responses for the survey respondents and did not have a strong presence on the list of healthy foods provided by the health care providers.

Knowledge also seemed to be lacking in regards to health complications of obesity and health weight loss methods. The lack of understanding about obesity-related diseases represents another miscommunication between doctors and the general public. It is telling that many women, when asked to identify which complications are related to obesity, first asked what obesity is. While doctors do understand the risks, women do not understand that there are

adverse health effects associated with a larger weight. In regards to weight loss methods, many women seem to understand that it is important to eat less to lose weight; however, some cited eating only one meal a day as the healthiest way to lose weight. While it may help lose weight, it is not healthy to skip meals, and though many women stated that exercising was also a healthy way to lose weight, it seems as though that is not the easiest activity for women. Several women, including a health care provider, noted the difficulties for women to exercise in public, so it is necessary to find ways to encourage exercise, and proper eating, that are consistent with the culture.

C. Goal III: To propose possible obesity prevention methods for future intervention

Solving a problem as large and complex as obesity requires the collaboration of various agencies and strategies. The solutions proposed as a result of the above conclusions are separated into two categories: those that require policy changes, and those that are able to be implemented at a community level. Both types of changes are necessary to most effectively combat the growing obesity problem in Malian women. These two categories are further divided into those interventions that target the lack of knowledge in the female Malian population, and those that aim to make healthy diet and exercise more feasible. Though none of these recommendations specifically seek to change the idea that overweight and obesity are the ideal, that change will likely come through increased knowledge and feasibility.

The WHO makes several recommendations for fighting obesity and promoting healthy diets and exercise. These include promoting public awareness about diet and physical activity through the use of mass media; using food taxes and subsidies to promote healthy diets; creating national physical activity requirement; providing nutrition information and counseling through health care; encouraging community and workplace programs for physical activity and health diets; and supporting healthy nutrition environments in schools¹⁰.

Goal Three: Policy Solutions

There are several recommendations that require implementation at the large scale or government level. The first few target the knowledge deficits evident in women's understandings of obesity and the others attack the lack of feasibility in obesity prevention.

Knowledge

To increase knowledge for women, it is first vital that communication increase between health professionals and their patients. However, to ensure that doctors have the correct knowledge about obesity and nutrition, they should be required to take classes specific to these

topics before receiving a degree or license of any kind. In addition, doctors should also be required to weigh patients and calculate BMIs or use charts to determine whether patients are of healthy weights. This should not be a protocol specific to patients with certain illnesses or of certain ages, but should be done for every patient each time they visit a clinic.

In addition, health education classes should begin when children are in school. Though older generations will not benefit from this directly, the hope is that students will bring their newly acquired knowledge home with them, and that it will stay with them throughout their lives. These classes should include not only information on nutrition but should also include physical education classes, with activities that are designed to include young girls as well as boys.

To spread knowledge to those who may not be educated or have regular access to health care, public service announcements may be used. A similar strategy has been used in neighboring Mauritania. To spread messages about the health impacts of obesity, they have created radio and television programs, using songs to spread messages about the importance of eating right and being healthy³⁰. Similar strategies have already been employed in Mali to convey information about hand washing and water purification techniques.

Feasibility

There are several changes that can be made to make dietary and exercise changes more feasible. The first is to create an environment where healthy foods are affordable and accessible to all women. This can be done at the governmental level through food subsidies, or creating other incentives for farmers to grow more fruits and vegetables. The second change that can be made is to make exercise more accessible to women. This may include such interventions as installing exercise rooms in workplaces or in cities that are open only to women, with all female staff.

³⁰ Callimachi, Rukmini. "Mauritania's Desert Culture Struggles to Stop Loving Fat Women." *North County Times - Californian*. 17 June 2001. Web. 26 Nov. 2011.

Goal Three: Community Level Solutions

To compliment larger-scale changes being made at the government and policy levels, changes may also be made by non-governmental organizations (NGOs) at the community level to improve both knowledge and accessibility for Malian women.

Knowledge

One smaller scale solution used to increase knowledge is a community cooking class for women taught by women from the community. While it seems that this may be difficult to orchestrate with women being so busy with household tasks, this type of solution has been used before. In the past, these types of classes have been arranged to educate women about making baby food for their children³¹ or preparing oral rehydration therapies to combat diarrheal diseases. A similar class could be arranged to teach women about nutrition. This could include teaching women about portion sizes, and using different sized spoons or cups to show how much rice to put into the communal bowl for each person. In addition, women may be shown how to prepare meals using less oil and salts, and little changes that can be made, such as adding vegetables to a sauce, that can make big differences to their health.

During these cooking classes, women could also be taught about the importance of physical activity. Instructors would provide women with information about how many minutes each day they should be walking, and small household chores that can be done each day to increase physical activity.

