

**BIOIDENTICAL HORMONE THERAPY: A LOOK AT STANDARD OF
PRACTICE, ATTITUDES, AND KNOWLEDGE**

by

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Abstract

Traditional hormone replacement therapy (HRT) is considered the gold standard for management of hormonal deficits. The findings generated by the Women's Health Initiative (WHI) trials concluded in July 2002 revealed health hazards associated with traditional HRTs, suggesting that individuals suffering from hormonal deficiencies or imbalance require alternative treatment modalities. Moreover, empirical evidence indicates that many healthcare providers in the United States have reservations about traditional HRT or face barriers in prescribing this form of therapy to their patients. Given the aforementioned issues, bioidentical hormone therapy (BHT) has emerged as a viable alternative to traditional hormone replacement therapy. However, as it is a relatively new form of treatment, most healthcare providers require further information about its safety and current standards of practice. The goal of the DNP project presented herein is to optimize care provided by the medical community by exploring whether gender-related bias exists and whether it influences providers' attitudes toward prescribing traditional HRT versus BHT to hormone-deficient patients. These issues were examined by randomly email surveying 200 healthcare providers. The study scope was restricted to healthcare providers working in family practice, family health, urology, women's health, and internal medicine in the State of Florida. Quantitative approach to data collection and analysis was adopted, as this allowed assessment of participants' standards of practice, attitudes, and knowledge. The pre-survey was conducted using a 30-item questionnaire designed by the DNP student conducting this project, which was copyrighted © on March 14, 2014. Please note as a disclaimer, the DNP student use of the pre-survey will be used to gain insight into the medical providers responses related to

bio-identical hormone therapy with the intent of further development and testing this survey as a future survey with the purpose of identifying key issues related to BHT and medical providers prescribing practices. As all responses were given on a Likert scale, they were subsequently analyzed and the findings were reported as frequency tables. The main study findings were summarized in a Power Point presentation, and were provided in the form of handouts that will serve as a platform to promote an open dialog about bioidentical hormone therapy. In summary, the findings yielded by the DNP student Project will assist the healthcare community in improving the quality of care offered to individuals experiencing andropause and menopause signs and symptoms.

Keywords: traditional hormone therapy, bioidentical hormone therapy, andropausal, menopausal.

BIOIDENTICAL HORMONE THERAPY:**A LOOK AT STANDARD OF PRACTICE, ATTITUDES, AND KNOWLEDGE**

Menopause, as well as andropause, is a natural transition in life. However, many women and men find the symptoms difficult to manage, as hormone-related vasomotor deficits can have profound effects on one's wellbeing and functioning. According to the United States Census Bureau findings published in 2010, roughly twenty-three million women in their late forties to mid-fifties were suffering from hormonal deficits (The North American Menopause Society [NAMS], 2012). Similarly, Staerman and Léon (2012) highlighted that, in men, androgen deficits can start much earlier, even at the age of thirty, taking a significant toll on men's wellbeing by the age of fifty. The DNP student also observed in clinical practice a much greater prevalence of hormone-related deficits due to the progressively longer lifespan among men and women in the United States.

Fishman, Flatt, and Settersten (2015) asserted that, as the baby boomer population is living into their late 80s, many such individuals are seeking anti-aging regimens. This extends beyond natural hormone therapy aimed at mere symptom management to disease prevention and wellness management through natural means, to include alternative, traditional, or synthetic hormone therapies. Fishman et al. (2015) explained that this cultural shift, whereby people take a much greater responsibility for their health and wellbeing, and require alternatives to conventional drug-based medicine, has led to the emergence and desire for the use of bioidentical hormone therapy. This assertion is aligned with the view offered by Weil (2010), who noted widespread Internet use by the aging baby boomers seeking more natural forms of treatment, including hormone

therapies that would alleviate their hormonal deficits without the potentially dangerous side-effects. Weil (2010) ascribed this growing trend to the widely publicized issues with traditional HRT safety, compounded by the public mistrust in pharmacological conglomerates and their financial motives behind drug development and prescribing practices. The debate surrounding the use of traditional hormone replacement therapy has cast a shadow on the use of bioidentical hormone therapy as well. Hence, Weil (2010) called for healthcare providers to rely on evidence-based practice when treating hormone-deficient patients in order to manage their care safely via bioidentical hormone therapies as a desired patient-centric means.

The traditional hormone replacement therapy (HRT) contains estrogen, progesterone, and/or testosterone and, despite its potentially harmful side-effects, has remained the first line of treatment for hot flashes, night sweats, mood swings, and vaginal dryness in women, as well as low libido and muscle loss in both men and women (NAMS, 2012). However, growing body of evidence indicates that HRT carries a risk of cardiovascular disease and cancer (NAMS, 2012).

According to the findings published by the Endocrine Society (2012), bioidentical hormones do not carry such health risks, as they are composites that have the identical molecular and biochemical make-up as those produced by the human body. Given that artificial hormones are produced by sourcing animal products, it is not surprising that many patients would be reluctant to take them, especially over a longer period of time. For example, Premarin is part of a drug class that contains estrogenic mixtures made from the urine of expectant mares (Endocrine Society, 2012).

In summary, the critical difference between bioidentical and synthetic hormones relates to their chemical makeup. As bioidentical hormones can be tailored to individual needs in order to achieve undistinguishable chemical balance in the body is based on individual serum blood levels, that have the potential to work naturally in the human body, without any harmful side-effects. However, for this treatment to yield the desired results, the structure of chemical compounds should completely match the needs of the intended individual.

Problem Description

Conclusions of the landmark study conducted in 1991 by the Women's Health Initiatives revealed that the long-term use of traditional HRT can have profound effects on individual's health, as it increases the risk of endometrial syndromes, breast cancer, and the development of blood clots that could lead to cerebrovascular accidents and heart disease in hormone users. Extensive research that has since been conducted on HRT has provided ample evidence in support of these claims, prompting many healthcare providers to start seeking alternatives to traditional HRT when treating their patients. This growing trend has led the need to establish if bioidentical hormones are safe to use.

In practice, the DNP student also encounters on a daily basis both male and female patients who are experiencing hormonal deficits and are desperately seeking advice from their healthcare providers on the best way to manage their vasomotor symptoms, as well as address their life-long health maintenance needs. Given the safety issues surrounding the traditional hormone replacement therapy and inadequate

information on bioidentical alternatives, there is apparent need to examine the reasons behind the hesitancy of healthcare providers to prescribe bioidentical hormones.

Available Knowledge

Dr. Robert Caputo is the Medical Director of Wellness and Weight Loss of Fort Walton Beach, Florida, with more than 35 years of work experience. As Dr. Caputo specialized in OB/GYN, he has been counseling women on bioidentical hormone therapy for more than 10 years. Dr. Caputo is also a stakeholder and advocate for the use of bioidentical hormone therapy and he believes that compounded hormone therapy can be prescribed for use in men and women in a safe and effective manner. In terms of the prescribing standards, his philosophy is to use “the right medications in the lowest effective dose to achieve an optimal hormone balance to manage the individual patient” (R. Caputo, 11/13/2013).

Dr. Caputo explains that, to achieve specific hormonal balance, the use of serum blood levels is recommended as a standard of practice to obtain baseline levels and maintenance of the patients’ hormone profiles. Dr. Caputo goes on to state “it is necessary for the patients to complete a hormonal symptom questionnaire that is vital to assist health care providers to achieve optimal individual patient-specific hormone management” (R. Caputo, 11/13/2013).

According to Dr. Caputo, the types of compounded hormone therapies for both males and females may include estrogen, progesterone, dehydroepiandrosterone (DHEA), pregnenolone, and testosterone. In treating andropause, it is recommended that anastrozole and finasteride be added to balance the use of testosterone for prostate

protection. Dr. Caputo further recommends that other compounded hormones, such as Armour Thyroid and/or Cytomel, be used if patients present with sub-clinical or clinical hypo/hyperthyroid conditions, while he is of view that vitamin D and vitamin B12 supplements can be beneficial to both male and female patients to combat issues arising from bone density loss and fatigue.

Examination of Evidence-based Literature

As the literature review aimed to uncover evidence-based and best practice recommendations, when searching pertinent databases—such as the Office of Research on Women’s Health, Pub-Med, the National Institute of Health, and the National Center for Health Statistics—traditional hormone therapy, bioidentical hormone therapy, andropausal, and menopausal phases were entered as keywords. The search yielded 45 articles pertaining to evidence-based practice, 20 of which were subjected to a more detailed review, as the authors of these works explored standards of practice, attitudes, and knowledge deemed significant to the current DNP project. According to Noyes et al. (2017), Archie Cochrane Qualitative Scoring System can be used to evaluate the strength of evidence based on the following criteria: “3=Good=75%-100% criteria met; 2=Fair=50%-74% criteria met; 1=Poor=25%-40% criteria met; 0=No evidence that criteria met=<25% criteria met” (p. 51).

In summary, the sources selected for inclusion in the literature review reflect the DNP student’s intent to provide evidence supporting the need to further assess the barriers to the use of bioidentical hormone therapy and the attitudes of healthcare providers toward this treatment mode.

To examine the factors affecting the use of bioidentical hormone therapy (BHT), Iftikhar, Shuster, Johnson, Jenkins, and Wahner-Roedler (2011) conducted a survey using a cross-sectional 19-item questionnaire, which was completed by 184 women seeking consultation regarding menopausal concerns. The aim of the survey was to elucidate the experiences of the menopausal women that used BHT. Analyses of participant responses revealed that 59% of the study sample used BHT preparations. Moreover, 78% of this group reported that their sexual symptoms were relieved, while 77% of the entire sample believed that BHT is safer than traditional HRT (Iftikhar et al., 2011). In the same year, Ruiz, Daniels, Barner, Carson, and Frei (2011) published the findings of a more extensive cohort observational project as a part of which they evaluated the effectiveness of compounded bioidentical hormone replacement therapy in 296 women aged 18–89 years via the use of six community pharmacies regarding vasomotor signs and symptoms. As a part of this investigation, women that used bioidentical hormone therapy were compared to those relying on traditional hormone therapy using Wilcoxon Sign-Rank Test. The results indicated that women in the BHT group experienced a 25% reduction in emotional irritability, while 14% and 6% of these women reported a reduction in night sweats and hot flashes, respectively. Overall, the project results demonstrated that compounded bioidentical hormone therapy did improve vasomotor signs and symptoms.

