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## Profile

Board Certified Nurse Midwife – Experienced in clinical management and compassionate care of obstetrical patients through the antepartum, intrapartum, and postpartum periods.
Knowledgeable and competent in providing evidence-based solutions in complex obstetrical and gynecological situations.
Skilled provider of surgical First Assistant services in both the obstetrical and gynecological theaters.
Exceptional communication skills with the ability to relate easily to patients, families, and inter-disciplinary specialty providers.

## Education

Doctor of Nursing Practice, 2011
Oregon Health & Science University, Portland, Oregon

Master of Science in Nursing, 2003
Case Western Reserve University, Cleveland, Ohio

Certificate in Nurse Midwifery, 2003
Frontier School of Midwifery and Family Nursing, Hyden, Kentucky

Bachelor of Science in Nursing, 2000
Bachelor of Science in Health Care Management, 2000
Clayton College and State University, Morrow, Georgia

## Employment

Samaritan Obstetrics & Gynecology, Corvallis, Oregon
November 2006 to Present
Certified Nurse Midwife, Nurse Practitioner

Life Cycle OB/GYN, East Point, Georgia
November 2003 to August 2006
Certified Nurse Midwife

TENET – South Fulton Medical Center, East Point, Georgia
June 2000 to September 2003
Labor & Delivery RN, Weekend Charge RN

Norrell Services, Inc., Atlanta, Georgia
June 1987 to September 1997
Area Service Manager, Recruiter

## Licensure

Certified Nurse Midwife, Nurse Practitioner – Oregon
Issued 2006, Expires 2011
Prescriptive Authority

Certified Nurse Midwife – Georgia
Issued 2004, Expires 2012

Registered Professional Nurse – Georgia
Issued 2000, Expired 2012

## Professional Organizations

American College of Nurse Midwives, 2004 to Present
Association of periOperative Registered Nurses, 2011 to Present
Sigma Theta Tau International, 2000 to Present

## DNP Clinical Inquiry Project

Women's Perceptions of Weight and Weight Gain During Pregnancy
Completion date – May 2011
A retrospective, qualitative study of attitudes and perceptions of obese women regarding the importance of weight and weight gain during their recent pregnancy.

## Service Activities

The Partnership Against Domestic Violence, Atlanta, Georgia
Recruiter, On-site Employment Counselor
2000 to 2003

Center Against Rape & Domestic Violence, Corvallis, Oregon
Active Board Member – 2010 to Present

## References

Available upon request

DNP Portfolio Executive Summary

Clare J. Thompson, CNM
Doctor of Nursing Practice Candidate, OHSU School of Nursing

May 18, 2011

When I entered the Doctor of Nursing Practice program at OHSU in the summer of 2009, I had one primary goal in mind – to gain the education and credentials that would allow me to teach in an university setting when I'm too old to get out of bed at 3:00 am to attend a birth. At the time, this seemed like the only real reason to suffer through two more years of classes, paper writing and research, not to mention, the expense. Now, having completed the program, I realize that the DNP degree and the educational process of obtaining it has brought with it a vast enrichment to my clinical practice as well as the capacity for an enhanced delivery system of quality health care for my patients.

As an experienced Certified Nurse Midwife of eight years, I have attended hundreds of births in my career. Much of the care I delivered to my obstetrical patients throughout their pregnancy, delivery and postpartum period was based on and steeped in the wise teachings of my prior mentors and peers. As is the case with many health care providers, I did what I did because it was the way I was taught. There was certainly some science out there to validate my practice but I now realize that first, I could not always be sure of this evidence and second, I could not always identify and translate it if it did exist. The educational process provided by the DNP program has given me the ability to recognize and identify opportunities for enhanced healthcare outcomes through scholarly inquiry skills and application as well as the capacity to analyze the cost effectiveness of practice initiatives and challenge the protocol when required. I believe I now have a superior ability to influence decisions and improve systems of health care on several critical levels resulting in better health for obstetrical patients and their children.

Additionally, the DNP program allowed me to develop and sharpen a new skill aimed at improving patient health outcomes. One of the ways to improve health outcomes is to strengthen the linkages in continuity of care. Over and over, research has identified a seamless continuity of care model as a major contributor to improved health outcomes and increased patient satisfaction. As an advanced practice provider, obtaining the skill and designation as an Advanced Practice First Assistant in the surgical arena allows me to be that important link in the continuity of care chain and a significant contributor towards this important goal. Involvement in the surgical arena also provides additional opportunities for the DNP prepared provider to serve as a translator of published evidence into practice resulting in improved outcomes for multiple populations.

As a proponent of life-long learning and a strong believer in raising the educational and competency bar as it applies to nursing, I believe the DNP program is a significant component toward this goal. Improved health care requires improved clinical delivery systems and the DNP prepared advanced practice nurse has the arsenal of skills to fulfill this important need resulting in positive long-term health outcomes for patients and their families. I look forward to being a contributor.

# Women's Perceptions of Weight and Weight Gain in Pregnancy

Clare Thompson

Oregon Health & Science University

**Abstract**

Over half of pregnant women gain more than the recommended weight in pregnancy with overweight and obese women being more likely to exceed the recommendations put forth by the American College of Obstetricians and Gynecologists (ACOG) and the Institute of Medicine (IOM). Overweight and obese pregnant women are at increased risk for multiple pregnancy related complications including a higher rate of birth defects, spontaneous abortion, gestational hypertension, preeclampsia, gestational diabetes, fetal macrosomia, cesarean delivery, shoulder dystocia, postpartum hemorrhage, wound infection and endometritis. While many complex factors are involved in obesity and weight gain in pregnancy, attitudes and perceptions regarding body weight may have a strong correlation to nutritional habits, activity level and subsequently, weight gain. The purpose of this research project is to identify perceptions of psychological factors that may have an effect on weight gain during pregnancy in obese women.

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Keywords: obesity, pregnancy, weight gain, perception of weight

## Obesity in Pregnancy

Obesity in the United States and worldwide has increased dramatically over the last 20 years. The prevalence of obesity in the general population, defined by the World Health Organization and the National Institutes of Health as a Body Mass Index (BMI) of 30 or greater, is estimated to be 30.2% to 34% with an alarming 50% to 70% increase in the prevalence of obesity in adults of reproductive age since 1991 (Weiss et al., 2003, Catalano, 2007, Kominiarek, M.A., 2008, Satpathy et al., 2008). BMI is the standard that defines weight categories and is calculated as weight in kilograms divided by height in meters squared (Flegal, 2010). Underweight is considered a BMI of less than 18.5, normal weight a BMI of 18.5 to 24.9, overweight a BMI of 25 to 29.9 and obese a BMI of over 30 (ACOG, 2005). Long-term complications from obesity in women include childhood obesity, infertility, uterine cancer, diabetes mellitus, heart disease, kidney disease and a host of other chronic health issues that contribute to a decreased quality of life and overall longevity (Weiss et al., 2003). Overweight and obese pregnant women are at increased risk for multiple pregnancy related complications. Gestational issues include a higher rate of birth defects, spontaneous abortion, gestational hypertension, preeclampsia, gestational diabetes, fetal macrosomia, cesarean delivery, shoulder dystocia, postpartum hemorrhage, wound infection and endometritis (ACOG, 2005. Kominiarek, M.A., 2008, Satpathy et al., 2008).

Another issue related to poor pregnancy outcomes is excessive weight gain in pregnancy, especially in obese women. In addition to the complications from obesity in pregnancy already detailed, mothers who gain excessive amounts of weight in pregnancy have the added risks of retaining additional pounds after delivery or delivering a premature infant or a larger than normal

infant with extra fat. These consequences increase the risk of lifelong health issues related to extra weight or impaired development due to prematurity ("Report Updates," 2009).

In 2009, The Institute of Medicine (IOM) published revised pregnancy weight gain guidelines. These guidelines encouraged 11 to 20 pounds of additional weight throughout the duration of the pregnancy for women who started the pregnancy obese (Lowry, 2009). Additionally, the IOM encourages providers to increase counseling given to patients before and during their pregnancy in an effort to facilitate healthy weight gain. While these efforts show promise in decreasing excessive weight gain in already obese mothers, a clearer understanding of motivations, perceptions and attitudes towards personal weight status may prove helpful in formulating a more effective strategy. Until healthier weights in pregnancy are realized, significant health hazards continue to plague prospective mothers with ramifications extending to generations to come.

Local data regarding actual average weight gain in pregnancy can be difficult to obtain. In Oregon, data are collected via the birth certificate worksheet at the time of birth, which includes maternal weight at the beginning of the pregnancy and again at the time of delivery. While this data is collected for statistical purposes and can be used to identify trends in excessive or inadequate weight gain during pregnancy, only recently has this data been analyzed and published for provider and public health use in Oregon. In 2008, 61.2% of overweight women and 54.8% of obese women gained more than the IOM recommended amounts for weight gain in pregnancy. Forty-seven percent of women entered pregnancy overweight or obese and 40% of first-time mothers were overweight or obese. Additionally, higher parity increases the likelihood of women entering the pregnancy obese or overweight with 60% of women having their 4$^{th}$ child beginning the pregnancy overweight or obese (Oregon Public Health Division, 2011).

While many programs and initiatives have been implemented to raise awareness and increase population education regarding the risks of obesity in pregnancy, these initiatives are still in process with no final result yet available. Pre-pregnancy weight loss, while an idealistic goal, may not be realistic due to the fact that 49% of all pregnancies are not planned (Finer & Henshaw, 2006). Pregnancy then becomes the ideal time to address weight control in an effort to mitigate further complications.

Many complex factors are at play in relating to women who struggle with obesity. Obstetrical providers work hard to provide women with tools and information that may assist them in addressing this issue. Advanced practice providers, especially those that are doctoral prepared, are experts in translating research into practice, however, a review of the current literature reveals very little information regarding effective advanced practice nursing interventions and strategies that may assist with healthy nutritional behavior in pregnancy. It is unclear whether the patient's personal perception of her weight, both before and during the pregnancy, helps predict weight gain during the antenatal period. If a woman is obese but perceives her personal weight to be in the healthy range, does she gain more or less weight in pregnancy than a woman who perceives her personal weight to be overweight or obese? Are women accurate in estimating their BMI and, subsequently, their weight status? If a woman is obese and has an accurate sense of her personal weight status, is she more motivated to stay within the recommended weight gain in pregnancy guidelines or is weight management too challenging for her? How important is maintaining a healthy weight in pregnancy to her? Understanding the psychological factors at work in weight perception and management may prove helpful in establishing more effective strategies for the advanced practice nurse practitioner.

**Purpose Statement**

The purpose of this research project is to identify psychological factors that may have had an effect on weight gain during pregnancy in obese women.

**Introduction**

In the past several decades, gestational weight gain has increased in the U.S. Previous medical recommendations of higher weight gain in pregnancy were thought to be linked to healthier infants and reduced perinatal mortality. More recent data has revealed that excessive maternal weight gain in pregnancy can be linked to many gestational complications, negative birth outcomes, childhood obesity and retained weight by the mother after the delivery further increasing her risk of lifelong health issues.

Over half of pregnant women gain more than the recommended weight in pregnancy with overweight and obese women being more likely to exceed the recommendations put forth by the American College of Obstetricians and Gynecologists (ACOG) and the Institute of Medicine (IOM)(Herring et al, 2008). Historically, maternal pregravid obesity has been the focus of obstetrical care in regards to health risks related to weight, however; more recently, attention is being placed on excessive net maternal weight gain as an ever increasing health concern for the obese mother and her fetus. In pregnancy, weight gain can be broken down into the following components:

7-8 lbs for a term fetus,

1-2 lbs placenta,

2 lbs amniotic fluid,

2 lbs uterine growth,

2 lbs breast tissue,

4 lbs maternal blood volume expansion,

7 lbs maternal fat/nutrient stores.

Total pregnancy weight gain, in a woman with a normal BMI, defined as a BMI of 18.5 to 24.9 (Janssen, Katzmarzyk & Ross, 2002), should be 25 – 27 lbs. Obese women, due to increased subcutaneous fat distribution between the midthorax and upper thigh and a decreased metabolic status, should not add additional fat stores in pregnancy (Catalano, 2007).

Attitudes and perceptions regarding body weight may have a strong correlation to nutritional habits and subsequently, weight gain. The results of a recent study of non-pregnant adolescents and young adults who are under or normal weight but perceived themselves as larger than normal found that this group has a two-fold increased risk of eating disorders and poor nutritional intake. Young adults who perceive themselves as normal weight but are, in fact, overweight or obese, are less likely to be involved in regular physical activity and eating behaviors that promote weight control (Herring et al., 2008). Inaccurate perception of weight status contributes to lower exercise participation and poorer nutritional intake, thereby, increasing weight status. Further investigation is needed in order to determine if the same relationship exists during pregnancy.

**Review of the literature**

Large bodies of research and knowledge exist regarding both the long and short-term health complications of obesity worldwide. This data has been compared and reported among different ethnic groups, between women and men, among the pregnant population, and many other demographic qualifiers. One of the larger organizations interested in health is The National Health and Nutrition Examination Survey (NHANES). NHANES is a program of studies that began in the early 1960's and focuses on the health and nutritional status of adults

and children of different populations in the United States (Ogden & Carroll, 2010). The NHANES data consists of demographic, socioeconomic, dietary and health related inquiries that seek to identify the incidence of disease patterns and risk factors by population groups.

One of the many health patterns regularly reviewed is the rising rate of overweight and obesity. Overweight and obesity rates are trended in these studies and reveal concerning results. The most recent data regarding trends in weight among adults aged 20 and over reported by NHANES 1988-2008 are illustrated in Figure 1. According to NHANES, since 1988, obesity rates have risen from 23% to 34% among all adults surveyed, aged 20 and over. When considering racial components of obesity, a review of the prevalence of obesity among women aged 20 and over comparing the periods of 1988–1994 and 2007-2008 reveals an increase from 22.9% to 33.0% among non-Hispanic white women, a rise from 38.2% to 49.6% among non-Hispanic black women and increase from 35.3% to 45.1% among Mexican-American women (Figure 1, Ogden & Carroll, 2010).

While overweight and obesity are clearly trending up in the U.S. and globally, less is known about the perceptions and attitudes of adults regarding their own weight status. Merrill and Richardson (2009) conducted an analysis of the NHANES from 2001 to 2006. This study sampled 8,208 men and 8,606 women over the age of 16 to evaluate bias levels in self-reported height and weight compared to body mass index. They concluded that both men and women significantly over-reported their height while women tended to under-report their weight leading to an underestimation of overall body mass index. John, Hanke, Grothues, and Thyrian (2006) found similar results in a moderate sized study in Germany. Kuchler and Variyam (2003) found that under-reporting was more likely in individuals with lower education levels, lower income levels and non-Hispanic blacks. Elgar and Stewart, in a 2008 Canadian study, also concluded

that self-reports yield underestimates of weight and overestimates of height in both men and women.

The only significant study to date regarding pre-pregnancy weight perception and gestation weight gain was conducted by Herring et al. in 2008. In this prospective study of 1537 normal and overweight or obese women, self-perception of pre-pregnant body weight was assessed and those with weight misconceptions were divided into two categories: over assessors defined as normal weight women who identified as overweight and under assessors defined as overweight or obese women who identified as normal weight. Of the 1029 normal weight women, 87% accurately perceived their weight status while 13% over assessed. Of the 508 overweigh or obese women, 86% accurately assessed but 14% under assessed. At the end of the pregnancies, 54% of all subjects had gained excessive, based on the weight guidelines for their actual pre-pregnancy BMI. Herring et al. concluded "misperceived pre-pregnancy body weight status was associated with excessive gestational weight gain among both normal weight and overweight/obese women, with the greatest likelihood of excessive gain among overweight/obese under assessors".

**Gaps in knowledge**

Because studies are limited regarding individual perceptions of weight status and weight gain during pregnancy, more research is needed. Many mechanisms, biologic, behavioral and psychological, are interrelated as they apply to perceived body weight and weight gain in pregnancy. While studies exist regarding personal weight perception, exercise, and nutritional intake in adolescents and young adults, these results and impressions may not be applicable in pregnancy.

Other areas of limited knowledge related to factors affecting weight perception and weight gain in pregnancy include socioeconomic variables, racial influences, social support, activity level and self-concept. If attention is placed on weight gain during the pregnancy and weight perception is corrected pre-conceptionally, is weight gain altered? Does depression or other psychological disorders affect perceived weight status and weight gain in pregnancy? Does aggressive treatment of depression in pregnancy affect weight gain in overweigh or obese pregnant patients? What behavior modification strategies can be applied to correct peripartum weight gain in overweight or obese patients? Is pregnancy the right time to address weight issues or can increased effectiveness be realized if focus is placed on the postpartum period where pregnancy concerns can be eliminated as a confounding factor?

## Project Objective

Obesity in the U.S. and globally is at an epidemic level, and all populations are affected. According to Dodson et al. (2009), 17% of children aged 2 to 19 years are overweight. In the general population, over two-thirds of Americans are overweight and over 30% are obese with a BMI of 30 or greater (Morin & Reilly, 2007). The rate of overweight or obesity in pregnant women has increased over 40% in the last ten years with 56.7% of women of reproductive age being overweight or obese (Catalano, 2007).

Long-term and short-term health issues related to overweight or obese people are numerous and well documented. In pregnancy, adverse perinatal outcomes are numerous as well when compared to normal weight women. Obese, pregnant women have a 2.5 to 3.2 times increased risk of gestational hypertension, 1.6 to 3.3 times increased risk of preeclampsia, 2.6 to 4.0 times increased risk of gestational diabetes, 1.7 to 2.0 times increased risk to deliver prematurely and 1.7 to 1.9 times increased risk of fetal macrosomia when compared to normal

weight women. The cesarean delivery rate for obese women is 33.8% to 47.4% compared with 20.7% in women with a normal BMI (ACOG, 2005, Weiss et al, 2003).

The most common-sense approach to decreasing obesity in pregnancy would be to encourage women to obtain a healthy weight level before pregnancy. While some opportunity to educate and counsel prior to pregnancy exists, the reality is that 49% of pregnancies are unplanned; therefore, the opportunity to educate prenatally may not exist. The first occasion most prenatal care providers have to evaluate and counsel most patients regarding overweight and obesity in pregnancy is during the patient's first obstetrical visit. While much can be done to encourage adherence to the recommended weight gain guidelines based on pre-pregnancy BMI, many women still exceed the recommended guidelines. Within this clinical inquiry project, the researcher hopes to determine the perceptions of what factors may have contributed to excessive weight gain during pregnancy in obese women.

**Clinical Inquiry Design**

Exploring attitudes, personal weight perceptions and knowledge regarding the effects of obesity in pregnancy may shed light on why some obese women gain more in pregnancy than others. A qualitative data collection and design, with emphasis on discovering the values, beliefs and practices of obese women in pregnancy, was an appropriate approach to this issue. It was hoped that the collection of data could contribute to some insight and understanding and lead to an identification of the issues and complex relationships surrounding excessive weight gain in pregnancy. This understanding will subsequently help prenatal care providers develop methods that will assist obese, pregnant women in achieving their healthy weight goals. A retrospective, qualitative study with postpartum, obese women who gained more than the recommended weight amount in pregnancy was conducted in an effort to identify those factors that may have affected

their total weight gain. While a retrospective study design is subject to recall bias and possible inaccuracies, it is a valuable design for collecting data in less researched areas.

The sample was a convenience sampling of 5 completed interviews with women who gave birth to a full term infant within 2010 under the care of Samaritan Ob/Gyn (SOG) and delivered at Samaritan Regional Medical Center (SRMC) in Corvallis, OR. Inclusion criteria were a BMI of 30 or over at the start of the pregnancy and a total weight gain during the pregnancy of greater than 20 pounds. Beginning weight was defined as the measured weight of the participant at their first prenatal visit and ending weight was the last weight recorded before delivery. Participants were included if they were over the age of 18 years, initiated their prenatal care with SOG before 13 weeks gestation, and delivered between 37 and 42 weeks gestation at GSRMC. Individuals, who transferred care to another provider or whose pregnancy ended in a stillbirth or intrauterine fetal demise, were excluded. Method of delivery could be either vaginal, vaginal operative or cesarean section.

Prior to the start of the project, Institutional Review Board approval was obtained from both Oregon Health and Science University and SRMC. Each board was solicited again as modifications to the project became necessary.

Using the electronic medical record (Centricity) of SOG, the author reviewed all prenatal records from 2010 deliveries at SRMC by SOG and identified individuals who met the study inclusion criteria. Centricity is a password-secured system and the researcher obtained permission from SOG to access these records for the purpose of this study. The initial database query returned 40 potential participants who met the inclusion and exclusion criteria described above.

The researcher sent an initial letter to each of the potential participants at their currently listed home address (Appendix A). The letter briefly described the study and offered participation in the project, asking the women to call the investigator to set up a time for the interview if they were interested in participation. This initial offering resulted in three individuals contacting the researcher for participation. Per study protocol, the researcher screened respondents for eligibility and provided additional information regarding the study. All three individuals agreed to participate in the study. Recruitment for the study was challenging, therefore; a second attempt was made approximately three weeks later by mailing a follow up flyer to the remaining 37 potential participants at their home address (Appendix B). The flyer reminded the potential participants of the availability of the study and again, offered participation. The second recruitment attempt resulted in an additional three individuals expressing interest in the study. One of these individuals, after speaking with the researcher and receiving more information regarding the study, declined participation. The researcher successfully completed interviews with the two remaining individuals and their interviews are included in the study.

While focus groups can be an effective method of gathering qualitative data, the researcher believed that obese women are more comfortable discussing their perceptions of their weight issues in a private versus group setting. Therefore, the interviewer chose a format of one-on-one interviews. In an effort to accommodate the time constraints and comfort of the participants as well as maintain participant confidentiality, the study protocol allowed for a choice of interview locations (i.e. local restaurant, participant's home, SOG office after hours). All participants chose their home as the interview location. The researcher obtained consent for participation at the beginning of the interview, answering all questions regarding the study

(Appendix C). The researcher informed the participants that they could refuse to answer any questions asked and were free to end the interview at any time. All participants completed the interview and answered all study questions (Appendix D). The researcher conducted the interview in a one-on-one format and all interviews lasted between one to one and a half hours. A low structured interview design with open-ended prompts allowed participants to define their own attitudes and perceptions related to weight and weight gain in pregnancy. As obesity can be a sensitive subject for many women, respect and consideration for these sensitivities was in the forefront of the researcher's mind at all times throughout the process, using interview questions designed to assist in making the participant comfortable with discussing her perception of her weight issues. Language was inclusive, not exclusive, with strict avoidance of culturally negative terms.

