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## Association of Metabolic Syndrome and PCOS in African American Women of Reproductive Age

Leah Murdock  
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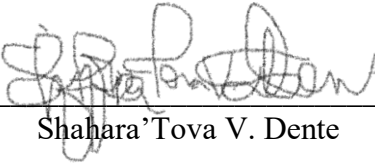
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Certifies that this is the approved version of the following thesis:

**ASSOCIATION OF METABOLIC SYNDROME AND PCOS IN AFRICAN AMERICAN  
WOMEN OF REPRODUCTIVE AGE**

Approved by the Committee:

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Chad Murphy

ASSOCIATION OF METABOLIC SYNDROME AND PCOS IN AFRICAN  
AMERICAN WOMEN OF REPRODUCTIVE AGE

by

Leah R. Murdock

Thesis

Presented to the Graduate Studies Faculty of Mississippi University for Women  
in Partial Fulfillment of the Requirements for the Degree of

Master of Arts in Women's Leadership

Mississippi University for Women, April 2021

Abstract

ASSOCIATION OF METABOLIC SYNDROME AND PCOS IN AFRICAN  
AMERICAN WOMEN OF REPRODUCTIVE AGE

by

Leah Murdock (MA in Women's Leadership)

Mississippi University for Women, 2021  
Thesis Director: Shahara'Tova V. Dente

The paper explains the correlation of metabolic syndrome and polycystic ovarian syndrome in African American Women of Reproductive Age and its long-term outcomes on overall health and wellness. The paper and research address the importance of a healthy metabolic baseline and explains, and program developed to address the whole person. There are programs developed for women with a plan to conceive and participants with no plans to conceive.

***Keywords:*** *PCOS, African American women, Reproductive Age, Reproductive health, STI*

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## Introduction

Polycystic ovarian syndrome (PCOS) is a condition that affects 6 to 25 percent of women of reproductive age, affecting one in every ten women. PCOS is caused by lifestyle, hormone, and genetic factors. According to research studies, PCOS has been linked profoundly to African American women. The association between PCOS and Metabolic syndrome in African American women is related to factors such as limitations in medical care associated with comorbid conditions and a lack of individualized care to diagnose, treat, and manage care.

The disease is believed to be caused by genetic transmission and environmental factors. According to historical texts, PCOS has existed in the medieval and renaissance period having evolved with human evolution. Many early physicians were unable to accurately diagnose it, however, the emergence of 21<sup>st</sup>-century scientific advancements facilitated the formulation of the diagnostic criteria for the disease.

Many women who are affected, vulnerable, or susceptible to PCOS are unaware, resulting in the development of severe complications due to the lack of identification of the disease at early stages. PCOS symptoms include menstrual irregularities, infertility, and masculine appearance as well heavy bleeding, among others. The lack of access to health care facilities due to low income and areas where rates of poverty are higher has led to advancement of symptoms and mortality of some women. The lack of treatment of PCOS can lead to complications during pregnancy or severe side effects when contraceptives are prescribed.

In general, the disease is prevalent in African American women whose genetic makeup makes them vulnerable to increased risk of comorbid outcomes. Moreover, their historical background of suffrage has contributed to their possibility of acquiring the disease. Furthermore, the presence of factors such as blood pressure, lupus, thyroid illness, obesity, and diabetes have

been linked with PCOS. African American women from a lower socio-economic status makes them susceptible to the development of the disease, including their inability to access quality reproductive health care services.

The research and information advance the knowledge base of women's health and leadership, and could be useful in my research. The outcomes of the studies show there is correlation between metabolic syndrome and polycystic ovarian syndrome which manifests in hormonal imbalances and metabolic related symptoms. There are ways to prevent and manage the changes the body system endures when in an imbalanced metabolic state.

Women that are genetically at risk to insulin resistance combined with limited physical activity and unhealthy weight can increase chances of insulin resistance and cause a disruption to metabolic balance. Metabolic syndrome and treatment of Metabolic Disorder begins with evaluating one's lifestyle and the lifestyle changes an individual or group must implement for positive change to manifest, in certain cases pharmaceutical intervention may be added to improve management of the disorder. Analyzing the correlation to cardiovascular disease, quality of life, and Metabolic syndrome ; several studies have shown an increase in cardiovascular mortality and morbidity in those with Metabolic syndrome .

### **Background & History**

PCOS has been present for many years and manifested in many different symptoms before it was defined as a disorder. The origin of PCOS is unknown with scientists differing in their belief on when the disease began to manifest in women. PCOS is believed to be an ancient disorder that has persisted through human evolution. The disease is genetically transmitted but linked with other physiologic and metabolic conditions such as cardiovascular diseases, hypercholesterolemia, obesity, and type 2 diabetes. Early historical texts suggest that PCOS

dates to ancient Egypt and repeatedly appears in ancient Hebrew and Greek literature also (Fertility Answers, 2020). Furthermore, the syndrome is also observed during the Renaissance and the medieval ages. Hippocrates notes from 460BC to 377 BC indicated that women at the time appeared to be healthy and vigorous but failed to become pregnant. A medieval physician of 1135 AD to 1204 AD in his medical notes projected that women who had a masculine appearance and their skin were hard and dry were having difficulties bearing children (Szydlarska et al., 2017). These statements made over centuries ago were suggestive of the signs and symptoms of women suffering from PCOS.

In 1721, an Italian doctor discovered a married infertile woman with shiny ovaries the size of pigeon eggs. An 1844 report by Rokitansky and Chereau describes sclerotic and fibrous lesions on a degenerative woman. Von Kahlden in 1902 wrote a report regarding the clinical implications and pathology of the ovaries projecting his opinion on partial resection of them. It is noted in 1935, Leventhal and Stein are the first scientific investigators of PCOS (Szydlarska et al., 2017). Leventhal and Stein conducted the study on seven (7) women with common symptoms and started ovary resection on them. Two patients conceived with the others receiving regular menstrual cycles this discovery identified the condition the women had. Thus, it was not until the 1990s when the National Institute of Health (NIH) pioneered a conference on PCOS in which the formal diagnostic criteria for the syndrome was outlined. Hereafter, scientists across the world sought to understand the pathophysiology of the disease, with many studies arising from diagnostic criteria that was outlined.

## Literature Review

Polycystic ovarian syndrome (PCOS) represents the most common endocrine condition amongst females of reproductive age. Based on recent studies, the prevalence rates for this condition range from six to fifteen percent based on the diagnostic criteria employed (Paoli et al., 2020). Further studies have presented conclusions suggesting that PCOS is a heterogeneous disease showing varying phenotypic expression resulting in controversy regarding the diagnostic criteria. The controversy linked with this condition's diagnostic criteria implies that it may be more troubling for individuals from minority groups such as African American women to be effectively diagnosed. Women with a PCOS diagnosis typically seek medical care for various menstrual disturbances, including prolonged irregular menstrual bleeding, oligomenorrhea, and amenorrhea. These women are also at risk of infertility and clinical manifestations of hyperandrogenism (Legro et al., 2007). Based on these claims, women with PCOS and Metabolic syndrome require individualized care and medical attention to ensure that they navigate the issues that come along with this condition.