Gaudard et al. (2016) conducted a review of pertinent studies as a part of which BHT effectiveness in the management of vasomotor symptoms in women was evaluated and compared to control samples. The literature review focused on 23 randomized controlled trials, allowing the authors to compare the outcomes of 5,779 participants that used BHT with those that were given placebo or non-bioidentical hormones. The

evidence of quality was evaluated by using the Grading of Recommendations Assessment Development and Evaluation (GRADE) criteria and was based on the primary outcome.

The analysis results revealed low to moderate evidence of quality. Nonetheless, based on the reviewed findings, the authors concluded that BHT in various forms and doses is more effective than the control (placebo) in treating moderate to severe menopausal hot flushes and night sweats (Gaudard et al., 2016). In an earlier study, Weil (2010) conducted observations using the Wiley Protocol in order to compare traditional hormone therapy with the use of bioidentical hormone therapy in the safe and effective management of menopausal symptoms. The study findings indicated that 90% of the 74 respondents reported reduction in their vasomotor symptoms due to BHT.

Assessment of Knowledge, Beliefs, and Prescribing Practice

Files et al. (2016) conducted a cross-sectional study as a part of which 366 healthcare providers that attended a CME conference were surveyed in order to assess their knowledge, beliefs, and prescribing practices related to BHT. The survey was conducted using a 26-item questionnaire, which required responses on a Likert scale. Analysis of participant responses revealed that 45.4% of the providers were comfortable prescribing bioidentical hormone therapy (Files et al., 2016). In a similar study, Constantine et al. (2016) surveyed 9,000 U.S.-based doctors to obtain information regarding their hormone therapy prescribing patterns in relation to the FDA-approved traditional HRT and compounded hormone therapy. The study sample included general practitioners, OB/GYN, and wellness practitioners that prescribed both traditional hormone therapy and conventional hormone therapy (CHT). Subsequent analyses

revealed that the OB/GYN providers and the general practitioners prescribed comparably more FDA-approved traditional hormone therapy than did wellness practitioners, who prescribed more CHT (Constantine et al., 2016).

In an earlier study, Siyam and Yuksel (2013) evaluated 2,000 pharmacists' beliefs, knowledge, and confidence regarding bioidentical hormone therapy. The pharmacists that reside in Alberta Canada were approached for participation and 401 responded to the survey, which was conducted through a 54-item questionnaire sent via email to those randomly selected for inclusion. When reporting the study findings, the authors relied on statistical and multivariate regression analyses, which revealed that 64% of the respondents were female, and 35% of the sample correctly classified BHT products. Moreover, 68% of the participating pharmacists agreed that BHT is more effective than non-BHT, and 60% were of view that the risks associated with BHT were the same as those linked to HRT. The authors concluded that pharmacists were more likely to recommend bioidentical hormone therapy (Siyam & Yuksel, 2013).

Pinkerton and Constantine (2016) similarly examined the safety of BHT by evaluating compounded non-FDA-accepted hormone therapy prescriptions via a nationwide online survey that was steered by the Rose Research Group marketing research company. The survey sample included 12,250 U.S.-based pharmacists from 365 independent community pharmacies and 118 compounding pharmacies. Analyses of completed surveys revealed that 52% of the independent community pharmacies and 75% of the compounding pharmacies expected to continue hormone compounding business development, with 5–25% growth rate anticipated within the next two years (Pinkerton & Constantine, 2016). In conclusion, the authors highlighted the need for

doctors to educate themselves and their female patients about the benefits and risks of both FDA-approved hormone therapy and compounded hormone therapy formulations, as well as their effectiveness in the management of hormonal deficits.

In their work, Pinkerton and Santoro (2015) reviewed the trends, knowledge gaps, and use of CHT versus FDA-approved hormone therapy among peri-menopausal women in the United States. The main study aim was to assess their menopausal knowledge that was previously obtained via two surveys completed by Harris and Rose in 2013. The first of the two surveys were administered online between June 24th and July 10th, 2013, and was completed by 801 women aged 45–60 years who had experienced a minimum of one menopausal symptom. On the other hand, the second survey started in April 2014 and was administered for three weeks to 2,044 women aged 40 years or older who used hormone therapy. The second survey findings revealed that up to 68% of U.S. women might use compounded hormone therapy yearly. However, 86% of the respondents to the first survey were unaware that CHT products are not approved by the FDA. Nonetheless, both surveys suggested that the participants' medical providers recommended the CHT treatment. The authors concluded that the CHT market is growing and the FDA-approved HT decreased dramatically in the past decade. Pinkerton and Santoro (2015) thus highlighted the important role of medical providers in educating women regarding the risks and benefits of CHT and FDA-accepted therapy modes.

A Look at Safety and Efficacy

Achilli et al. (2017) completed a systematic review and meta-analysis in order to collate and analyze existing evidence related to the transdermal testosterone efficacy and safety as a treatment offered to postmenopausal women. As a part of this investigation, the authors compared findings yielded by seven randomized controlled trials with 3,035 participants in total, whereby 1,350 women were randomized to the testosterone-patch group, and 1,379 women were randomized to the placebo group. Their findings revealed that the testosterone group had significantly more satisfying sexual activity and orgasms without significant change in Personal Distress Scores or androgenic adverse events compared with the placebo group (Achilli et al., 2017). On the other hand, Conaway (2011) attempted to assess the BHT safety and efficacy in order to educate primary care providers regarding the FDA-approved hormone therapies and their alternatives. To achieve these aims, the author completed a systematic review of randomized clinical trials the findings of which were published in the 1999–2009 period. Pertinent literature sources were identified via Medline and Ovid search engines.

The results reported by Conaway (2011) supported prescribing hormone therapies, such as estropipate, estradiol, progesterone, testosterone, and dehydroepiandrosterone (DHEA), for the relief of menopausal symptoms, as well as bone density loss management, with the potential to yield protective heart benefits. In presenting these recommendations, Conaway (2011) cited a landmark study in which 70 male and 70 female patients received DHEA or placebo, whereby those in the treatment group experienced improvements in hipbone density one year later. Thus, Conaway

concluded that the lowest effective dose of FDA-approved hormones would be the desirable compounded bioidentical hormone therapy for most female patients.

Safety of hormone therapy was also evaluated by Xue, Deng, Wang, and Sun (2016) as a part of a prospective open-label study conducted between February 2014 and December 2015. The study sample comprised of 107 Chinese postmenopausal women with vasomotor symptoms who were randomly assigned to one of three groups, namely Group A (which received 0.3 mg estrogen and 100 mg of micronized progesterone every day), Group B (which received 0.625 mg of estrogen and 100 mg of micronized progesterone every day), and Group C (which received 0.625 mg of estrogen as well as 10 mg of dydrogesterone daily). The participants' medical, anthropometrical, and metabolic parameters were measured over the twelve-month study period. The analysis results revealed that the high-density lipoprotein cholesterol and apolipoprotein levels increased significantly in Group A, and low-density lipoprotein cholesterol, fasting glucose, and glycosylated hemoglobin levels significantly decreased in Group B and Group C. Moreover, no heart and vascular events were reported by any of the participants (Xue et al., 2016).

The findings yielded by the studies discussed above suggest that micronized progesterone or dydrogesterone (a form of natural hormone therapy) can be used in conjunction with traditional FDA-approved estrogen in a safe and effective manner to manage vasomotor symptoms in the hormone-deficient population, as well as contribute to lowering the risk of cardiac and endocrine disorders.

Bioidentical Hormone Therapy – Accepted Treatment and Therapy Management

In their study Spark, Willis, and Byrne (2012) aimed to ascertain why compounded progesterone was acceptable to Australian women. The authors completed a cross-sectional survey using a perspectives questionnaire that was completed by 366 Australian women who were prescribed compounded progesterone and who were willing to recommend progesterone therapy to other women. The findings revealed that Australian women who completed the study were highly educated, had menopause-related hormone deficiency, and preferred transdermal progesterone cream. The authors also explained that about 73% of the respondents reported improvement in mood swings or irritability, while 56% of the participating women experienced relief from hot flushes.

Based on their findings, the authors ascribed the high level of acceptance of progesterone hormone therapy by the Australian women to their trust in their chosen therapy, as well as their preference for personalized therapy. They also noted that most participants relied on compounded therapy as it led to symptom improvement (Spark et al., 2012).

More recently, Cunningham (2013) evaluated extant research on male menopause or andropause aiming to obtain research-based evidence in support of testosterone replacement therapy (TRT) use in senior men with low testosterone levels. The literature review focused on cross-sectional and longitudinal male population-based studies. Based on the study findings, Cunningham concluded that, given the evidence yielded by DEXA scans of the lumbar spine and femoral neck indicating improved bone density in men treated with testosterone therapy, its use is justified.

Further support for testosterone therapy and holistic management in middle-aged and older men was provided by Grossmann and Matsumoto (2017) based on a literature review that spanned the 1970–2016 period and focused on randomized controlled trials involving obese men aged fifty years and older, who suffered from comorbidities and had androgen deficiency. The authors evaluated lifestyle measures to achieve weight loss and optimization of comorbidities. The evidence that emerged from the reviewed literature indicated that use of testosterone therapy in these men did lead to clinical improvements in obesity, comorbidities, and androgen deficiency, while also yielding a modest increase in testosterone replacement therapies.

Compounded Hormone Therapy Route and Applications

Ruiz and Daniels (2014) conducted an observational cohort study as a part of which they evaluated the effectiveness of sublingual and topical compounded BHT in 200 post-menopausal women. The research aim was to determine the efficacy of sublingual and topical BHT as a treatment of vasomotor, mood, and quality-of-life symptoms in the affected patient population. To ascertain if BHT would aid in the relief of menopausal signs and symptoms, the authors applied a chi-squared test intended for categorical variables related to the evaluation of 160 women that received topical BHT, 40 of whom received sublingual bioidentical hormone therapy. Based on the data analyses, the authors concluded that “70% of sublingually managed patients reported ‘moderate’ or ‘severe’ symptom reduction at the one as well as the three months follow-up” (p. 75). For example, 31% of patients that suffered hot flashes reported symptom alleviation, while sleep disturbances were decreased by 35%. In conclusion, Ruiz and

Daniels (2014) stated that sublingual BHT was more effective in reducing vasomotor, mood, and quality-of-life symptoms in post-menopausal women compared to topical therapy, which did not relieve symptoms as quickly as the sublingual therapy.