The researcher used a standard, voice recorder to record the interview for later transcription. The researcher personally transcribed all interviews on her personal computer, which was password protected, identifying participants on the tape and transcription by participant number only with a master list that linked the participant to their number. The purpose of this list was for identification of the participant only if clarification of information was needed. The researcher secured interview notes, participant list and tape recordings in a locked file cabinet at SOG throughout the research process and controlled the keys to the file cabinet. At the end of the project, the researcher destroyed all data, including the original records, the paper transcriptions and the computer files. To the researcher's knowledge, no breach of security occurred throughout any phase of the project.

Once the interviews were completed, the researcher transcribed the data verbatim. Transcriptions were meticulously in-depth and included incomplete sentences, pauses,

distractions, emotions and any other verbal and non-verbal details as they occurred. Following the protocol, the researcher performed an initial review of the data using thematic analyses in an effort to identify common concepts within the interviews. The researcher then scoured the interviews in detail reflecting on the content and searching for patterns of meaning and constructs of ideas. Finally, the researcher worked in depth to identify commonalities within the interviews and overriding descriptions and concepts indicated by the data that lent itself to common or unique themes. To mitigate researcher bias, a danger in solo thematic analysis, the researcher utilized the skill of two outside, independent consultants who were experts in the field of obstetrics. These experts reviewed the interview transcriptions independently and gathered their own ideas and opinions regarding common themes and concepts. The researcher compared their conclusions with the researcher's independent findings. The consultants identified a total of six common themes. These themes were compared to the researcher's findings and the most common four were selected.

Cost of the project was minimal. The researcher covered the cost of postage in mailing the participation letters and follow up reminders. A small, portable tape recorder was supplied by the researcher for use during the interviews.

**Measures**

At the beginning of the interviews, all participants were asked eight demographic questions. The results of these questions are summarized in Table 1. In order to quantify the accuracy of each participant's perception of their weight gain in pregnancy, at the end of the interviews, all participants were asked to recall how much weight they had gained in their last pregnancy. Their responses, along with objective data collected from their obstetrical medical chart, are summarized in Table 2.

# Women's Perceptions of Weight and Weight Gain in Pregnancy

Executive Summary

And

Report

Clare Thompson

Oregon Health & Science University

## Executive Summary

Obesity in the United States and worldwide has become a major health concern. Millions of healthcare dollars are spent yearly treating the cascade of health problems that stem from this escalating public health issue. While all populations are at risk from the health problems that accompany obesity, the purpose of this project is to examine factors that may contribute to the ill effects of excessive weight gain suffered by women as it relates to pregnancy.

The Institute of Medicine (IOM), in 2009, revised their pregnancy weight gain recommendations as a result of data that confirms 49% of pregnant women gain excessively during pregnancy, placing themselves and their fetus at tremendous risk. The IOM also encourages increased counseling for patients before, during and after their pregnancies in an effort to increase knowledge regarding safe pregnancy weight gain. While these efforts are commendable, it is the opinion of this Doctor of Nursing Practice candidate and Advanced Practice provider that these recommendations may be superficial and not address the core challenges in this vulnerable population. Therefore, this project attempts to gain a deeper understanding directly from the perspective of the woman regarding why she thinks weight control in pregnancy is a challenge.

In this project, the researcher interviewed five previously pregnant women who delivered a full term infant in 2010. All of these women began their pregnancy with a Body Mass Index of 30 or more and gained more than the recommended 20 pounds throughout their pregnancy. Interview questions were designed to allow the women to explore their feelings and identify factors that they believe impacted their pregnancy weight gain. Recruitment was challenging and may be due to women's reluctance to discuss their weight.

After the interviews were complete, a thematic analysis of the data was performed where numerous concepts and themes were suggested. The final report focuses on four prevalent themes identified from the data with comments that support the findings. While this study is not adequate to affect practice, it is the hope of this researcher that it may serve as a springboard for more in-depth analysis in the future.

Clare Thompson, CNM

Doctor of Nursing Practice Candidate

OHSU School of Nursing

## Prevalent Themes

Thematic analysis was chosen as the analytical method for this study. This type of methodology allow theoretical freedom, celebrate flexibility and attempts to describe the data in rich detail as it exists without bias or assumption. This method may allow the researcher to discover untapped relationships and patterns of thought as they relate to the subject under investigation. While thematic analysis can be quite abstract and unstructured, the researcher used a systematic approach to the data as described by Braun and Clark (2006) in an attempt to produce results that are methodologically sound and applicable to practice.

This study revealed four basic themes: adequate knowledge, avoidance, psychological pain and willpower. Each theme provided a basic definition and the participant quotes listed underneath clarify their perceptions.

### Theme #1 Adequate Knowledge

The first theme identified during the interviews was adequate knowledge. The participants said they feel like they had adequate knowledge regarding a healthy diet and exercise and some of the participants identified early learning of healthy eating habits:

*"I learned really good eating habits when I was a kid from my family."*

*"We always ate healthy when I was a kid. We weren't allowed to snack or eat in from of the TV. My parents just didn't allow that. We ate vegetables and lean meats. Not too many sweets."*

Other women expressed a good basic knowledge of healthy foods and were able to identify examples of good food choices. One woman said:

*"I'm not a dietician but I think I know what foods are good for you and which ones aren't. I really try to eat whole grains, low fat foods."*

Another woman said:

> *"I think I ate more healthier prior to getting married. I ate more lean meats, like fish and tuna and then I would eat more salads and vegetables. I drank a lot of water. I don't eat as well now. I know what to eat. I just don't always eat right."*

Others reported that being offered additional education did not increase their knowledge level. They said:

> *"I'm a grown person who is intelligent and I know what to eat and I know when to eat it. I know to exercise and I think I get lots of that advice which I don't feel offended by but its not that helpful."*
>
> *"I was sent to a nutritionist but a lot of what she told me I already knew."*
>
> "*I think anybody who struggles with weight has done the diets and all the different regimes and they probably know better than most about nutrition".*

Participants identified having a good knowledge base of health producing physical activities such as aerobics, Zumba, biking, running, swimming and walking and said they have, at intermittent points in their life, incorporated them into their lifestyle. One woman said:

> "*I try to stay pretty active. Actually, for the last week, I've been doing my own kick boxing/yoga/pilates. And its just stuff I know because I've always done something so I kind of remember stuff from class."*

Another participant said:

> *"I know that exercising is actually good for the baby, you know, to get that blood flow. I wouldn't necessarily go jogging while pregnant but some type of light exercise is good".*

**Theme #2 Avoidance**

Avoidance- Participants expressed a tendency to avoid providers who addressed their weight gain in pregnancy. They did not articulate a recognized dissatisfaction with the provider but an avoidance of seeing that provider again.

> *"I remember distinctly there was a jump in my weight one month and I remember seeing Dr. _____. She told me babies are scavengers and they will get what they need. You don't need to eat a lot. When they tried to schedule me again with her, I said is anyone else available?"*

Other women said they enjoyed no conversation about their weight or conversation that relinquished concern regarding their weight gain:

> *"There are some doctors that are really nice about it and don't talk about it even if you're huge".*

> *"I remember one doctor told me (about my weight gain) 'Oh, don't worry about it' (laughing). That was good to hear".*

Some participants also expressed a tendency to avoid undesired outcomes by hiding their eating habits from family. These outcomes may be an avoidance of confrontation with or embarrassment by family members or the participant may be attempting to avoid teaching of undesirable behaviors to their children. This avoidance is evidenced by one participant saying:

> *"I tend to hide my eating so people don't see me do it and I know its part of my problem."*

Another woman said:

> *"I have those core values ingrained, so when I cook for my children, we always eat a balanced meal with the right portions. And I'll eat that with them too. But then when they go to bed, I'll snack. You know, its almost like sneak snacking away*

> *from my kids. I don't want them to have bad eating habits. But I think my dad probably did that and on some level I knew, right? That was passed on to me so I don't think there's any tricking with it. Your kids know and as they get older, they're going to know even better. "*

**Theme #3 Psychological Pain**

**History of pain.** Participants expressed a history of pain related to their weight and weight gain. Many of the experiences conveyed occurred when the women were younger. Some of the women recognize or suspect that these experiences may be impacting their decisions and actions as they relate to their adult diet. One woman said:

> *"I was 18 when I got pregnant the first time. I was still in high school. My mother kicked me out. So there's still a lot of mommy issues (with my mother). And we've worked through a lot of them but there's something I'm holding on to that I can't, I don't know, I still haven't figured out."*

One new mother said:

> *"My family's, like, fitness freaks. That's what my parents did in retirement. My dad goes to the gym 4 hours a day and my mom plays tennis all the time. My brother's wife is a fitness freak. My family works out, like, hours a day. They are in great shape but they've almost become people I don't like because of the attitude that comes with it. They are pretty critical. They worried about my weight gain. I think some of them are about image. I know their intentions are good but they don't know how to support around it".*

Several women conveyed stories of being teased and called undesirable names because of their weight. One woman remembers being teased as a child by her brothers but did not realized the magnitude of the hurt until it was addressed as an adult:

> *"My brothers called me fat when we were children. Yeah, they really were not very nice to me. That was one thing that stuck with me. I remember shortly after high school, one of my brothers apologized to me about it and I didn't know how much it impacted me. When he apologized, I just started crying. So I think that definitely has had an impact on how I feel about myself".*

Another woman also reported being teased by siblings and recognized the potential for psychological damage:

> *"I was teased in school. I was teased by my sisters and my brothers. They called me ….in the summers I was very pale so they called me pale white whale. And in school, I think someone once called me pork chop. But I don't know, kids are going to do that. It's not something that ……maybe subconsciously it stuck with me. But it does not affect me on a daily basis".*

One woman remembers being surprised by a comment by a family member regarding her weight. She says she felt like she was at a healthy weight at the time:

> *"I remember when I was living with my grandmother while my mom moved down here and I had mentioned to my aunt that at my check up I was 150 lbs and she said 'boy, you're a fat ass'. That really surprised me".*

Another new mother described unpleasant comments from her mother's boyfriend after her parents divorced:

> *"My brother and I have talked several times about all the stuff we went through with*

*mom and her boyfriend and we basically have come to the conclusion that we probably would have been fine had we not had so much of the processed foods. And mom's boyfriend saying 'oh, you're a fat ass, you need to get up and move around' or the other little comments that were said."*

**Stress response.** Many participants attributed their unhealthy eating to a stress response. Identification of comfort eating as a way of coping with stress was expressed by multiple participants:

*"I'm eating for comfort because I'm feeling stressed or anxious or lonely."*

*"I have not been diagnosed with depression but I definitely think I am a comfort eater. So I think when I was pregnant……for me, there were parts of me that I really felt great about being pregnant. There were other parts, hormonally, where I felt isolated and kind of crazy. So food was definitely a comfort I turned to."*

*"When I find myself in a stressful situation, I'll find myself in the kitchen."*

*"My hunch is that my dad was a bit of a comfort eater. I don't really remember it growing up. But it was when I started comfort eating when I got a more stressful job and had a lot of responsibilities. If I have a stressful week, at the end of the week I can say 'gosh, everyday I got myself some kind of treat'. You know, I can reflect back and see that".*

*"I like sweets and I'm kind of a stress eater. So when I get stressed out, that's my way of coping with things. It's really not good."*

*"I think my problem with food goes a lot deeper. I have a lot of knowledge about*

*how to eat healthy but I think there might be some emotional and psychological factors. Like I said, when I'm stressed its what I turn to for comfort and how to deal with that".*

**Theme #4 Willpower**

Participants expressed a desire to eat healthy and exercise but identified a lack of willpower as a barrier in their ability to perform. Many of them identified physical reasons for their behavior but lacked the ability to identify why the behavior occurred and attributed it to personal weakness.

*"Um, when I was pregnant with my first one, I think I was better at exercising but then I got pregnant (again), I don't really remember doing much. I remember I would walk around occasionally. I'd go for a walk but it wasn't as consistent as it was with my first. And I don't know why. Maybe I was just tired or lazy, thinking I really don't want to. My feet hurt or whatever. Even though you think you'll feel better, you're still like, sitting on the couch is much for comfortable than going for a walk".*

Some women would grant themselves permission to forego activity:

*"I don't eat very healthy. I mean, we try. Like I might make rice, I might throw in peas and carrots but we won't make a salad. And I just don't have the willpower to say no to whatever it is, ice cream. That's probably it. Then not finding the motivation to get up off the couch and move around. I tell myself, don't beat yourself up about it. Don't worry about it".*

Others said they simply have no willpower:

*" I struggle with the willpower to just say no."*

*"I guess it's just my willpower. Everything is so busy and the effort and the willpower it takes to say no when you should say no just isn't there for me"*.

One woman said she needed accountability and support:

*"I needed someone to reign me in and control the fact that…..and I knew that I didn't want to gain much more weight. That's the biggest thing for me was that I needed the accountability to weight every month. I couldn't do it by myself".*

## Discussion

Assisting obese women in achieving and maintaining a healthy lifestyle, in both the pregnant and non-pregnant state, is multi-dimensional. This study revealed several clues to understanding and addressing the problems of unhealthy behavior in overweight and obese women and offers some starting-point solutions for providers. Patient teaching and increased education related to healthy activity and diet has always been the cornerstone of weight management strategies; however, further evaluation and an understanding of the core issues may allow for greater success in this pandemic concern.

Obstetrical healthcare providers are compelled to evaluate the obstetrical patient physically, psychologically and socially throughout the entire pregnancy cycle. While providers may be experts in certain aspects of these evaluative steps, results of this study suggest that emphasis on the psychological struggles experienced by the woman as it relates to her weight may be deficit and may possess invaluable information regarding how to help her overcome these issues. Many women in this study expressed struggles with no willpower, stress eating, avoidance of painful clinical situations where her weight is addressed or discussed, and a history of long-standing psychological injury that may be undermining her efforts of achieving an optimal healthy weight. Providers should consider starting their evaluative process by

acknowledging that these struggles exist and querying women to see if any of these issues could be affecting them. Asking patients why they struggle with their weight may provide additional information and avenues for discussion.

Providers should be wary when assuming that the first step in the weight treatment process is an increase in educational instruction and resources as it relates to diet and exercise. This study suggested that women feel they possess adequate knowledge regarding healthy food choices and proper portion control. While dietitians and nutritional educators provide an invaluable and bountiful source of information and diet solutions for individuals that suffer from many health challenges, the obstetrical provider should engage in a sensitive, yet comprehensive, conversation with the woman in order to better understand her level of knowledge before making these blanket referrals. Assessing her knowledge level can be tedious and time consuming, however, encouraging the woman to be an active participant in her health versus spoon-feeding her information that she may not feel she lacks is a waste of valuable time and resources.

Lastly, results of this research suggested that issues with healthy eating, exercise and optimum weight may be closely connected to a history psychological pain and stress. Exploring these avenues with women can be challenging and should be approached sensitively and after a foundation of trust has been established with the woman. When these struggles are suggested or revealed, providers should have in their arsenal of resources a variety of specialty providers who focus on assisting women in overcoming these types of issues.

## Limitations

The purpose of this pilot study was to gain starting-point information regarding the perceptions of weight and weight gain in obese, obstetrical women. While a wide array of concepts and ideas were identified in this initial survey, more research is needed before firm

indications for practice change can be branded. No control group was used in this study, therefore, results may not be significant. Additionally, this qualitative project is very small and all the participants were either married or partnered, therefore; the study findings cannot be generalized to any population.

## Conclusion

Identifying factors and methods of addressing the obesity issue in the U.S. and worldwide are paramount. Evidence shows that women who begin their pregnancy obese and gain more than the recommended amount of weight during the pregnancy increase their health risks and the risk to their offspring before and after birth. To date, no study could be found that attempts to identify the woman's perception of why weight control is a struggle for her in pregnancy, therefore; a tremendous research opportunity exists. Multiple themes and rich data was collected in this study and these findings may provide the springboard for more in-depth and focused research. Future studies should include a larger sample population, a control group of women who were normal weight at the beginning of the pregnancy and overgained, and a less homogenous, more diverse group. It is the hope of the researcher that interest will be sparked in gaining a more complete understanding of obesity and weight gain in pregnancy, not simply from a behavioral viewpoint, but from a perceptual point of view. It is this researcher's belief that a gold mine of information exists in the mind of these women.

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OHSU

# Women's Perceptions of Weight and Weight Gain in Pregnancy

**Presented by: Clare Thompson**

**Date: May 25, 2011**

# Why DNP???

- What was I thinking??
  - Getting too old
  - Perpetual Student
  - Life Long Learner
- Better CNM
- Place at the table
- Evidence-based practice
- Passion
  - Better birth outcomes
  - Less chronic disease in mothers
  - Cutting Edge Research
- Obesity in Pregnancy

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# Who defines weight?

- Body Mass Index (BMI) $weight[kg]/height[m]^2$
  - Originally developed by life insurance co
  - 120% of ideal weight established a health hazard
  - Obesity added to definition in 1985
- Institute of Medicine
- The World Health Organization
  - Underweight <18.4
  - Normal 18.5 – 24.9
  - Overweight 25 – 29.9
  - Obese
    - Class I 30 – 34.9
    - Class II 35-39.9
    - Class III >40

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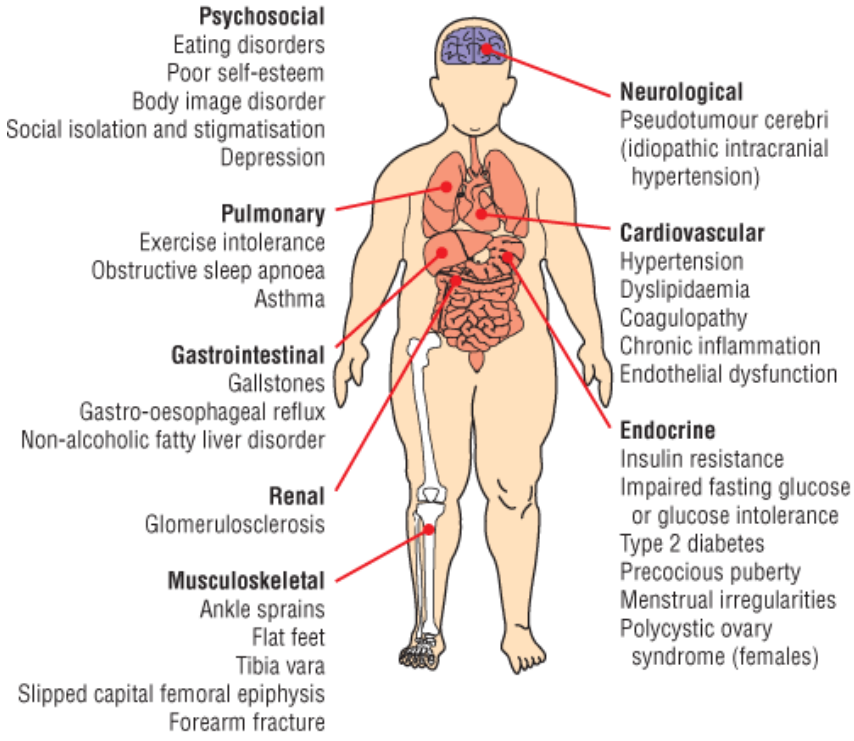
# Why is weight important?

- General Population
  - Up to 65% of U.S. population is overweight or obese
  - Alarming 50 to 70% increase in prevalence of obesity in adults since 1991
  - Lifetime health risks
    - Diabetes, heart disease, kidney disease, cancer, skeletal disorders, hypertension, stroke, etc.

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# Why is weight important in pregnancy?

- Complications of overweight/obesity
  - More birth defects
  - Spontaneous Abortion
  - Hypertension
  - Preeclampsia
  - Gestational Diabetes
  - Fetal Macrosomia
  - Cesarean Delivery
  - Shoulder Dystocia
  - Postpartum hemorrhage
  - Wound infection
  - Endometritis
  - Premature delivery
  - Childhood obesity

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# Recommendations for weight gain in pregnancy

- The Institute of Medicine (IOM) revised pregnancy weight gain guidelines in 2009
  - Underweight – gain 28 to 40 lbs
  - Normal – gain 25 to 35 lbs
  - Overweight – gain 15 to 25 lbs
  - Obese – gain 11 to 20 lbs

# Current Trends – Many gain too much

- 38% of normal weight women gain more than the recommended 25 to 35 lbs
- 63% of overweight women gain more than the recommended 15 to 25 lbs
- 46% of obese women gain more than the recommended 11 to 20 lbs

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# Local Data - Oregon

- In 2008
  - 62.2% of overweight women and 54.8% of obese women gained more than the recommended amount
  - 47% of women entered pregnancy overweight or obese
  - 60% of women having their 4th child are overweight or obese


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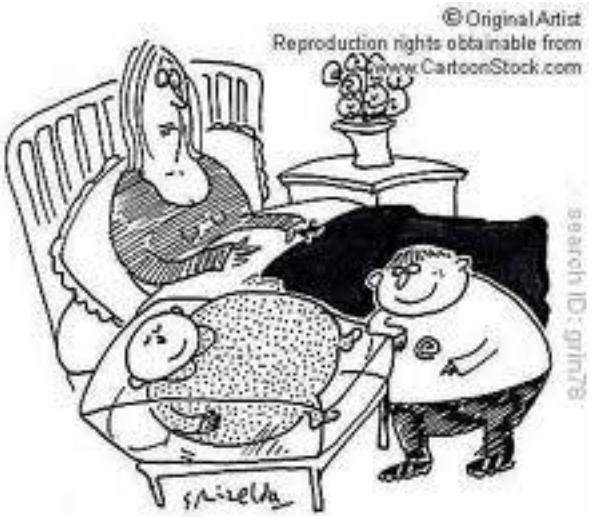
# The Outcome

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# Why is this happening?

- Knowledge deficit?
- Biological?
- Behavioral?
  - Nutrition
  - Activity
- Perception?
- Genetic?
- Motivational?

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# The Study Purpose

- Identify psychological factors that may have had an effect on weight gain during pregnancy in obese women.

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# Review of the literature

- Few studies on perception of weight in pregnancy
  - Herring et al. (2008) – evaluated self-perception of weight before and after pregnancy and compared to actuals
  - Concluded “misperceived pre-pregnancy body weight status is associated with excessive weight gain in pregnancy”

# Further review of the literature

- Polly, Wing, & Sims (2002)
  - 120 participants
  - Excessive gainers were provided stepped behavioral interventions
  - Outcome – Intervention significantly decreased the number of normal weight women who exceeded the recommended weight gain amounts. Overweight women gained more than the recommended amount, even with the behavioral intervention.