Gilstrap et al. (2013) assert that alternatively, reduced insulin sensitivity responsible for a post-receptor binding failure in the insulin signaling pathways has been shown as an inherent element of PCOS that is independent of obesity. It is also identified that a change in gene manifestation of some players in insulin signaling pathways by microarray gene examination. Nonetheless, PCOS has been linked with heightened glycoxidative stress secondary to mitochondrial failure (Genazzani et al., 2010). Some of the common PCOS signs that are not considered in its diagnostic criteria include those presented by obesity, a reversal of the LH/FSH ratio, and insulin resistance. From this, this condition, if not well-diagnosed and addressed, could significantly affect people from the minority groups like African American women (Blaha &

Tota-Maharaj, 2012). This can be proven by the fact that most of the disease responsible for presenting the overlooked diagnostic criteria for PCOS, are increasingly prevalent among African American women. Some scholars have discovered findings suggesting a genetic element of androgen excess in individuals with PCOS (Blaha & Tota-Maharaj, 2012). Besides, a polymorphic marker in fibrillin 3 gene linked with PCOS, D19S884, is present in independent family sets having the disease.

### **Progression**

One of the major issues associated with PCOS is symptom development and progression. PCOS has emerged as a challenging condition to diagnose based on its evolutionary nature. The condition keeps advancing with its diagnosis criteria being updated or changed due to the discovery of new information regarding the disease (Legro et al., 2007). From this, individuals experiencing any sort of signs that could be linked to the condition should seek early diagnosis to provide early intervention in case they are found to be having the condition. PCOS could begin in utero, thus showing how this condition could impact the health of the newborn. When PCOS begins in utero, chances are that the newborns could have high birth weight or low birth weight and later continually increase in post-natal weight or catch up on their growth. These risk factors can result in signs of premature adrenarche, metabolic syndrome, and premature pubarche. Among adolescents, the condition switches to its more prevalent form with signs and symptoms of anovulation and/or hyperandrogenism. Genazzani et al. (2010) state that long-term morbidities such as cardiovascular disease (CVD), become more prevalent during the postmenopausal period. The manifestation of PCOS as an evolving condition throughout its development process results in the intricacy of the disease.

Genazzani's study presents a truthful account of the manifestation of PCOS among African American women in their reproductive age. While science has offered an insight into the origin of the disease, people's comprehension of it is still insufficient. For instance, the adipose tissue expandability hypothesis does not explain the prevalence of the condition in children without IUGR (Genazzani et al., 2010). Besides, because unrestrained ovarian steroidogenesis responsible for the emergence of hyperandrogenism comprises only a single component of the condition, it becomes a problem explaining the lack of association amid prenatal androgen exposure and the emergence of PCOS among humans. This results in many other questions that individuals are unable to answer. For instance, one may wonder whether excessive androgen exposure should manifest at a vulnerable growth window for PCOS to show in the future. Another question that remains unexplained is at what age interval could be regarded to fall within the vulnerable window.

Other questions arise during the study of PCOS disease in women, which makes the understanding of the disease increasingly difficult (Gilstrap et al., 2013). For instance, it is difficult to understand how the genetic element of the condition is inherited and whether this component portrays penetrance. Finally, individuals seek to understand whether it would be possible for individuals screen neonates for PCOS (Gilstrap et al., 2013). Future studies need to fill in the missing gaps such as the relationship amid the ovarian dysregulation, genetics, androgen excess, and other susceptibility determinants that might course PCOS.

## **Diagnosis**

Diagnosing PCOS among adults can be conducted through three diverse guidelines. While conditions, including obesity and insulin resistance, are regarded as inherent to PCOS, none of them is taken into consideration in guidelines and thus should be employed for

diagnostic goals (Sherif, 2016). Besides, each diagnosis guideline necessitates overlooking any pathological disease that might explain menstrual irregularity or hyperandrogenism. The inconsistencies between the guidelines, however minor they are, are linked with a variation in the treatment and diagnosis of PCOS. In addition, the diagnosis of PCOS in adolescent women is increasingly debatable as puberty causes steady changes in hormones.

### **Signs and Symptoms**

The appearance of PCOS often differs with the age of the patients. Young women usually complain about psychological and reproductive issues while older females complain of metabolic issues (Sherif, 2016). It is necessary to conduct a thorough medical history, laboratory examination, and physical examination to ensure appropriate diagnosis. The termination of spironolactone and oral contraceptive pills (OCP) about one month before testing, alongside testing close to the luteal phase of the menstrual cycle are commended to obtain more accurate results. Besides, the testing process should comprise an examination of the patient's metabolic status (Gilstrap et al., 2013). Nonetheless, examining thyroid diseases through examination of thyroid-stimulating hormone levels is significant because thyroid conditions represent a usual source of menstrual irregularity.

### **Hyperandrogenism**

The puberty stage is associated with physiological hyperandrogenism. Various studies have shown that testosterone levels increase during puberty and attain peak levels a few years following menarche. This may relate to pathological hyperandrogenism thus clouding PCOS's picture (Genazzani et al., 2010). Analysis of the level of testosterone does not address this ambiguity since testosterone levels are increasingly impacted by the menstrual cycle and the

stage of puberty alongside other determinants. No reference ranges or cutoff values for androgen concentrations are well identifiable in adolescent women. Nonetheless, acne, which is increasingly manifested during puberty, is not linked with hyperandrogenism. Diagnosing hirsutism is complex because the standardized scoring criterion fails to consider ethnic differences.

### **Menstrual irregularity**

Adolescents often show physiological menstrual anomalies, including oligomenorrhea, particularly during the initial two years following menarche (Gilstrap et al., 2013), because of lack of maturation of the hypothalamic-pituitary-ovarian axis. Therefore, the menstrual anomaly can at times be an unreliable basis for the diagnosis of PCOS among adolescents. Following a close analysis of the patterns involved in the menstrual cycle, clinicians need to differentiate amid physiological anovulation linked with puberty from pathological anovulation as an anomaly identified PCOS. It is necessary to push forward the diagnosis process for at least two years following menarche to ensure a persistent menstrual anomaly (Sherif, 2016). Nonetheless, this could result in the delaying of the initiation of suitable treatment process. Common physiological variations and changes in the size and volume of the ovaries during puberty make ultrasonography outcomes debatable for diagnosing PCOS. Besides, conducting a transvaginal or transrectal ultrasonography in adolescents might not be appropriate, something that may result in the delay of the diagnosis.



## Associated Morbidities

### Obesity

Obesity is regarded as one of the most significant features of PCOS. The existence of obesity in diseased females ranges between sixty-one and seventy-six percent (Sherif, 2016). The occurrence of obesity reaches up to eighty percent in the United States and fifty percent outside. From this, it can be suggested that this prevalence is dependent on ethnic backgrounds, lifestyle, and environmental factors and not entirely on the presence of PCOS itself. Obesity during the childhood stage represents a renowned risk determinant for PCOS. As highlighted by Sherif (2016), obese girls are susceptible to the development of metabolic syndrome, insulin resistance, and PCOS at a later stage in their lives. Nonetheless, females with PCOS show an even higher risk of becoming obese. Many scholars show that women with PCOS show increased subcutaneous and visceral body fat distribution (Gilstrap et al., 2013), because of heightened rates of androgen production. Such central obesity results from a fat distribution of a masculinized body, where the quantity of viscera fat distribution relates with the level of insulin resistance. Nonetheless, obesity plays a vital role in manifesting PCOS's metabolic features.