Stephenson, Neuenschwander, and Kurdowska (2013) evaluated the effects of compounded BHT on hemostatic, inflammatory, immune factors, cardiovascular biomarkers, quality-of-life measures, and health outcomes in 300 peri-menopausal and postmenopausal women. This prospective cohort, closed label study focused on transdermal patches including estriol, estradiol, progesterone, DHEA, and testosterone.

Based on the study findings, the authors concluded that the use of BHT in the form of a transdermal patch containing estriol, estradiol, progesterone, DHEA, and testosterone had a beneficial effect on the participating women, who reported improvements in various health outcomes, such as depression, anxiety, menopausal symptoms, and cardiac implications.

In conducting a more recent literature review, Scheffers, Armstrong, Cantineau, Farquhar, and Jordan (2015) utilized online databases to identify studies as a part of which researchers evaluated the efficacy of dehydroepiandrosterone (DHEA) in the management of menopausal symptoms in the peri- or postmenopausal phase. The systematic review included 28 randomized controlled trials involving 1,273 menopausal women that used various dehydroepiandrosterone doses and formulas, with intake by any route of administration, whose health outcomes were compared to those reported by women given placebo or no treatment (Scheffers et al., 2015). Analysis findings revealed that, while DHEA did not necessarily lead to improvement in menopausal symptoms, slight improvement in sexual function was achieved with the use of

dehydroepiandrosterone compared to placebo. Hence, the authors concluded that evidence in support of DHEA as BHT in the management of menopause symptoms is poor to fair, likely due to inconsistencies in study design and limited DHEA hormone treatment duration.

Compounded Hormones and Anti-aging Attraction

Fishman et al. (2015) conducted in-depth telephone interviews with 31 clinicians and 25 female patients that were randomly selected from a list of 130 clinicians and 36 patients in order to examine their attitudes towards the use of BHT to manage anti-aging. Their findings revealed that patients desired services to relieve hormone symptoms and anti-aging services, but experienced frustration with traditional HRT providers, which prompted them to seek compounded bioidentical hormone therapy (Fishman et al., 2015).

In a recent study, Thompson, Ritenbaugh, and Nichter (2017) aimed to elucidate why women choose compounded bio-identical hormone therapy. The data required to meet the study objective was gathered via audio-recorded interviews with 21 current and former users of compounded bioidentical hormone therapy. Specifically, the authors aimed to identify factors that *push away* from conventional hormone therapies, as well as those that *pull toward* compounded BHT. The analysis of the interview data indicated that, in 80.9% of the cases, *push away* from conventional hormone therapy was related to the fear that surrounds its safety. Specifically, 47.6% of the respondents had a distaste for conjugated estrogens, while 95.2% were distrustful of biomedicine and the pharmacies. Finally, 61.9% of the respondents did not want to try alternative therapies.

In contrast, analysis of the factors that *pull toward* compounded BHT indicated that 76.2% of the respondents had the perception that compounded BHT is “safer” than conventional HT, while 57.1% and 61.9% indicated a desire for individualized treatment management and enhanced clinical experience, respectively (Thompson et al., 2017).

Based on the aforementioned evidence-based literature review and findings, despite the lack of FDA approval, there is excellent support for the use of bioidentical hormone therapy in the hormone-deficient patient populations. However, evident gaps exist between the current state of clinical practice and the desired level of optimal patient-centered care, both in clinical practice and within the local community that surrounds healthcare providers, who are hesitant about prescribing BHT because of the risks associated with traditional hormone therapy. Moreover, some healthcare providers are reluctant to prescribe BHT due to the absence of clear standards of care that can assist them in navigating this complex issue.

Rationale

The project aim was to evaluate the current bioidentical hormone therapy prescribing practices of various medical providers. In order to obtain data required to meet this objective, a survey was conducted using a questionnaire developed by the DNP student, whereby the 30 items included probed into a potential association between medical provider’s gender, attitude, and knowledge toward the use of bioidentical hormone therapies and his/her willingness to offer BHT to patients.

The inquiry was guided by the question “Does provider’s gender influence the recommendation and use of bioidentical hormone therapies in the female and male hormone deprived population?”

A further survey aim was to assess if a direct association between gender and provider type exists regarding whether male or female providers will consider the use of bioidentical hormone therapies in relation to the WHI trials. The survey also evaluated if the provider’s specialty could have any influence that exists between the male and female providers as a secondary outcome of the project.

The project assumptions surround the needs assessment regarding this clinical issue that further drives the desired state of healthcare practice and the future needs of the baby boomer population. Based on the DNP student’s desire to assist in optimizing patient care, it is envisaged that healthcare providers will embrace prescribing bioidentical hormone therapy as a safe and effective clinical practice. This assumption is consistent with the findings based on the primary and secondary literature reviewed, indicating ample evidence-based support for bioidentical hormone therapy use, especially if the treatment is FDA approved or compounded. For many patients, BHT is preferred to HRT due to safety and physiological benefits of bioidentical hormone therapy.

Theoretical Approach

Based on the identified clinical problem, the DNP learner’s project was guided by Martha Rogers’ theory of the science of unitary human beings, which served as the theoretical framework for the DNP survey project. Rogers’ theory was chosen as it explicates the evolvment of an energy field that surrounds the patient and recognizes the

patient's health and the environment as one entity. In other words, according to the science of unitary human beings' theory, the energy field that surrounds the patient and the environment reveals whether or not optimal health has been attained.

According to the DNP Essentials related to the leadership role, as outlined by the American Association of Colleges of Nursing (2006), the DNP leader emulates the art and science of caring. Thus, it is the DNP leader's responsibility to be decisive in all activities and services that involve the expansion of scientific guiding principles to assist in the development of strategies that move healthcare practitioner toward evidence-instituted interventions, for evaluating practice results that end with optimal health outcomes in patient care.

In adopting the DNP Essentials as the guiding principles for this project, the DNP learner selected Rogers' unitary human beings' theory as the core postulates guiding the art and science of caring, the aim of which should always be to assist all patients in achieving their highest health potential. This framework reflects the maintenance of current health in the promotion of future health outcomes, prevention of disease, intervention, and rehabilitation that encompasses the scope of the DNP's Essential roles and leadership goals.

Specific Aims and Secondary Outcomes

Based on the findings yielded by the literature review, it is evident that traditional HRT is viewed by most patients as unsafe, due to which BHT has emerged as a viable form of therapy for hormone-deficient individuals. As this treatment mode is presently not approved by the FDA, this is likely to affect provider attitudes toward BHT. Thus,

the goal of this DNP survey project was to explore provider attitudes and knowledge related to BHT use and examine potential links with the provider gender, education, practice type and setting, and other influential factors.

The data collected as a part of the project were analyzed to evaluate the current prescribing practices of various healthcare providers regarding the use of bioidentical hormone therapy (BHT). The DNP student developed the project survey evaluation tool and conducted the sample survey to examine if an association existed between healthcare providers' gender, attitude and knowledge toward the use of bioidentical hormone therapies and their preference for safe use in the clinical practice setting and the healthcare community. The information yielded by this survey was evaluated to determine if provider gender, attitude, and knowledge could influence prescribing practices.

Methods

Context

The PICOT question in the target group as instructed and formatted is as follows: P – Population is gender-related male and female medical providers; I – Issue being evaluated pertains to the prescribing practices of the male and female providers to include MDs, DOs, ARNPs, and PAs; C – Comparison of gender-related healthcare providers' attitudes, knowledge, and preferences regarding the use of traditional HRTs versus BHTs; O – Outcomes reflect healthcare provider gender and type (MD/DO/ARNP/PA) that would be willing to prescribe bioidentical hormone therapy to their andropausal and menopausal patients. The survey was implemented via the use of Survey Monkey.com on January 23rd, 2015. The setting and number of participants were restricted, whereby

200 providers that practiced in family practice, family health, urology, women's health, and internal medicine throughout the State of Florida were invited to take part in the survey, which was closed on March 8th, 2015, without any data collection barriers identified.

Interventions

For this cross-sectional study, an online survey tool served as a data collection instrument. It was administered via Survey Monkey.com, and all questions used in the project were e-mailed anonymously to the participants in the form of a 30-item questionnaire. The goal of the sample survey was to determine the response rate among the male and female providers to collect the responses that were analyzed separately as well as all-inclusive. A copy of the sample survey tool is included in Appendix B.

Participant recruitment involved conducting a random email survey that was sent to 200 male and female medical providers to include 50 MDs, 50 DOs, 50 PAs, and 50 ARNPs that practiced throughout the State of Florida and worked in the areas of family practice, family health, urology, women's health, and internal medicine services.

Recruitment efforts started with the Florida Department of Health: Division of Medical Quality Assurance, Directors Office of Strategic Planning Service Unit. The point of contact in obtaining the healthcare providers' public e-mail addresses from the State Board of Health (Department of Nursing and Medicine) was Carla D. Ruis, CPM, Notary Public Government Operations Consultant II Management Analyst, and the approval process was implemented on May 12th, 2014. According to the point of contact for the State of Florida, no special permission was required in obtaining public e-mail

addresses of the participants because the e-mail databases are voluntarily posted by healthcare providers and were thus listed as part of the participants' online public record profile.

The assumptions and delimitation of the project restricted the healthcare providers' demographics to include race/ethnicity, age, marital status, region of residence, nursing and medical education preparation, type of practice, work setting, practice location, and the number of years of experience in a particular practice field. The above information was used for demographic purposes only.

The survey method and design imposed a restriction on the sample size, whereby 100 male and 100 female providers that were equally and randomly selected among the medical provider types were invited to take part in the study. Only healthcare providers that practiced as DOs, Physicians, PAs, and ARNPs throughout the State of Florida were invited to take part in the survey.