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# The Study Design

- Qualitative
- Retrospective
- Small study
  - Perceptions
  - Ideas
  - Beliefs
- Thematic Analysis
- One on One Interviews
  - Low Structure

- Goal - Six participants
  - Delivered a full term infant in 2010
  - Received care at Samaritan Ob/Gyn
  - Began pregnancy with a BMI of 30 or >
  - Gained more than 20 lbs

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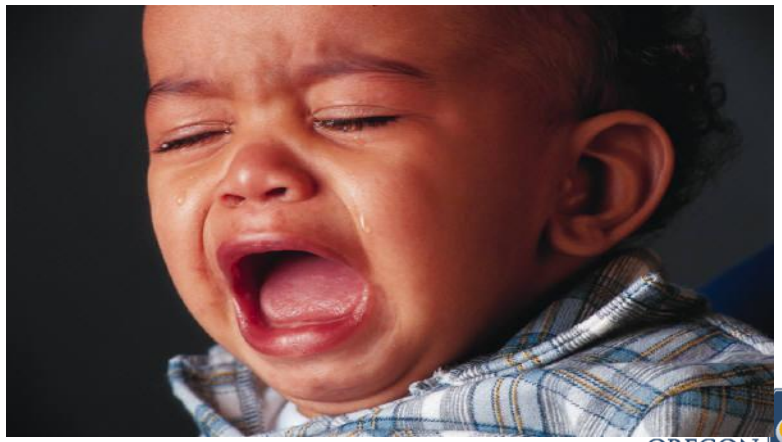
# Recruitment

- EMR review of all prenatal records of 2010 deliveries at SOG
- 40 potential participants identified
- Letters mailed to home address

- Results
  - 3 respondents
  - All 3 were interviewed and included in the study.



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# More recruitment

- Follow up flyer to the remaining 37 potential participants
- Results – 3 respondents
  - 1 declined after hearing more about the project
  - 2 were interviewed and included in the study

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# The Interviews

- 5 interviews completed
- All occurred in the participant's home
- Low structure
- Voice tape recorded
- Sensitive language
- Average time – 1.25 hours

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# The Questions

- Tell me about your normal, non-pregnant diet.
- Tell me about your normal, non-pregnant exercise routine.
- Tell me about your pregnant diet and exercise routine.
- Can you identify any barriers for you in maintaining a healthy diet/activity level in pregnancy?
- Tell me about your partner's/family's attitude toward weight gain in pregnancy.

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# The Questions

- What programs or advice do you think were helpful during your pregnancy?
- How important to you was weight monitoring in your pregnancy?
- Weight before/after


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# Analytical Measures

- Interviews transcribed verbatim
  - Included incomplete sentences, pauses, distractions, emotions and other details
- Thematic Analysis
  - In-depth, looking for commonalities, immersion in the data, coding
  - Search for patterns of meaning, constructs of ideas
  - Independent analysis
  - Reviewed, defined and named themes

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# Demographic Data

| Participant | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Age | 27 | 22 | 32 | 38 | 34 |
| Ethnicity | Russian | Caucasian | Caucasian | Caucasian | Caucasian |
| # of Preg | 2 | 2 | 4 | 1 | 3 |
| # live births | 2 | 2 | 3 | 1 | 1 |
| # PTD | 0 | 0 | 0 | 0 | 0 |
| SAB/VIP | 0 | 0 | 1 | 0 | 1 |
| Delivery | Vag | Vag | Vag | CS | Vag |
| Partner | Married | Married | Married | DP | Married |

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# Tip of the Iceberg

- Has information
  - Aware of nutrition
  - Try to eat right
  - Organic foods, whole grains
- Family is supportive
  - Not critical
  - Encouraging
- Family enables poor diet
  - “You’re pregnant, its ok”
- Family too supportive
  - Partner is obese
  - Family members struggle with wt
- Family is critical
  - Embarrassment
- Less conscious in pregnancy
  - Justifies choices
- Want to exercise
  - Too tired
  - Too busy
  - Tried walking
- Stress
- Has goals of losing weight
- Yo-Yo dieter
- Worried
- Pregnancy gives permission
  - Worry about gaining enough for a healthy baby

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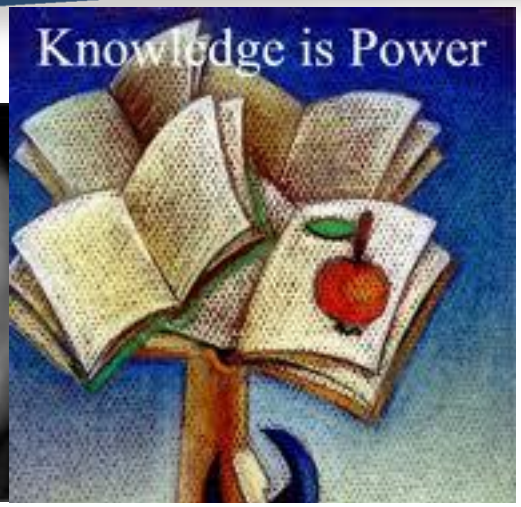
# Themes

Four Themes Identified

1. Adequate Knowledge
2. Avoidance
3. Psychological Pain
   - History of Pain
   - Stress Response
4. Lack of Willpower





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# Adequate Knowledge

- Women felt they possess knowledge
  - *"I learned really good eating habits when I was a kid from my family"*
  - *"I'm not a dietician but I think I know what foods are good for you and which ones aren't. I really try to eat whole grains, low fat foods."*
  - *"I'm a grown person who is intelligent and I know how to eat and when to eat it".*
  - *"I was sent to a nutritionist….it was not helpful"*

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# Avoidance

- Avoidance of providers who discuss their weight

  *“I remember distinctly there was a jump in my weight one month and I remember seeing Dr. _____. She told me babies are scavengers and they will get what they need. You don’t need to eat a lot. When they tried to schedule me again with her, I said is anyone else available”.*

# Avoidance

- Enjoy no conversation or conversation that relinquishes concern

  "*There are some doctors that are really nice about it and don't talk about it even if you're huge.*"

  *"I remember one doctor told me (about my weight) 'oh, don't worry about it'. That was good to hear (laughing)".*

# Avoidance

- Hiding eating habits from family

  *“I tend to hide my eating so people don’t see me do it and I know its part of my problem”.*

  *“….when I go to bed, I’ll snack. You know, its almost like sneak snacking away from my kids. I don’t want them to have bad eating habits. …but there’s no tricking with it”.*

# Psychological Pain

- History of pain related to their weight

  *"My brothers called me fat when we were children. I remember shortly after high school, one of my brothers apologized to me about it and I didn't know how much it impacted me. When he apologized, I just started crying. So I think that definitely has had an impact on how I feel about myself."*

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# Psychological Pain

- Called names

  *"I was teased in school. I was teased by my sisters and brothers. They called me……pale white whale. And in school, I think someone once called me pork chop. But I know kids are going to do that. It's not something that….maybe subconsciously it stuck with me. But it doesn't affect me on a daily basis."*

# Psychological Pain

- Called names

  *"I remember when I was living with my grandmother…..and I mentioned to my aunt that at my check up I was 150 lbs and she said 'boy, you're a fat ass'. That really surprised me".*

  *"My mom's boyfriend said to me 'oh, you're a fat ass, you need to get up and move around'.*

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# Stress Response

- Way of coping with stress

  *“I’m eating for comfort because I’m feeling stressed or anxious or lonely”.*

  *“When I find myself in a stressful situation, I find myself in the kitchen”.*

  *“I like sweets and I’m kind of a stress eater. So when I get stressed out, that’s my way of coping with things.  Its really not good’.*

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# Stress Response

*"I think my problem with food goes a lot deeper. I have a lot of knowledge about how to eat and I think there might be some emotional and psychological factors. Like I said, when I'm stressed, its what I turn to for comfort and how to deal with that".*

*"Food is definitely a comfort I turn to".*

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# Willpower

- Participants expressed a desire to eat healthy and exercise but identified a lack of willpower as a barrier.

  "*I struggle with the willpower to say no".*

  *" I guess its just my willpower. Everything is so busy and the effort and the willpower it takes to say no when you should say no just isn't there for me".*

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# Willpower

- Need accountability and support

  "*I needed someone to reign me in and control the fact that….and I knew that I didn't want to gain much more weight. That's the biggest thing for me was that I needed the accountability to weight every month. I couldn't do it by myself".*

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# Perception versus Reality

## Participant's Weight Gain in Pregnancy

| Participant | Reported Weight Gain | Actual Weight Gain | Difference |
|---|---|---|---|
| 1 | 30 lbs | 39 lbs | +9 lbs |
| 2 | 33 lbs | 38 lbs | +5 lbs |
| 3 | 30 lbs | 29 lbs | -1 lb |
| 4 | 30 lbs | 35 lbs | +5 lbs |
| 5 | 50 lbs | 30 lbs | -20 lbs |

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# Limitations

- Small Study
- No Control Or Comparison Group
- Self Selection
- Recall Bias
- Researcher Bias


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# Important Lessons Learned

- More research is needed
- Goldmine of information exists
- Don’t assume education is the only answer
- Ask “WHY”
- Obesity is a sensitive subject
  - Anticipate the likelihood of pain
  - Anticipate avoidance

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# Summary of DNP

## Accomplishments

- Completed the research process
- Translator of research into clinical practice
- Dare to challenge
- Life Long Learner
- Influence decisions

## Future Plans

- Continue to attend births
- Complete APFA clinical hours
- Teaching??

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## Appendix A

Date

Participant
Home Address

RE: A research study on weight gain in pregnancy

Dear _____,

My name is Clare Thompson. I am currently a student at Oregon Health & Science University. I am studying for the degree of Doctorate of Nursing Practice. I am also a Certified Nurse Midwife at Samaritan Ob/GYN in Corvallis and may have participated in your care at Samaritan Ob/GYN during your 2010 pregnancy.

My research interest is Women's Perceptions of Weight and Weight Gain During Pregnancy. I plan to interview women who delivered a baby during 2010 about weight and weight gain during pregnancy. The interview will last approximately 1½ hours and can be scheduled at the participant's convenience in a place of their choosing. All information gathered will be reported anonymously and no names will be used in the reporting.

My goal is to learn more about what women think about their own weight and weight gain during pregnancy. I understand that weight can be a sensitive subject for many people. Some of the questions may seem very personal and may make you uncomfortable; you do not have to answer any questions that your do not wish to answer. Some of the questions will include questions about your weight and your previous pregnancies, including miscarriages and abortions. Gaining knowledge regarding weight gain in pregnancy is important to me and I sincerely hope you will participate in my research. Your experience is valuable.

If you are interested in learning more about this project or would like to participate, please contact my office at 541-768-4714. This is my direct line with a secure voice mail that only I can access. If I am not able to answer, please leave a message with any questions or indicating your desire to participate and a phone number where and when I can call you back. I hope to year from you.

Fondly,

Clare Thompson, CNM

**Appendix B**

# OHSU Research Study

You recently received an invitation to participate in a research study on

**Women's Perceptions of Weight and Weight Gain in Pregnancy**

There is still time to join in and give your input. I am very interested in including your experience in my study. If you are interested, please call 541-740-4714 and leave me a message. I will return your call ASAP.

Clare Thompson, CNM
Samaritan Ob/Gyn

## Appendix C

**Oregon Health & Science University**
**Consent & Authorization Form**

**IRB#: 6891**
**Protocol Approval Date: 01.07.2011**

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**OREGON HEALTH & SCIENCE UNIVERSITY**
Consent & Authorization Form

**TITLE**: Women's Perceptions of Weight and Weight Gain During Pregnancy

**PRINCIPAL INVESTIGATOR**: Maggie Shaw, CNN, PhD
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**CO-INVESTIGATORS**: Clare Thompson, CNM, MSN
Phone: 541-768-4714

**This form contains important information about the study in which you are being invited to participate. Please read the form carefully, ask questions of the investigators or others who are obtaining your consent to participate in the study, and take time to think about your participation. You may want to discuss the study with your family or friends before agreeing to be in the study.**

### What is the purpose of this study?

The purpose of this research study is to increase understanding of factors and attitudes that may affect weight gain in pregnancy. You have been invited to be in this research study because you delivered a full term infant in 2010, started the pregnancy with a body mass index (BMI) of over 30 and gained more than 20 pounds during the pregnancy.

### What is required to participate in this study?

To qualify for this study, you must meet the following criteria:

1. Delivered a full-term, live infant during the year of 2010.
2. Started the pregnancy with a BMI of over 30
3. Gained more than 20 pounds during the pregnancy
4. Be of at least 18 years of age

**What can I expect as a study participant?**

A one-on-one interview will be done in a single session that can last up to one and a half hours. During this interview, questions will be asked regarding your personal perceptions and attitudes about weight and weight gain during your recent pregnancy, exercise, diet and social influences on weight gain. The interview will be taped and these tapes will not be shared with anyone. However, a final report that may contain anonymous quotations will be available at the end of the study.

If you have any questions regarding this study now or in the future, contact Maggie Shaw at (503) *560-5563* or other members of the study team at *541-768-4714*

**What effect will this study have on my care?**

Being in this study will not affect any care that you might receive at OHSU, Good Samaritan Regional Medical Center or Samaritan Ob/Gyn.

**How will my privacy be protected?**

We will protect your privacy in the following ways:

1. Your name or other protected information will not be used. Instead, we will identify you by participant number.
2. Only Maggie Shaw and Clare Thompson will be able to access your information.
3. The master list of participant names and numbers will be locked in a secure place and only the co-investigator will have access. Your interview will be tape-recorded. At the completion of the project, the tapes, along with the master list, will be destroyed.

The specific health information we will collect from you will be limited to your responses to questions in an interview with the investigator. The purposes of our use and disclosure of this health information are described in the **Purpose** section of this Consent & Authorization Form.

The persons who are authorized to use and/or disclose your health information are all of the investigators who are listed on page one of this Research Consent Form and the OHSU Institutional Review Board.

This authorization will expire and we will no longer keep protected health information that we collect from you in this study once the study is completed.

**What are the possible risks of participating in this study?**

Although we have made every effort to protect your identity, there is a minimal risk of loss of confidentiality.

**What are the possible benefits of participating in the study?**

You will not benefit from being in this study. However, by serving as a subject, you may help us learn how to benefit patients in the future.

**Will it cost anything to participate?**

There will be no cost to you to participate in this research study with the possible exception of travel expense to a local place of your choosing for the interview.

**What if I am harmed or injured in this study?**

If you believe you have been injured or harmed while participating in this research and require immediate treatment, contact Maggie Shaw, CNM, PhD at 503-560-5563 or Clare Thompson, CNM, MSN at 541-768-4714.

You have not waived your legal rights by signing this form. If you are harmed by the study procedures, you will be treated. Oregon Health & Science University does not offer to pay for the cost of the treatment. Any claim you make against Oregon Health & Science University may be limited by the Oregon Tort Claims Act (ORS 30.260 through 30.300). If you have questions on this subject, please call the OHSU Research Integrity Office at (503) 494-7887.

**What are my rights as a participant?**

If you have any questions regarding your rights as a research subject, you may contact the OHSU Research Integrity Office at (503) 494-7887.

You do not have to join this or any research study. If you do join, and later change your mind, you may quit at any time. If you refuse to join or withdraw early from the study, there will be no penalty or loss of any benefits to which you are otherwise entitled.

You have the right to revoke this authorization and can withdraw your permission for us to use your information for this research by sending a written request to the Principal Investigator listed on page one of this form. If you do send a letter to the Principal Investigator, the use and disclosure of your protected health information will stop as of the date he/she receives your request. However, the Principal Investigator is allowed to use information collected before the date of the letter or collected in good faith before your letter arrives. Revoking this authorization will not affect your health care or your relationship with OHSU.

If the researchers publish the results of this research, they will do so in a way that does not identify you unless you allow this in writing.

Your health care provider may be *one of* the investigators of this research study, and as an investigator is interested in both your clinical welfare and in the conduct of this study. Before entering this study or at any time during the research, you may ask for a second opinion about

your care from another doctor who is in no way involved in this project. You do not have to be in any research study offered by your physician.

You may be removed from the study if*:*

a. the investigator stops the study.
b. you develop serious side effects.

You may choose to leave the study at any time without penalty.

To participate in this study, you must read and sign this consent and authorization form. If you withdraw your authorization for us to use and disclose your information as described above, you will be withdrawn from the study.

We will give you a copy of this signed form.

**SIGNATURES:**

Your signature below indicates that you have read this entire form and that you agree to be in this study.

**OREGON HEALTH & SCIENCE UNIVERSITY**

***INSTITUTIONAL REVIEW BOARD***

***PHONE NUMBER (503) 494-7887***

**CONSENT/AUTHORIZATION FORM APPROVAL DATE**

**Jan. 07, 2011**

**Do not sign this form after the**

**Expiration date of: 01-06-2012**

_____ _____

Participant Signature Date

_____ _____

_____

Researcher Signature Researcher Name Date

## Appendix D

Interview Questions

My first questions are demographic questions to help me get an overall picture of the women I am talking with.

How old were you on your last birthday?_____

What ethnic or racial background do you claim?_____

How many times have you been pregnant?_____

How many babies have you had?_____ All 37 weeks or more?_____

Any born before 37 weeks?_____ How many miscarriages/abortions?_____

How were these babies born? Vaginally?_____ C-Section _____

How would you describe your partner status? _____

For many women, pregnancy is often a time when women look at their life and decide if they want to make changes in their lifestyle for the sake of their unborn baby. This can be especially true for women with an elevated BMI. Tell me about your feelings regarding your weight and its impact on your pregnancy.

Tell me about your normal, non-pregnant diet.

Tell me about your normal, non-pregnant exercise routine.

While pregnant, did your diet and exercise routine change and, if so, how?

What programs or advice do you think were helpful in maintaining a healthy weight during pregnancy?

Tell me about your partner's/family's attitude toward weight gain in pregnancy. Did that influence your attitude?

What barriers you can identify that affected pregnancy weight gain?

Finally, I have just 4 more specific questions to ask:

How important to you was weight monitoring in your pregnancy?

How much did you weigh before your last pregnancy?

How much did you gain during your last pregnancy?

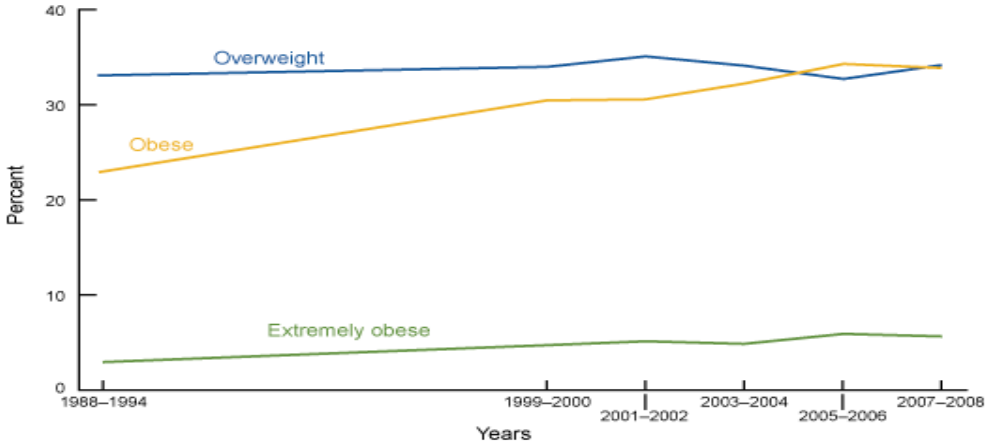
Was your pregnancy/delivery complicated by

High Blood Pressure?

Diabetes?

Other complications?

**Figure 1. Trends in overweight, obesity, and extreme obesity among adults aged 20 years and over: United States, 1988–2008**




NOTES: Age-adjusted by the direct method to the year 2000 U.S. Census Bureau estimates, using the age groups 20–39, 40–59, and 60 years and over. Pregnant females were excluded. Overweight is defined as a body mass index (BMI) of 25 or greater but less than 30; obesity is a BMI greater than or equal to 30; extreme obesity is a BMI greater than or equal to 40.
SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey III 1988–1994, 1999–2000, 2001–2002, 2003–2004, 2005–2006, and 2007–2008.

(Ogden & Carroll, 2010)

Table 1. Participant Demographic Data

| Participant | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Age | 27 | 22 | 32 | 38 | 34 |
| Ethnicity | Russian | Caucasian | Caucasian | Caucasian | Caucasian |
| # of Pregnancies | 2 | 2 | 4 | 1 | 3 |
| # of Live Deliveries | 2 | 2 | 3 | 1 | 1 |
| # of Preterm Deliveries | 0 | 0 | 0 | 0 | 0 |
| Abortions/Miscarriages | 0 | 0 | 1 | 0 | 1 |
| Mode of Delivery | 2 Vaginal | 2 Vaginal | 2 Vaginal | 1 C-Section | 1 Vaginal |
| Partner Status | Married | Married | Married | Domestic Partnered | Married |

Table 2. Participant's Weight Gain in Pregnancy

| Participant | Reported Weight Gain | Actual Weight Gain | Difference |
|---|---|---|---|
| 1 | 30 lbs | 39 lbs | + 9 lbs |
| 2 | 33 lbs | 38 lbs | + 5 lbs |
| 3 | 30 lbs | 29 lbs | - 1 lb |
| 4 | 30 lbs | 35 lbs | + 5 lbs |
| 5 | 50 lbs | 30 lbs | - 20 lbs |

# A Case Study in Maternal MTHFR C677T Polymorphism and Recurrent Pregnancy Loss

Clare Thompson

Oregon Health and Science University

## Introduction

Repeated pregnancy loss (RPL) is defined as three or more spontaneous pregnancy losses before twenty weeks gestation and affects approximately one to three percent of reproductive age women (Gumus, Bavbek & Turhan, 2008). Many of the reasons for these losses remain unexplained leaving couples, the obstetric community, and genetic researchers in search of enlightenment and remedy. Thrombophilic defects such as protein S deficiency, protein C deficiency, factor V Leiden mutation, antiphospholipid syndrome, and methylenetetrahydrofolate reductase C677T mutation (MTHFR C677T) are possible culprits in these obstetric complications as well as countless other genetic, environmental and social variables yet to be identified (Prochazka et al. 2007). The purpose of this paper is to examine the possibility of MTHFR mutation specifically as a plausible explanation in RPL, thereby, offering some solution of this issue for many reproductive age women.

Study patient, Carrie Johnson (patient and family names have been changed), is a thirty-seven year old female who is currently married to Joe, her husband of twelve years. After the loss of three consecutive pregnancy attempts in six years, Carrie underwent genetic testing which determined she has a MTHFR C677T polymorphism, which may help explain her losses. Because Carrie is of "advanced maternal age" (reproductive woman over the age of thirty-five), time is of the essence in determining a solution so that she and Joe can complete their family before her reproductive opportunities cease.

## Case Presentation

Carrie is a healthy, Caucasian female who denies any major medical issues. Neither she nor Joe smoke tobacco or engage in the use of illicit drugs. They say that they enjoy an occasional glass of red wine but no other alcohol. Carrie's only surgeries were when she was eighteen years of age to remove her wisdom teeth and a breast biopsy at age twenty-two which revealed a benign tumor of her right breast. Joe was involved in a motor vehicle accident in his teenage years requiring exploratory abdominal surgery for internal injuries. He reports that he has recovered fully with no concerning sequelae.