Females with PCOS show an atherogenic lipid profile linked with increased standards of low-density lipoprotein, cholesterol, and triglycerides. Besides, such women are placed at a higher risk of contracting arterial stiffness, altered vascular endothelium, and atherosclerosis (Sherif, 2016). Individuals with PCOS also demonstrate a worse cardiovascular status and other related conditions. This is evident by the fact that women with PCOS present similar metabolic features to those that are obese. However, it is still debatable whether PCOS leads to obesity or whether obesity leads to PCOS. Results from PCOS identified in animals show that the provision of testosterone among pregnant monkeys and rats in their early phases of conception results in a

central abdominal collection of fat of the progeny during the postpartum phase (Gilstrap et al., 2013). Therefore, excess prenatal androgen, whether induced or genetic, might be the primordial occurrence in the growth of PCOS linked with obesity.

### **Insulin resistance**

An increased level of attention has been paid to the metabolic issues that come alongside the PCOS condition, and the impacts of these issues later in one's life. Currently, insulin resistance is regarded as a major pathogenic determinant behind the heightened metabolic issues among females with PCOS, which can explain menstrual anomalies, hyperandrogenism, and other manifestations that are identifiable in the disease (Genazzani et al., 2010). A study conducted in 1990 was the first to identify the link between PCOS and hyperinsulinemia. Based on the findings presented by this study, there is a significant positive link between androstenedione, testosterone, and insulin levels amongst women with PCOS. Other studies have supported these findings by showing that about eighty-five percent of women with PCOS, including sixty-five percent of lean affected females and eighty-five percent of PCOS women, show the manifestation of hyperinsulinemia.

High insulin amounts in PCOS patients, together with increased levels of luteinizing hormone, initiate the arrest of follicular growth, which results in anovulation. Besides, hyperinsulinemia changes the gonadotropin-secreting hormone (GnRH) pulse secretion pattern, overwhelms the sex hormone-binding globulin (SHBG), and ignites ovarian androgen secretion among females with PCOS (Sherif, 2016). Many other studies have agreed to the relationship between PCOS and diabetes and demonstrated that lifestyle or dietary changes and insulin-sensitizing drugs enhance hyperandrogenism in individuals living with PCOS. When the hormone leptin is employed as an insulin-sensitizing factor, it alleviates androgen concentrations

and prompts menstruation in impacted lean females. Other findings have demonstrated that six months of lifestyle variations increase insulin sensitivity by seventy percent and substantially reduce anovulation in impacted obese women. These findings support the idea that insulin resistance increases hyperinsulinemia. Such findings represent one of the significant issues in PCOS diagnosis, which resulted in the deliberation of insulin-sensitization or insulin-mimetic agents as part of the management of the condition.

Based on Sherif (2016), patients with PCOS must undergo an insulin resistance test. Various biomarkers have been employed to identify insulin resistance among women with PCOS. For instance, insulin bars the secretion of sex hormone-binding globin (SHBG) from the liver and the secretion of insulin-like growth determinant binding protein 1 (IGFBP-1). It also impacts the homeostatic model assessment (HOMA-IR) (Gilstrap et al., 2013), which is based on computations of insulin levels and fasting glucose. Nonetheless, these markers have different specificities and sensitivities during insulin resistance testing. Therefore, studies should come up with a universal marker that could be used to accurately diagnose reduced insulin sensitivity among PCOS patients.

### **Type II Diabetes Mellitus**

PCOS presents a significantly heightened risk for gestational diabetes and types 2 diabetes mellitus from the childhood stages. Based on this study, an average of one in every five women living with PCOS develops type II diabetes, causing decreased glucose tolerance a usual anomaly in this condition (Sherif, 2016). Prospective and cross-sectional longitudinal research has constantly revealed that PCOS women show a heightened risk of contracting impaired glucose tolerance or type II diabetes mellitus in comparison to other identical women. Besides, findings from studies conducted among young and middle-aged females with PCOS demonstrate

an increased risk for developing diabetes in their later stages of life particularly because of a high prevalence of insulin resistance and obesity among the patients. Another interesting determinant is that family history of diabetes enhances the prevalence of type II diabetes among patients with PCOS. Nonetheless, the manifestation of type II diabetes mellitus amongst women with PCOS individuals without any history of diabetes in their family is still perceived to be higher compared to normal women (Condorelli et al., 2017). While obesity and family history represent two of the major factors in the emergence of diabetes in individuals with PCOS, diabetes can still manifest in lean PCOS women who do not have any family history, particularly secondary insulin resistance.

### **Cardiovascular Disease**

Past studies have shown that PCOS patients are seven times likely to develop myocardial infarction compared to their healthy counterparts (Sherif, 2016). However, recent findings have shown that there is no significant difference in the risk of development of myocardial infarction between the two groups. More findings from recent studies have demonstrated that PCOS patients have substantially increased levels of circulating CVD biomarkers such as C-reactive protein, and lipoprotein A, compared to normal women. Increased burden of determinants of atherosclerosis with early manifestation of cardiovascular dysfunction, including endothelial dysfunction, arterial stiffness, and coronary artery calcification, has also been highlighted by other studies. According to Gilstrap et al. (2013), the burden of cardiovascular diseases is increasing in sub-Saharan Africa (SSA). The study shows that hypertension represents the most leading risk determinant for CVD globally and it is emerging as a more prevalent disease in sub-Saharan Africa.

## **Cancer**

Ebrahimi-Mamaghani et al. (2015) show that women with PCOS show numerous risk factors linked with the enhancement of endometrial cancer, including insulin resistance, obesity, anovulation, and type II diabetes mellitus. Based on this study, anovulation initiates an unchallenged uterine estrogen exposure. As shown in the study, this can consequently result in the emergence of endometrial hyperplasia and later endometrial cancer. Ebrahimi-Mamaghani et al. (2015) also argue that women living with PCOS present a threefold heightened risk of developing endometrial cancer in their lives, which is distinguished with a perfect prognosis. Nonetheless, there has been no data presented to support ultrasound checking for endometrial thickness among women living with PCOS.

## **Treatment**

Various treatment approaches have been cited as being effective in handling PCOS. The first one includes lifestyle changes. In this case, it is understood that calorie-restricted diet and exercise therapy are vital in ensuring that individuals do not develop obesity during their lives (Gilstrap et al., 2013). This minimizes their chances of acquiring PCOS. Other treatment processes include medical interventions which include oral contraceptive pills, metformin, a thiazolidinedione, inositol, and spironolactone.

## **African American Women**

The reference to America as a melting pot is because of the country's ability to host to people from different places, ideologies, religious beliefs, and races. The different groups of people in the country have their uniqueness, which makes them beneficiaries to positive things, but it also makes them vulnerable in other areas of life. African American women form an

important part of the melanin fabric in American society. Like their African American men counterparts, they have a history marked with adverse personal experiences that span a period of about 400 years to when the institution of slavery formed the spine of American society. The difficulties facing African American women today can largely be traced back to their ancestral and historical origins of mistreatment and enslavement.

Black people in America are the melanin of the collective consciousness of African American women in North America has long been attributed to a common history. Such history includes the centuries of enslavement, a great promise of political alignment during the Reconstruction period, the freedom that came during the Civil War, segregation, and the eventual struggle for equality (Guerra, 2013). These historical struggles are well reflected in modern-day health inequality that African American women face. Decades of sexual violence, limited access to healthcare, involuntary subjection to medical experimentation, genitalia mutilation, generational poverty, and targeted sterilizations have all been combined to further exacerbate the dilemma for African American women in their search for equality in healthcare (Prather et al., 2018). As African American women continue to struggle with these issues, their health needs remain smeared increasingly their vulnerability. A prime example is the health outcomes and how disparately they are affected by Polycystic Ovarian syndrome (PCOS).