Measures

Given that the project aim was to examine gender-and role-based attitudes toward BHT, the first survey item required the respondent to state his/her gender. Gender was used in subsequent data analyses to assess gender influence on different independent variables related to attitudes and knowledge towards the use of bioidentical hormone therapies among the various types of healthcare providers (which were determined based on the response to question seven probing into respondents' professional title).

The specific project question that guided this inquiry was: Does the provider gender affect the response rate when surveying providers on BHT prescribing practices?

Moreover, the last two survey questions related to the Women's Health Initiative and use of bioidentical hormone therapy, respectively, as the aim was to evaluate the providers' therapy preferences and knowledge of bioidentical hormone therapies.

Analysis

As stated above, quantitative data collection instrument in the form of a survey questionnaire was developed by the DNP learner to obtain information from 100 male and 100 female healthcare providers that was subsequently subjected to cross-sectional analysis. The project design stipulated gender as a categorical variable, as the project aim was to establish if provider gender influences the use of bioidentical hormone therapy. The healthcare providers' knowledge, attitudes, and preferences toward the use of bioidentical hormone therapy, as well as the type of provider (such as MD, DO, PA, and ARNP) was also examined during the survey data analysis.

Ethical Considerations

To implement the project, the DNP student utilized the e-mail addresses supplied by the State Board of Medicine and Board of Nursing to identify healthcare providers that currently hold active licensure and practice in the State of Florida. Using 200 individuals (100 males and 100 females) were randomly chosen to take part in a survey facilitated by the Survey Monkey online survey tool. The DNP learner did not require any special permission to use the providers' e-mail listing because the information was voluntary and was provided as part of each participant's online profile. In short, no Institutional Review Board (IRB) involvement was required for approval because the participants' medical profiles and voluntary e-mails are a part of the medical providers' public record.

Results

Please note as a disclaimer, the DNP student use of the pre-survey aided to gain insight into the providers responses related to bio-identical hormone therapy with the intent of further development and testing a future survey with the purpose of identifying key issues related to BHT and medical providers prescribing practices. While 200 invitations were issued, only 129 individuals completed the survey, resulting in a 64.5% response rate. Responses to individual survey items were examined and the results were reported as frequency scores and Likert scale tables, some of which are discussed in the subsequent section, while the full list is given in Appendix D.

Key Survey Results

One key survey outcome related to the question regarding the healthcare provider’s gender, which revealed that 72.1% of the 129 respondents were female. Given this significant disparity, it is pragmatic to note that the project outcomes may not reflect the true gender-related attitudes toward bioidentical hormone therapy and the willingness of male/female practitioners to prescribe BHT in treating hormone-related deficits (please see Question 1, Appendix C).

Table 1-Professional Title: Summary of Survey Responses (N=129)

	Title			
	Advance Registered Nurse Practitioner (ARNP)	Doctors of Osteopathy (DO)	Physician Assistant (PA)	Medical Doctors (MD)
Respondents	32	15	26	56
%	24.8	11.6	20.2	43.4

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)
 Responses reported as valid percentages.

Data reported in Table 1 indicate that the study sample comprised primarily of Medical Doctors (43.4%), followed by Nurse Practitioners (24.8%), Physician Assistants (20.2%), and Doctors of Osteopathy (11.6%).

Table 2-Type of Practice: Summary of Survey Responses (N=129)

	Practice				
	Family Health	Family Practice	Urology	Women's Health	Internal Medicine
Respondents	13	58	38	20	0
%	10.0	45.0	29.5	15.5	0

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)
 Responses reported as valid percentages.

According to the survey findings summarized in Table 2, family practice is the specialty of 45% of the healthcare providers, while 29.5% of the respondents specified that they are employed in urology practice. Moreover, 15.5% and 10% of the respondents worked in women’s health and family health, respectively. It is somewhat surprising that the vast majority of healthcare providers (71.3%) indicated having no knowledge about the various bioidentical hormone therapies.

Furthermore, 29% of the responding healthcare providers revealed that, while they do possess some knowledge of bioidentical hormone therapy, they would benefit from updated information, while only 7.80% of the respondents claimed to have adequate knowledge of bioidentical hormone therapy.

Table 3 summarizes the responses to the survey question regarding the management of low or no libido, indicating that 87.0% of the participants would highly recommend or recommend compounded pregnenolone in such cases. Additionally, 97.8% of the respondents would also highly recommend or recommend compounded

DHEA, while 82.6% of the respondents would highly recommend or recommend the use of traditional HRT for the management of libido concerns.

Table 3 also provides a summary of findings regarding the management of fatigue and insomnia related to hormone deficiency. It is evident that 92.4% of the respondents either highly recommended or recommended MVI for the management of fatigue and insomnia symptoms, while 50% would highly recommend or recommend use of traditional HRT.

Table 3 Summary of Survey Responses		Likert Responses			
Hot Flashes/Night Sweats (N =91)		1.0	2.0	3.0	4.0
Black Cohosh/Remifemin		20	44	13	14
Compounded Estradiol/ Progesterone		8	16	45	22
Regular Exercise		60	23	2	6
Traditional HRTs (Prempro)		10	47	22	12
Zoloft		31	40	9	11
Diet Therapy		9	19	36	27
Compounded Testosterone		54	23	5	9
Effexor		29	42	7	13
Compounded DHEA		7	37	19	28
Compounded Pregnenolone		12	29	25	25
Management of low or no libido (N = 92)		1.0	2.0	3.0	4.0
Compounded Pregnenolone		63	17	4	8
Traditional HRT's		54	22	5	11
Avoid Smoking		72	17	1	2
Avoid Alcohol Intake		57	28	2	5
Compounded DHEA		76	14	0	2
Compounded HRT		20	41	19	12
Effexor		76	11	0	5
Compounded Testosterone		20	27	14	31
Viagra for Men		25	41	8	18
OTC Estroven		39	37	7	9
Management of fatigue and insomnia (N = 92)		1.0	2.0	3.0	4.0
SSRI		7	15	44	26
Traditional HRT's		3	42	21	24
Life Style Changes		9	29	43	10
Ambien		2	12	15	62
MVI		70	15	3	4
Compounded DHEA		18	38	23	13
OTC Sleep Aid		29	23	13	26
Compounded Pregnenolone		2	3	14	70
Calcium/Vit-D		14	55	7	16
OTC Herbal Treatment		11	12	15	54
Likert Scale: 1= Highly recommend 2= Recommend 3= Recommend with reservation 4= Would not recommend					
Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)					
*Indicates that not all 129 participants responded to the questions					
**Various responses					
Responses reported as valid percentages					

Discussions

Summary

This vital DNP project was guided by the question: Do differences exist between male and female providers in terms of their readiness to recommend traditional hormone therapy versus bioidentical therapy? While the survey sample was predominantly female, and this could have biased the findings, based on the analysis of survey responses, female providers working in private practice that reside and work in urban areas would be least likely to recommend or use bioidentical hormone therapy in their medical practice. This finding is rather surprising, given that most of the female medical providers (based on Question 3, Appendix C) that took part in the study were aged 51–60 years and would have experienced hormone deficiency-related symptoms directly. According to Fishman et al. (2015), the female baby boomer population is living longer than men, making it more likely that they would require some form of hormonal treatment over a long period of time.

Another critical analysis result associated with Question 12 (Appendix C) revealed that male physicians, ARNPs, and physician assistants had similar attitudes toward the use of bioidentical hormone therapy instead of traditional HRTs. However, 79.8% of the healthcare providers who answered the question indicated that they did not have any training regarding bioidentical hormone therapy, confirming the urgent need for updated information and training regarding bioidentical hormone therapy in the healthcare community.

In reviewing the results pertaining to Question 14 (Appendix C) regarding the respondents' practice preference related to hormone recommendations, it is noteworthy

that 29.4% of the healthcare providers did not prescribe BHT in their practice, whereas 27.5% of the respondents indicated that they would only prescribe traditional FDA-approved HRTs, and 22.5% responded that they would use both traditional and compounded hormone therapy. These findings indicate that 43.1% of the surveyed healthcare providers would prescribe bioidentical or compounded HRTs. It is likely that this percentage could be increased by providing additional education and training regarding the practical use of bioidentical HRTs, as those providers that do not currently prescribe BHT might consider its use in their patient population if they are confident in its safety.

According to the findings related to the barriers to prescribing BHT (as reflected in Question 17, Appendix C), 39.8% of the respondents would not prescribe BHT due to malpractice concerns, and 23.5% would not prescribe BHT due to patient safety concerns. These responses are not surprising, given that both pertinent literature and the DNP student's clinical experience confirm these barriers to optimal patient care. The prevalent avoidance of BHT could be alleviated with additional education and training regarding the practical use of bioidentical therapy.

Regarding management of vaginal dryness, which was explored in Question 21 of the survey (Appendix B), analysis findings revealed that 66.3% and 49.5% of the healthcare providers would highly recommend or recommend vaginal Estrace cream and the vaginal ring, respectively. On the other hand, 59.8% of the respondents would highly recommend or recommend compounded hormone therapy.

Based on the survey Question 26 (Appendix C) related to the best evaluation for hormone levels, 68.2% of the providers would order blood serum levels, compared to

23.3% of healthcare providers that would prefer using patient's saliva in hormone evaluation, with evaluation by capillary blood was the least likely method of hormone level evaluation.

The use of BHT was also examined in relation to the WHI study findings (Question 29, Appendix C), whereby the survey findings indicated that the majority of the healthcare providers will continue to recommend and prescribe traditional hormone therapy. For example, 68.2% of the respondents would continue to prescribe traditional hormone therapy despite their patients' preference for bioidentical therapy. It should also be note that 20.2% of the remaining healthcare providers were undecided, while 11.6% of the participants stated that they would not continue prescribing HRT if this was not their patient's preference.

Finally, responses to Question 30 (Appendix C) aiming to establish if the healthcare providers will continue to use traditional HRT despite the WHI study findings confirming related health risks revealed that 75.2% of the respondents would continue to recommend traditional hormone therapies as a management option for their patient population.

Interpretation

One of the critical findings that emerged from this project is that gender differences do exist between male and female providers that recommend and prescribe traditional hormone therapy as a preferred option to bioidentical hormone therapy. On the other hand, provider title did not seem to influence the attitude toward BHT, as similar numbers of MDs, DOs, and the ARNPs (but not PAs) indicated willingness to prescribe BHT therapy to the intended patient population.