Carrie is employed as a full-time real estate broker, a job that she has done for over ten years, and Joe works as a bank executive. In their spare time, Joe and Carrie enjoy downhill snow skiing, camping, white water rafting and swimming. Carrie also runs and recently completed a half marathon where she finished at her best time to date of three hours and fourteen minutes.

A review of family history for Carrie and Joe reveals that Joe's family is relatively healthy. Joe is an only child. Both of his parents are sill living with his mother at age sixty-one and father at age sixty-six. Joe's father suffers from mild hypertension and takes an antihypertensive medication each day with reported good control. All of Joe's grandparents are deceased with causes ranging from old age to complications from diabetes. Carrie's father and paternal grandfather both died at of a sudden myocardial infarction in their fifty's. Carrie also has a paternal

aunt who suffers from the effects of a stroke at age sixty-one. Carrie's mother is a healthy fifty-nine year old with no reported history of illness or disease. Carrie has only one sister who reports no health problems.

About six years ago, Joe and Carrie decided to expand their family by attempting to have a child. While Carrie had never been pregnant before, Joe is the father of a fourteen-year-old son from a prior relationship. Carrie took birth control pills from the age of twenty-five until approximately seven years ago. During the last six years, Carrie has become pregnant three times, all ending in spontaneous abortion before sixteen weeks of gestation. Carrie and Joe are very disappointed that they have not had a successful pregnancy and are beginning to worry that they may not ever be able to have a baby.

Following the third pregnancy loss, Carrie and Joe were referred to a genetic counselor to determine if a reason for the repeated pregnancy losses could be identified. Carrie endured a battery of standard tests designed to ascertain if she unknowingly had a condition that could be sabotaging her and Joe's pregnancy attempts. Carrie's physical exam was normal and appeared to be non-contributory. Evaluative tests for thrombophilic disorders were also performed and the results are shown in Table 1. Although most of the tests revealed normal results, it was determined that Carrie has the MTHFR C677T mutation. Carrie was instructed to increase her folic acid intake to lower her levels of homocysteine and decrease her risk of venous thrombosis, thereby, increasing her chances of having a successful pregnancy.

Table 1.

| Test | Result | Normal Values |
|---|---|---|
| Factor V Leiden | 122% | 70-130% |
| Protein S | 110% | 70-140% |
| Protein C | 138% | 60-140% |
| TSH | 2.74 uIU/ml | 0.35 – 5.5 uIU/ml |
| ANA | Negative | Negative |
| ACA | <12 | <12 |
| MTHFR C677T | C677T Homozygous | Heterozygous |

**MTHFR C677T**

The MTHFR gene is an important player in the metabolism of folate. This gene is responsible for channeling one-carbon units between nucleotide synthesis and methylation reactions and regulating the reduction of 5,10-methlenetetrahydrofolate into 5-methlyenetetrahydrofolate. (Wiwanikit, 2005). A deficiency in this enzyme causes higher levels of homocysteine in the blood and urine and alters folate distribution. 5-methylenetetrahydrofolate is also responsible for remethylation of homocysteine to methionine. A polymorphism of MTHFR 677 C>T results in decreased activity, therefore, increased levels of homocysteine. It is estimated that up to 16% of the population are carriers of this mutation (ACOG, 2010). Elevated levels of homocysteine may be associated with

thrombophilia and have been implicated in many conditions such as coronary heart disease, congenital heart defects, neural tube defects, kidney disease, psoriasis and pregnancy loss. It has been theorized that folate supplementation along with Vitamin B6 and B12 aids the body in breaking down excess homocysteine, thereby; decreasing its ill effects (Beynum et al. 2006).

A primary review of the literature regarding the impact of MTHFR C677T mutation on pregnancy loss is mixed and somewhat limited. Ren and Wang (2006) performed a meta-analysis that concluded that MTHFR C677T mutation was not a genetic risk for RPL except in the Chinese population. Nadir, Hoffman, and Brenner (2007) found in a small study of 326 participants that elevated homocysteine levels were weakly associated with thrombotic events or recurrent fetal loss. Biswas et al. (2008) found 'no significant role of this mutation in the development of recurrent abortion' in a small study of Asian Indians. The American College of Obstetrics and Gynecologists in 2007 alluded to a believed connection between high homocysteine levels and thrombotic event and suggested folate supplementation to combat RPL as well as neural tube defects as a current practice recommendation for obstetricians and gynecologists. However, in 2010, ACOG revised these recommendations based on insufficient data to support a reasonable link between MTHFR mutations and RPL. Furthermore, ACOG no longer recommends testing of women for this mutation as a possible etiology in RPL (ACOG, 2010).

## Case Analysis

Early pregnancy loss is very common and can be stressful and frustrating for couples especially when it occurs multiple times. Many may begin to wonder if having a family will ever happen for them. Determining cause and effect in these cases becomes very important, thereby, increasing the likelihood of success through intervention. The actual rate of spontaneous miscarriage is unknown but estimated to be 10-20% of all clinically recognized pregnancies, however, most women who experience one or two pregnancy losses will go on to have normal, term pregnancies without complications (ACOG, 2001). Because spontaneous miscarriage is so common, ACOG (2007) recommends delaying diagnostic evaluation until a total of three losses have occurred as 35% to 85% of these couples will go on to have a live birth without intervention. This recommendation was developed in order to maintain cost effectiveness and decrease unnecessary testing. This perceived delay frustrates many couples.

When caring for women with reproductive concerns, timing can become an important factor to consider. Depending on the region of the United States and the cultural influences, women's family planning goals may differ. Women who live in a culture or environment where early childbearing is the accepted norm may not have the same concerns as women who live in areas where childbearing is delayed until a later age. Carrie's situation is complicated by unsuccessful reproductivity and advanced maternal age. Her years of predicted obstetric success without complications are limited as she ages. The incidence of Down Syndrome increases to 1/250 at age 35 while other aneuploidy increases to 1/132 (ACOG, 2007). These

concerns including possible thrombophilic disorders and associated complications may cause stress for Carrie and Joe, further impeding their reproductive progress. Several studies looking at the impact of stress on infertility reveal a possible relationship between coping skills and pregnancy outcomes (Schmidt, 2009; Peterson et al. 2009).

**Reflection on Practice**

As genetics continues to be an emerging science, more research into the causes of repeated pregnancy losses are being discovered. While insufficient data exists to definitively suggest change of practice regarding standardized and routine testing of all reproductive age women for the MTHFR C677T mutation, progress is being made in making improvements to care. As indicated, research regarding the relationship between MTHFR C677T mutation and pregnancy loss is limited and weak. Although ACOG favored folate supplementation as a treatment for high homocysteine levels at one time, support for this recommendation does not currently exist. Certainly, pre-conceptual folate supplementation for other defects such as neural tube defects is supported by the data, therefore; folate supplementation has a practical place in overall obstetrical care. Folate supplementation pre-conceptually has been a cornerstone practice for obstetrical advanced practice nursing for many years. While effective in decreasing the rate of spina bifida and similar neural tube defects in the pre-conceptional patient, it was hopeful that something so simple and benign as vitamin supplementation would serve multiple reproductive purposes. Unfortunately, the data only weakly, at best, supports this recommendation for this purpose at this time. However, with further

genetic research, more information will be obtained that may assist these women in enhancing their families and lives.

**Further Recommendations**

In cases such as Carrie's, other possible causes of RPL in conjunction with MTHFR polymorphism should be investigated in couples who suffer three or more pregnancy losses as MTHFR polymorphism should not be assumed to be a major factor. Before referral to a genetic specialist, the Advanced Practice Registered Nurse (APRN) can be instrumental in initiating the evaluation process and should begin by performing a thorough medical and pregnancy history including a gestational age of all pregnancy losses. This information may be helpful in determining a categorical cause of loss. For example, losses that occur early in the pregnancy tend to be related to chromosomal or endocrine disorders where later losses may be associated with anatomic or immunological abnormalities (Stirrat, 1990). Additional information that may prove useful would include a history of uterine instrumentation (i.e. Dilation and Curettage causing uterine adhesions and scaring), regularity and quality of menstrual cycles (suggestive of endocrine dysfunction), exposure to environmental toxins that may be lethal to developing embryos, or known consanguinity. Information should also be gathered regarding any family history of congenital abnormalities including venous thrombosis suggesting other inherited thrombophilia. Although couples like Cassie and her husband are physically active, attention should be paid to dietary and environmental influences that may affect reproductivity. Special care should be taken to assure ovulatory status, as athletes are frequently oligo-ovulatory.

Next, a detailed physical examination should be performed with special emphasis placed on any signs of endocrinopathy such as hirsutism or galactorrhea. A bimanual pelvic examination will assist the provider in identification of pelvic organ anomalies such as uterine malformations or cervical irregularities. If uterine or cervical abnormalities are suspected, a pelvic ultrasound may be helpful in diagnosing uterine septate and bicornuate, uterine fibroids or cervical incompetence. An MRI may also be employed in further diagnosing mullerian duct anomalies if ultrasound results are inconclusive. Vaginal cultures should also be collected to rule out infection as a contributing factor.

Laboratory testing should be the next step in diagnosis of RPL. These include:

| | |
|---|---|
| Prolactin | Lupus Anticoagulant |
| Hgb A1c | Protein S and C |
| Factor V Leiden | Antiphospholipid Antibodies |
| Thyroid Panel | Anticardiolipin antibodies IgG & IgM |

Once all preliminary information, imaging studies, and laboratory data have been collected, referral to a qualified genetics and reproductive specialist is warranted. The APRN may continue to be involved in the patient's assessment and treatment and should make him or herself available to provide reassurance and psychological support as needed. Emotional support in caring for these anxious couples may enhance therapeutic success.

## Summary

While pre-conceptual folate supplementation decreases the incidence of neural tube defects, the research is yet to be developed in determining if it also decreases early pregnancy loss due to high homocysteine levels produced by the MTHFR C77T mutation. Further research is indicated and forthcoming as more and more linkages are made between reproduction and genetics. As this emerging research strives to reveal solutions to fertility problems, the APRN can not only be instrumental in assisting couples like Carrie and Joe in the process of navigating reproductive medicine but can also provide emotion and psychological support to them during this difficult and trying time.

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# Salmonella Typhi in Pregnancy – A Case Report

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## Case Report

A.C. is a 30-year-old, gravida 1, Eastern Indian female who presents to the clinic at 36 weeks gestation with a concern of fever for three days. She states that she had a headache three days ago that prompted her to take her temperature. At that time, her temperature orally was 102 degrees. Over the next three days, she continued to take her temperature and her fever varied as it would decrease during the day but return around 6pm at night, but never exceeding 102 degrees. Other than having a fever each evening, she states she feels fine.

A.C. began her prenatal care at 9 weeks gestation and it has been uncomplicated thus far. Her initial prenatal labs drawn at 10 weeks of her pregnancy were all normal. She had a Quad Marker drawn at 18 weeks gestation and it was also normal. Obstetrical ultrasounds were performed at 10 and 20 weeks gestation that confirmed an estimated date of confinement of October 1. She has also had an ultrasound performed at 34 weeks to evaluate fetal growth that revealed an estimated fetal weight of 2600 gm plus or minus 430 gm, normal interval growth and normal amniotic fluid. Her 28-week labs were normal and showed no concern for gestational diabetes.

A.C. is a married female and she lives with her husband. She works at the local university in an administrative role. She is originally from India and migrated to the United States approximately 2 years ago so her husband could attend the local university. A.C. has no family locally, however, her parents arrived about 2 weeks ago from India with plans to stay for approximately 3 months so they can help her with the new baby.

After presentation to the clinic, A.C. was hospitalized immediately. A battery of laboratory and radiologic tests were ordered, as was a non-stress test on the fetus. These tests included a complete blood count and complete metabolic panel, a urinalysis to rule out bladder infection, a throat culture and chest x-ray to rule out pharyngitis, pneumonia or other respiratory sources of infection, a lower extremity Doppler study looking for a deep vein thrombosis and an amniocentesis to rule out uterine infection as a source of fever. The amniocentesis also determined the likelihood of fetal lung maturity (FLM), in case delivery of the fetus became necessary. Most test results were negative including the FLM indicating the fetal lungs were immature. A.C.'s white blood count was 9.6 x10 3/ul, which is in the normal range. Her total neutrophils were slightly elevated at 83.2% and lymphocytes were slightly low at 11.8%. Liver enzymes were elevated with her AST at 80 U/L and ALT at 52 U/L. The fetal non-stress test showed tachycardia with a baseline heart rate in the 180's and occasional variable decelerations with quick and complete recovery to baseline. The initial diagnosis for A.C. was early chorioamnionitis, however, this diagnosis was changed to a probable viral etiology after review of the initial labs.

A.C. continued to be observed in the hospital with contact precautions in place. Non-stress tests were performed each nursing shift and her temperature normalized during the day but spiked in the evenings with a maximum of 103.1 degrees. The fetal heart rate normalized when A.C.'s temperature lowered but increased in the evening concurrent with A.C.'s temperature. The fetus continued to have occasional variable heart rate decelerations but variability remained

reassuring. On Hospital Day (HD) #3, a consultation with Internal Medicine was ordered along with blood cultures, HIV test and ultrasounds of A.C.'s liver and renal systems. On HD #4, intravenous Rocephin was initiated after blood cultures revealed gram-negative rods with culture pending. Renal and liver sonograms were negative as was the test for HIV.

On HD #5, A.C. experienced a spontaneous rupture of her amniotic membranes. External monitoring revealed that the fetus was having concerning, repetitive variable decelerations of its heart rate and a decision was made to proceed with delivery via Cesarean Section. A live born, healthy male was delivered, weighing 5 pounds, 6 ounces. Apgar scores were 9 at 1 minute and 9 at 5 minutes of life. Cord gases were collected at the time of delivery and arterial pH was 7.34, venous pH was 7.39. During the first few days of life, the infant was observed closely and given intravenous antibiotics as a precaution. Throughout his hospital course, he remained afebrile with no signs of infection.

Blood culture results on A.C. were completed late in the day on HD #5 and revealed *Salmonella typhi* as the source of infection. Stool cultures were collected as well and the results were concurrent. The source of infection was presumed to be A.C.'s parents who were recently visiting from India, an area of the world where *Salmonella typhi* is more prevalent. Although A.C.'s parents had no signs of illness or infection, they are likely chronic carriers of the bacteria and unknowingly transferred the bacteria to A.C.

Postpartum, A.C. continued to get intravenous Rocephin until her and the baby's discharge home on HD #8. Home health care was coordinated where she

continued intravenous antibiotic therapy for a full 10 days. She and the baby continued to do well and have had no complicating sequalae to date.

## Purpose

The origin of fever in pregnancy can be difficult to diagnose and commonly thought to be a symptom of pyelonephritis or chorioamnionitis. Once these two diagnoses have been explored and ruled out, other sources of infection must be investigated. Following the development of effective antibiotic therapies, pregnancies complicated by typhoid fever in the United States are extremely rare, however, as international travel and migration increases and multi-drug resistant strains emerge, the incidence of cases are on the rise. This paper will review the incidence of fever in pregnancy caused by typhoid fever and discuss a systematic method of diagnosis, thereby, lowering the potential morbidity and mortality to mother and fetus.

## Discussion

Typhoid fever is caused by the gram negative, flagellated bacillus *Salmonella typhimurium* and most commonly transmitted through fecal contamination of food and drinking water (Awadalla, Mercer, & Brown, 1985; Sadan, Matthews, Koller, & White, 1986; Sulaiman & Sarwari, 2006; Pejcic-Karapetrovic et al., 2007; Dildy, Martens, Faro, & Lee, 1990). Incidence of the disease is more common in undeveloped countries with 12.5 million to 16 million cases of typhoid fever reported annually resulting in 600,000 deaths (Carles et al. 2002; Yoon, Segal-Maurer, & Rahal, 2004). Since the introduction of proper sanitation procedures and the development of antibiotics, the incidence of typhoid fever in the United States has decreased dramatically from approximately 36,000 in 1920 to less than 500

cases annually (Yoon, Segal-Maurer, & Rahal, 2004; Dildy, Martens, Faro, & Lee, 1990).

Bacterial infection of typhoid fever is systematic. Once host exposure occurs, the bacterium enters the mucosa of the small intestine and then progresses to the liver, spleen and other organs where it multiples. The incubation period varies by the size of the inoculum and averages from 7 to 14 days (Dildy et al. 1990). Symptoms may be mild or severe. High fever is present in 98% of cases, caused by the endotoxins released and typically appears within the first week of the illness. Accompanying symptoms include headache, abdominal pain, and gastrointestinal issues including constipation and/or diarrhea, anorexia and weight loss (Yoon, Segal-Maurer, & Rahal, 2004). Less common symptoms include abdominal tenderness due to hepatosplenomegaly. If left untreated, the bacterium may progress to infective endocarditis causing mitral valve stenosis and aortic regurgitation (Ozer, Cebesoy, Sari, & Davutoglu, 2009).

## Review of the Literature

A primary review of the literature was performed regarding the incidence of *Salmonella typhi* in pregnancy. Search terms included typhoid fever, *Salmonella typhi* and pregnancy. Even though internationally the incidence of pregnancies complicated by Typhoid fever is not uncommon, the overall number of cases of *Salmonella typhi* in the United States is low, therefore; very few reports of infection in pregnancy exist. Awadalla, Mercer, & Lynn (1985) reported a case of transplacental transmission of *Salmonella typhi* in a 20-year-old Mexican national.

This case pregnancy ended in loss at 26 weeks gestation and an amniotic fluid culture was positive for *Salmonella typhi.* Dildy et al. (1990) reviewed a case of *Salmonella typhi* in a 24-year-old Mexican who contracted the bacteria early in her pregnancy at 15 weeks gestation. Serum cultures revealed *Salmonella typhi* on day 10 of her hospitalization and effective antibiotic therapy was initiated. This patient, subsequently, went on to deliver a full-term, 10 lb male infant with no further complications. Multi-drug resistant *Salmonella typhi* in pregnancy was reviewed by Koul, Wani, & Wahid (1995) and Leung et al. (1995) and recommendations for effective drug therapy in pregnancy was presented. Lastly, Sadan et al. (1986) reported on 2 cases of typhoid fever in pregnancy, one of which resulted in maternal typhoid endocarditis.

**Typhoid Fever in Pregnancy**

Prior to the development of effective antibiotic therapy, 1.28 to 2.8% of all pregnancies were complicated by typhoid fever and the outcomes of pregnant women who contracted the bacterium were grave (Seoud, Saade, Uwaydah, & Axoury, 1988). Carles et al. (2002) reported that 80% of infected women would spontaneously abort prior to term and 15% of those women would expire due to life-threatening sepsis and disseminated intravascular coagulation. Dildy et al. (1990) reported an abortion or preterm delivery rate of 65% to 85% and a maternal mortality rate of 26%. In 1951, the first case of typhoid fever in pregnancy was treated with chloramphenicol and resulted in a favorable outcome for both mother and fetus (Seoud, Saade, Uwaydah, & Axoury, 1988). Since then, the actual effective

rate of treatment of typhoid fever in pregnancy is unknown due to the very limited number of cases reported.

Although immunity status may be suboptimal, symptoms of the disease in pregnancy vary only slightly from non-pregnant cases. Fever is usually the first clinical sign of infection and maternal temperatures may rise to as high as 40 degrees Celsius. Other symptoms include abdominal pain, bowel irregularities, chills, and nausea. Within the first week of exposure, blood cultures will be positive for the bacterium if no antibiotic has been administered. Initial stool cultures will be negative but will become positive by week three. Fever will remain elevated until the fourth week if left untreated (Sadan et al., 1986).

Fetal mortality appears to be directly related to the severity of maternal disease (Sadan et al., 1986). The bacterium can cross the placental barrier and subsequently, infect the developing fetus. However, maternal disease of less than 3 weeks has not been shown to transmit to the fetus (Sadan et al., 1986).

Prompt diagnosis and treatment in pregnancy is key to favorable outcomes for mother and fetus. The current treatment recommendation includes a two-week course of chloramphenicol or ampicillin. As new multi-drug resistant strains of typhoid fever emerge, use of drugs previously avoided in pregnancy is being reevaluated and gaining popularity. The Lancet (1995) reviewed the use of fluoroquinolone antibiotics in pregnancy for multi-drug resistant enteric fever and concluded that the use of ciprofloxacin was not hazardous to the unborn fetus and should be considered if all other drug regimes have failed.

## Conclusions

### Recommendation for Practice

Prevention is always the first step in addressing health care concerns. Teaching of effective hand washing remains a mainstay of public health nursing and decreases the incidence of innumerous infections including the transmission of *Salmonella typhi*. Additionally, while there currently exists a vaccination for typhoid fever, universal inoculation is not recommended in pregnancy because the vaccine is a live-attenuated virus (CDC, 1994, Chattopadhyay et al., 2010). Also, incidence of the disease in the United States is too low to establish it as a public health priority at this time. Therefore, prevention, early recognition, diagnosis and treatment are the keys to optimal outcomes in pregnancy.

When evaluating a patient with fever of unknown origin, a complete history and physical is imperative. Special care should be taken to discover if the patient has traveled abroad recently, especially to an undeveloped country. Also, information regarding the travels of any family members whom the patient may have come in close contact with is important. Areas of the world where typhoid fever is more common include Mexico, India, Indonesia, Egypt and Peru (Sulaiman & Sawari, 2007). Additionally, the health of other members of the family may provide clues to the source of the illness.

A basic laboratory evaluation should be done including a complete blood count with differential, complete metabolic panel, hepatic panel and urinalysis. Prolonged exposure to *Salmonella typhi* toxins may results in liver damage (Hasburn, Osori & Hasbun, 2006). If the patient has any upper respiratory

symptoms, a chest x-ray may be warranted to rule out pneumonia as a source of fever. Blood cultures should be collected as they will be positive for *Salmonella typhi* within one week of infection. Traditionally, the Widal test has been used in serologic isolation of *Salmonella typhi,* however, sensitivity and specificity of this method are highly variable, therefore; its use is no longer considered reliable (Dildy et al., 1990). Amniocentesis and vaginal cultures should be considered to rule out chorioamnionitis.

Most cases of typhoid fever will effectively respond to chloramphenicol and ampicillin. If the pregnancy is more than 28 weeks gestation, ampicillin is the preferred treatment as chloramphenicol readily crosses the placenta and has been associated with 'gray syndrome' (Sadan et al., 1986). Its use is reserved for the non-viable fetus of less than 24 weeks. In non-multi-drug resistant strains, clinical symptoms of the illness should wane within a few days of antibiotic treatment. The patient may be discharged home when blood and stool cultures are negative.