### **Reproductive Age**

Reproductive age is defined as those life years in women between menarche and menopause. Studies show reproductive years range from the ages of 15 to 49 years. However, the time is imprecise as women can bear children at a younger age than fifteen years or older age of more than 49 years. Many African American women of reproductive age face issues in women's health. According to the World Health Organization (WHO), reproductive health is defined as a

“state of complete mental, physical and social well-being and not merely the absence of infirmity or disease” (WHO, 2006). Reproductive Health (RH) addresses issues concerning the reproductive system, function, and processes as well as human sexuality. Reproductive health focuses on creating awareness for women and men on acceptable, affordable, effective, and safe practices of sex and their methods of regulating fertility, family planning as well as advocating for safe pregnancy and child birth. Reproductive health is not limited to women of reproductive age but rather it involves all factors and aspects that may directly or indirectly affect women of child-bearing age.

According to WHO, women in reproductive age, have the following reproductive rights: the right to the optimum standard of sexual and reproductive health, the right to make decisions freely without violence, coercion, or discrimination, the right to access medical services on reproductive health and the right to freely decide the number of children and spacing. Women in reproductive age are vulnerable and predisposed to issues concerning side effects from contraceptives, unplanned pregnancies, lack of access to family planning methods, stillbirths, infertility, social stigma, maternal mortality, unsafe abortion complications, lack of health information on parenthood and sexuality, reproductive illnesses such as endometriosis, STIs, PCOS, and many others.

### **Predisposition of African American Women**

African American women based on culture, genetics, and socioeconomic factors have various health concerns, and this is often linked to their marginalization within the healthcare system that leaves them without equality in accessing basic medical services. Nonetheless, health disparities are present between African American women and the rest of the population. Cancer,

reproductive illness, and cardiovascular diseases are the leading diseases where socio-economic factors predispose African American Women (Asiedu et al., 2017).

Cancer is an example of a disease that affects all races in North America. As a result, it has since been ranked the second-highest killer among all races (Asiedu et al., 2017). Furthermore, African American men are 50 times as likely to be affected by an enlarged prostate or prostate cancer as their Caucasian colleagues. African American men are most likely to die of cancer than any other racial group. African American women, the circumstances are equally dire. African American women below the age of 5 are twice as likely to have breast cancer and have more than a 42 percent chance of dying from the disease in comparison to their white colleagues. Asiedu et al. (2017) attribute this phenomenon to the lack of referral to chemotherapy early which sees the disease progress much faster and cause more death.

African American women suffering from PCOS have a higher prevalence to type 2 diabetes mellitus and metabolic syndrome. Similarly, they record higher mortality and morbidity rates to cardiovascular disease in comparison to the general population (Engmann, 2017). There is a need for concentrated effort to be directed towards dealing with PCOS among African American women and the comorbid illnesses such as diabetes, cardiovascular illness, and cancer.

### **Health Factors Impacting African American Women in Reproductive Age**

#### **Depression**

Depression is a mental health concern for many African American women across the United States. The issue of mental health is highly stigmatized among the Black community, hence, the majority, of those affected fail to receive medical assistance due to fear of cultural stigma (Hamm, 2016). According to a study conducted by the Centers for Disease Control and



Prevention in 2011, discovered that 4 percent of women are likely to suffer from depression as compared to 2.7 percent of men. Additionally, African Americans are 4 percent more times likely to have depression than their White counterparts with 3.1 percent. Of the total African American population that has depression, only 7.6 percent seek treatment. Black women are considered most vulnerable to committing suicide due to depression. The University of Wisconsin-Madison report shows that Black women are at a higher risk of developing Major Depressive Disorder (MDD) with a mere percentage receiving treatment. A study conducted in 2020 showed that out of the sample size of 485,141 females with PCOS 47 percent of them had depression (Guo et al, 2018).

There are many causes for depression among African American women. One of the major causes of depression is that of reproductive health issues. Studies have shown that 54 percent of women suffer from depression before pregnancy often transfers into the gestational period which also impacts the baby. African American women of reproductive age are 4 times more likely to have depression as compared to White women (American Heart Association, 2021). Factors such as infertility, PCOS, stillbirths, miscarriages, and the inability to access reproductive health services have been known to be the major factors contributing to perinatal depression in African American women. The effect rising from PCOS such as infertility and menstrual imbalances lead to women developing anxiety and stress about their reproductive health. Furthermore, post-partum depression for African American women who have undergone PCOS treatment has also been a source of concern. The women face anxiety on how to handles such issues as infant management or illnesses and the possible complications that arise after delivery such as fistula, heavy bleeding, among others. Consequently, many African American women seek to commit suicide or to cause self-harm to alleviate their anxiety or depression.

## **Diabetes**

Diabetes is another health concern that affects African American women. However, like other diseases, diabetes does not disproportionately affect African American women as is the case with other diseases such as cancer and cardiovascular diseases. Nevertheless, African American women of reproductive age are still at greater risk of diabetes in comparison to white women of the same age group. While genetics plays a role in this phenomenon, obesity has been pointed out as the most important factor. Diabetes and obesity are correlated with women who have the most fat being more predisposed to being diabetic. The location of fat deposits on the body also determines the severity of risk with women whose most fat is in the abdominal area being more vulnerable than those who carry their fats in their hips and buttock area (Walnut Hill, 2020). Nonetheless, overweight women, regardless of where they carry their body fat, are at significantly higher risk of diabetes than those with leaner fat deposits.

African American women of reproductive age, their concern with diabetes is just as like their counterparts who are not of the same age group. While there are more than 16 million who have diabetes mellitus in the US, the condition among African American women has hit epidemic proportions (Walnut Hill, 2020). According to National Institute of Health (NIH, 2018), the predisposition of African American women to diabetes in comparison to the others is because of a gene that makes them glucose intolerant, and this is a major factor in the development of the disease.

Generally, poor glycemic control for African American women of reproductive age has been their worst enemy as this makes them more susceptible to diabetes. Poor glucose control around the time of conception has been shown to contribute to higher instances of diabetes among African American women. Other accompanying risks of the same include infant

malformations and loss of the pregnancy (Holcomb et al., 2001). In essence, African American women of reproductive age need stricter glycemic control measures to reduce their risk of diabetes.

### **High Blood Pressure**

High blood pressure or hypertension affects a great majority of the world population. The non-communicable disease is also referred to as a lifestyle disease as it stems from such factors as obesity, high salt intake, lack of exercise, high-stress levels, among other conditions. While the condition is likely to affect any person in the population, those in the vulnerable or susceptible population such as the elderly, pregnant women, the obese, and those with underlying chronic conditions, the disease has been seen to affect African Americans more than other races (Amiri et al., 2020). Research studies have shown that the African American population has higher rates of diabetes and obesity which predisposes them to develop hypertension. It is considered that 16.5 percent of women of reproductive age have hypertension.

Given the low socio-economic status of many African American women in terms of lacking medical insurance to treat PCOS, they end up developing hypertension (Grassi & Fogoros, 2019). Women with PCOS have a higher chance of being hypertensive. Notably, one of the symptoms of PCOS is masculinization which means that a woman may tend to lose their feminine appearance. For this reason, the social stigma that African American women with PCOS must face results in the need for withdrawal or isolation. Such isolation from social interactions contributes to the production of less endorphin hormone by the brain which results in depression.