The clinical implications of this project pertain to the benefits of increased knowledge for medical providers that take care of patients that desire BHT options for the management of hormone-related signs and symptoms. The survey findings may also represent a possible impact regarding implementation and recommendation to prescribe bioidentical hormone therapies in the related practice settings. The survey tool that was developed and implemented as a part of this project can be used to further conduct a nationwide survey to provide a more comprehensive picture of medical providers' knowledge of bioidentical hormone therapy and their attitudes toward this treatment mode.

Based on the findings regarding healthcare providers' knowledge of the bioidentical hormone therapy, it is evident that further education is necessary. Given that most survey respondents indicated having no or little knowledge of BHT, lack of knowledge likely influenced the providers' attitude and preference in their decision to prescribe bioidentical hormone therapy. For example, when the healthcare providers were asked to state their preferred treatment for management of hot flashes, night sweats,

and mood swings, 26.4% of the respondents stated that they would either highly recommend or recommend compounded estradiol and progesterone to treat hormone deficit signs and symptoms. In comparison, 62.6% of the respondents would highly recommend or recommend Prempro as a traditional HRT for the management of hormonal deficits.

According to the DNP sample survey findings, majority of the providers did not have training or knowledge regarding bioidentical hormone therapy. Yet, they all concurred that providers should be prepared to counsel their patients on preventative health measures and management options, to include bioidentical hormone therapies, as a way of developing a strong provider–patient relationship.

Limitations

The scope of the project limited the study population to healthcare providers that work in family practice, family health, urology, women’s health, and internal medicine services. In addition to gender-specific response rates for the sample survey, healthcare providers’ gender-related In the final analysis, the DNP learner excluded information relating to demographics and geographic location of the healthcare providers. However, this information may impact implementation of the project and educational interventions in other regions of the United States as part of the comparative analysis of the project findings.

Another limitation pertains to the small number of female urologists and males that work as PAs, as well as relatively small number of males that are employed as NPs that work in women’s health and practice in the State of Florida. The outlined variables

may influence the findings pertaining to the opinions, attitudes, and preferences that emerged from the survey, which may interfere with the survey process, analysis, and outcome. The DNP learner acknowledges that this disparity in the sample composition may potentially bias the outcome of the project. The DNP student thus expects that the use of a nationwide survey project may mitigate this limitation, as a larger sample size would likely include a greater number of male PAs, female MDs, DOs, and NPs that practice in urology.

Conclusions and Benefits of the DNP Project

The findings yielded by this DNP project will assist in the evaluation of educational needs of medical providers that care for men and women that have hormonal deficits. In addition, the DNP student's aim in the near future is to provide more information and resources to the healthcare community regarding the use of bioidentical hormone therapy for patients that desire a more natural approach to the management of their hormonal related deficits. Based on the information gained from various literature sources, the DNP student intends to provide further assessment of the clinical problem related to the use of bioidentical hormone therapy, as well as examine standards of practice, attitudes, and knowledge relating to the use of bioidentical hormone therapy.

Based on the sample survey findings reported in the preceding sections, healthcare providers should embrace knowledge gained from this project because this topic is vital for symptom management as an integral part of the optimal care of our patients that desire a more natural approach to hormone-related deficits.

Education Integration Tools

In assisting healthcare providers in optimizing medical care for those patients that desire bioidentical hormone therapy to manage their hormonal signs and symptoms, and in alignment with the healthcare providers' concerns that they lack knowledge and training regarding bioidentical hormone therapy, the use of a Hormone Deficit Male and Female Symptom Assessment Sheet, Patient Education Symptoms Sheet, and recommended Hormone Lab Draw Sheets will give the healthcare providers a guide to use with the intended patient population. The recommended tools will also assist the healthcare providers in the optimization of available services and resources for this population of patients who suffer from hormone imbalance.

References

- Achilli, C., Pundir, J., Ramanathan, P., Sabatini, L., Hamoda, H., & Panay, N. (2017). Efficacy and safety of transdermal testosterone in postmenopausal women with hypoactive sexual desire disorder: a systematic review and meta-analysis. *Fertility Sterility*, *107*(2), 475-482. doi:10.1016/j.fertnstert.2016.10.028
- American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice*. Retrieved November 15, 2017, from <http://www.aacnursing.org/Portals/42/Publications/DNPEssentials.pdf>
- American College of Obstetricians and Gynecologists. (2012). Committee opinion No. 532: Compounded bioidentical menopausal hormone therapy. *Obstetrics Gynecology*, *120*, 411-415. Retrieved November 15, 2015, from <https://www.acog.org/-/media/Committee-Opinions/Committee-on-Gynecologic-Practice/co532.pdf?dmc=1&ts=20171109T0434064078>
- Bosarge, P., & Freeman, S. (2009). Bioidentical hormones, compounding, and evidence-based medicine: What women's health practitioners need to know. *Journal of Nurse Practitioners*, *5*(6), 421-427. doi:10.1016/j.nurpra.2009.03.011. Retrieved November 20, 2015, from [http://www.npjournals.org/article/S1555-4155\(09\)00143-3/fulltext](http://www.npjournals.org/article/S1555-4155(09)00143-3/fulltext)
- Bush, T. M., Bonomi, A. E., Nekhlyudov, L., Ludman, E. J., Reed, S. D., Connelly, M. T., . . . Newton, K. M. (2007). How the women's health initiative (WHI) influenced physicians' practice attitudes. *Journal of General Internal Medicine*, *22*, 1311-1316. doi:10.1007/s11606-007-0296-z
- Cirigliano, M. (2007). Bioidentical hormone therapy a review of the evidence. *Journal of Women's Health*, *16*(5), 600-631. doi:10.1038/sj.ijir.3901622. Retrieved May 12, 2015, from <http://www.nature.com/ijir/journal/v20/n1/full/3901622a.html>
- Conaway, E. (2011). Bioidentical hormones: an evidence-based review for primary care providers. *Journal of American Osteopathic Association*, *111*(3), 153-164. Retrieved November 20, 2015, from <http://jaoa.org/pdfaccess.ashx?url=/data/journals/jaoa/932141/>
- Constantine, G. D., Archer, D. F., Graham, S., Bernick, B. A., & Mirkin, S. (2016). Prescribing of FDA-approved and compounded hormone therapy differs by Specialty. *Menopause*, *23*(10), 1075-1082. doi:10.1097/GME.0000000000000683
- Cunningham, G. (2013). Andropause or male menopause? Rationale for testosterone replacement therapy in older men with low testosterone levels. *Endocrine Practice*, *19*(5), 847-852. doi:10.4158/EP13217.RA

- Davis, R., Batur, P., & Thacker, H. L. (2014). Risks and effectiveness of compounded bioidentical hormone therapy: A case series. *Journal of Women's Health (15409996)*, 23(8), 642-648. doi:[10.1089/jwh.2014.4770](https://doi.org/10.1089/jwh.2014.4770). Retrieved January 1, 2017, from <http://online.liebertpub.com/doi/pdf/10.1089/jwh.2014.4770>
- Endocrine Society. (2012). Bioidentical hormones position statement. Retrieved December 5, 2015, from <https://www.endocrine.org/~media/endosociety/Files/Advocacy%20Files>
- Files J. A., Kransdorf, L. N., Ko, M., Kling J. M., David P. S., Pruthi, S., . . . Mayer, A. P. (2016). Bioidentical hormone therapy: An assessment of provider knowledge. *Maturitas*, 94, 46-51. doi:[10.1016/j.maturitas.2016.08.014](https://doi.org/10.1016/j.maturitas.2016.08.014)
- Fishman, J. R., Flatt, M. A., & Settersten, R. A. (2015). Bioidentical hormones, menopausal women, and the lure of the “natural” in U.S. anti-aging Medicine. *Social Science & Medicine (1982)*, 132, 79-87. doi:[10.1016/j.socscimed.2015.02.027](https://doi.org/10.1016/j.socscimed.2015.02.027). Retrieved October 16, 2017, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4400226/>
- Fugh-Berman, A., & Bythrow, J. (2007). Bioidentical hormones for menopausal hormone therapy: Variation on a theme. *Society of General Internal Medicine*, 22, 1030-1034. doi:[10.1007/s11606-007-0141-4](https://doi.org/10.1007/s11606-007-0141-4). Retrieved October 16, 2017, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2219716/>
- Furlow, M. L., Patel, D. A., Sen, A., & Liu, J. R. (2008). Physician and patient attitudes towards complementary and alternative medicine in obstetrics and gynecology. *Journal of Complementary and Alternative Medicine*, 8, 1186-1472. doi:[10.1186/1472-6882-8-35](https://doi.org/10.1186/1472-6882-8-35). Retrieved January 15, 2015, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2464574/>
- Gass, M. L. S., Stuenkel, C. A., Utian, W. H., Croix, A. L., Liu, J. H., & Shifren, J. L. (2015). Use of compounded hormone therapy in the united states: Report of the North American Menopause Society Survey. *Menopause*, 22(12), 1276-1284. doi:[10.1097/GME.0000000000000553](https://doi.org/10.1097/GME.0000000000000553)
- Gaudard, A., Silva de Souza, S., Puga, M., Marjoribanks, J., Da Silva, E., & Torloni, M. R. (2016). Bioidentical hormones for women with vasomotor symptoms. *Cochrane Database of Systematic Reviews*, 8, 1-133. Art. No. CD010407. doi:[10.1002/14651858.CD010407.pub2](https://doi.org/10.1002/14651858.CD010407.pub2)
- Grossmann, M., & Matsumoto, A. M. (2017). A perspective on middle-aged and older men with functional hypogonadism: Focus on holistic management. *Journal of Clinical Endocrinology Metabolism*, 102(3), 1067-1075. doi:[10.1210/jc.2016-3580](https://doi.org/10.1210/jc.2016-3580)