**Case Evaluation**

In reviewing the case of A.C., systematic evaluation of the clinical situation was evident and well executed in many ways. The most common etiologies of fever in pregnancy were evaluated and ruled out early in the clinical process, therefore, little time was wasted contributing to a delay in diagnosis. While expanded clinical expertise was employed by the involvement of Internal Medicine in the case when initial evaluations were inconclusive, perhaps consultation with Infectious Disease would have shed more light on the possible etiology in a more efficient manner. Even though A.C. responded well to the antibiotics administered, the literature

clearly recommends a more effective regimen in these cases. Additionally, a comprehensive evaluation of outside sources of infection, including the recent visit by A.C.'s parents from India, were considered but only as an after-thought once identification of the bacteria was made. Lastly, close observation of the patient during her infectious period contributed to early recognition of fetal intolerance of labor and a safe delivery mode resulting in a good clinical outcome.

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# The Hazardous Combination of Super-Super Morbid Obesity, Osteoporosis, Kidney Failure and Post Menopausal Bleeding: A Case Report

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## Introduction

Ms. Z is a 59-year-old woman who is scheduled for surgical evaluation of postmenopausal bleeding. Her current weight is 459 pounds with a Body Mass Index (BMI) of 82 and she has been hospitalized for the last 3 months for weight loss management and in-patient dialysis due to renal failure secondary to diabetes. Her weight upon admission to the hospital 3 months ago was over 600 pounds. Due to her extreme morbid obesity, she has been unable to ambulate for the last 6 years and has been living in a group home designed to care for the morbidly obese. While her personal care and cleanliness since living in this home has been overall acceptable, her diet and physical activity requirements have been poorly managed contributing to her current medical condition. A visiting physician who treats patients at the home on an as needed basis provided her only medical care. Past medical screenings include a colon screening at age 50 and a bone scan for osteoporosis at age 45, both yielding negative findings. Ms. Z has no spouse or children and her only family is an estranged sister and brother who live in another state.

Since Ms. Z's admission to the hospital, attention had been placed on managing her chronic renal failure and decreasing her weight. Unexpectedly, Ms. Z began experiencing post-menopausal bleeding approximately 1 month after admission to the hospital. An on-staff gynecologist was consulted and a transvaginal ultrasound was performed in an attempt to determine the cause of the bleeding, however, imaging quality was poor due to her size. Efforts at a bedside collection of tissue for an endometrial biopsy (EMB) were unsuccessful as well because Ms. Z was

unable to move her legs far enough apart to allow good visualization and vaginal access. Attempts at placing Ms. Z in stirrups caused her extreme pain due to her years of immobility and inability to walk. After lengthy discussions and evaluation of her risks related to endometrial cancer, Ms. Z agreed to an attempt to collect an EMB under general anesthesia where better positioning for improved visualization could be obtained.

Ms. Z was scheduled for surgery. Consent for surgery was obtained that discussed many of the risks related to general anesthesia and vaginal collection of an endometrial biopsy. Pre-operative labs for Ms. Z included a complete blood count and comprehensive metabolic panel to determine liver function and metabolic stability adequate for surgery. These results were non-contributory. A pre-anesthesia consultation was conducted due to Ms. Z's extreme morbid obesity and anticipated complications related to general anesthesia and intubation. An abbreviated physical exam, limited by Ms. Z's obesity, was performed with special attention placed on her respiratory and cardiac status. The pelvic exam was deferred until Ms. Z was under the comfort of anesthesia.

In planning for surgery, care was taken to involve as many members of the surgical team in the plan as possible as it related to the movement and positioning of Ms. Z under general anesthesia. Extra personnel were available for transport and positioning, and specialized transport equipment such as the Hover Mat were used. The surgeon performing the EMB held briefings with other members of Ms. Z's healthcare team in an attempt to better understand the limitations of her movement.

As the surgery began, induction of anesthesia was uneventful and after Ms. Z was asleep, an attempt was made to gain vaginal access by placing her legs in candy-cane stirrups in a low lithotomy position. The surgeon, however, was unable to access Ms. Z's vagina due to the size and girth of her thighs. An attempt was made to move Ms. Z from a low lithotomy position to a standard lithotomy position in order to gain better visualization and access. While slowly and gently elevating and abducting Ms. Z's right leg, a loud crack was heard. The assumption at the time of the incident was that Ms. Z's right knee had been damaged and possibly broken. The surgeon immediately consulted the on-call orthopedist who ordered imaging studies to be performed after Ms. Z's gynecologic procedure was completed. The gynecologic surgeon continued as planned to obtain uterine tissue for an EMB with limited success, again, due to the access issues created by Ms. Z's immobility and size. Unfortunately, an adequate endometrial sample could not be retrieved; therefore, no diagnosis regarding the health of her uterus could be determined. Ms. Z was transported to the Post Anesthesia Care Unit (PACU) after the procedure and had a normal anesthesia recovery course.

Imaging studies of Ms. Z's right leg revealed no knee damage, however, a spiral fracture of her right femur was identified which extended from mid-femur to the pelvis. After consultation with several other orthopedic surgeons regarding the complexities of this case, the orthopedic surgeon concluded that she would not be able to position Ms. Z adequately in order to repair her right femur and pelvis. The unique positioning required to gain adequate access to Ms. Z's right upper thigh and pelvis would be impossible given her advanced stage of osteoporosis and very

limited mobility. Additionally, positioning to repair her right femur and pelvis would result in fracture of her left side as well. Unfortunately, no further surgical repair options were available to Ms. Z.

## Purpose

The purpose of this case study is to review some of the unanticipated complications that may affect surgical care of the super-super morbidly obese patient and how these complications may be anticipated and avoided. A primary literature search regarding the interrelations of super-super morbid obesity with osteoporosis, endometrial cancer and renal failure will be reviewed and recommendations for practice considered.

## Discussion

Obesity is a growing epidemic in the United States and around the world. The National Health and Examination Survey of 2008 estimated that over one-third of the U.S. population is obese with a Body Mass Index (BMI) over 30 (Bates, Gary, Singh, Reinert & Starr, 2011). Salani et al. (2009) further reports that the number of obese individuals in the U.S. has grown over 74% since 1990. As the overweight and obesity trend has steadily rose over the last 20 years, new categories of obesity descriptors have been developed in order to further identify levels of health risks associated with weight (Hobbs, 2008). Individuals with a BMI of over 40 are identified as morbidly obese while a BMI of over 50 is now referred to as super morbidly obese (Mbah, et al. 2010; Almongy, Crooks & Anthone 2004). In an effort

to further classify extremes in weight, individuals who have a BMI of over 60 are now categorized as super-super morbidly obese. Each of these categories of obesity elevates the risks of co-morbidities and mortality of individuals and heightens the concerns of local health care providers, national health care agencies and international public health groups who are working to identify solutions to this global health care disaster.

Health risks associated with the super morbidly obese and super-super morbidly obese include extremely higher rates of hypertension, diabetes, heart disease, and cancers. These risk factors become compounded when diseases such as diabetes lead to chronic kidney disease, osteoporosis and immobility. Research in these areas on normal to obese patients are plentiful and the correlations are well studied, however, studies on the super and super-super morbidly obese are less available. As much of the U.S. population ages and BMIs trend upward, an opportunity to increase research in these arenas becomes critical.

**Immobility and Osteoporosis**

Osteoporosis is a condition of low bone density and low bone strength. Individuals with osteoporosis are at high risk of bone fractures, most specifically spine, pelvic and wrists, leading to devastating consequences of tremendous morbidity and mortality (Wu et al., 2010). It is estimated that over 1.5 million osteoporotic fractures occur each year costing over 16.9 billion annually (Spangler, Phillips, Ross & Moores, 2011). Some of the risk factors for osteoporosis include postmenopausal women, small stature, Caucasian, smoking, decreased mobility, low calcium and Vitamin D intake and family history (Drake, Clarke, & Khosla, 2008).

While osteoporosis may be more common in the normal to low BMI range populations, obese individuals may also be at risk as well due to higher rates of immobility. Obese women with physical disabilities who are non-ambulatory are among the highest risk group for low bone mineral density (BMD) (Schrager, 2004).

Acute immobility is highly associated with profound bone loss. These types of immobility are typically associated with trauma such as a motor vehicle accident and result in a severe acceleration of osteoclast-mediated bone reabsorption and a deceleration in bone formation from osteoblast activities (Chen et al., 2006). The initial bone loss is exaggerated with up to 50% loss in the lower extremities if the immobility lasts up to 2 years. Additionally, up to 40% of these individuals will experience complications related to their acute mobility (Schrager, 2004). .

While pathologies and scenarios causing acute bone loss have been studied extensively, studies on slower bone loss mechanisms such as chronic immobility are less plentiful. Immobility has been shown to be responsible in profound bone loss due to loss of mechanical stresses on the bones with simple activities such as walking, however, the progression is much slower than in acute trauma. Additionally, individuals who have suffered chronic immobility for 2 or more years have a higher incidence of more porous and fragile bone, therefore, when a fracture occurs, surgical options such as pinning may be impossible (Schrager, 2004).

**Osteoporosis and Hemodialysis**

Changes in BMD occur frequently in patients with chronic kidney disease who are treated with hemodialysis. Imbalances in parathyroid hormone, serum calcium and phosphorus caused by hemodialysis increase the incidence of cystic

fibrous osteitis and bone loss (Castillo & de la Rosa, 2009). Even with recommendations brought forth by the Dialysis Outcomes Practice Patterns Study (DOPPS)(Toussaint, 2010), which established thresholds for these hormones in patients on dialysis, most patients fail to be maintained at a level that is protective of bone density and strength. Toussaint et al. (2010) reported that according to the DOPPS, fracture risk in patients under the age of 65 who are on dialysis may be up to 100 times higher than the general population in the same age range.

Dual Energy X-ray Absorptiometry (DEXA) is the radiological study of choice in diagnosing osteopenia and osteoporosis in most populations. However, this important tool has its limitations in evaluating patients with chronic kidney disease on dialysis. The primary issue relates to a lack of agreement in parameters that may apply to this population (T score versus Z score). Additionally, spinal ostiophytes and aortic calcification, both of which are common in patients with chronic kidney disease, may interfere with the accuracy of the image when evaluating the lumbar spine (Barreto et al. 2006). Therefore, diagnosis of osteoporosis in these individuals continues to be difficult and may leave then undiagnosed and vulnerable to the risks related to the disease.

**Obesity and Endometrial Cancer**

In the U.S., endometrial cancer is the fourth leading cause of cancer death in women resulting in almost 6,000 lives lost per year (Richardson, Thomas & Bowman, 2009; McGregor, 2001) . Only breast, lung and colorectal cancers are responsible for more cancer deaths in women. Endometrial cancer has been linked to several causes including lack of physical activity, obesity, poor dietary choices

and increasing weight gain over the lifespan (Richardson, Thomas & Bowman, 2009).

Obesity is believed to be a major contributor to endometrial cancer worldwide. According to the World Cancer Research Fund, 'body fatness and probably abdominal fatness are causes of endometrial cancer' (Richardson, Thomas & Bowman, 2009). The link between obesity and endometrial cancer is especially worrisome given the rising rate of obesity in the U.S. over the last 20 years. The development of endometrial cancer via obesity may be mediated through an increased prevalence of Type II Diabetes and higher levels of sex hormone production from adipose tissue. This phenomenon leads the endometrium of the uterus to produce excessive amounts of estrogen that remains unopposed and balanced by progesterone. Sixty percent of endometrial cancer can be linked to obesity, subsequently, obese women with endometrial cancer are six-times more likely to die than non-obese women (Richardson, Thomas & Bowman, 2009).

Early diagnosis and treatment of endometrial cancer is the key to decreasing the number of deaths from this form of cancer. Postmenopausal bleeding must be evaluated and diagnosed quickly in all cases but especially in women who fall into the category of morbidly obese or higher as their risk of developing and having this type of cancer is particularly worrisome. The current gold standard for diagnosis of endometrial cancer begins with an endometrial biopsy (EMB) (McGregor, 2001; Clark et al., 2002). Less than 10% of women who have postmenopausal bleeding cannot be diagnosed with a simple, in-office EMB (McGregor, 2001). Limited or no access to the uterine cavity is the main reason for this procedure failure.

When an EMB is not possible, a transvaginal uterine ultrasound should be attempted to obtain an endometrial stripe measurement. The thickness of the endometrial stripe may correlate with the likelihood of the presence of an endometrial concern. An endometrial stripe that measures less than 5mm is considered a negative finding. However, caution must be used in utilizing ultrasound alone to diagnose endometrial cancer. While transvaginal ultrasound has a high negative predictive value for endometrial cancer, it has a very poor positive predictive value. Ultrasound is a reliable method of detecting endometrial hyperplasia but fails to consistently diagnose more serious disease. This, coupled with the additional sonographic inaccuracies caused by obesity, decreases the ability of transvaginal ultrasound to reliably diagnose endometrial cancer (Langer et al., 1997).

## Recommendations

### Do No Harm

In the cases like Ms. Z, the question becomes what is the best medical approach to evaluating postmenopausal bleeding. While most would agree that hindsight is 20/20, what are the critical decision points in managing these complex individuals?

The Hippocratic Oath includes a vow to "abstain from doing harm" (Smith, 2004). All healthcare providers are bound by this edict and understand the gravity of its oath with the caveat that good intentions sometimes result in bad outcomes.

However, a close examination of what actions, including no action, would result in the least amount of harm for the patient.

Individuals like Ms. Z are certainly at high risk for endometrial cancer given their weight and lack of physical activity. As already stated, Mrs. Z is at least six times more likely to die from endometrial cancer than her non-obese counterparts. While evaluation for endometrial cancer is critical in almost all women who present with postmenopausal bleeding, further discussions must be held as to the course of action, should pathology be confirmed. The customary treatment for confirmed endometrial cancer is hysterectomy. Super-super morbidly obese individuals may be poor candidates for this type of surgery due to several issues. First, super-super morbidly obese patients are much more likely to experience intra-operative challenges. Access and visualization due to excessive adipose tissue in the abdominal region and overhanging pannus can be severely compromised in these patients. Studies have shown that super-super morbidly obese individuals have a significantly higher blood loss than the non-obese (Salani et al., 2009). Additionally, if cancer staging is needed at the time of surgery, access to lymph nodes can be limited as well. Lastly, this population can be up to 50% more likely to develop wound complications after the surgery further placing them at a two-fold mortality risk (Salani et al., 2009; Streubel, Garner & Ricci, 2011).

**Percutaneous Uterine Biopsy**

Percutaneous Uterine Biopsy may be an alternative to EMB in some super-super morbidly obese, immobile patients. CT-imaging guided percutaneous biopsies have been utilized for several years and are established as safe and effective, though

technically difficult to perform. The advantage of this uterine approach is that minimal lower extremity manipulation is required. The patient is able to lie supine during the procedure, therefore, fracture risk is lowered. However, the disadvantages of this procedure are several. First, deep pelvic lesions are difficult to reach due to the obstructing bladder and bowel. Biopsy needle size is limited for this reason to minimize damage should the bowel inadvertently become transgressed. Additionally, penetrating the peritoneal layer can be painful for the patient. Lastly, radiological expertise in this procedure must be locally available in order for it to be a viable option (Gupta et al., 2004) . While this type of approach may not appropriate for many populations, a careful consideration in certain individuals should be done.

**Orthopedic Consult**

Should surgical intervention be required, an orthopedic consult is the first step in assessing the risk level of fracture in patients of this population. Although osteoporosis in Ms. Z's case was undiagnosed, individuals who are older, female, diabetic, immobile and have been on dialysis for a longer time are especially vulnerable to fractures and should be evaluated carefully and fully. The patient should be informed of the risks related to bone injury prior to any procedure that requires irregular manipulation of extremities. An individual or group meeting that is led by the orthopedic surgeon and includes all members of the patient's care team will provide the best continuity of care and communication. Feedback from each team member to the orthopedic surgeon regarding details of mobility and movement for the patient should be shared. Next, assessment of bone turnover with

biochemical markers such as extremes of parathyroid hormone and alkaline phosphatase (ALP) should be considered. Some studies have shown that extremes of these hormones indicate high bone turnover that may reduce bone strength. In the case of Ms. Z, osteoporosis was not a known condition, however, if these studies had been done and a high risk of fracture was assessed, a bone biopsy could have been obtained by an experienced orthopedic surgeon to definitively determine advanced renal osteodystrophy (Toussaint, 2010).

## Conclusion

Traumatic pelvic fracture of a patient during a minor surgery can be a care team's worst nightmare. Healthcare providers are dedicated to the healing of people and populations and may feel especially responsible when an unintended, bad outcome occurs at their hands. Furthermore, options for restoration to health may become severely limited for these individuals, depending on the significance of the injury. Unfortunately, scenarios such as this one have the potential to become a more common occurrence as the obesity rates in the U.S. and across the world climb. Careful consideration of all the potential pitfalls in this vulnerable population is key to safeguarding against injury.

Given Ms. Z's super-super morbid obesity, she had a very high risk of having endometrial cancer. However, in cases such as this, further consideration of reasonable treatment options and co-morbidities must be reviewed in order to determine what course of action would be most beneficial or least harmful for the patient. Just because we can diagnose or treat does not mean we should.

In summary, healthcare providers should ask themselves these 3 key questions when assessing the care plan for this population.

1. Is there a viable treatment option available for this patient if a diagnosis is confirmed?
2. Are there alternative ways of obtaining the information or specimen that is needed other than the traditional method?
3. Can a multi-specialty care team approach decrease the risk of injury and improve the potential outcomes for this patient if diagnosis is imperative?

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# Utilization of Advanced Practice Registered Nurses as First Assistants: A Case Study

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## Case Presentation

Sandyville OB/Gyn is a hospital-based obstetrical and gynecological practice in central Ohio that employs 4 obstetrician/gynecologists, 4 certified nurse midwives, 1 gynecologist, and 1 nurse practitioner. Good Heart Hospital System owns and manages the practice along with 5 other hospitals in the central Ohio area. Sandyville Ob/Gyn is a vibrant practice delivering approximately 60 newborns and performing 10 to 15 gynecologic surgeries per month. Sandyville Ob/Gyn offers full scope gynecologic surgical services including traditional surgical modalities and cutting edge robotics.

Traditionally, the gynecologists at Sandyville Ob/Gyn have utilized each other as first assistants in surgeries that require a first assist. This practice, while desired by the surgeons, has created some scheduling and logistical problems from time to time. For example, there have been times when two surgeons are not available at the same time to assist one another in a major case such as a hysterectomy. When this occurs, either the patient has to be rescheduled to a different surgery date or time or the surgeon has to acquire assistance from an assistant outside of their group. Also, due to the high volume of surgical cases performed, clinic time for the surgeons can be deeply impacted when two surgeons are not available resulting in the inability of some patients to obtain a timely appointment. This creates frustration for the patient and lost revenue for the practice as the patient may seek a surgeon who can perform her surgery in a more-timely manner.

This case study will attempt to look at the disadvantages of utilizing surgeons as first assistants and the advantages of employing the skills of Advanced Practice First Assists as a solution to this issue. A review of the role evolution of the Advanced Practice Registered Nurse (APRN) will be done along with an exploration of benefits of using an APRN in the surgical area. Patient outcomes and satisfaction will also be assessed as they compare to other surgical assistant options.

## Evolution of Advanced Practice Nursing

Over the past 30 to 40 years, the role and scope of practice of the advanced practice registered nurse has evolved. The first APRNs were nurses who were originally trained and hired as simply an extension of the physician's reach to the patient. However, over time and as economic shifts have occurred, changes in illness management models require much more. These management models now include higher patient acuity, shorter hospital stays, expansion of ambulatory care needs and advancements in technology requiring specialized training (Hodson, 1998). Subsequently, the APRN has been required to adapt as the explicit mission of the APRN has been redefined and transformed to include quality care that is specialized and integrates a broad range of research-based skills, practice, and theories. According to Hodson (1998), "Advanced nursing practice is the application of an expanded range of practical, theoretical, and research-based therapeutics to phenomena experienced by patients, individuals and clients within a specialized clinical area of the larger discipline of nursing". As this expansion of

therapeutics has been realized and appreciated, the role of the APRN has evolved appropriately.

Currently, APRNs include Clinical Nurse Specialists (CNS), Nurse Practitioners (NP), Certified Nurse Midwives (CNM) and Certified Registered Nurse Anesthetists (CRNA). All of these specialties require a master's level training with some requiring additional certification in their area of specialization. While none of these specializations are geared specifically toward surgical assisting skills, most of the governing entities have a Position Statement that addresses the expansion of technical skills into the surgical theater. For example, the American College of Nurse-Midwives' Position statement declares, "…..first assist at cesarean and gynecologic surgery is within the scope of expanded practice of the CNM/CM" (ACNM, 2008). This expanded practice requires additional, specialized training and documentation of the educational process and includes "formal study, supervised practice and comprehensive evaluation". The Association of periOperative Registered Nurses (AORN) recommends that APRNs participate in an AORN endorsed program that meets all requirements and adheres to the 2000 Core Curriculum for the RN First Assistant (Zarnitz & Malone, 2006). With this additional training and certification, APRNs are able to expand their skill sets into surgical function.

## Benefits of APRNs in the Surgical Arena

### Preoperative and Postoperative Assessment

Preoperative assessments have been traditionally performed by the surgeon in preparation of the patient for the procedure to be performed. The goal of this assessment is early identification of potential problems that could impact surgical outcomes and post procedure planning for optimal recovery and return to normal functioning. This assessment is typically performed in the surgeon's office during normal business hours one to three days prior to surgery. Lab data and radiologic studies are interpreted, reviewed and discussed with the patient and his or her family. Risks and benefits of the surgery are discussed, options other than surgery are reviewed and the patient is given adequate time for questions and concerns to be addressed. While Sandyville Ob/Gyn has performed their preoperative assessments by this model, another care model is proposed.

APRNs are well prepared and trained to identify and address the complexities of surgical patients. APRN training includes, not only medical preparation, but, through its nursing component, also encompasses the vast educational and emotional needs of the patient and their family members as it relates to illness and health. Training that is grounded in holistic care models and cultivation of collaborative relationships with the surgeon, anesthesia, and the entire perioperative team are among the strengths of the APRN. These key attributes are important to creating a more positive surgical outcome for the patient and their family.

Preoperative assessment by the APRN will include all of the same components of the preoperative assessment performed by the surgeon with some important advantages. While the surgeon's training is well steeped in surgical techniques and medical skills, the APRN brings to the surgical team an ability to not only recognize and manage medical and educational issues but also a deep understanding of nursing models created to provide holistic care and geared toward complete care and recovery (Barnett, 2005). This additional element has been found to decrease the overall recovery time after surgery and increase, in general, the level of satisfaction experienced by the patient and his or her family (Schroeder, 2008). Postoperatively, the APRN has the ability and expertise to anticipate and assess postoperative complications and address these issues in a timely manner. In addition, APRNs work collaboratively with other inpatient team members in an effort to decrease surgical recovery times and increase wound healing, thereby, facilitating the patient's return to normal functioning. Lastly, the APRN provides patient education and performs postoperative discharge planning and teaching as well as follow up care after discharge.