## **Lupus**

Lupus is another health condition that disproportionately affects African American women. Unlike the other conditions, however, Lupus affects all people in the general population. Sadly, however, women of all age groups are more at risk of lupus than their male counterparts. Furthermore, African American women are more affected by lupus but there is no scientific explanation for that despite links to genetic makeup. The idea of a genetic code that triggers lupus among African American women has been supported to some extent by the fact that at least 1 in 250 African American have the disease. For African American women, their situation is further worsened by the fact that it affects people within their community from a younger age (Faith et al., 2018). As a result, women of reproductive age are at greater risk of lupus and their symptoms are likely to be worse than those of their white counterparts.

The most common form of lupus that worries women of reproductive age is that it could impair their reproductive processes. Systemic Lupus Erythematosus (SLE) is at its worst during the reproductive years, and it is also the time when most diagnoses are made. Suffering from SLE during the childbearing years worsens the situation for women with PCOS. Research shows that SLE leads to infertility and causes the inability to conceive and maintain a pregnancy (Kartoz, 2015). Since the pathophysiology of SLE directly causes reproductive health difficulties, there is need for African American women – who are at the highest risk – to have thorough reproductive health planning and interventions that will assist in making sound reproductive health choices. In so doing, the severity of SLE on reproductive health and the accompanying risks of worsening PCOS will be significantly reduced.

## **Obesity**

Recently, obesity in the global population has increased rampantly among young adolescents and middle-aged people. Several studies have shown that there is a disproportionate number of African Americans suffer from obesity. African American women have a high risk of developing obese-related conditions such as hypertension, cardiovascular diseases, stroke, and cancer (Abraham et al., 2013). Furthermore, there is an increased prevalence of Black women developing metabolic syndrome due to PCOS. African American women with obesity have a higher risk of having complications arising from PCOS.

One of the primary causes of obesity is poor diet and the lack of exercise. Evidently, the majority of African Americans live in low-income neighborhoods. Due to their socio-economic status, they do not have the means to afford healthy diet and gym membership. The predisposition to be obese is further culminated by increase in stress levels. The latter is further worsened for African American women who have PCOS (Sutherland, 2013). Particularly, PCOS is a disease that is addressed on private platforms with many patients not speaking of them publicly. Given that the women fear social stigma, they end up being withdrawn or isolated which then fosters the habit of binge eating. As studies have shown, binge eating contributes to obesity. Additionally, PCOS symptoms are likely to be worsened for African American women diagnosed with obesity.

## **Thyroid Health**

PCOS and thyroid disorders are two health matters that can share common features. Hypothyroidism in specific, Hashimoto's thyroiditis (HT), is prevalent for people with PCOS. A study conducted in 2013 discovered that 22.5 percent of women that suffer from PCOS have hypothyroidism. The PCOS and thyroid relationship is believed to be caused by environmental

and genetic factors (American Thyroid Association, 2017). Hypothyroidism tends to increase the levels of testosterone while at the same time decreasing the sex hormone-binding globulin (SHBG) which explains the symptom of masculinity manifesting in women with PCOS.

Genetic susceptibility leads to women acquiring PCOS and HT. Thyroid dysfunction is highly linked with fertility problems. In this regard, women who have not yet been diagnosed with PCOS may be referred to thyroid examination. Also, hypothyroidism has been linked with ovarian cyst formation which in turn may result in such symptoms as ovulatory dysfunction, low endometrial thickness, irregular menses, and heavy bleeding. Research shows that there lacks a racial link between African American women having PCOS suffering from hypothyroidism.

### **Conclusion**

Polycystic ovary syndrome (PCOS) and Metabolic syndrome share similar features are interrelated in outcomes and treatment. Symptoms such as such as increased lip cholesterol panels, excess weight in the abdominal section, and irregular menstrual cycles are seen in women affected with PCOS. Symptoms also include internal and external symptoms irregular periods such as irregular periods, excess body hair, acne, male pattern baldness, and infertility. Individuals with higher amounts of testosterone and obesity are more likely to be diagnosed with diabetes and other insulin-resistant types of imbalances that often disrupt the lives of women on a hormonal level impacting a woman's ability to conceive and safely carry children to full-term pregnancy and deliver without complications. When treating and managing care in patients diagnosed with PCOS and metabolic syndrome each case is different however care can be managed through nutrition, weight management, normal A1C and cholesterol baselines, and dietary supplements.

Each case of PCOS manifests in a different way in each woman and is managed inversely. There are cases where a patient may not show any external signs of PCOS or may have one internal symptom, but the lab work expresses otherwise. In certain instances, some women have all the external signs, and the lab work expresses normal baseline values within a standard range. This further explains the importance of assessing each patient individually, family history, culture, socio-economic factors as well as lifestyle factors. Establishing a clear foundation and understanding the life of the patient is crucial in addressing the symptoms and developing an appropriate treatment plan that addresses the whole person.

My research concludes that African American women that with a presence of metabolic symptoms are at a higher risk for PCOS and vice versa. Early diagnosis is essential in reducing the overlapping of symptoms and managing the progression of symptoms. There the earlier intervention is implemented with increased physical activity, nutrition management, establishing healthy metabolic baselines, and a weight within a range that aligns with height and age. Metformin may be the course of treatment often used in the standard course of treatment however medication alone does not guarantee improvement in outcomes without dietary and lifestyle modifications.

## **Program Treatment Plan<sup>1</sup>**

### ***Step 1: Target Population and Needs***

#### **Women with No Plans to Conceive**

African American women ages 25 and 40, that are in reproductive age with a desire to implement healthier lifestyles and manage symptoms concerning Metabolic syndrome and

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<sup>1</sup> See Appendix for more information

Polycystic Ovarian syndrome. I have chosen this population because there are significant numbers of women between the ages of 25 and 40 that have health issues and the presence of symptoms that put them at immediate risk for cardiovascular disease, stroke, gynecological cancers, and co-morbid conditions. Correlation of Metabolic syndrome and Polycystic Ovarian syndrome in African American Women of reproductive age is a present issue that demands a call to action to manage and reduce instances of declining health with age and hormones.

### **Women with Plans to Conceive**

African American women ages 25 and 40 years with symptoms or diagnosis of PCOS and/or Metabolic syndrome are eligible. The goal in implementing the program is to help aid in transitioning each participant to a healthy metabolic baseline and reduce their risk and chances of developing the disease and improving their chances at a healthy life and conception through carrying a healthy pregnancy and baby full time. This program also improves the chances for a woman to eat healthily and condition the body to carry a healthy baby with a reduced likelihood of gestational complications and maternal complications such as gestational diabetes, obesity, and preterm labor.

### **Program Basis:**

Studies show that individuals with higher amounts of testosterone and obesity are more likely to be diagnosed with diabetes and other insulin-resistant types of imbalances that often disrupt the lives of women on a hormonal level impacting a woman's ability to conceive and safely carry children to full-term pregnancy and delivery without complications. Assessing metabolic well-being, BMI, and customary cardio and metabolic hazard elements can give huge bits of knowledge into metabolic status. Because of high inconstancy in metabolic well-being in overweight and stout grown-ups and natural sex contrasts, evaluating body organization and



instinctive fat measures in the clinical setting can improve early distinguishing proof and ways to deal with illness counteractive action.

To ensure each woman is in alignment with their treatment plan developed under supervision of the Clinical Team, women work with a team of Licensed and Board-Certified Clinicians that work together to coordinate care at an affordable price including sliding scale options, with specialties that include Family Health, Obstetrics and Gynecology, Endocrinology, Dermatology, Health Coaches and Health Educators. Contracts are established with local restaurants, gym facilities, and companies that provide meal prep to ensure healthy foods needed to be successful are within reach.