- Guth, M. A. (2015). Compounded testosterone troches to optimize health and the testosterone controversy. *Int J Pharm Compd*, 15(19), 195-203. Retrieved February 28, 2018, from <https://primarycare.imedpub.com/bioidentical-hormone-replacement-therapy-for-men-in-the-primary-care-setting>
- Iftikhar, S., Shuster, L. T., Johnson, R. E., Jenkins, S. M., & Wahner-Roedler, D. L. (2011). Use of bioidentical compounded hormones for menopausal concerns: a cross-sectional survey in an academic menopause center. *Journal of Women's Health*, 20(4), 559-565. doi:10.1089/jwh.2009.1915
- Kupferer, E. M., Dormire, S. L., & Becker, H. (2008). Complementary and alternative medicines use for vasomotor symptoms among women who have discontinued hormone therapy. *Journal of Obstetrics and Gynecologic, & Neonatal Nursing*, 38(1), 50-59. Retrieved January 20, 2014, from [http://www.jognn.org/article/S0884-2175\(15\)30152-0/](http://www.jognn.org/article/S0884-2175(15)30152-0/)
- LaCroix, A. Z., Chlebowski, R. T., & Manson, J. E. (2011). Health outcomes after stopping conjugated equine estrogens among postmenopausal women with prior hysterectomy: A randomized controlled trial. *JAMA*, 305, 1305-1314. doi:10.1001/jama.2011.382. Retrieved January 15, 2014, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3656722/>
- Lobo, R. A. (2013). Where are we ten years after the women's health initiative? *Journal Clinical Endocrinology Metabolism*, 98(5), 1771-1780. Retrieved February 18, 2017, from <https://academic.oup.com/jcem/article-lookup/doi/10.1210/jc.2012-4070>
- McBane, S. E., Borgelt, L. M., Barnes, K. M., Westberg, L. N. M., & Stassinis, M. (2014). Use of compounded bio-identical hormone therapy in menopausal women: An opinion statement of the women's health practice and research network of the American college of clinical pharmacy. Retrieved January 10, 2017, from http://www.researchgate.net/publication/5772082_Ethical_problems_with_bioidentical_hormone_therapy
- North America Menopause Society. (2012). *Menopause practice: A clinician's guide* (3rd ed.). The North America Menopause Society. doi:10.1097/gme.0b013e31824b970a. Retrieved on January 12, 2016, from <http://www.menopause.org/docs/default-document-library/psht12.pdf?sfvrsn=2>

- Noyes, J., Booth, A., Flemming, K., Garside, R., Harden, A., Lewin, S., . . . Thomas, J. (2017). Cochrane Qualitative and Implementation Methods Group guidance paper 3: Methods for assessing methodological limitations, data extraction, and synthesis, and confidence in synthesized qualitative findings. *Panel Journal of Clinical Epidemiology*, [doi:10.1016/j.jclinepi.2017.06.020](https://doi.org/10.1016/j.jclinepi.2017.06.020)
- Pallant, J. (2007). *SPSS survival manual: A step-by-step guide to data analysis* (3rd ed.). New York, NY: The McGraw Hill Companies.
- Pinkerton, J. V., & Constantine, G. D. (2016). Compounded non-FDA-approved menopausal hormone therapy prescriptions have increased: results of a pharmacy survey. *Menopause: The Journal of The North American Menopause Society*, *23*(4), 359-367. [doi:10.1097/GME.0000000000000567](https://doi.org/10.1097/GME.0000000000000567)
- Pinkerton, J. V., & Santoro, N. (2015). Compounded bioidentical hormone therapy: Identifying use trends and knowledge gaps among US women. *Menopause (New York, N.Y.)*, *22*(9), 926-936. [doi:10.1097/GME.0000000000000420](https://doi.org/10.1097/GME.0000000000000420)
- Pruthi, S. (2011). Bioidentical hormone therapy. *Mayo Clinic Proceedings*, *86*(7), 673-680. [doi:10.4065/mcp.2010.0714](https://doi.org/10.4065/mcp.2010.0714). Retrieved January 15, 2016, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3127562/>
- Rosenthal, S. (2008). Ethical problems with bio-identical hormone therapy. *International Journal of Impotence Research*. Retrieved January 10, 2017, from http://faculty.mercer.edu/strom_jg/pha529/hrt-4.pdf
- Roush, K. (2011). Menopausal hormone therapy: What we know now. *Advance Journal of Nursing*, *111*(6), 38-47. [doi:10.1097/01.NAJ.0000398539.52283.55](https://doi.org/10.1097/01.NAJ.0000398539.52283.55). Retrieved February 15, 2014, from <http://journals.lww.com/ajnonline/pages/articleviewer.aspx?year=2011&issue=06000&article=00025&type=abstract>
- Ruiz, A. D., Daniels, K. R., Barner, J. C., Carson, J. J., & Frei, C. R. (2011). The effectiveness of compounded bioidentical hormone replacement therapy: An observational cohort study. *BioMed Central Women's Health*, *11*(27), 1-10. [doi:10.1186/1472-6874-11-27](https://doi.org/10.1186/1472-6874-11-27). Retrieved December 12, 2015, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3131235/>
- Ruiz, A. D., & Daniels, K. R. (2014). The effectiveness of sublingual and topical compounded bioidentical hormone replacement therapy in postmenopausal women: an observational cohort study. *Int J Pharm Compd*, *18*(1), 70-77. Retrieved February 28, 2018, from <https://www.altmetric.com/details/2399769>

- Scheffers, C. S., Armstrong, S., Cantineau, A. E., Farquhar, C., & Jordan, V. (2015). Dehydroepiandrosterone for women in the peri- or postmenopausal phase. *Cochrane Database Syst Rev*. CD011066. doi:10.1002/14651858.CD011066.pub2
- Shores, M. M., Smith, N. L., Forsberg, C. W., Anawalt, B. D., & Matsumoto, A. M. (2012). Testosterone treatment and mortality in men with low testosterone levels. *Journal of Clinical Endocrinology and Metabolism*, 97(6), 2050-2058. doi:10.1210/jc.2011-2591
- Siyam, T., & Yuksel, N. (2013). Beliefs about bioidentical hormone therapy: a cross-sectional survey of pharmacists. *Maturitas*, 74, 196-202.
- Society of Rogerian Scholars. (2008). Theory: An overview of the science of unitary human beings. Retrieved on August 16, 2017, from <http://www.societyofrogerianscholars.org/theory.html>
- Spark, M. J., Willis, J., & Byrne, G. (2012). Compounded progesterone: why is it acceptable to Australian women? *Maturitas*, 73(4), 18-24. doi:10.1016/j.maturitas.2012.09.003
- Staerman, F., & Léon, P. (2012). Andropause (androgen deficiency of the aging male): diagnosis and management. Retrieved on January 10, 2017, from <https://www.ncbi.nlm.nih.gov/pubmed/23042368>
- Stephenson, K., Neuenschwander, P. F., & Kurdowska, A. K. (2013). The effects of compounded bioidentical transdermal hormone therapy on hemostatic, inflammatory, immune factors; cardiovascular biomarkers; quality-of-life measures; and health outcomes in perimenopausal and postmenopausal women. *Int J Pharm Compd*, 17(1), 74-85. Retrieved February 28, 2018, from <https://www.ncbi.nlm.nih.gov/pubmed/23627249>
- Survey Monkey: Smart Survey Design. (2017). Retrieved March 28, 2017, from <https://www.surveymonkey.com/mp/survey-guidelines/>
- Thompson, J. J., Ritenbaugh, C., & Nichter, M. (2017). Why women choose compounded bioidentical hormone therapy: lessons from a qualitative study of menopausal decision-making. *BMC Women's Health*, 17(97) doi:10.1186/s12905-017-0449-0
- US Food and Drug Administration. (2013). Bio-identical: sorting myth from fact. *FDA Consumer Health Information*, VOL, 1-3. Retrieved November 10, 2015, from <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm049311.htm>
- Webster's Practical Dictionary. (2013). *Webster's Practical Dictionary*. Chicago, IL: G.C. Merriam. Retrieved November 10, 2015, from <https://www.merriam-webster.com/>

- Weil, E. (2010a). Bio-identical hormones: Examining the debate. *Advance for NPs & PAs*, 17(9), 37-42. Retrieved November 10, 2015, from <https://www.ncbi.nlm.nih.gov/pubmed/20000171>
- Weil, E. (2010b). Bio-identical hormones explained. *Advance for NPs & PAs*, 10(11), 43-47. Retrieved November 10, 2015, from <https://www.ncbi.nlm.nih.gov/pubmed/20000171>
- Whelan, A. M., Jurgens, T. M., & Trinacty, M. (2011). Defining bioidentical hormones for menopause-related symptoms. *Pharmacy Practice*, 9(1), 16-22. Retrieved January 22, 2014, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4132968/>
- Xue, W., Deng, Y., Wang, Y. F., & Sun, A. J. (2016). Effect of half-dose and standard-dose conjugated equine estrogens combined with natural progesterone or dydrogesterone on components of metabolic syndrome in healthy postmenopausal women: A Randomized Controlled Trial. *Chin Med J (Engl)*, 129(23), 2773-2779. doi:10.4103/0366-6999.194646
- Zirkin, B. R., & Tenover, J. L. (2012). Aging and declining testosterone: Past, present, and hopes for the future. *Journal of Andrology*, 33(6), 1111-1118. doi:10.2164/jandrol.112.017160

APPENDIX B

PROVIDER SURVEY INSTRUMENT

Hello, my name is Mauricia Stanton-ARNP, and I am a Doctor of Nursing Practice student at Capella University located in Minneapolis, Minnesota.

The purpose of the study will be to explore the association of health care provider’s gender-related attitudes and knowledge towards the use of bio-identical hormone therapies in the management of the male and female patients with hormonal related sign and symptoms.

Your feedback is important regarding your thoughts and opinions relating to the use of bio-identical hormone therapies in your medical practice.

This survey will take approximately 10 to 15 minutes of your time, and your answers will be completely anonymous and confidential.

I thank you for taking the time to complete this survey.