**Intra-Operative**

APRNs as first assistants are responsible for many aspects of the surgery that contribute to the overall success of the procedure. The APRN as first assistant serves to bridge the gap that may exist between the surgeon and other surgical team members. According to Rothrock (2005), development of an intra-operative plan of care is the primary responsibility of the APRN and includes:

- Verification of correct patient and procedure (including correct side)
- Review of chart for proper lab studies and signed consents
- Verification of correct instrument and supply availability for the surgery
- Verification of proper equipment function
- Proper patient positioning to reduce nerve and skin injury
- Anticipation of needs or complications that may be encountered during the surgery
- Prevention from injury due to inaccurate sponge, sharp or instrument counts
- Knowledge of intra-operative medications and anticipation of interactions
- Monitoring of blood loss and fluid imbalances
- Managing operating room traffic patterns to reduce potential for contamination and surgical infection
- Use of safe judgment and decision making throughout the surgery

The APRN as a first assistant is not simply a holder of the retractor and suction for the surgeon. The APRN as a first assistant must have the surgical knowledge and decision-making skills to anticipate issues without direction or instruction. As a critical member of the surgical team, the APRN as a first assistant brings additional resources and expertise to the surgical arena. His or her contributions to improved patient care and surgical outcomes only serves to

complement the abilities of the surgeon and other operative team members as well as improve overall patient outcomes and safety.

As with any aspect of medical care, experience brings expertise. For example, many studies have found that surgeons who perform familiar procedures in high volumes have better patient outcomes than those who perform the same procedure in lower volumes (Pear & Williamson, 2009). The same principle applies to the ability levels of APRNs in surgery. The ability and expertise of the APRN as a first assistant is directly related to the volume and repetition of cases experienced. Pear and Williamson (2009) found that substituting experienced APFAs for surgeons as a first assistant in cardiac surgery resulted in no adverse surgical consequences and found improvements in surgical times as well as surgical site infection rates. They concluded that experienced APFA services expedites the surgical process and may considerably improve safety in the operating room.

**Cost Effectiveness**

When reviewing the cost considerations for utilization of an APRN first assistant versus a second surgeon, itemization of the most common gynecological surgeries performed is warranted. Medicare pays hospitals and provider practices for services bill based on CPT codes. Each CPT code has a Relative Value Unit (RVU) assigned that many practices use to compensate and evaluate the productivity of their providers (Intro to RVUs, n.d.). For example, the CPT code for a surgeon performing a Total Abdominal Hysterectomy (TAH) is 58150 with a RVU amount of 29.55. This RVU amount is calculated to capture the relative time, skill, training and

technical difficulty associated with the procedure. Many of these codes are not static but are adjusted based on geographic location and change as economic situations warrant.

The procedures commonly performed by Sandyville Ob/Gyn that require a first assistant are Total Abdominal Hysterectomy (TAH), Laparoscopic Assisted Vaginal Hysterectomy (LAVH) and Laparoscopic Supracervical Hysterectomy (LSH). An analysis of reimbursement rates of a surgeon as a first assistant by Medicare reveals the following comparison:

| Procedure | CPT Code | RVU Amount |
|---|---|---|
| TAH | 58150 | 5.91 |
| LAVH | 58550 | 5.25 |
| LSH | 58541 | 5.12 |

Based on an average operating schedule per week, the surgeon will be assisting on approximately 4 major gynecologic surgeries in any given week. This will yield the surgeon as a first assistant a total of 20.48 to 23.64 RVUs. Time in the operating room for 4 major surgeries will likely consume the physician's full day and not allow for office appointments on that particular day. By comparison, during a normal, gynecologic clinic day, the surgeon can expect to evaluate and treat 16-25 gynecologic patients generating approximately 50 RVUs. In addition, the surgeon in

the office is available to identify and evaluate and treat patients who may need surgical services in the future, thereby, generating more income for the practice.

## Patient Outcomes and Satisfaction

Review of the literature regarding patient satisfaction when encountering an APRN as a first assistant is limited. Studies regarding overall patient satisfaction related to patient interaction with APRNs, however, are bountiful. Hodson (1998) reported that APRNs are "excellent at providing support throughout hospitalization and extremely efficient at performing procedures". Stables et al. (2003) concluded that, "the preparation of patients for diagnostic cardiac catherization by a trained NP…….may be associated with improved patient satisfaction and reduced clinic duration times." Barnett (2005) found that APRNs present "a capable, cost and quality efficient alternative to physicians." Similarly, Mikhail et al. (2009) concluded that the usefulness of APRNs in trauma and surgical care areas "cannot be underestimated". Budzi et al. (2010) reviewed the satisfaction level of veterans when being cared for by APRNs versus other providers and found that "veterans are more satisfied with care by NPs than with physicians and PAs".

The expertise of the APRN has a strong correlation with improved patient outcomes and overall higher patient satisfaction. This correlation is theorized to be related to the strong nursing influence that APRNs bring to the medical care team along with a component of continuity of care when the APRN is involved in the patient's care through the pre, intra and post-operative process.

## Disadvantages

Disadvantages of utilizing this type of care model are difficult to identify. Optimum patient outcomes, satisfaction and facility cost effectiveness, the ultimate goals of any healthcare system, have proven true when utilizing an APRN in the surgical suite. The only possible disadvantage that could be identified with this model was lower surgeon job satisfaction. Surgeons enjoy being in the operating room and a poll of several surgeons at Sandyville Ob/Gyn revealed the sentiment that they would prefer to be in the operating room as a less productive first assistant than in the office performing pap smears all day. Monotonous duties such as annual exams and routine obstetrical exams may contribute to surgeon burnout long term. This concern is valid and should be addressed.

## Conclusion

Nurses, in general, are highly regarded and trusted by the medical public (Rothrock, 2005). This places the APRN in the unique position of effectively bridging the gap between the surgeon and the anxious patient who requires surgical intervention. By blending the role of the APRN and First Assistant, further optimization of patient outcomes, decreased opportunity costs and improved efficiency for the surgeon and surgical team can be realized.

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# Vicarious Liability: Hospital by-laws as they apply to Certified Nurse Midwives. A Case Presentation

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## Abstract

### Purpose

Institutional By-Laws, that mandate physician co-signature of medical charts in patients solely managed by Certified Nurse Midwives and place the physician and the facility in danger of vicarious liability, are reviewed.

### Summary

In the last 10 to 15 years, a growing number of healthcare facilities have become interested in offering the services of Certified Nurse Midwives (CNM) to the women of their community. This effort is in response to evidence based research that finds that midwifery care has significant benefits to women and demonstrates no adverse health outcomes as compared to physician attended births and that CNMs can also provide safe care to women with many high-risk conditions (Davidson, 2002). CNMs are Licensed Independent Providers (LIP) and are responsible for the independent care of women, both gynecologically and obstetrically. Their authority does not flow from the license of another provider, even when that provider is in a collaborative relationship with the CNM. Hospital by-laws that require physician signature of certain documents in the patient chart, even when the physician was not involved in the care of the patient at any point, places the physician and the hospital at risk of vicarious liability. This case presentation reviews such a case and the laws related to such by-laws.

## Case Presentation

C.C. is a healthy, 27 year old female who is pregnant for the first time. She and her husband are very excited about the pregnancy as they discontinued her birth control pills approximately 6 months prior in hopes of conceiving. C.C. presented to her local obstetrical and gynecology clinic to begin her prenatal care at 9 weeks gestation. After a full history and physical exam were completed, an initial ultrasound, performed by the certified nurse midwife (CNM), confirmed that the gestational age was consistent with the crown-rump length. Her initial lab results revealed a blood type of B Positive, immunity to Rubella, and no evidence of Syphilis, Hepatitis B or HIV infection. The complete blood count was essentially unremarkable except she was mildly anemic with a hemoglobin of 11.1 and hematocrit of 33.0. Her only risk factor was her pre-pregnancy body mass index (BMI) of 33.7, placing her in the obese weight range. A review of family history for C.C. and her husband was done and no known genetic risks were identified. C.C.'s medical history was noncontributory as she only reported mild asthma as a child with no recurrence since 8 years of age. She takes no medications except prenatal vitamins and Folic Acid.

C.C. was seen at regular intervals throughout her pregnancy for routine care by the clinic CNMs. Throughout her prenatal visits, the CNMs reviewed with C.C. her risks as they relate to elevated BMI. C.C. was encouraged to keep her weight gain below the recommended 15-pound total during pregnancy as prescribed by the American College of Obstetricians and Gynecologist (ACOG, 2005). At 20 weeks gestation, the hospital ultrasound department performed an anatomical ultrasound where all fetal measurements and structures were found to be within normal limits. Subsequent prenatal visits were done with the clinic CNMs and revealed normal fetal growth as evidenced by consistent fundal height measurements and

clinical evaluation of normal fetal size. At 28 weeks gestation, C.C. had a one-hour glucose tolerance test (normal at 78) and repeat complete blood count drawn as specified by the clinic protocol. C.C. continued to be anemic with a hemoglobin of 10.7 and a hematocrit of 30.1. She was advised to increase her intake of iron rich foods and to supplement with 325 mg per day of Ferrous Sulfate in addition to her regular prenatal vitamin routine. At 36 weeks gestation, a negative Group B Strep culture was obtained. Total weight gain throughout the entire pregnancy totaled to be 14.2 pounds, consistent with clinic and ACOG recommendations.

C.C. went into spontaneous labor at 39 weeks and 2 days. When she presented to the Labor & Delivery unit at Hospital A, a moderate sized, full scope hospital in mid-Oregon, she was in active labor with a cervix dilated to 6 centimeters. She labored in multiple positions including the Jacuzzi tub with her husband and CNM by her side. Per her request, she received no pain medication and after 13 hours of labor, was dilated to 10 centimeters with a very strong urge to push. After active pushing of 1 hour and 50 minutes, C.C. had a spontaneous, vaginal delivery of a healthy, vigorous 8-pound baby boy. She sustained a second-degree perineal laceration that was repaired by the CNM without difficulty. Her estimated blood loss was 350 milliliters. Postpartum, C.C. did well as she breastfed her son with little assistance or difficulty, and they both were discharged home on postpartum day one by the CNM on duty in stable condition.

After patient discharge, the C.C.'s hospital chart was transferred to the Medical Records department for processing. Hospital policy requires an obstetrician from the clinic to review all CNMs notes and orders and co-sign certain documents. This hospital policy applies to all CNM attended births, even if the obstetrician was never involved in the care of the patient at any point including the intrapartum or postpartum period.

## Introduction

In the last 10 to 15 years, a growing number of healthcare facilities have become interested in offering the services of Certified Nurse Midwives (CNM) to the women of their community. This effort is in response to evidence based research that finds that midwifery care has significant benefits to women, demonstrates no adverse health outcomes as compared to physician attended births, and that CNMs can also provide safe care to women with many high-risk conditions (Davidson, 2002). Midwife-attended births in the United States increased over 33% since 1996 and 10.8% of all vaginal births in the U.S. are assisted by a certified midwife or CNM (ACNM, 2009). Hospital A joined this effort in 2006 with the addition of four CNMs to their hospital-owned, physician-only obstetrical services. Since the inception of this service offering, CNM attended births at Hospital A has topped over 2000, and the high quality standards of safe, patient-centered care established by the obstetricians, both past and present, remains intact. In fact, local, community-based surveys show that the availability of midwifery services attracts many women who are seeking a safe, alternative birthing option to home delivery while maintaining their autonomy and active participation in their own care and the care of their newborn.

At the inception of this service offering over 4 years ago at Hospital A, the role and responsibilities of the CNM and her relationship with her collaborating physicians was emerging. Language used in documents pertaining to hospital credentialing and clinical privilege delineation was tentative. Many nuances of midwifery care were unknown by the physicians and medical staff and some caution was apparent in determining how CNMs should be defined in relation to other hospital staff. Subsequently, a "supervisory" stance was taken

whereby the obstetrician assumed certain responsibilities as it related to the actions of the CNM. One of these responsibilities was the requirement by hospital guidelines that the obstetrician co-sign many chart documents such as the admission H&P, delivery summaries, medication reconciliation, and discharge orders. While the original intent of this guideline was to provide a checks and balances system of safe patient care, this policy was fraught with liability issues for both the obstetrician and the hospital at large.

## Literature Review

### The CNM as a LIP

A CNM is an individual educated at the Masters level in two disciplines of nursing and midwifery and possesses evidence of certification according to the requirements of the American College of Nurse-Midwives (ACNM). In Oregon, CNMs have been Licensed Independent Practitioners (LIP) since January 2006, responsible for the independent care of women particularly during pregnancy, childbirth and postpartum (Oregon Administrative Rules, 2010). CNMs are also able to meet the family planning and gynecologic needs of women. The CNM practices within a healthcare system that provides for consultation, collaborative management or referral as indicated by the health status of the client. The ACNM establishes the Standards of Practice for Midwifery by which CNMs are bound.

Joint Commission on Accreditations of Healthcare Organizations' (JACHO) definition of a licensed independent practitioner is "an individual who is permitted by law and the hospital to provide patient care services without direction or supervision, within the scope of his/her license, and in accordance with individually granted clinical privileges" (Tunajek & Bei, 2006). The definition of independence derives from the relationship established between the CNM and

physician. Independence practice laws establish that midwifery practice is authorized by the midwife license and does not flow from the authority of another provider's license. Such laws may require a mechanism for collaboration, consultation or referral, or may include mutually agreed-upon practice guidelines but still authorize the midwife to make autonomous decisions and assume the responsibility for her own judgment and actions. Designation as a LIP is clearly different from other non-physician providers such as Physician Assistants whose licensure is often conditional upon employment by a physician. In Oregon, only CNMs and clinical psychologists have the designation of an LIP.

**ACNM and ACOG**

The ACNM and the American College of Obstetricians and Gynecologists (ACOG) "affirm their commitment to promote appropriate standards for education and certification of their respective members, to support appropriate practice guidelines and to facilitate communication and collegial relationships between obstetricians and CNMs" (ACNM, 2002). Midwifery care is primarily intended as independent care of healthy women. However, when medical, obstetrical or gynecologic complications arise, the CNM has practice guidelines that dictate the appropriate pattern of care. These practice guidelines established the following relationships:

Consultative: the process whereby a CNM who maintains management responsibilities of the woman's care while seeking the advice or opinion of a physician or another member of the healthcare team.

Collaborative: the process whereby a CNM and physician jointly manage the care of the woman who has become medically, obstetrically or gynecologically complicated. The scope of the collaboration may encompass the physical care of the client including delivery by the CNM.

If the physician must assume a dominate role in the care of the woman, the CNM may continue to participate in physical care, counseling, guidance, teaching and support. Effective communication between the CNM and physician is essential.

Referral: the process whereby the CNM directs the client to a physician or another healthcare professional for management.

## Discussion

### Midwifery Led Care

Many studies exist which evaluate the safety of midwifery-led care. A recent Cochran Review by Sandall et al. (2010) on midwife-led care versus other forms of maternity care examined four of the Institute of Medicine (IOM) defined dimensions of quality as they relate to women's healthcare. These dimensions of quality include safety, effectiveness, women-centeredness, and efficiency. The review found that women who participate in midwifery-led models of care experience no increased likelihood of adverse outcomes when compared to other types of care. Effectiveness increased as women who utilized midwifery-led care were less likely to receive regional anesthesia, have an instrument-assisted delivery and require an episiotomy. Midwifery-led care contributed significantly to the woman's high perception of control during labor, satisfaction with information provided, preparation for labor and birth and overall contentment with her maternity care. Finally, economic evaluation of efficiency suggested that midwifery-led care leads to cost savings when compared to other models of care due to an overall shorter length of hospital stay (Sandall et al., 2010). This review reinforces the knowledge that women, who receive midwifery-led care, will have improved health outcomes and report a higher birth satisfaction when compared to other models of care.

**Vicarious Liability**

A concept known as respondeat superior is the attribution of responsibility to the principal (in this case, the physician) for the action of the agent (the midwife) (Winrow & Winrow, 2008). This concept is intended to apply to employer/employee relationships and seeks to address institutional policies that encourage sufficient training and supervision of employees and allow for adequate recourse to patients should an injury occur. It also prevents employers from escaping the liability of neglecting to supervise or train subordinates. While this concept is appropriate as it applies to the hospital/physician and hospital/midwife relationship, it is not appropriate in the relationship between the physician and any LIP.

Policies and guidelines that require, or even give the impression that physicians have the responsibility for the actions of CNMs create significant and unnecessary problems especially given the current malpractice climate. An analysis of the issue of vicarious liability concludes, "A hospital will not have any greater risk of liability for the negligence of CNMs than it does for physician staff members" (Summers & Williams, 2003). A chart co-signature can be misinterpreted to mean that a physician has assumed responsibility for a plan of care and invokes the concept of respondeat superior. If the CNM admits the patient, fully manages her care, attends the delivery, provides postpartum care and discharges the patient, there is no need for physician participation. The requirement of physician co-signature of CNM documentation and orders requires that the physician agrees with and signs for care already administered by another licensed practitioner who, by definition of their license, may practice independently. This unnecessary and dangerous guideline places obstetrical providers and the hospital at a higher liability risk with no improvement in patient outcomes.

**Community Standard of Care**

ACOG (2010) defines standard of care as when "a physician is required to adhere to the standards of practice of competent physicians, with comparable training and experience, in the same or similar circumstances. The term community adds to that definition the scope of practice standards of a given community. While individual practice standards may vary from area to area across the United States and internationally, it is the practice standards of a given community that dictate what is practical and prudent for the patients of the community in question.

When considering a community standard of care that applies to Hospital A, Hospital B, located within one hour's drive of Hospital A, is one highly respected medical facility that compares to Hospital A in many service offerings and contributes to the definition of the community standard for the area. As midwifery services are offered at Hospital B, a look at the hospital by-laws as they apply to CNMs is warranted. According to these by-laws, "Licensed Independent Practitioners (referred to as Category I practitioners)……(are) authorized to function independently in the Medical Center, and (are) granted clinical privileges. These individuals require no formal or direct supervision by a physician." Category I practitioners include Certified Nurse Midwives. These by-laws reflect the current legal language as it relates to LIPs.

## Discussion

Traditional physician to "mid-level" provider relationships were born out of an intention to supervise. As evidence-based practice has become the standard of care in all arenas of healthcare, this type of relationship does not allow Advance Practice Nurses (APNs) to make independent, meaningful contributions to improved health outcomes. According to Wendy

Carson-Smith, Esq (2006), "we must get away from a model of care that is intended to support physicians' practices as opposed to a model of care that highlights and emphasizes the best education and clinical skills of…..APNs". A movement toward a true collaborative culture in women's healthcare is imperative.

In moving from a supervisory role to a collaborative one, physicians must begin to practice engaging in an interactive way. All members of the group should have the same degree of autonomy as it relates to their job responsibilities. CNMs have the obligation to identify avenues for open and honest communication with their collaborating physician, acknowledge interdependence and accept shared responsibilities when the characteristic of the patient care requires alteration (Downe, Finlayson & Fleming, 2010). Concurrently, physicians have a responsibility to understand that collaboration is not synonymous with teamwork and requires mutual understanding, trust and respect for each member's contribution, autonomy and responsibility. Additionally, the organizational structure is an important factor in establishing and nurturing a collaborative relationship versus one where the infrastructure is based on teamwork only. The redesign and restructuring of Hospital A's by-laws is the first step in that process.

## Conclusion

Professional relationships between physicians and CNM's, like the one described in Hospital A, exist at many facilities nationally. As the medico-legal environment of the U.S. continues to be dynamic and tenuous, examination of these arrangements is imperative. Vicarious liability is an impediment for not only the physician but also the CNM and the hospital as it can impute negligence to an innocent party unnecessarily simply through by-law language. As these arrangements come to light, all stakeholders have an obligation to

participate in building of collaborative frameworks that protect not only the patient but also the care providers and their interests.

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# An Examination of the Role of Racial Stress in Poor Pregnancy Outcomes Among African American Women

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## Abstract

In the United States, mortality related to preterm and low birth weight is the leading cause of death in infants under the age of one behind congenital anomalies and the number one cause of death in African American infants. Of all preterm infants (born before 37 weeks gestation) that survive, African American infants are two times more likely to be born low birth weight (less than 2500 grams) or very low birth weight (less than 1500 grams). These poor birth outcomes pose serious implications long term for infants and their families including early mortality, chronic morbidity, delayed growth and development and other health problems. Studies show that stress due to the experience of racial discrimination increases the likelihood that African American women will deliver preterm infants or infants with low birth weight or very low birth weight. Despite the tremendous advancements that the U.S. society has made in the area of African American rights in the last 50 years, racial discrimination still exists. The purpose of this paper is to examine racial stress as a risk factor for preterm birth and low and very low birth weight among African American women, identify possible physiological indicators of racial stress during pregnancy and examine the impact of this phenomenon as it applies to health disparities across society.

**The Effects of Racism in Pregnancy Among African American Women**

Infant mortality is defined as death within the first year of life and considered a primary indicator of a population's general health status internationally. Despite public health initiatives focused on improvements in sanitation, housing, antibiotic therapy, vaccines, and access to health care services for all populations over the last 100 years, infant mortality continues to be a concerning health issue for the United States (Giscombe & Lobel, 2005). As of 1998, 23 nations had infant mortality rates lower than the United States despite phenomenal advances in health and technology in this country (Hoyert, Freedman, Strobino, & Guyer, 2001). When examining the distribution of infant mortality by population, the distribution is inequitable and concerning. In 2005, the infant mortality rate for the United States was 6.86 deaths per 1000 infants born regardless of race compared with 13.63 per 1000 for African Americans (Matthews & MacDorman, 2008). Furthermore, infants born to African American women are more than twice as likely to be born prematurely (before 37 weeks gestation), three times more likely to be low birth weight (less than 2400 grams) or very low birth weight (less than 1500 grams) and twice as likely to die within the first year of life when compared to non-Hispanic Whites (Dominguez, Dunkel-Schetter, Glynn, Hobel, & Sandman, 2008).

Several theoretical causes of high infant mortality and preterm delivery among African American women have been identified and studied. Socioeconomic factors such as income, education, housing, nutrition, marital status and behavioral risks are important indicators of maternal-fetal outcomes and are well established (Dailey, 2009). Even in light of this bounty of research, the full explanation of the disproportionately

high rates of low birth weight and infant mortality in the African American population are not completely explained (Giscombe & Lobel, 2005).

The most recent and most encouraging research involves evaluating self-esteem, stress and specifically, racial stress as a predictor of preterm birth and low birth weight in this vulnerable population. Several studies have linked racial stress to both psychological and physiological responses in many minority populations which may contribute to biological responses resulting in suboptimal health outcomes. In the African American population, racism continues to be a daily force with which to be reckoned despite fifty years of civil rights recognition and advancement. Socioeconomic disparities related to racial discrimination continue to contribute to deprivation of health benefits in this population.