Feasibility

At the community level, it would also be practical and productive to create women's organizations, or utilize existing women's organizations, to promote health conscious behaviors. First, to increase accessibility to healthy foods, such as fruits and vegetables, women could plant

³¹ Holloway, Kris, and John Bidwell. *Monique and the Mango Rains: Two Years with a Midwife in Mali*. Long Grove, IL: Waveland, 2007. Print.

community gardens that would provide a village or small town with beans, carrots, and other available plants. Each woman would be responsible for a small plot of land and, in exchange, could be given some of the products from others' plots.

To encourage fitness and physical activity, these organizations can organize small sports leagues or walking clubs. The social stigma against women who exercise may be diminished when the women are walking or exercising in groups, especially if those exercises permit them to retain their modest dress. These groups or exercises could also be lead by women and arranged in areas that are removed from city or community centers.

Goal Three: Double Burden

The double burden prevents an interesting challenge when preparing obesity prevention strategies in Mali. Because so much of the population remains underweight and malnourished, it is not appropriate to spread messages to the entire country that everyone should be eating less and exercising more. However, there are several ways to make the above interventions appropriate in a Malian context.

The first major intervention should be an examination of existing nutrition programs, both at the government and community level. Programs geared towards ending malnutrition can actually cause obesity to increase if they are not properly monitored or structured³². Programs should be promoting healthy foods, not simply foods that are high in calories and fat. In addition, these types of organizations should be conscious of the double burden existing within the same household. If a family is being provided with food that is very high in calories and fat because the children are undernourished, this may have adverse health effects for overweight or obese adults in the family.

³² Uauy, C. A. "Obesity Trends in Latin America: Trending from Under- to Overweight." *Journal of Nutrition* 131 (2001): 893S-99S. Web.

This is also an area that can be moderated through the use of doctors and health professionals to spread specific information for each patient. If BMI tests are being done at each clinic visit, doctors are able to provide information tailored to the needs of each individual.

Goal Three: Areas for Further Research

Before determining the best ways to combat the growing obesity epidemic, it is important to have accurate and current information. For future research, studies should be conducted to determine obesity percentages across different socioeconomic groups, ages, education levels, and other categories to determine which population to most heavily target with interventions. It would also be important to have more information regarding the physical activity levels and diet make-up for different populations in Mali. Lastly, if rates of obesity-related NCDs were available, that would assist in the creation and funding of interventions.

VI. Conclusion

Though malnutrition still dominates much of the world's focus in Africa, obesity is a rising trend that deserves attention now in order to prevent future complications. Recent obesity rates have been shown to be high amongst women, and comparisons between statistics from 2006 and 2008 show that they are increasing rapidly. In addition, rates of obesity related diseases are high, and the two main determinants of obesity, diet and exercise, will most likely continue to propel the obesity epidemic further.

The three central barriers to obesity prevention for women in Mali are the social ideals of beauty, both internal and external; the lack of knowledge regarding normalcy, nutrition, health impacts of obesity, healthy weight loss methods, and self awareness; and feasibility, of both diet and exercise. When interventions are targeted towards increasing knowledge and feasibility, both at the government and community levels, ideals of beauty will likely change as well. However, change will not be possible without a coordinated effort between many sectors working in Mali. The government will need to engage smaller community organizations to spread knowledge and change the environment that is becoming increasingly obesogenic.

Now is the best time for Mali to act. Obesity has been rapidly increasing across the world, and many forget that it is an entirely preventable disease. It is important to create changes before the epidemic really takes hold of Mali. Changes that are made now can save hundreds of thousands from deaths of obesity-related diseases in the future.

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IX. Acronyms

BMI: Body Mass Index

CSCOM: Centre de Sante Communautaire

LIC: Low-income Country

NCD: Non-Communicable Disease

NGO: Non-governmental organization

ORTM: L'office de Radiodiffusion Télévision du Mali

WHO: World Health Organization

Appendix A

Questionnaire (English)

Profile:

Age
Occupation
Education Level
Location
Marital Status
Traditional/ Modern (self-identified)

Questionnaire:

1. Choose the picture on the scale that represents the weight that you wish to be.
2. Choose the picture on the scale that represents the body type that men think is most attractive.
3. Choose the picture on the scale that represents your weight.
4. Choose the picture on the scale that represents a thin woman.
5. Choose the picture on the scale that represents a normal weight woman.
6. Choose the picture on the scale that represents an overweight woman.

