Self Esteem, Distress, Body Image Concern and Quality of Life among Married Women with Polycystic Ovary Syndrome

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Dedicated to

To all those near dear and loved ones who made it happen!

With utmost regard and gratitude... Especially my loving parents and My dear husband...

CERTIFICATE

It is certified that MSc. Research report on "Self-esteem, distress, body image concern and quality of life among married women with Polycystic Ovary Syndrome" prepared by Afifa Naz has been approved for submission to National Institute of psychology, Quaid-i-Azam university, Islamabad.

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I begin by expressing my gratitude to Allah Almighty, the most merciful and the most beneficent for giving me the strength to material the crude ideas into reality and to bear with undesirable circumstances without losing hope.

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ABSTRACT

The aim of the present study was to explore the relationship between self-esteem, psychological distress, body image concern and health related quality of life among married women with Polycystic Ovary Syndrome (PCOS). Demographic variables like age, monthly income, education, work status, duration of marriage and miscarriage history were explored with reference to the study variables. Sample consisted of 200 married women having PCOS diagnosed by a physician. Data was collected through convenience and purposive sampling techniques. Self-esteem was assessed through Rosenberg's self-esteem scale (Rosenberg, 1979), psychological distress was measured through Kessler's distress scale (Prochaska, Sung, Max, Shi, & Ong, 2013), while body image concern was measured through body image concern inventory (Littleton, Axsom, & Pury, 2005), and health related quality of; life was measured through polycystic ovary syndrome questionnaire (Cronion et al., 1998). All the scales were used in English language. The study was carried out in two phases. In the first phase qualitative inquiry was done, findings of which revealed that women having PCOS had fair understanding of the various aspects of the disease. The second part consisted of the main study (N=200). Results yielded that there was a significant negative relationship between body image concern, psychological distress and health related quality of life among married women with PCOS. The results also indicated that there was significant positive relationship between self-esteem and health related quality of life. Findings also indicated that psychological distress negatively predicts the health related quality of life among married women with PCOS. The overall model accounted for 21% of variance among self-esteem, distress, body image concern and health related quality of life. Findings also indicated that psychological distress mediates the relationship between self-esteem and health related quality of life. Additionally, body image concern also mediates the relationship between self-esteem and health related quality of life. Findings also indicated that women who were married for two years scored higher on body image concerns as compared to women who were married for more than two years. Also, women with a miscarriage history scored higher means on body hair domain of health related quality of life as compared to women with no miscarriage history. Further, women who had no previous kids scored higher on emotional and menstruation subscales of health related quality of life as compared to women who already had kids. Findings on mean differences across age indicated that women in

middle adulthood scored lower on psychological distress, body image concerns and emotional subscale of health related quality of life as compared to women in early adulthood. Findings also indicated that women who were diagnosed with PCOS and had less than two-year history of PCOS had higher scores on self-esteem and emotional subscale of health related quality of life as compared to women who had been diagnosed for more than two years. Findings of the present study show implications in health and clinical domains along with psychiatry and psychology. Prevention programs can be designed to overcome the psychological correlates of women with PCOS.

INTRODUCTION

Chapter I

INTRODUCTION

Often times a string of pearls is referred as a beautiful thing; however, there is one exception to this case. If the string has more than 10 pearls and it's lining the ovaries, it potentially could affect the ability of a woman to conceive children (Boomsma et al., 2006). This syndrome is known as Polycystic Ovary Syndrome (PCOS), it's a multifaceted condition characterized by the presence of small cysts about 1/8 to 1/4 inch in diameter on one or both of the ovaries. As a result of this condition immature follicles join together. Due to which, the immature follicles do not burst and release an egg, resulting in cysts formation (Merwe, 2014). These halted follicles are physically referred to as "string of pearls". These are present on the outer boundary of the ovary, and they form the "cysts" seen in PCOS. The cysts do not require removal, as they are not tumors (Azziz et al., 2004).

PCOS is extremely common these days affecting every fifth women in their reproductive age. In addition to that, it has serious complicated and diverse clinical presentation, which includes concerns related to reproduction (hirsutism, infertility and hyperandrogenism); metabolism (impaired glucose tolerance, insulin resistance, type 2 diabetes mellitus, adverse cardiovascular risk profiles) as well as psychological concerns (depression, high levels of anxiety, and worsened quality of life) (Teede, Deeks, & Moran, 2010)

Previously, this syndrome was called the Stein-Leventhal Syndrome. The name was based on the physicians who first characterized it in 1930. This syndrome is mostly present in adolescent females with an irregular mensuration cycle and a surplus of unwanted hair on their face and body i.e. hirsutism (Dewailly & Poncelet, 2016).

Whilst looking at PCOS development mechanism, primary defects in insulin secretion can be identified as well as abnormalities related to ovarian functioning. Recent research has also discovered strong links between PCOS, resistance of insulin with obesity. This is because; insulin is responsible for regulating the ovarian function, but under the influence of excessive pituitary hormones the cells cannot consume insulin. As a result, the ovaries responding to the excess insulin produce excessive androgens (male sex hormones), leading to an-ovulation meaning, no egg is produced.