An interesting and perhaps telling observable fact relates to research regarding the heterogeneity of people of African descent. In general, foreign-born immigrants are healthier than American-born minorities during the first 10 years or so after immigration. After 10 years or more, health outcomes decline to the levels of American-born immigrants. When comparing African-born women to American born Africans, African-born women have a low incidence of negative birth outcomes. This data suggests that the manner in which these groups are treated in America may have a direct impact on birth outcomes (Giscombe & Lobel, 2005).

The long-term effects to society of poor birth outcomes are enormous. Of those infants that survive, many will have cognitive and behaviors delays, lower intelligence, poorer language skills and lower academic achievement requiring special education. They are less likely to graduate from high school and more likely to require some form

of financial government assistance at some time during their life due to minimal job skills. Likewise, lifetime health care dollars for these individuals far exceeds preventative costs. Therefore, it is imperative that understanding the major causes and eventual elimination of racial disparities in birth outcomes be realized in this large disadvantaged population as a major public policy initiative in the United States.

## Components of Theory

### Racial Stress

Population differences, specifically race, ethnicity, class, culture and gender are the basis for many of the present health care issues in the United States (Byrd & Clayton, 2003). According to Dominquez et al. (2008), racism is defined as a 'multidimensional construct that involves the oppression, domination, and denigration of individuals by other individuals and by social institutions on the basis of skin color and/or membership in a particular ethnic group'. This noxious relationship results in unjust treatment, experiences and attitudes. While many minority populations suffer at varying levels from the stress of racism, it is evidenced that African Americans experience more stress than other groups (Dominquez et al., 2008). As a result, the psychological and physiological effects are disproportionately high in this population when compared to other minority groups.

Racism has been categorized into four types: individual, institutional, cultural and collective (Giscombe & Lobel, 2005). *Individual racism* is that racism which is personally experienced. *Institutional racism*, also known as "structural racism", is found in the policies and scaffolding of an organization reflecting inequitable availability of goods, services and opportunities between populations. *Cultural racism*

is evidenced by the belief of one group that their cultural values are superior to another. *Collective racism* occurs when certain groups are intentionally excluded from membership while others are not. Giscombe and Lobel (2005) found evidence that 98% of African Americans have experienced some sort of racially based discrimination in their lifetime, 96% in the last year. Consequently, 95% report racial discrimination as stressful.

As Carlson and Chamberlain (2004) declared, 'the evidence supports the painful truth: we are very much a racist society'. Unfortunately, the experience of racism is not only felt and endured by the individual but can be transferred to other members of the family unit. Many women of minority populations experience racial stress when it is directed toward their children. Protecting their children from all harm, potential and real, is a central, core responsibility for all mothers, therefore, vicarious racism experiences is yet another avenue of assault for the African American woman (Nuru-Jeter et al., 2009). Furthermore, the anticipation of future racism encounters, whether personal or vicarious, may lead to a state of chronic hyperarousal. This hyperaroused state against potential racism threats may damage multiple organ systems and immune defenses resulting in a higher risk of poor birth outcomes (Nuru-Jeter et al., 2009).

**Stress Response**

Maternal stress responses can have a direct impact on birth outcomes by directly altering allostasis, the body's ability to maintain homeostasis and adapt to acutely stressful situations. Allostatic load, which is the cumulative risk to individuals resulting from chronic exposure to life challenges, increases which results in multiple physiological regulatory system adjustments in an attempt to return to homeostasis.

The challenge of chronic stressors such as racism places an excessive demand on the body's regulatory system resulting in alterations in cardiovascular activity, metabolism, sympathetic nervous systems and neuroendocrine systems (Giscombe & Lobel, 2005).

Another perspective on the cumulative health affects to African American women is a concept known as "weathering". Weathering may explain why African American women have a higher potential for adverse health outcomes related to stressors such as racism. This concept suggests that African American women suffer magnified poor health outcomes due to the cumulative lifetime effects of repeated social, economic and political segregation on a daily basis. Weathering becomes most apparent after the age of 25 with maximum effects noted between the ages of 35 and 64 (Giscombe & Lobel, 2005). Because African American women may be subjected to a lifetime of racial discrimination and the associated stress, this concept may help explain why they are more susceptible to the impact of prenatal stress.

Regarding reproductive health, maternal stress has an affect, not only on the mother, but also on the fetus via utero-placental function. Cardiovascular function adapts by increasing blood pressure which decreases utero-placental blood flow resulting in shorter gestational length and, therefore, lower birth weight. Stress also increases systemic cortisol levels which are influenced via pressure on the hypothalamic-pituitary adrenal axis (Stancil, Hertz-Picciotto, Schramm, & Watt-Morse, 2000). Hyperactivation of neuroendrocrine pathways in the maternal-placental-fetal systems may activate parturition (Rowland Hogue & Brenmer, 2005). Immune-inflammatory pathways may be activated via stress resulting in increased susceptibility to intrauterine and fetal infections, therefore, initiating the parturition cascade. Bacterial

vaginosis, a urogenital infection which has been implicated in premature rupture of membranes and, therefore, preterm birth, has the highest incidence in African American women and has been associated with chronic stress (Nuru-Jeter et al. 2009). Unhealthy coping behaviors to stressors such as drug, alcohol, and/or tobacco abuse may also contribute to suboptimal maternal and fetal health outcomes especially low birth weight infants (Giscombe & Lobel, 2005).

## Review of Literature

Research regarding racial stress as a cause of preterm birth and low birth weight infants in the African American population is limited. Many of the studies located agreed that socioeconomic disparities among African Americans when compared to majority populations did not fully explain the suboptimal outcomes even after controlling for variables such as income, education, prenatal care, marital status and substance use (Giscombe & Lobel, 2005; Dailey, 2009; Stancil et al., 2000; Nuru et al., 2009). Research findings consistently agree that racism for African American women is a lifetime phenomenon starting in childhood and spilling over into adulthood influencing relationships with their own offspring, that the stress of racism has both physiological and psychological effects, and the individual is subjected to multiple forms of racial stress with individualized responses, both active and passive (Nuru-Jeter et al., 2009). While the actual data regarding low birth weight and infant mortality of the African American population is definable and concrete, the research can only speculate as to the contributing factors. As research is emerging, preliminary findings are pointing to maternal stress via racism as a potential explanation; however, future

studies are needed to account for the complexities of these measurements (Hogue & Bremner, 2005).

## Racism in Health Care

### Spillover Effect

Nationally, despite overall improvement in the health care status of the United States population as a whole, the health of many minority groups still lag in improvements with some health indices either stagnant or deteriorating (Byrd & Clayton, 2004). Much research has been dedicated to identification of the reasons for failure of improvement among these groups. Traditionally accepted explanations include socioeconomic differences and unavailability or inadequate access to healthcare facilities. However, more contemporary research focusing on racial stress, ethnic and gender bias and discrimination holds great promise as explanations of serious health disparities.

Ethnic disparities and discrimination are phenomena dating back to the beginning of time. In the United States, social stratification, racial hierarchies and tremendous inequities among various groups has been the 'central dilemma' since the establishment of the nation (Byrd & Clayton, 2004). Since these issues have been woven into the fabric of the country from its genesis, many aspects of society including health care could not be spared the effects of spillover from these inequities. Despite social change throughout history involving the advancement of the rights of many minority groups including women, Indians, African Americans, and others, research continues to conclude that these 'central dilemmas' continue to plague our society and are vividly evidenced in the health outcome of these groups.

While societal racial discrimination and ethnic disparities are important contributors to suboptimal health outcomes among minority groups, this may not fully explain the scope of the problem. Attitudes and actions by health care providers, whether conscious or unconscious, may also contribute to the issue (Geiger, 2004). Many studies conducted investigating racial bias have revealed that the arena of health care is not immune to the practice of discrimination. Physicians, while vowing an oath of non-discrimination and equal treatment among all groups irrelevant of race, gender, social class, and such, are unintentionally and unknowing guilty of discrimination as evidenced by studies conducted which examined differences in health care decision making among different racial groups. In all areas of medicine, evidence exists that different social and/or racial groups receive differing quality of care. Therefore, while conceptually disturbing and uncomfortable, racial discrimination in health care exists and is a major contributor to health disparities (Geiger, 2004).

## Possible Solutions or Interventions

The effect of racial discrimination in African American women in the birth outcomes of their infants is simply a symptom of a greater issue affecting a much larger spectrum of minority populations. There continues to exist a tremendous Black-White gap in perception of racism in American society which permeates all areas of society including health care. Denial of the existence of this phenomenon continues to impede its remedy (Carlson & Chamberlain, 2004).

First, most researchers reviewed agreed that further studies regarding the effects of racial discrimination on human health is warranted (Giscombe & Lobel, 2005). Coping mechanisms among African American women may have a significant impact on

the birth outcome. Furthermore, exposure variants to racial discrimination may influence the coping abilities related to the stressor, thereby, altering the outcomes as well.

Secondly, the establishment of support networks where African American women can provoke in-group identification which may lead to improved self-esteem and enhanced confidence warrants investigation. Studies show minority groups who engage in groups where they are affirmed and their cultural identity is preserved enhances their overall self-image (James, 1993). These positive attributes are powerful in potentially protecting unborn infants from the pathogenic effects of stress and racism, thereby, improving overall birth outcomes.

Continued emphasis by teaching institutions in producing 'culturally competent' clinicians is key (DelVeccio Good, James, Good & Becker, 2004). Even though unambiguous forms of racial discrimination have diminished over time, racism continues to affect the communication styles and health decisions of health care providers (Carlson & Chamberlain, 2004). Further training of providers in patient-centered communication skills beginning at the medical school level with reiteration throughout their medical training and careers may prove beneficial. Identification of attitudes and behaviors toward certain groups which may influence decision-making and communication is also a key component to achieving a more race-neutral patient-physician relationship.

The health of all minority groups in the United States is vital to the overall health status of the nation and the world. The relationship of stress, racism and self-esteem as they apply to the health of African American women in their childbearing

years may hold the key to a further and deeper understanding of preterm delivery and low birth weight outcomes and unfortunate mortality of this vulnerable group of Americans. As a social ambition, erasing health disparities due to racism among all minority groups is essential to the continued improvement of health and well being of all persons and must continue to be a primary obligation of all groups until this unnecessary obstacle has been eradicated.

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# The Lesbian Health Care Experience: A Population at Risk

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**Abstract**

Even though the knowledge base regarding differences between men and women is a growing area of research and being integrated into medical practices and ideology leading to further improvement in health care, consideration of sexual orientation as an influence on health outcomes is largely concealed under the norms and assumptions related to heterosexuality. Heterosexism perpetuates health care disparities between minority and majority groups further widening its chasm and ill-willed effects. While all minority groups suffer from disparities in health outcomes, some groups are especially oppressed due to multiple minority identification. Lesbians fall into this category as they are both female and homosexual. This double discrimination further compounds the issues related to this vulnerable group.

The purpose of this paper is to identify real and potential unidentified shortcomings of the medical community as it relates to lesbian health. A review of the literature regarding research of lesbian physical and mental health will be done in an attempt to obtain a better understanding of barriers which potentially distance lesbian women from health care. Lastly, prospective solutions to discrimination in medicine will be identified and reviewed in an attempt to offer remedy of discrimination towards lesbians in health care.

## Discrimination Among Minority Groups

According to Dohrenwend (2009), 'Social responsibility, a dearly held value in the medical community, requires that medicine use its influence to end discrimination and to reduce barriers that affect access to care'. Discrimination remains a formidable enemy of civilized societies despite tremendous advances in civil rights legislation and efforts of community enlightenment regarding basic human rights. All minority groups, in one form or another, suffer from the effects of discrimination whether it is individual, institutional, cultural, or collective (Giscombe & Lobel, 2005). The health outcomes of these minority groups remain suboptimal and can be directly linked to a health care system which fails to recognize its shortcomings as it relates to discrimination and society as a whole which continues to perpetuate non-nutritive environments for certain groups.

Nationally, despite overall improvement in the health care status of the United States population as a whole, the health of many minority groups still lag in improvements with some health indices either stagnant or deteriorating (Byrd & Clayton, 2004). Much research has been dedicated to identification of the reasons for failure of improvement among these groups. Traditionally accepted explanations include socioeconomic differences and unavailability or inadequate access to healthcare facilities. However, more contemporary research focusing on racial stress, ethnic and gender bias and sexual discrimination holds great promise as explanations of serious health disparities.

Social disparities and discrimination are phenomena dating back to the beginning of time. In the United States, social stratification, racial hierarchies and tremendous inequities among various groups has been the 'central dilemma' since the establishment of the nation (Byrd & Clayton, 2004). Since these issues have been woven into the fabric of the country from its

genesis, many aspects of society including health care could not be spared the effects of spillover from these inequities. Despite social change throughout history involving the advancement of the rights of many minority groups including women, Indians, African Americans, and others, research continues to conclude that these 'central dilemmas' continue to plague our society and are vividly evidenced in the health outcome of these groups.

While sexual discrimination is a important contributor to suboptimal health outcomes among homosexual groups, this may not fully explain the scope of the problem. Attitudes and actions by health care providers, whether conscious or unconscious, may also contribute to the issue (Geiger, 2004). Many studies conducted investigating sexual bias have revealed that the arena of health care is not immune to the practice of gender-based discrimination. Physicians, while vowing an oath of non-discrimination and equal treatment among all groups irrelevant of race, gender, social class, sexual orientation and such, are unintentionally and unknowing guilty of discrimination as evidenced by studies conducted which examined differences in health care decision making among different minority groups. In all areas of medicine, evidence exists that different minority groups receive differing quality of care. Therefore, while conceptually disturbing and uncomfortable, discrimination in health care exists and is a major contributor to health disparities (Geiger, 2004).

Lesbian health care disparities and oppression, as well as gay, bisexual and transgender, have been identified as a specific area of concern among minority group advocates. "Gay rights" is a term most often associated with marital rights but its meaning is much broader and carries with it more comprehensive responsibilities than most realize or appreciate. The United Nations Universal Declaration of Human Rights and the United States (U.S.) Constitution can be interpreted as delineating gay rights as human rights (Dohrenwend, 2009). These rights include

the right to procreate, pursue happiness, the right to freedom of expression, the right to an education and to obtain quality health care, the right to work and the right to unwavering equality in the eyes of the law. Societal practices which are counter to these rights are in violation of human rights and run the risk of affecting all populations, not just gay.

## Review of the Literature

Until approximately 20 years ago, The American Psychological Association classified individuals who were involved in same-sex relationships as a mental illness diagnosis in their Diagnostic and Statistical (DSM) of Mental Disorders (McDonald, McIntyre, & Anderson, 2003). The identification of same-sex relationships as a mental illness requiring treatment helped perpetuate the existing negativism and have further alienated this vulnerable minority group in society. Most of the medical studies reviewed regarding lesbian health care focused on psychological illnesses and how homosexuality may be linked tangentially or possibly bear direct responsibility.

Mental health issues such as depression, alcoholism, physical, mental and sexual abuse and suicidal tendencies in the gay, lesbian, bisexual and transgendered groups have been well reviewed for many years. Lesbian and gay individuals are 2.4 times more likely to suffer from anxiety, depression and substance related disorders than heterosexuals and are more likely to demonstrate suicidal behavior (Ross, Steele, & Sapiro, 2005; King & Bartlett, 2005). In the lesbian community, specifically, depression and anxiety have been viewed as ‘inadequate coping’ on the part of the woman and treatment has been navigated via pharmacology or behavioral therapy. All diagnosis and treatment modalities have been exclusively biomedical and have failed miserably in incorporating the lesbian’s entire life experience in treatment (McDonald et al., 2003).

Despite an estimated two million or more lesbian and gay parents in the United States as of 2004, contemporary research related to lesbian health care and family dynamics is scant (Ross, Steele, Goldfinger, & Strike, 2007; Polek, Hardie, & Crowley, 2008). Available research concludes that lesbians access health care less often than heterosexual women and, therefore, may experience suboptimal health status as a result (Seaver, Freud, Wright, Tjia, & Frayne, 2008). Current studies have evolved to include more modern day issues in lesbian mental health such as anxiety related to reproduction and dual-mothering families, perinatal and postpartum depression, adolescent depression, and social support "coming out" but most are surface level research lacking substance and remain steeped in heterosexual mindsets and ideologies.

## Heterosexism And Other Barriers

Heterosexism is defined as the lack of consideration of sexual orientation (Trettin, Moses-Kolko, & Wisner, 2005) and "refers to belief and practices that reinforce the belief that the world is and should be heterosexual, and other sexual orientations and practices are unhealthy and threatening to society" (Weisz, 2009). Though slightly blunted in the last decade through increased public awareness campaigns and limited legislative efforts, this concept continues to permeate throughout Western culture and can be identified in all aspects of society. Heterosexism can be focused and purposeful as illustrated in legislation and public policy which omits funding or support for sexual orientation based research or unaware which is exemplified by questionnaires asking the respondent to identify themselves as married, divorced or single. Heterosexism is further perpetuated in medical research due to variable definitions of sexual orientation or identity. Differentiation of sexual orientation from sexual desire and sexual behavior additionally complicates study designs and impedes reproducibility (Trettin et al., 2005).

**Failure to disclose**

Failure to disclose sexual identity is another barrier to meaningful lesbian research and comprehensive medical assessment and treatment. It is estimated that only 60% of lesbians disclose their sexual orientation publically and only 31% reveal this information to their health care provider. Inquiry rates of providers regarding sexual behavior or orientation range from 17 to 30% (Steele, Tinmouth, & Lu, 2006). Reluctance to disclose is even higher in bisexual women (Polek et al., 2008). Of lesbian that revealed this information, 27% gave recants which exemplified a negative consequence related to their health care after disclosure further reinforcing their reluctance to disclose (Trettin et al., 2006).

When lesbians seek health care, many report that they first must feel comfortable with the health care environment in order to disclose. When in the provider office, they look for clues from the office staff, environment and health care providers to help them determine if it is a safe place. They listen to language clues including gender-neutral terms (partner or significant other versus husband) and observe details in the office such as what type of information is displayed in the provider waiting room and whether it appears "gay friendly". They observe non-verbal cues from the provider in an attempt to ascertain the provider's comfort or acceptance of alternative lifestyles before deciding if it is safe to disclose (Steele et al., 2006). If any of these conditions are uncomfortable or unwelcoming to the lesbian, she may opt not to fully disclose pertinent health information regarding her sexuality.

**Misinformation among health care providers**

Health risks associated with sexual contact are not unique to the lesbian community. Many lesbians have a history of intercourse with males, thereby, placing them at risk of acquiring sexually transmitted diseases at the same rate as heterosexual women (Hutchinson,

Thompson, & Cedarbaum, 2006; Trettin et al., 2006). Sexual diseases considered more male to female transmittable such as herpes, Hepatitis C and Human Papilloma virus (HPV) are also possible through female-to-female sexual relations. Unfortunately, wide spread misinformation in the medical community regarding frequency of transmission of these diseases has led to decreased offerings of testing to lesbians. Consequently, fewer lesbians obtain indicated screenings and treatment (Bailey, Kavanaugh, Owen, McLean, & Skinner, 2000).

Despite the Institute of Medicine's (IOM) acknowledgement that lesbian women may at increased risk of certain illnesses such as breast, ovarian, and cervical cancers as well as substance abuse and depression, screenings for these health issues is inadequate (Diamant, Wold, Spritzer, & Gelberg, 2000). Several studies have shown that health care providers may be operating under outdated information regarding the potential risks of this population. For example, a long held belief among gynecologic providers was that lesbians are at low risk for cervical cancer due to presumed low transmission rates of HPV and therefore, pap screens were unnecessary and a waste of time and money. More current research shows that HPV infection occurs in 21% of lesbian women who report no prior sexual contact with men indicating a higher rate of transfer of the virus than previously thought (McNair, 2003). Furthermore, lesbians who have never become pregnant or breastfed an infant have a higher risk of breast cancer but are still less likely to have had a clinical breast examination (Diamant et al., 2000). As lesbian health care research becomes more forthcoming and the information is disseminated throughout the medical communities, these trends will hopefully improve.

**Mislabeling**

Actual rates of lesbian, gay, bisexual, and transgendered individuals are difficult to ascertain due to low disclosure rates, however, it is estimated at between 3.6% and 8.9% of the

U.S. population identify as one of these minority groups (Reynolds, 2004). Even though women who identify as lesbian are often considered by society and health care workers as 'women exclusive', many may be bisexual depending on variations in life circumstances and points in time (Weisz, 2009). The term lesbian may refer to behavior such as having sex with women but perhaps not exclusively with women, orientation where women may have a sexual interest in other women regardless of their sexual actions, and cultural identity where women identify with a community of like-minded women (Seaver et al. 2008). This labeling confusion may lead to misidentification of risk factors and inaccurate conceptualization of health needs by the medical community.

**Comprehensive lesbian health**

Conceptualization of lesbian health is varied and confused. Traditionally, women's health has been viewed through the lens of reproductive health, maternal health, family health and heterosexual health. Women's health issues are observed solely as the function of the physical body and viewed as the complete biomedical picture. Female life stages such as menopause, when viewed through the biomedical lens, are interpreted as symptoms of disease requiring pharmacological interventions. Medications are recommended and no further interpretation of the material content in this normal, womanly progression of life is attempted. While sexual and reproductive health of lesbians is important and deserving of attention, this narrow perception fails to include the social and material components of a lived life. Broader determinants of health are compulsory which should include education, economic status, housing, environment and discrimination.

As previously stated, lesbians are at higher risk of depression and suicide than heterosexual women. This increase in risk is theorized to be related to high levels of stress due

to homophobia and lack of social support. Mental health studies which compared heterosexual people to gay and lesbians found that gay and lesbians suffered more day-to-day and lifetime stress related to their sexuality (McNair, 2003). Lack of support from family and society due to their sexuality further exacerbates their isolation. Lesbian health, as well as women's health, must be all encompassing and include the context of female life and the landscape in which it grows. To omit or ignore the context further perpetuates the shortcomings of health care for this marginalized group.

Lesbians encounter almost all of the same biomedical issues of heterosexual women and more. Additionally, social stigmatization further increases the risk of health issues among this marginalized population. This is evident in situations where lesbian mothers experience heterosexism in the context of obstetrical and pediatric care. Many lesbian mothers report an uncomfortable refusal by the obstetrical and pediatric medical community to acknowledge the non-biologic mother (Ross et al., 2007). Furthermore, lesbian mothers express concern regarding the social stigmatization that their children will endure as a result of being parented by two mothers as opposed to a more traditional family structure. Finally, financial stressors related to taxation, insurance benefits and custody issues further compromise the health and well being of this population.