7. Do you know your weight and height? What is your weight and height?

8. Have you ever tried to lose weight?
9. What are ways someone could lose weight?
10. How often do you think about your weight? (Never, Sometimes, Often, or Always)
11. Are these complications related to obesity? (Choose Y/N/IDK)
 - a. sleep apnea
 - b. head aches
 - c. cancer
 - d. malaria
 - e. diabetes
 - f. typhoid
 - g. polio
 - h. hypertension
 - i. heart disease
12. What are examples of healthy foods?
13. What are examples of unhealthy foods?
14. What are the three foods you eat most frequently?
15. Has anyone ever told you that you should gain weight?
 - a. Mother
 - b. Father
 - c. Sister
 - d. Brother
 - e. Friends
 - f. Spouse/Fiance/Boyfriend
 - g. Doctor
16. Has anyone ever told you that you should lose weight? Who?
 - a. Mother
 - b. Father
 - c. Sister
 - d. Brother
 - e. Friends
 - f. Spouse/Fiance/Boyfriend
 - g. Doctor

Appendix B

Questionnaire (French)

Age
Profession
Nombre d'années d'éducation
Résidence (Localité)
Statut Matrimonial
Traditionnelle/ Moderne (selon vous)

Questionnaire

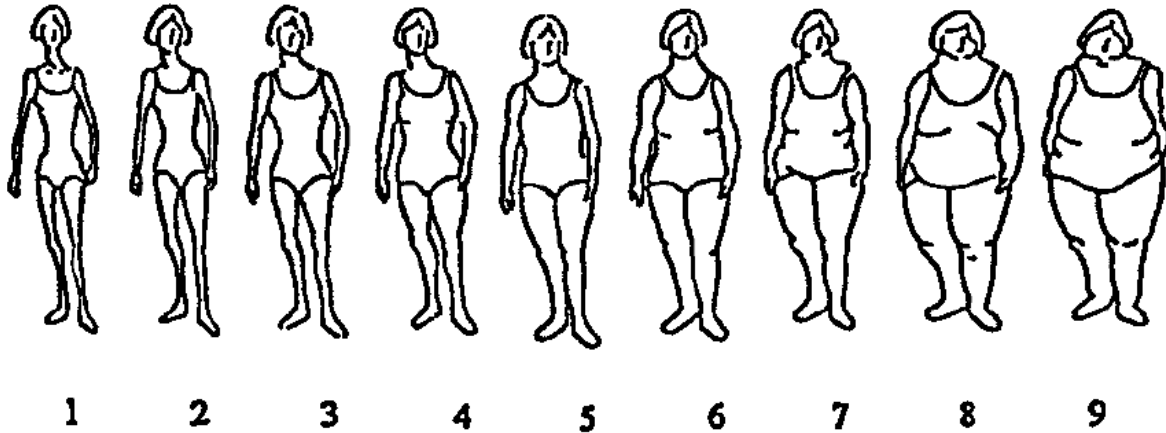
1. Choisissez l'image qui représente la taille que vous auriez préféré avoir.
2. Choisissez l'image qui représente la taille que les hommes pensent est la plus attractive.
3. Choisissez l'image qui représente votre taille.
4. Choisissez toutes les images qui représente une femme qui est trop maigres.
5. Choisissez toutes les images qui représente une femme en bonne santé.
6. Choisissez toutes les images qui représente une femme qui a un surpoids.

7. Savez-vous votre taille et votre poids? Quelle est votre taille et votre poids?

8. Est-ce que vous avez déjà essayer de perdre du poids?
9. Quelles sont les différents manières pour perdre du poids?
10. Combien de fois pensez-vous à votre poids? (Jamais, Quelque fois, Souvent, ou Beaucoup)
11. Est-ce que ces complications sont liés à obésité? (Choisissez oui, non, ou je ne sais pas.)
 - a. apnée du sommeil
 - b. maux de tête
 - c. cancer
 - d. paludisme
 - e. diabète
 - f. typhoïde
 - g. polio
 - h. hypertension
 - i. problèmes cardiaque
12. Quelles sont les trois repas que vous mangez la plus fréquemment?
13. Quelles sont quelques exemples de nourriture saine?
14. Quelles sont quelques exemples de nourriture non équilibré (malsaine)?
15. Est-ce que quelqu'un vous a déjà dit que vous devrez perdre du poids?
 - a. mère
 - b. père
 - c. soeur
 - d. frère
 - e. amis
 - f. épouse
 - g. médecin
16. Est-ce que quelqu'un vous a déjà dit que vous devrez prendre du poids?
 - a. mère
 - b. père
 - c. soeur
 - d. frère
 - e. amis
 - f. épouse
 - g. médecin

Appendix C

Stunkard Body Image Scale



Appendix D

Questionnaire Demographic Information

Traditional Status		Marital Status		Age	
Traditional	42.3% (22)	Ever Married	63.5% (33)	15-20	23% (12)
Modern	34.6% (18)	Non-Married	36.5% (19)	21-30	36.5% (19)
Both	23.1% (12)			31-40	19.2% (10)
				41-50	11.5% (6)
				50+	9.6% (5)