Survey Section:

1. Please indicate your gender.
 - 1. Female
 - 2. Male

2. Which of the following best describes your race/ethnicity?
 - 1. African/Black American
 - 2. Asian (Chinese, Japanese)
 - 3. Caucasian/White American (not Latino)
 - 4. Latino
 - 5. Native American
 - 6. Other (please specify)

3. Which response best describes your age group?
 - 1. 21-30
 - 2. 31-40
 - 3. 41-50
 - 4. 51-60
 - 5. 61 or older

4. Which response best describes your marital status?
 - 1. Single
 - 2. Married
 - 3. Divorced
 - 4. Separated
 - 5. Partnered

5. In what region of Florida do you reside?
 - 1. West
 - 2. North
 - 3. Central
 - 4. South

- 6 In what region of the U.S. did, you received your medical or college education as a healthcare provider?
- 1. North
 - 2. South
 - 3. East
 - 4. West
 - 5. Outside the USA

- 7 Which of the following best describes your professional title?
- 1. Advance Registered Nurse Practitioner (ARNP)
 - 2. Doctor of Osteopathic Medicine (DO)
 - 3. Medical Doctor (MD)
 - 4. Physician Assistant (PA)

- 8 Which response best describes your type of practice?
- 1. Family Health
 - 2. Family Practice
 - 3. Urology
 - 4. Women’s Health
 - 5. Internal Medicine
 - 6. Other (please specify)

9. Which best describe your practice location?
- 1. Rural
 - 2. Urban

10. Which of the following best describes your Practice Location?
- 1. County Health Department
 - 2. Community-Based Clinic
 - 3. Hospital, Local, outpatient setting
 - 4. Military Treatment Facility
 - 5. Private Office

11. Which response best indicate the number of years you have practice as a healthcare provider?
- 1. 5 years or less
 - 2. 6-10 years
 - 3. 11-20 years
 - 4. 21-30 years
 - 5. Over 30 years

12. In college or medical school, did you receive educational training or preparation regarding bio-identical hormone therapies?
- 1. Yes
 - 2. No

13. What is your estimation of the number of men and women over the age of 40 that you provide care for in your practice?

	Men	Women
<input type="checkbox"/> 1. 10 percent	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 2. 20 percent	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 3. 30 percent	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 4. 40 percent	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 5. 50 percent or more	<input type="checkbox"/>	<input type="checkbox"/>

14. What discipline of hormone therapies have you used or recommended in your practice? (Check all that applies).
- 1. I have not prescribed bio-identical hormones in my practice
 - 2. Traditional Hormone Therapy (FDA Approved Only).
 - 3. Biological-based hormones (FDA Approved Only).
 - 4. Compounded bio-identical hormones only
 - 5. Both traditional and compounded only
 - 6. Other (please specify)

15. How do you rate your knowledge regarding bio-identical hormone therapies as it relates to the management of male and female hormonal symptoms such as (fatigue, insomnia, hot flashes, night sweats, mood swings, hair loss, vaginal dryness, low or no libido, muscle loss, and weight gain)?

- 1. No knowledge
- 2. Knowledgeable, but need-updated information
- 3. Very Knowledgeable, minimal updates needed
- 4. Extremely knowledgeable, no updated information needed.

16. In your opinion, what is the best route to take compounded medications?

- 1. Oral
- 2. Sublingual
- 3. Pellets
- 4. Injections
- 5. Creams
- 6. Jellies
- 7. Transdermal/patches
- 8. Suppositories

17. Which (one) of the following is most important to you and would prevent you from prescribing compounded hormone therapy?

- 1. Overall patient safety
- 2. Possible malpractice
- 3. Lack of FDA approval
- 4. Knowledge level relating to dosing and prescribing bioidentical hormone therapies
- 5. Not an evidence-based therapy
- 6. Patient that has been diagnosed with cancer
- 7. Provider preference not to prescribe

18. Regarding women who report concerns of hot flashes/night sweats/mood swings; please rate the following therapies: (1=Highly Recommend, 2=Recommend, 3=Recommend, but with some reservation, 4=Would not recommend).

	1	2	3	4
1. Black Cohosh (Remifemin)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Compounded estradiol/progesterone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Regular exercise-at least 20 minutes (3-4 days weekly)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Traditional HRT (such as Prempro)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Zoloft n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Diet Therapy n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Compounded Testosterone n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Effexor n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Compounded DHEA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Compounded Pregnenolone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. Regarding men and women who report concerns of low or no libido, please rate the following: (1=Highly Recommend, 2=Recommend, 3=Recommend, but with some reservation, 4=Would not recommend).

	1	2	3	4
1. Compounded Pregnenolone n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Traditional HRT's	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Avoid smoking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Avoid alcohol intake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Compounded DHEA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Compounded female HRT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Effexor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Compounded testosterone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Viagra for males	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Over-the-counter estrogen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Please rate the following therapies used in the management of fatigue and insomnia in males and females? (1=Highly Recommend, 2=Recommend, 3=Recommend, but with some reservation, 4=Would not recommend).

	1	2	3	4
1. SSRI n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Traditional HRT's	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Lifestyle changes (relaxation exercise, diet, rest)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Ambien n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. MVI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Compounded DHEA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Over-the-counter sleep aids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Compounded pregnenolone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Calcium/vitamin D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Over-the-counter treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. Regarding vaginal dryness, please rate your recommendations for management of symptoms. (1=Highly Recommend, 2=Recommend, 3=Recommend, but with some reservation, 4=Would not recommend).

	1	2	3	4
1. Astroglide Gel n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Estrace vaginal cream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. KY Jelly n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Vagisil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Vagifem tablets n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Esting n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Pellets n	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Traditional HRT's	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Compounded hormones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Over-the-counter soy Products.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. In your opinion, health care providers who are knowledgeable of multiple medical systems to include complementary and alternative practices (i.e., Chinese, Ayurvedic, Homeopathic, Naturopathic, etc.) Do better than those providers whose are only familiar with conventional medicine.

- 1. Strongly Agree
- 2. Agree
- 3. Strongly Disagree
- 4. No Opinion

23. Health care providers should be prepared to answer the patient's questions regarding the safety, efficacy, and proper usage of commonly used Bioidentical hormone therapies such as; DHEA, pregnenolone, and testosterone for use in both women and men.

- 1. Strongly Agree
- 2. Agree
- 3. Strongly Disagree
- 4. No Opinion

24. Counseling patient on the importance of completing annual preventative health screenings and testing is an important aspect of health management and should be included by the healthcare provider in the management of male and female hormone patient's

- 1. Strongly Agree
- 2. Agree
- 3. Strongly Disagree
- 4. No Opinion

25. A strong relationship between patient and healthcare provider is an extremely valuable therapeutic intervention that leads to improved outcomes in the management of menopausal symptoms?

- 1. Strongly Agree
- 2. Agree
- 3. Strongly Disagree
- 4. No Opinion

26. In your opinion, what is the best way to evaluate hormone levels?
- 1. Blood/Serum
 - 2. Saliva
 - 3. Based on signs and symptoms only
 - 4. Urine
 - 5. Capillary
27. Have you considered using a compounding pharmacy for your patient's bioidentical hormone management?
- 1. Yes
 - 2. No
 - 3. Undecided
28. Have you used a compounding pharmacy for consultation regarding proper dosing of Compounded hormone therapies?
- 1. Yes
 - 2. No
29. Based on the information from the Women's Health Initiative trials; I plan to recommend bioidentical hormone therapies to manage my Patient's symptoms.
- 1. Yes
 - 2. No
 - 3. Undecided
30. Despite the outcomes related to the Women's Health Initiative trials; I plan to continue to recommend traditional hormone replacement therapies to manage my patient's hormonal symptoms.
- 1. Yes
 - 2. No
 - 3. Undecided

DONE: To submit this survey, please go to the next page.

Thank you again for your time!

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APPENDIX C: SURVEY TABLES & LIKERT SCALES

Question 1-Gender: Summary of Survey Responses (N=129)

Gender		
	Female	Male
Respondents	93	72.1
%	36	27.9

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 2-Race and Ethnicity; Summary of Survey Responses (N=129)

Ethnicity						
	African/Black American	Asian Chinese &Japanese	Caucasian (Not Latino)	Latino	Native American	Other (Specify)
Respondents	9	6	96	12	4	2
%	6.98	4.64	74.3	9.30	3.10	1.67

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 3-Age: Summary of Survey Responses (N=129)

Age					
	21-30	31-40	41-50	51-60	61 or older
Respondents	11	30	27	47	14
%	8.53	23.3	20.9	36.4	10.9

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 4-Marital Status; Summary of Survey Responses (N=129)

Marital Status				
	Single	Married	Divorced	Separated
Respondents	17	101	10	1
%	13.2	78.3	7.75	0.78

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 5-Region of Florida Reside: Summary of Survey Responses (N=129)

Region				
	West	North	Central	South
Respondents	28	27	44	30
%	21.7	20.9	34.1	23.3

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 6-Medical Education: Summary of Survey Responses (N=129)

Medical Education					
	North	South	East	West	Outside the USA
Respondents	89	24	7	6	3
%	69.0	18.6	5.4	4.7	2.3

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 7-Professional Title: Summary of Survey Responses (N=129)

Title				
	Advance Registered Nurse Practitioner (ARNP)	Doctors of Osteopathy (DO)	Physician Assistant (PA)	Medical Doctors (MD)
Respondents	32	15	26	56
%	24.8	11.6	20.2	43.4

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 8-Type of Practice: Summary of Survey Responses (N=129)

	Practice				
	Family Health	Family Practice	Urology	Women's Health	Internal Medicine
Respondents	13	58	38	20	0
%	10.0	45.0	29.5	15.5	0

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 9-Practice Location: Summary of Survey Responses (N=129)

	Location	
	Rural	Urban
Respondents	32	97
%	24.8	75.2

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 10-Work Setting: Summary of Survey Responses (N=129)

	Work Setting				
	County Health Department	Community-Based Clinic	Hospital, Local, outpatient setting	Military Treatment Facility	Private Office
Respondents	7	10	18	9	85
%	5.43	7.80	14.0	7.0	65.9

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 11-Years of Practice: Summary of Survey Responses (N=129)

	Years in Practice				
	5 years or less	6-10 ears	11-20 years	21-30 years	Over 30 years
Respondents	28	24	44	15	18
%	21.7	18.6	34.1	11.6	14.0

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages

Question 12-BHT Training: Summary of Survey Responses (N=129)

BHT Training		
	Yes	No
Respondents	26	103
%	20.2	79.8

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 13-Women Over 40: Summary of Survey Responses (N=129)

Women Over 40					
	10 percent	20 percent	30 percent	40 percent	50 percent or More
Respondents	26	51	20	19	13
%	20.2	39.5	15.5	14.7	10.1

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages

Question 14-Hormones Recommendations: Summary of Survey Responses (N=129)

Hormone Recommendations						
	I have not prescribed (BHT)	Traditional HRT (Only FDA Approved)	Biological-Based Hormones (Only FDA Approved)	Compounded BHT Only	Both Traditional & Compounded BHT	Other (Specify)
Respondents	30	28	9	12	23	0
%	29.4	27.5	8.8	11.8	22.5	0.00

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 15- Knowledge: Summary of Survey Responses (N=129)

		Knowledge			
		No knowledge	Knowledgeable, but need-updated information.	Very Knowledgeable, very minimal updates needed	Extremely knowledgeable, no updated information needed
Respondents		92	27	10	0
%		71.3	20.9	7.80	0.00

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)
 Responses reported as valid percentages.