## Proposed Solutions

Legislative efforts regarding the acknowledgement of the human rights of all populations must be objective number one in this society. The constituents of academic medicine along with nursing organizations and others must work cohesively and in unison to influence institutional policy and advocate state and federal governments to support basic human rights for all but especially gay populations. Legislation related to equality such as same sex civil unions is

controversial but may have important and powerful health indications. This is exemplified by studies in human immunodeficiency virus (HIV) infected individuals receiving appropriate anti-retroviral medication who are in long-term, stable sexual partnerships and experience a slower progression to acquired immune deficiency syndrome (AIDS) and death than those individuals who lack that component. According to King and Bartlett (2005), the legal recognition by society of same-sex relationships "will probably increase societal and family support for same sex couples" thereby reducing discrimination and the related stress. Decreased discrimination and increased societal support for partnerships among same sex couples may increase self respect cascading into improved health benefits related to sexual monogamy (King & Bartlett, 2005).

An improved patient-provider relationship is another component of improved health care among lesbians. Women, in general, prefer providers who are able to communicate compassionately and effectively. Lesbians elevate communication skills to the next level by requiring their health care provider to have a nonjudgmental attitude and display a care style which is nonhierarchical (Seaver et al., 2008). Lesbians seek providers who demonstrate a desire to listen to them and understand their entire health picture, not just the physiological aspects. Trust is also a central component of effective lesbian health care. Obvious disapproval or discomfort with the lesbianism is usually apparent resulting in decreased effective communication between the woman and provider. Belittling and chastising communication related to poor health habits such as obesity, lack of exercise, poor diet, smoking, drug or alcohol use is counterproductive to creating a trusting relationship. Some lesbians participate in alternative forms of medicine including herbal treatments, acupuncture, chiropractics, massage and meditation. The practice of these types of healing modalities expresses a desire by the patient to limit the uses of pharmacological treatments unless deemed necessary and all other

forms of treatment have failed. Lesbians prefer a health care provider who is well versed in many alternative medical treatments or is at least respectful of the patient's wishes in pursuing these health management avenues and able to communicate effectively regarding them.

Education in academia plays a tremendous role in fostering improved health outcomes for lesbians. Medical educators must develop curriculum which examines knowledge and attitudes related to sexual diversity. Illumination of lesbian health invisibility and marginalization in nursing education may challenge the dominant heterosexual theories of practice (MacDonell, 2009). However, challenge must occur in order for educators and students to understand lesbian health and sexual diversity and begin the cycle of change and understanding of lesbian health issues toward better health outcomes.

In the health services work place, access to lesbian sensitive information is vital. Lesbians prefer provider sites which are "gay positive" meaning open minded, knowledgeable and welcoming. Training of staff members to be sensitive regarding lesbian issues and having a written practice policy of antidiscrimination which specifically mentions the issue of sexuality is significant. Communicating "gay positive" attitudes through brochures and posters in the clinic waiting area and treatment rooms expresses a welcoming approach to lesbians and may facilitate disclosure of sensitive sexual health information (McNair, 2003). Health care providers must be cognizant of language which is not gay sensitive such as "husband or boyfriend" and use terms such as "partner or significant other". Health history forms should be inclusive and reflect gender-neutrality. Also, acknowledgement of the lesbian's partner as an important member of her family and addressing her as such in conversation further communicates a "gay positive" attitude.

## Conclusion

Culturally competent health care in a nondiscriminatory atmosphere is critical to decreasing the health disparities among minority groups such as lesbians. Barriers to care such as failure to disclose one's sexual identity to her health care provider are born out of fear of discrimination and disapproval and based on living in a society which has been traditionally intolerant of same-sex relationships. Outdated medical information and limited medical research regarding gay and lesbian health further compounds poorer health outcomes in this vulnerable minority group. Finally, lesbian women demand comprehensive health care which encompasses not only the reproductive and biomedical aspects of her care but care for the whole person in an integrated fashion.

Much work is needed in the area of legislation and public policy which will help further the equal rights of all minority groups. Recognition of same-sex relationships on a national public scale, though controversial, may improve health outcomes through elevated self-esteem, better social and family support and superior financial protections. Education of health care providers and nurses which brings about cultural awareness regarding the unique social and health needs of the lesbian community will also lead to better health outcomes.

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# Will taxation of sugar-based drinks help prevent the growing problem of obesity in Americans

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## The Growing Issue of Obesity

Obesity is defined as a body mass index (BMI) of greater than or equal to 30 and has become a leading health concern both in the United States (U.S.) and around the world. In the U.S., an alarming two-thirds or 134 million people are overweight (BMI greater than 25) or obese (Hobbs, 2008). In children and adolescents, BMI's have trended up in the last 20 years affecting 17% of individuals between the age of six and nineteen years (Dodson et al, 2009). Similar disturbing trends in adults and children have been identified around the world. The World Health Organization (WHO) in 2004 estimated that 1.6 billion individuals over the age of 15 are overweight and over 400 million adults are obese (Hobbs, 2008).

The recognition of obesity as a major health issue in the United States as well as around the world is not a newly identified phenomenon. In 1952, the American Heart Association was one of the first health organizations to identify obesity as a modifiable cardiac risk factor (Nestle & Jacobson,2000). Since then, numerous other U.S. government agencies and health organizations such as the American Diabetes Association, American Cancer Society, U.S. Department of Agriculture, National Heart, Lung and Blood Institute and the U.S. Department of Health and Human Services have developed various policy guidelines which have recognized the health risks associated with obesity and made lifestyle modification recommendations in an attempt to decrease its prevalence. According to Nestle and Jacobson (2000), obesity was the main subject of an editorial in The Lancet in 1974 where it was identified as 'the most important nutritional disease in the affluent countries of the world'. Obesity increases the incidence of type II diabetes, coronary artery disease, stroke, musculoskeletal issues, and several types of cancer (Aranceta, Moreno, Moya, & Anadon, 2009). Even in light of the appreciation regarding the

perils of obesity, twenty-five years later its prevalence has increased tremendously with its affects permeating all societies along all phases of life.

U.S. national public policy has specifically focused on obesity since 1980. Government agencies such as the U.S. Public health Service (PHS) suggested that the government become involved in obesity prevention and management via distribution of educational materials, encouragement of fitness and nutrition programs through funding grants to the states, and fund support for research. The Center for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) have been large proponents of mass media campaigns regarding education in food labeling and school nutrition. The National Institutes of Health (NIH) have sponsored workshops on obesity education and obesity research. *Healthy People 2000* named precise objectives for nutrition and physical education, specifically in communities, work places and schools with a goal of reducing the prevalence of overweight to no more than 20% of adults and 15% of adolescents (Nestle & Jacobson, 2000). *Healthy People 2010* revised their goals to include increasing the healthy body mass index of at least 60% of healthy adults, reducing the prevalence of obesity in adolescents to 5%, increase education in school systems and work sites regarding healthy nutrition and increase the number of primary health care providers to 75% who provide weight management services for patients at high risk for heart disease and diabetes (Nestle & Jacobson, 2000).

Despite the focus of identifying and applying limited resources nationally to obesity prevention and management, results thus far are disappointing. Major health concerns that can be directly linked to obesity such as high blood pressures, coronary heart disease, type 2 diabetes, osteoarthritis and other degenerative diseases are increasing to epidemic levels.

The CDC alarmingly reported in 2006 that one in 523 people under the age of 20 have diabetes (Hobbs, 2008). Increasing economic costs and decreasing health quality underscore the desperate urgency of the public health community to address the issues more aggressively and effectively as well.

Governments have traditionally used taxation in many forms to mold public behavior in areas which are deemed as unhealthy or undesirable. Taxes on alcohol, cigarettes, gasoline, and gambling are examples of such taxes which were designed to decrease use while raising government revenues. Many experts agree that one of the practical causes of obesity is overconsumption of processed foods high in sugar, fat, sodium and calories while low in dietary fiber. Overconsumption coupled with decreased physical activity is a recipe for weight gain leading to obesity and its subsequent health issues. One proposed way of decreasing the epidemic of obesity is to use taxation of obesity-causing foods and beverages as a way of decreasing consumption. The purpose of this paper is to review taxation of sugar-based drinks as a means of lowering consumption and thereby, decreasing overconsumption leading to obesity.

## Problem Statement

Lowering consumption of sugar-based drinks through taxes will help prevent the growing problem of obesity in Americans, thereby, lowering health care costs.

## Literature Review

The intake of excess sugar-sweetened foods, specifically drinks, has been linked to obesity and related diseases such as diabetes and coronary heart disease (Brownell et al., 2009). Around the world, the intake of sugar-sweetened beverages has increased exponentially in the last 10 years. The most recent data from 2006 showed that Americans,

both adults and children, consume about 175 kcal daily per person on average from sugar-sweetened beverages (Duffy & Popkin, 2007). Consumption in Mexico of sugary drinks doubled between 1999 and 2006 (Brownell et al., 2009).

In reviewing the scientific evidence related to body weight and sugar-sweetened beverages, numerous interesting and concerning results can be found. Brownell et al. (2009) referenced a meta-analysis which showed a positive association between the intake of sugar-sweetened beverages and increased body weight. These associations were stronger in longitudinal studies that were not funded by the beverage industry as opposed to those that were. Of those studies involving children which were funded by the beverage industry, no association between sugar-sweetened drinks and increased body weight could be found . Upon closer examination, those studies were determined to be flawed and a re-analysis showed a positive association (Malik & Willett, 2009).

Further review of evidence identified a prospective study involving middle-school students over the course of two years which showed the risk of becoming obese increased by 60% for every additional serving of sugar-sweetened beverage consumed per day (Brownell et al., 2009). A prospective study lasting eight years examined the effects of sugar-sweetened beverage intake in women. Results showed that a weight increase of 8 kg was realized in women who consumed sugar-sweetened drinks as opposed only a 2.8 kg increase in those who restricted their sugary drink intake (Schulze, Mason & Ludwig, 2004).

International studies reveal similar results. A school-based study in the United Kingdom reviewed an intervention to decrease the sugar-sweetened beverage consumption among 644 students between the ages of 7 and 11. One year after the

intervention was implemented, obesity dropped by 7.7% (James, Thomas, Cavan, & Kerr, 2004). In a similar study of 1140 Brazilian schoolchildren age 9 to 12 years where students were discouraged to consume sugar-based drinks, a significant decrease in BMI was noted in overweight girls 9 months after the study's inception (Sichieri, Paula Trotte, de Souza, & Veiga, 2009). Additionally, a small Chilean study of 98 children where sugar-sweetened drinks were replaced with milk products showed a non-significant decrease in the percentage of body fat but a significant increase in lean mass in the intervention group (Albala et al., 2008).

Evidence of the economic costs of obesity is compelling as well. Finkelstein et al. (2003) estimated that obesity costs the U.S. healthcare system approximately $92.6 billion annually or 9.1% of annual health expenditures. Costs include doctor visits and outpatient services as well as lost productivity due to illness related to obesity (Hobbs, 2008). This cost estimation is up $40 billion in health care expenses and 3.4% of annual expenditures from 1995 (Nestle & Jacobson, 2000). Brownell et al. (2009) estimated the current annual costs to be $147 billion. Additionally, social costs include poor diet and physical inactivity which were responsible for 400,000 deaths in 2000 (Mokdad, Marks, Stroup, & Gerberding, 2004).

## Alternatives

As previously stated, taxation as a means of deterring negative health behaviors is not a new concept. Taxation on many of the "sins" has been a method used to decrease consumption, increase positive health behaviors and raise revenues to develop programs which would be further utilized to improved public health for many years. Taxes on tobacco products has proven to be highly effective in reducing smoking and other forms of

tobacco use and has traditionally been responsible for a decrease in use of 0.4% annually since the 1970's (West, 2007).

In an effort to decrease obesity, a tax on sugar-sweetened beverages has been implemented in 33 states as of this year. Consumption taxes of this form typically yield a decrease of 7.8% in consumption for every 10% increase in price. However, the sugar-sweetened beverage tax in most of the participatory states is very small with a mean rate of 5.2% (Brownell et al., 2009). The general consensus is that a tax at this rate is too small to affect consumption. Furthermore, the revenues are not earmarked for programs related to health improvements as is the standard for "sin" taxation revenues.

**Excise vs. Sales Tax**

Since the current tax is too weak to affect consumption, other alternatives should be considered. Currently, the sugar-sweetened beverage tax in most states is a sales tax which is levied as a percentage of price. One of the disadvantages of this type of tax system is it encourages the purchase of lower priced brands, not necessarily lower calorie products. This type of tax also does not capture the tax in facilities which use fountain drinks and allow multiple refills without cost. A better alternative would be to implement an excise tax of 1 cent per ounce for any beverage which contains caloric sweeteners. This type of tax is very simple to administer and would promote the consumption of other non-caloric beverages including water. It would also encourage manufacturers to reformulate their products to non-sugar sweetened alternatives. The implementation of this type of tax would increase the cost of a 20-oz soft drink by 15 to 20% (Brownell et al., 2009). Taking into consideration the price elasticity of all soft drinks, the expected effect of the tax would

be a 10% decrease in the caloric consumption from sugar-sweetened beverages or 20 kcal per person per day.

**High Calorie Food Tax**

Another alternative would take the sugar-sweetened beverage tax to the next level by including a tax on high-caloric, low nutrient foods. This tax would affect movie theaters, convenience stores and fast food establishments which would raise the costs charged and lower consumption. Many popular table-service restaurants serve meals which are 1000 to 2000 kcal each. These amounts are equivalent to 50% to 100% of an entire day's caloric requirement for most adults. Foods eaten outside the home, on average, are higher in fat than food cooked at home (Nestle & Jacobson, 2000). This tax alternative would result in more individuals eating lower calorie, healthier foods at home, thereby, lowering the well-known weight gain associated with eating out.

## Expected Outcomes and Potential Barriers

Taxation on sugar-sweetened beverages and high calorie foods, if high enough, should decrease the consumption rate of these goods. A decrease in caloric intake will slow the growing obesity trend and thereby, decrease the related heath concerns it accompanies. As previously discussed, a 1 cent tax per ounce on sugar-sweetened beverages would result in a 10% decrease in the caloric consumption from sugar-sweetened beverages or 20 kcal per person per day. According to a recent New York Times report, 'a tax of a penny an ounce on sugary beverages would raise $14.9 billion in its first year' (Neuman, 2009). Additionally, some feel this reduction in caloric consumption is sufficient for weight loss for many populations and will effect reduction in obesity-related health care risks.

Other less predictable and measurable outcomes would be the amount of increase in other more nutritious foods and beverages as a result of less sugar intake. Experts agree that because soda is affordable, easily accessible and replaces good caloric intake with 'empty' caloric intake, its consumption decreases the intake of fresh fruits and vegetables which further increases the rate of obesity. It is estimated that if only one quarter of the calories consumed from sugar-sweetened beverages were replaced by healthy fruits and vegetables, caloric intake would decrease by 8000 kcal per person per year yielding about a 2 lb weight loss for the average person (Brownell & Frieden, 2009).

**Beverage Industry**

U.S. beverage makers are a major industry comprised of about 3,000 companies with combined revenues of $70 billion annually (First Research, 2009). With this economic strength, this group can be a major barrier to the sugar-sweetened beverage tax. In the past decade, the amount of sugar-sweetened beverages consumed by adults, adolescents and children has increased by nearly 30% and consumption is up 50% over the last 50 years (Brownell & Frieden, 2009; Butterworth, 2009). In adolescents and children, sugared beverages account for about 10 to 15% of their daily caloric intake (Brownell & Frieden, 2009). Any taxation on these drinks can significantly decrease consumer consumption and therefore, decrease industry annual sales and profits. Major beverage makers such as Coca-Cola, Dr. Pepper Snapple and Pepsi are at risk of decreasing profit margins and lost market share to other drink manufacturers as a result of this tax.

Beverage taxation is hotly contested by the beverage industry for obvious reasons. Besides the impact on the bottom line, beverage companies argue that this type of tax will not have the desired outcome of decreasing obesity. According to Muhtar Kent, the chief

executive of Coca-Cola, government mandates which 'tell people what to eat and what to drink don't work. If it worked, the Soviet Union would still be around' (Neuman, 2009). Food Tax opponents such as an organization called American Against Food Taxes agree. According to the group's senior vice-president, Kevin W. Keane, the beverage tax will not make anyone healthier. 'When it comes to losing weight, all calories count, regardless of the food source' said Mr. Keane in a recent interview with The New York Times (Neuman, 2009).

Brownell et al. (2009) charged the beverage industry with skewing the data in studies which examined the relationship between sugar-sweetened beverages and body weight increases. They also accuse the beverage industry of making health claims such as the 'beverages provide energy or vitamins' and use this type of advertising to exploit young children and adolescents whose cognitive ability may not be developed enough to distinguish between real information and an advertisement designed to boost sales. More education to the public, specifically children, on the facts related to sugar intake, energy and obesity is needed to combat these advertising ploys.

**Failure to address physical activity**

While reduction of negative health foods and drinks will decrease poor health outcomes, this approach will not increase the level of physical activity of the population. Encouraging individuals to increase their physical activity is a daunting task requiring multiple approaches. Modern day labor savings devices from automobiles to e-mail, from remote controls to drive through restaurants have decreased the amount of energy individuals expend in a normal day. Other robbers of energy users also include air conditioning, televisions, computer games and white-collar employment. Suburban

neighborhoods are no longer designed to encourage walking, pushing strollers, playing ball, jogging or permitting children to play outside. Tax support for physical education programs have been failing over the last few years, thereby, losing the opportunity for children to expend energy through physical activity at school. Obesity prevention must have multiple formulas and increasing physical activity and caloric expenditure should be included in the plan.

**Paternalistic Governance**

According to Bennett, Gostin, Magnusson and Martin (2009), the definition of public health governance is 'the means by which society collectively seeks to assure the conditions under which the population can live with the highest possible level of health and wellbeing'. Public health governance has a spectrum which is wide and encompassing. It entails business, environment, information, socioeconomics and individuals. Protection of the public health through public health governance can be controversial. While most would agree that governance is the duty of the government, many would argue that is it also the responsibility of society and the individual as well. Taxation in the interest of public health walks a thin line between over-governance of the individual and protection of the public health.

Most individuals agree that public health is an institution worthy of some amount of expenditure of time, energy, and money in an effort to acquire a healthy population. However, not everyone agrees to the priority which public health should have and how the available resources should be spent as it applies to education, safety, and medicine. Barriers to food taxation may exist because many believe that while tobacco and alcohol are not necessary for survival, food and beverage are and should not be singled out for

taxations. Currently, the public mood is rejecting the 'nanny' state where government engages in paternalistic policies which attempt to govern how people live their lives and in which activities they may engage which, they believe, only affect the individual (Bennett, Gostin, Magnusson & Martin, 2009). The current debate regarding a national health care system illustrates this conflict. Taxation on high calorie drinks and/or foods is an example of what many people may feel is over-governance. This attitude can be a barrier to taxation as a method of decreasing caloric intake and reducing obesity.

**Unintended outcomes**

When comparing a sugar-sweetened beverage tax to cigarette taxes, other unintended outcomes may occur. Sociologist, Robert Merton, coined the term 'unintended consequences' which may be applied to this type of tax policy. Tax hikes on cigarettes have had negative effects such as smuggling of cigarettes in an effort to avoid duties or tariffs, theft, murders over cigarette smuggling and financing terrorism. Additionally, channeling behaviors such as "rolling your own" had occurred as people strive to obtain the product they seek (Lafaive, 2002). Similar outcomes could be applicable to taxes beverages as well if the tax rate becomes high enough.

## Decision

Certainly the solution to the growing obesity problem in the United States and around the world requires a complex, multi-faceted solution involving all the stakeholders. It is agreed that most population-based approaches to behavior modification tend to be highly paternalistic by 'singling out the right choices for people' (Araceta et al., 2009). Population-based approaches which are oriented towards making healthy choices easy and accessible do not interfere with freedom of choice. I believe the sugar-sweetened beverage

taxation alternative is oriented towards healthy choices but does not interfere with freedom of that selection. Support of taxation of sugar-sweetened beverages has had mixed public review, however. President Obama supported the idea recently in an interview with Men's Magazine where he said "I actually think it's an idea that we should be exploring. There's no doubt that our kids drink way too much soda. And every study that's been done about obesity shows that there is as high a correlation between increased soda consumption and obesity as just about anything else' (Neuman, 2009). Poll results reveal between 37 and 72% of Americans support this type of tax. These results improved when the respondents were told the revenues would be used for obesity prevention (Brownell & Frieden, 2009). Still, many responders expressed a concern regarding more taxation and the increased impact of government intervention into more and more of their daily lives. Again the question of government's responsibility in intervening and protecting populations at risk versus personal freedom and choice is an ongoing challenge.

The one-cent per ounce tax on sugar-sweetened beverages could conceivably reduce consumption of these beverages by more than 10%. Most education programs alone regarding obesity prevention have difficulty achieving an impact of this magnitude. The revenue collected from this tax could be used to improve health through funding of education programs in schools, physical education programs, and subsidizing healthy food choices for individuals. While this program would only be a small piece of a very large, complex solution, the outcomes, though small, would be positive.

## Conclusion

Public health experts, politicians, and individuals agree that the obesity epidemic is staggering and in need of swift and effective action. Evidence has shown that prevention in

health care is usually more effective and saves more costs and lives than treatment solutions alone. While governmental intervention is not always the most effective means to control public behavior and affect positive health outcomes, there are situations where money encourages behaviors. Taxation of sugar-sweetened beverages will make those drinks less affordable for many individuals, therefore, a decrease in consumption will occur. This decreased consumption will have four positive outcomes. The first is a decrease in the caloric intake of adults, adolescents and children which will decrease the rate of weight gain in these populations annually. This reduction in weight gain will slow the rate of obesity. Secondly, the revenues from the sugar-sweetened beverage tax can be used to further education and resources regarding obesity prevention. Programs such as school nutrition, physical activity and community education would be implemented to further increase the educational levels of the public regarding the adverse health effects of obesity and unhealthy weight gain. The third positive outcome from this tax would be the decrease in health care dollars spent on obesity related illnesses. Medicare and Medicaid systems are currently stretched to their limits with at risk of bankruptcy is some relief within the healthcare system is not realized. A reduction in illnesses related to obesity would provide some health care resource relief. Lastly, the sugar-sweetened beverage tax would decrease the bottom line earnings of the major beverage makers. This decrease in profits would force these manufacturers to review their company mission and sales goals and develop more health-conscience beverage choices for their consumers.

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OREGON HEALTH & SCIENCE UNIVERSITY

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# DNP Clinical Inquiry Project Report & DNP Portfolio Approval

Student Name: Clare Thompson

Degree: Doctor of Nursing Practice

Title of Study:

Women's Perceptions of Weight and Weight Gain During Pregnancy.

APPROVED:

Committee Chair: Maggie Shaw, CNM, PhD Signature: _____
(name and credentials)

Committee Member: Deborah Messecar, PhD, MPH, GCNS-BC Signature: _____
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Dean, School of Nursing Signature: Michael R. Bleich, Ph.D, RN

Date: _____

*Submit completed original form to the Graduate Program office.*

Revised 4/2009