### ***Step 2: Program Goals***

#### **Women with No Plans to Conceive:**

- Develop, implement, and evaluate a personalized health and wellness program to increase rates of healthy eating, and lifestyle, with patient education specific to health management through nutrition and lifestyle changes.
- Upon program completion, participants will build a platform to support “Healthy living” among black women and increase the quality of life, improve women’s health, and normal vital values in the African American Female population.
- To encourage the adoption of healthy lifestyles among African American Women

#### **Women with Plans to Conceive:**

- Develop, implement, and evaluate a personalized health and wellness program to increase rates of fertility, healthy eating, and lifestyle, with patient education specific to health management through nutrition and lifestyle changes.

- Upon program completion, participants will build a platform to support “Healthy living” among black women and increase the quality of life, fertility, and normal vital values in the African American Female population.
- To encourage the adoption of healthy lifestyles among African American Women
- Maintain healthy Metabolic Baselines and Postpartum health by implementing the program regimen postpartum for women with no desire to conceive.
- Maintain a low-risk pregnancy and childbirth.

**Health Objectives:**

Got Body Program via Body with Finesse addresses the identified health objectives:

- Make each woman aware of her Vitals and Stats documenting a metabolic baseline. (Stats Weight, A1C, Blood Pressure, and Measurements)
- Develop an individualized meal plan Fast Food Reference Guide for each woman that accommodates her lifestyle and aids in reducing unhealthy stats such as Weight, A1C, Blood Pressure, and Measurements that increase the risks for infertility, and metabolic-related imbalances, reducing the burden of disease enhancing family and community health.
- Document successful outcomes in the lives of women that participate in the 12-week program, weekly check-ins are required in person or online to maintain accountability and participation in online support removing barriers in the health care and cross-disciplinary outcomes.
- Encourage Leadership, Wellness, and diet management for long-term lifestyle changes results in improving women’s health across the lifespan.

**Treatment Outcomes:****Women with No Plans to Conceive:**

Women implementing changes in their lives improving body composition, self-esteem, and attitudes towards health, wellness, and overall women's health.

**Women with Plans to Conceive:**

Women implementing changes in their lives improving body composition, self-esteem, and attitudes towards health, wellness, preconception, through pregnancy and postpartum health. The goal is to ensure a normal vital and metabolic baseline and achieve a healthy, low risk, and safe pregnancy, childbirth, and baby.

***Step 3: Proposed Program Plan and Intervention***

All women in this study are given either a low dose (an amount currently found in many prenatal vitamins) or a higher dose of DHA and asked to take three capsules every day until their baby is born. After the study, participants would learn which dose they were given.

**Program Screening:****Women with No Plans to Conceive**

Women between ages 25 and 40 years with symptoms or diagnosis of PCOS and/or Metabolic syndrome are eligible. The expected treatment outcomes for women without a plan to conceive include normal A1C levels, healthy weight range, it is also important in each treatment group that symptoms that may be present are treated, this may include aesthetic concerns also.

**Women with Plans to Conceive**

Women between ages 25 and 40 years with symptoms or diagnosis of PCOS and/or Metabolic syndrome with plans to conceive are eligible.

**Program Inclusion:**

This program also provides patient education to women on healthy eating and reducing the likelihood of health complications associated with comorbid conditions. I plan to market these programs through the Local Health Department and Local obstetrics and Gynecology practices. Our team of clinicians and program staff will coordinate with medical facilities to determine who is the best fit for the program and select 3 patients each from a pool of 4 offices including the local health department, and 3 OB/GYN providers.

***Step 4: Personnel and Budget***

Team of Licensed and Board-Certified Clinicians that work together to coordinate care at an affordable price including sliding scale options, specialties include Family Health, Obstetrics and Gynecology, Endocrinology, Dermatology, Health Coaches and Health Educators.

**Meeting Space:**

Local Health Department/On-Site Office for Online Follow-up (Tele-Med)

**Supplies:**

Program Fee: Variable

CBC Blood Panel Costs Determined at Evaluation

Meal Plan Costs Determined at Evaluation

Pap Smear (Varies based on Provider)

Any Visitor Service is charged a fee based on the Provider selected in the program.

Some restrictions apply based on need, demand, and medical history.

**Itemized Costs:****Start of Program:****Service/Consult Fee: Hourly Rate**

CBC Blood Panel Costs Determined at Evaluation

Meal Plan Costs Determined at Evaluation

Pap Smear (Varies based on Provider)

**Program Conclusion:**

**Service/Consult Fee: Hourly Rate**

CBC Blood Panel Costs Determined at Evaluation

Meal Plan Costs Determined at Evaluation

Pap Smear (Varies based on Provider)

Rates and fees subject to change based on market fees and costs and demands of business, clinicians, and parties involved. Participants that complete the program will be offered a 90-day Maintenance program at a reduced cost to transition from weekly support in the program.

***Step 5: Program Plan (either treatment group)***

The plan is to begin the program at the beginning of the year with participants ready to start, necessary intake paperwork and medical clearance, including program commitment. The program will run for 12 weeks at a time with 12 participants in each program. The initial program and trial period will be in effect 1/1/20xx until 12/31/20xx. Over the course of the program including 4 quarterly programs of 12 participants each totaling 48 participants in a year. If the outcomes show improvement of at least 60 percent, the program will be planned, developed, and expanded to meet the needs of women that meet the same criteria in larger communities and groups.

**Projected Start:** 1/1/20xx

**Expected Completion:** 3/xx/20xx

## **Step 6: Program Measures and Administration**

### **Women with No Plans to Conceive:**

At the end of each 12-week program, all participants are expected to complete another CBC Blood Panel including A1c, Measurements, Weight, and Cholesterol Screening; labs and other supplemental testing and wellness update will be accessed and compared to data reported at the start of the program. Participants that have not improved to a medically normal clinical baseline will be given recommendations and an opportunity to continue receiving medical services on a sliding scale fee however they will be responsible for any medical services required or needed that extend beyond what is offered in the 12-week program, outcomes will be documented regardless of the outcome. Participants that complete the program will then be placed in a log and we will maintain biweekly communication with them for 6 months to a year. There will be a quarterly log where the client will document their weight and maintain appointments and guidelines in the treatment plan and program release.

For the participants that achieve a healthy metabolic baseline, healthy weight range fulfills program commitments and participants much agree to provide a medical release that supports the supports whether the program was successful in addressing the need and improving the health outcomes. Documenting successful outcomes in the lives of women that participate in the 12-week program, weekly check-ins help foster accountability and maintain participation in online support removing barriers in health care and cross-disciplinary outcomes.

### **Women with Plans to Conceive:**

This treatment group includes black women between the ages of 25 and 40, that are in the reproductive and childbearing years with a desire to implement healthier lifestyles and prepare their bodies for conception and postpartum health management.

At the end of each 12-week program, all participants are expected to complete another CBC Blood Panel including A1c, Measurements, Weight, and Cholesterol Screening; labs and other supplemental testing and wellness update will be accessed and compared to data reported at the start of the program. Participants that have not improved to a medically normal clinical baseline will be given recommendations and an opportunity to continue receiving medical services on a sliding scale fee however they will be responsible for any medical services required or needed that extend beyond what is offered in the 12-week program, outcomes will be documented regardless of the outcome.