Question 16-Best Route for Compounded Medications: Summary of Survey Responses (N=129)

		Best Route for Compounded Medication.							
		Oral	Sublingual	Pellets	Injections	Creams	Jellies	Transdermal/Patches	Suppositories.
Respondents		20	51	5	7	10	15	21	0
%		15.5	39.5	3.90	5.43	7.75	11.7	16.2	0

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)
 Responses reported as valid percentages.

Question 17-Barriers to Prescribe BHT: Summary of Survey Responses (N=128)

		Barriers to Prescribe BHT						
		Patient Safety Preference	Malpractice	FDA Approved	Knowledge	Evidence-Based	Cancer Diagnosis	Provider
Respondents		30	51	5	20	5	10	7
%		3.50	39.8	3.92	15.7	3.92	7.80	5.44

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)
 Responses reported as valid percentages.

Question 18-Summary of Survey Responses

(N=91)	Likert Scales			
	1.0	2.0	3.0	4.0
Q:18 Hot Flashes/Night Sweats/Mood Swings				
Black Cohosh/Remifemin	20	44	13	14
Compounded Estradiol/ Progesterone	8	16	45	22
Regular Exercise	60	23	2	6
Traditional HRT's (Prempro)	10	47	22	12
Zoloft	31	40	9	11
Diet Therapy	9	19	36	27
Compounded Testosterone	54	23	5	9
Effexor	29	42	7	13
Compounded DHEA	7	37	19	28
Compounded Pregnenolone	12	29	25	25

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)
 Likert Scale: 1= Highly recommend 2= Recommend 3= Recommend with reservation 4= Would not recommend
 Responses reported as valid percentages.

Question 19- Summary of Survey Responses

(N=92)	Likert Scales			
	1.0	2.0	3.0	4.0
Q: 19 Management of low or no libido)				
Compounded Pregnenolone	63	17	4	8
Traditional HRT's	54	22	5	11
Avoid Smoking	72	17	1	2
Avoid Alcohol Intake	57	28	2	5
Compounded DHEA	76	14	0	2
Compounded HRT	20	41	19	12
Effexor	76	11	0	5
Compounded Testosterone	20	27	14	31
Viagra for Men	25	41	8	18
OTC Estroven	39	37	7	9

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)
 Likert Scale: 1= Highly recommend 2= Recommend 3= Recommend with reservation 4= Would not recommend
 Responses reported as valid percentages.

Question 20-Summary of Survey Responses

	(N=Various Responses)			
	Likert Scales			
Q: 20 Management of fatigue and insomnia	1.0	2.0	3.0	4.0
SSRI (N=92)	7	15	44	26
Traditional HRT's (N=90)	3	42	21	24
Life Style Changes (N=91)	9	29	43	10
Ambien (N=91)	2	12	15	62
MVI (N=92)	70	15	3	4
Compounded DHEA (N=92)	18	38	23	13
OTC Sleep Aid (N=91)	29	23	13	26
Compounded Pregnenolone (N=89)	2	3	14	70
Calcium/Vit-D (N=92)	14	55	7	16
OTC Herbal Treatment (N=92)	11	12	15	54

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Likert Scale: 1= Highly recommend 2= Recommend 3= Recommend with reservation 4= Would not recommend

Responses reported as valid percentages.

Question 21-Summary of Survey Responses (N=Various Responses)

	Likert Scales			
	1.0	2.0	3.0	4.0
Q:21 Vaginal Dryness				
Astroglide Gel (N=92)	32	44	11	5
Estrace Vaginal Cream (N=92)	17	44	24	7
Ky Jelly (N=91)	28	47	8	8
Vagisil (N=90)	2	8	15	65
Vagifem Tablets (N=91)	15	26	32	18
Estring (N=91)	10	35	25	21
Pellets (N=91)	13	51	10	17
Compound Hormones (N=92)	11	44	11	26
OTC Soy Products (N=92)	18	47	12	15

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Likert Scale: 1= Highly recommend 2= Recommend 3= Recommend with reservation 4= Would not recommend

Responses reported as valid percentages.

Question 22- Summary of Survey Responses (N=129)

CAM/Alternative vs Traditional Medicine					
	Strongly Agree	Agree	Strongly Disagree	Disagree	No Opinion
Respondents	20	92	2		15
%	15.5	71.3	1.60		11.6

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 23-Answering Patient's Questions: Summary of Survey Responses (N=129)

Patient's Questions					
	Strongly Agree	Agree	Strongly Disagree	Disagree	No Opinion
Respondents	33	94	0		2
%	25.6	72.9	0		1.50

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 24-Counseling on Preventive Health Measures: Summary of Survey Responses (N=129)

Counseling					
	Strongly Agree	Agree	Strongly Disagree	Disagree	No Opinion
Respondents	68	30	27		4
%	52.7	23.3	20.9		3.10

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 25-Strong Relationship: Summary of Survey Responses (N=129)

Strong Relationship					
	Strongly Agree	Agree	Strongly Disagree	Disagree	No Opinion
Respondents	33	92	0		4
%	25.6	71.3	0		3.10

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 26-Best Evaluation of Hormone Levels: Summary of Survey Responses (N=129)

Best Evaluation of Hormone Levels					
	Blood/Serum	Saliva	Based on Symptoms Only	Urine	Capillary
Respondents	88	30	3	6	2
%	68.2	23.3	20.3	4.70	15.0

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages

Question 27-Consider Using a Compound Pharmacy: Summary of Survey Responses (N=129)

Consider Using a Compounding Pharmacy				
	. Yes	No	Undecided	
Respondents	99	14	16	
%	76.7	10.9	12.4	

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 28-Compounding Pharmacy Consultation: Summary of Survey Responses (N=129)

Compounding Pharmacy Consultation				
	. Yes	No	Undecided	
Respondents	89	6	34	
%	69.0	4.7	26.3	

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 29-WHI Trials and Recommendations to Use BHT: Summary of Survey Responses (N=129)

WHI Trials and Traditional BHT's				
	. Yes	No	Undecided	
Respondents	88	15	26	
%	68.2	11.6	20.2	

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

Question 30- WHI Trials and Recommendations to Use Traditional HRT's: Summary of Responses (N=129)

WHI Trials and Traditional HRT's			
	Yes	No	Undecided
Respondents	97	6	26
%	75.2	4.7	20.1

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

Responses reported as valid percentages.

APPENDIX D

The Survey Finding

Table 1-Bio-Identical Hormone Survey Summary of Questions & Results

Question & Answer Response	Response %	Response Count	N=200
Q-1: Gender (Female)	72.1	93	129
Q-2: Race (Caucasian)	74.3	96	129
Q-3: Age Group (51-60)	36.4	47	129
Q-4: Marital Status (Married)	78.3	101	129
Q-5: Florida Region (Central)	34.1	44	129
Q-6: US Medical Education Region (North)	69.0	89	129
Q-7: Professional Title (MD)	43.4	56	129
Q-8: Type of Practice (Family Practice)	45.0	58	129
Q-9: Practice Location (Urban)	75.2	97	129
Q-10: Work Setting (Private Office)	65.9	85	129
Q-11: Number of Years in Practice (11-20)	34.1	44	129
Q-12: Bio-ID HRT Training (No)	79.8	103	129
Q-13: Women Over Age 40 (20)	39.5	51	129
Q-14: *Hormone Prescribe (Have not Prescribed)	29.4	30	*102
Q-15: Bio-ID HRT Knowledge (No Knowledge)	71.3	92	129

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

*(Indicate not all 129 participants responded to the questions)

Responses reported as valid percentages.

APPENDIX D (Continues)

Table 2 Bio-Identical Hormone Survey Summary of Questions & Results

Question & Answer Response	Response %	Response Count	N=200
Q-16: Best Route for HRT Medications (Sublingual)	39.5	51	129
Q-17: *Barrier to Prescribing HRT (Possible Malpractice)	40.1	51	*128
Q-18: **Management of Menopausal S/S (Prempro)	Various Responses	47	*91
Q-19: **Management of Low Libido in Men/Women (DHEA/Effexor)	Various Responses	**76	*92
Q-20: **Management of Fatigue/Insomnia (MVI)	Various Responses	70	*92
Q-21: **Management of Vaginal Dryness (Pellets)	Various Responses	51	*91
Q-22: Knowledgeable about Multiple Medical Treatment Sys (Agree)	71.3	92	129
Q-23: Provider Preparation to Answer Patient Questions about Safety (Agree)	72.8	94	129
Q-24: Important Counseling Annual Prevention and Screening (Strongly Agree)	52.7	68	129
Q-25: Provider and Patient Relationship (Agree)	71.3	92	129
Q-26: Best Intervention to Evaluate Hormones Levels (Blood/Serum)	68.2	88	129
Q-27: Using Compounding Pharmacies (Yes)	76.7	99	129
Q-28: Consulting Compound Pharmacies (Yes)	69.0	89	129
Q-29: Providers Who Will Continue to Prescribe Traditional HRT's (Yes)	68.2	88	129
Q-30: Providers Who Will Continue to Recommend Traditional HRT's (Yes)	75.2	97	129

Source: Adapted by Mauricia Stanton, DNP Student from Survey Monkey Results (2015)

*(Indicate not all 129 participants responded to the questions)

** (Various Responses)

Responses reported as valid percentages.