Participants that complete the program will then be placed in a log and we will maintain biweekly communication with them for 6 months to a year or until conception, whichever comes first. Throughout the pregnancy, the client needs to be in communication regarding any changes that impact the baby during gestation that are related to PCOS and Metabolic factors. Upon successful pregnancy and delivery, all clinical and postpartum documentation will be included in the file while the mother works with the new regimen for mothers with no plans to conceive to maintain health outcomes postpartum pregnancy.

For the participants that achieve a healthy metabolic baseline, healthy weight range fulfills program commitments and participants much agree to provide a medical release that supports the supports whether the program was successful in addressing the need and improving the health outcomes. Documenting successful outcomes in the lives of women that participate in the 12-week program, weekly check-ins help foster accountability and maintain participation in online support removing barriers in health care and cross-disciplinary outcomes.

## **Explanations for Two Different Protocols**

There are two treatment protocols as it is not the desire of every woman to conceive. Metabolic syndrome and PCOS both impact health, well-being, and fertility in women, one treatment approach focuses more on the diet, lifestyle, nutrition with fertility management including postpartum disease prevention. The second treatment will focus on diet, lifestyle, nutrition, disease prevention, and reducing the likelihood of other co-morbid conditions.

The expected treatment outcomes for women with a desire to conceive include transitioning each participant to a healthy metabolic baseline and reduce their risk and chances of developing the disease and improving their chances at a healthy life and conception through carrying a healthy pregnancy and baby full time. The expected treatment outcomes for women without a plan to conceive include normal A1C levels, healthy weight range, it is also important in each treatment group that symptoms that may be present are treated, this may include aesthetic concerns also.

In managing clients with Metabolic and PCOS imbalance factors although vitals are within the normal range some issues may be of concern. For example, a patient may have normal A1C and weight, however, they suffer from darker skin on the areas of the neck and skin folds, which is common. In this instance, skincare management under the care of a dermatologist or other Licensed Skin Care Professional such as an Aesthetician would be essential to treating the external esthetic concerns through customized skincare treatment. Another example of this would be excess skin in a patient that experienced a significant amount of weight loss, now they may have sagging arms, loose abdominal skin which in some patients that cause dermatitis or fungal infections. This is an example where cosmetic procedures may be performed such as skin tightening or skin removal under the care of a Plastic Surgeon; this is another example where



after the symptoms are managed, things are done to improve a patient's self-esteem which addresses the mental health aspect in the treatment outcomes.

Management of PCOS and Metabolic syndrome related imbalances depends on age, demographic, overall health, and other health-related factors. This highlights the importance of personalized evaluation in diagnosing, treating, and managing PCOS and Metabolic syndrome . There is no universal standard of care and when a universal approach is taken patients can engage in treatments that may be a better fit for another patient and increase the likelihood of unsuccessful treatment outcomes.

There are two treatment protocols as it is not the desire of every woman to bear children and the same treatment that is used for women that have no desire to conceive is recommended for post-partum PCOS and Metabolic syndrome management long term, if the desire to conceive changes, the protocol may be changed to align with the conception ready regimen.

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## Appendix

### **Body with Finesse, LLC: Intervention Model, Food and Nutrition Guide**

When deciding to change your diet and lifestyle habits this is one of the best decisions that can be made. When we talk about weight loss and a healthy lifestyle this is a process that requires not only ourselves but patience with the process. Often, we get frustrated when we hit a roadblock or circumstance that may slow us down, but patience and tools are a must. This is where I come in to help you with tools that make this process a little easier.

When you begin to lose weight and begin a new routine make sure that you are doing this for you. Sometimes we do things because other people want it for us or to make others comfortable and this state of mind does not provide a good foundation for a lifestyle change. I am a firm believer in loving yourself and self-preservation if you do not love yourself no one else will. I remember when I was in my heavier days and people would make comments about my eating habits or comments about why I needed to exercise, and it did not matter to me because I did not want it. I was not serious about a healthy lifestyle at that time, I had become comfortable and developed health challenges. When I realized that I was no longer happy with how I was feeling in my clothes and lacked motivation and energy I knew I had to do something. I had to change how I looked at food, I realized that there is nothing wrong with eating, but food should not be what we look to when we are bored or because it is there.

We eat to nourish the body and refuel. Planning what to eat is the biggest challenge for most. I have removed the hassle and developed a guide for you that will make the transition much easier.

## **Program Model**

Body with Finesse is here to help you achieve your health and wellness goals. Whether you desire to lose weight, gain weight, or maintain a healthy weight. You may just need some guidance with changing your diet, whatever we are here to help you. The skin is the largest organ the human body consists of and what we put in our bodies shows in our skin. We offer Esthetics, and Body therapies to help you implement a healthy skin regimen. Many of the challenges that we experience in our bodies manifest in our skin and from what we put in our bodies and how we treat our skin.

We understand everyone is different and cultural competence is the foundation of the Body with Finesse experience. We are committed to excellence, grounded in the enthusiasm we take pride in delivering personalized, dedicated service. Our therapies combine both natural and complementary techniques in a systemic approach. They are designed to provide balance to meet the needs of everyone individually and implement lifelong lifestyle habits.

Education is important, not only do we customize a program for you we offer affordable prices and options for all types of lifestyles. We specialize in working with individuals that are looking to change their lifestyles and need help getting started. We also specialize in clinical esthetic and wellness management. Unique skills, a genuine passion for guest care, and a personal understanding of the needs of everyone individually are important to ensure that each experience is a personalized experience. Working together to create the body you want.

## **Process Consultation**

This is the portion of the program where we get acquainted and complete an intake to learn about you, your needs, and your health and wellness goals. It is important when we work



together for you to be honest with me about your current and past health information as well as lifestyle factors. We need to have an honest and healthy business relationship. I do not diagnose or treat; I am here to help provide you with services within my scope of practice and will refer you to your Medical Practitioner when outside my treatment area. I highly recommend that you write down several questions that are important to you before our meeting, this helps you remember important questions. This is your consultation customized specifically for you.

### **Education and Implementation**

This is the step where we begin the stages of putting the treatment plan in motion. This is where we combine the Consultation and Education into a personalized plan for you and provide you with tools to get started.

### **Maintenance**

Here we outline the steps and plan to align with the goals we established at the end. This allows you to maintain the lifestyle you implemented and reduce the chances of regression. Maintaining outcomes is important to ensure optimal well-being and long-term management.

## **Grocery Guide**

### **Fruits**

Apples, Blackberries, Blueberries, Cantaloupe, Cherries, Cranberries, Grapefruit, Kiwi, Nectarine, Oranges, Peaches, Pineapple, Plums, Strawberries.

**Vegetables**

Asparagus, Avocados, Beets, Broccoli, Cabbage, Carrots, Cauliflower, Celery, Cucumber, Eggplant, Green Beans, Lettuce, Mushrooms, Spinach, Squash, Zucchini.

**Meats**

Salmon, Organic Chicken, Organic Turkey, Grass-Fed Meats, Shrimp, Plant-Based Meat Alternatives (minimal soy options). No Tilapia, or GMO Meat options.

**Dairy**

Cheese (Dairy and Non-Dairy), Nut Milks (Almond, Cashew), Rice Milk, Plant Based Dairy Alternatives.

**Herbs**

Parsley, Cilantro, Cinnamon, Turmeric, Oregano, Dill, Thyme, Basil, Sage, Rosemary, Bay Leaf, and Mint.

**Meal Recommendations****Salads**

When making your salad, pick a base; you can do a variety of green leafy options, this can include anything from lettuce, spinach, kale, spring greens, etc. You can combine these options also. Choose a protein: Protein in a salad is a great option to reduce cravings and feel fuller longer. Any protein of your choice (lean protein), and/or lentils. Toppings include any vegetables or fruits of your choice. Please limit salad dressing.

## **Fruit Smoothie or Meal Replacement Shake**

When making your Fruit Smoothie or Meal Replacement Shake always: Choose 1 liquid/base: Water, Almond Milk, or Organic Juice. Choose 1 Green Base: Spinach, Kale, or Combination. Choose 3 Fruits these can be fresh or frozen, no canned fruits permitted. Either is a great option, this is a flexible option for convenience and to reduce boredom, there are many ways you can alternate these. If using a meal replacement shake: Add a low-calorie protein of your choice.

## **Bowls**

When building your Bowl: Select a base, please be mindful of your choice. If your goal is to lose weight, I would suggest selecting lower carb options. Choose a base such as brown rice, greens such as Lettuce, Kale, Spinach, etc. You can also do both greens and brown rice however the rice portion should not exceed. Choose any protein of your choice. Toppings: include anything such as tomatoes, onions, peppers, cilantro, beans (limit to 1/4 a cup of beans), avocado are great additions to build a veggie bowl. Follow the same guidelines used in the fruit smoothie guidelines when building a bowl, I recommend fresh produce. Preparation is key here if you plan to use this option, maintain a grocery list and be sure that you have your ingredients.

## **Snacks**

Snacks are a great way to reduce hunger and keep your metabolism burning throughout the day. Please refrain from chips, cookies, candy bars, milkshakes, and fast-food snacks. I recommend consuming wholesome options like Fruits, Veggie Chips, Air Fried Popcorn, Nuts Hummus, Trail Mix Scoops of Peanut Butter or Nut Butter of your choice, and hard-boiled eggs.

It is a great idea to boil eggs and refrigerate them, doing so you always be prepared and great to take on the go.

## **Oils, Sugars, and Condiments**

### **Oils**

When using oils, it is important to consider healthy fats versus bad fat what is saturated versus unsaturated. I recommend refraining from canola, vegetable, and palm oils. I highly recommend purchasing olive, grapeseed, safflower, avocado, flaxseed, and coconut oils. These are much healthier alternatives and your body with digest and utilize these oils. When in doubt do without and consider a baked option or a general vinegar and oil base.

### **Seasonings**

Food with a great taste is important to ensure we still enjoy what we eat. The main thing to avoid here is food that has MSG and excess sodium. Sodium is an ingredient that is hidden in a lot of foods and causes the body to retain water and excess weight. Excess sodium also contributes to increasing in blood pressure. I encourage you to try herbs that add flavors such as Mrs. Dash, Garlic, Onion Powder, Pepper, and table-ready blends that are salt-free. If you need to add salt to the food, I encourage you to use Himalayan Pink Salt, this salt is a natural mineral and is much healthier for consumption.

### **Sweeteners**

When shopping for sweeteners, please refrain from table sugar and artificial sweeteners. I suggest using sweeteners such as Agave Nectar, Honey, and others that may be recommended by your Medical Provider based on your health concerns. Cinnamon is a great herb to use to curb

cravings for sweets and has zero calories. Often, people may think they have a sweet craving, and, in this case, I encourage you to increase your water intake.

### **Drinks**

There are many different options when selecting a beverage other than water however I highly recommend keeping these beverages such as soda, juice, and alcohol to a minimum. Water should be your first beverage of choice, and if you do decide to consume other beverages be sure to increase your water intake after to flush your system. There are several healthy alternatives such as herbal teas, sparkling water, and water infused with fruits. I recommend purchasing fruits that are frozen to place in your water if you prefer them extra cold, and fresh fruits if you prefer your beverages at room temperature. Either way is great, and when finished with your infused water eat the fruits for extra goodness. If you decide to consume any other drinks, I encourage you to check the nutrition label and be mindful of the nutritional content and count the cost and ask yourself whether this is something you need or can do without.

### **Condiments & Dressing**

This is an area where people can rack up excess calories and not realize it, there will be a healthy meal and when loaded with ketchup or salad dressing the hidden calories rise. There are healthier alternatives such as hot pepper sauces, mustard. I recommend consuming ketchup, mayo, and dip sauces in minimal portions. For example, save these calories for days or meals that are lower in calories, so you maintain with a healthy range.

### **Fat Blaster Meal Guide**

This meal guide is recommended for 3 days at a time to provide balance and change to break a weight loss plateau. This meal guide can also be used for those that desire a lightweight

diet intake and are more disciplined. This is a great outline to use when you are bored with your normal regimen, need to be changed, and highly recommended for those on the go. Please drink a gallon of water per day and follow the recommendations in the food guide for days when this program is not in use.

### **Dietary and Herbal Supplements**

#### **Aloe Ease**

Helps stop cravings, improves digestion, toxin removal, and helps shed unhealthy fat naturally. Promotes regular bowel movements, detoxification, eliminating parasites, old waste and reduce midsection.

#### **Cranberry Cleanse**

Supports urinary tract health, reduce recurrent urinary tract infections (UTI), antioxidant and vitamin C source, organic, NON-GMO, vegan and vegetarian.

#### **Raspberry Relief**

Provides postpartum support, regulates menstrual cycle, nourish mother and baby, supports female health reproductive system, packed with magnesium, vitamin C, iron, and folate.

#### **Grow Back**

Oil supplies hair and scalp with antioxidants, anti-inflammatory properties, reduces shedding, thinning hair related to hormonal imbalance. Strengthens damaged, breakage-prone hair. Promotes healthy hair and soothes the scalp.

When we mention dietary supplements the first thing people assume is weight loss. Dietary supplements are simply a form of vitamin, mineral, or herb that is consumed to replace vital nutrients the body may not receive through dietary intake.

### **Daily Multivitamin/Multimineral**

Multivitamins and Minerals are important to ensure that you are replacing vitamins and minerals your body may not receive through food consumption.

#### **Vitamin D**

African American women are most common to be deficient in Vitamin D and deficiency in the vitamin is related to infertility and bone health.

#### **Meal Guide**

##### **Day One**

**Breakfast:** Black coffee or tea, 2 egg whites, lean protein, or green based smoothie with scoop of nut butter

**Lunch:** Tea and water, salad, 3-4 oz of lean meat or lentils, salad, and one serving of fruit or vegetables

**Dinner:** 8 oz water, 3-4 oz lean meat, 1 cup of greens, 1 serving of greens, 1 serving of fruit

##### **Day Two**

**Breakfast:** Black coffee or tea, 2 egg whites, lean protein, or green based smoothie with scoop of nut butter

**Lunch:** Tea and water, salad, 3-4 oz of lean meat or lentils, salad, and one serving of fruit or vegetables

**Dinner:** 8 oz water, 3-4 oz lean meat, 1 cup of greens, 1 serving of greens, 1 serving of fruit

### **Day Three**

**Breakfast:** Black coffee or tea, 2 egg whites, lean protein, or green based smoothie with scoop of nut butter

**Lunch:** Tea and water, salad, 3-4 oz of lean meat or lentils, salad, and one serving of fruit or vegetables

**Dinner:** 8 oz water, 3-4 oz lean meat, 1 cup of greens, 1 serving of greens, 1 serving of fruit

This meal guide is recommended for 3 days at a time to provide balance and change to prevent plateau. This meal guide can also be used for those that desire a lightweight diet intake and are more disciplined. This is a great outline to use when you are bored with your normal regimen, need changed, and highly recommended for those on the go.