This arrest of follicles failing to mature into eggs indicates that an ovarian abnormality is present (Diamanti & Kouli, 2013)

PCOS is regarded as a common disorder that interjects the homeostasis of the female endocrine system. This disorder comes with two possible effects. It can be predominantly biochemical, or it can be morphological. The predominantly biochemical disorder is known as Hyperandrogenism. It is a well-known clinical hallmark of PCOS, as it can result in the arrest of the development of the follicles. Resulting in, micro cysts present in ovaries, anovulation, and changes in mensuration. The resulting phenotypes are dependent on stage of life, genotype, ethnic background, and environmental factors which include life style and body weight. Thus the dependence of the phenotype is widely varied (Teede, Deeks, & Moran, 2010).

Several environmental factors interact in PCOS, making it a multi factorial disorder. This explains its heterogeneous, biochemical and clinical expression. Although the genetic causes of PCOS have not yet been discovered, the family history of PCOS explains a lot about this phenomenon. Currently studies show that the persistence of PCOS in families resembles an autosomal dominant pattern (Brassard, Melk, & Baillargeon, 2014).

It has been reported that women with PCOS have also enhanced prevalence of cardiovascular risk factors, diabetes and uterine pathology. PCOS women may exhibit a vast number of metabolic and cardiovascular problems, which include, type 2 diabetes and many psychological disorders. The psychological disorders include: anxiety, depression, social and marital problems and sexual functioning derailments. The actual reasons of these non-gynecological health-related problems that women face are still to be explored. However, they have a negative impact on the Quality of Life (QoL) of the women that have PCOS. These women mainly undergo menstrual irregularities, mood disorders, low sexual satisfaction, acne, weight gain, pain, hair loss and infertility (Dunaif, 2014).

PCOS and Reproductive Concerns

Perhaps PCOS is the most frustrating concern with regards to reproduction. This is because, it affects the capability of a woman to bear children or give birth. In addition to that, there are also other distressing factors associated with PCOS, which makes this condition worse for the women (Sagle, 1998). One of these concerning factors is

frequent pregnancy loss (Rai & Regan, 2000). One in third of pregnant women with PCOS undergo spontaneous abortion, which twice more than women without PCOS that get an abortion (12–15%). This can lead to distress and psychological impairments, as well as greatly affecting the health related quality of life (Carmina & Lobo, 1999). Also, obese women have a higher chance of abortion, in comparison to non-obese women. Perinatal mortality and pregnancy related complications are exaggerated which include diabetes, preeclampsia, pre-term labor and an alarmingly increased stillborn frequency. Because of these difficulties the C-section rate is also enhanced. Since most of the patients with PCOS endure insulin resistance, it has been observed that patients with PCOS can also develop gestational diabetes (diabetes of pregnancy) (Paradisi et al., 1998).

PCOS and Obesity

Women that have PCOS are proved to have a higher percentage of obesity. Obesity tends to be affected by several mechanisms in PCOS. Enhanced androgen productivity by the polycystic ovaries is a well-established feature of PCOS explaining the major reason of obesity. Diet and lifestyle changes are considered an important way to reduce weight in obese women with PCOS; but pharmaceutical compounds are usually needed to reduce weight (Sam & Dunaif, 2003).

Obesity is one of the distinguishing features of PCOS. This also make patients with PCOS feel different and less feminine in comparison with society, which may result in some psychiatric problems (Kitzinge & Willmott, 2002). Obesity is found to affect about 44% of women having PCOS. Ethnical and geographical factors play a major role in determining the obesity prevalence in PCOS. In obese women, it has been reported that their obesity further deteriorates the clinical picture of PCOS resulting in an enhanced insulin resistance and consequently in an additional rise of ovarian and adrenal androgens. In women wanting to get pregnant their fertility concerns require even more emphasis upon the weight reduction and its management (Carmina & Lobo, 1999). Subsequently, obesity treatment is the basic target of any treatment for PCOS, but this can be more problematic because of insulin resistance). Due to hyperandrogenism and insulin resistance, the obesity of PCOS is of the android (central) type which is also highly associated with diabetes mellitus and increased cardiovascular risks (Kandarakis & Dunaif, 2012)

PCOS, Risk of Diabetes and Insulin Resistance

Dahlgren (1992) carried out a longitudinal study, his study reported that by the age of menopause 16% of women with PCOS developed type 2 diabetes mellitus. Insulin resistance has been found to occur in the most of the women with PCOS and has an enhanced severity in women with obesity. Majority of women having PCOS are hence at a borderline to develop impaired glucose tolerance and subsequently type 2 diabetes (Legro, Kunselman, Dodson, & Dunaif, 1999). Therefore, it is needed that every young woman with PCOS should be evaluated and tested for diabetes and a follow-up is mandatory.

PCOS and Risk of Miscarriages

In couples trying to conceive and recurrent miscarriages i.e., spontaneous loss of two or more pregnancies have been proven to be a daunting factor if the women have PCOS. Polycystic ovaries are hence the most common alarming ultrasound anomaly among PCOS women having recurrent miscarriages (Clifford et al., 1994; Sagle et al., 1988).

It has also been found that the prevalence of PCOS is drastically higher in the women with recurrent miscarriage compared women without PCOS. Reports have found that the prevalence of PCO amongst women with recurrent miscarriage to be 56% (Clifford et al., 1994).

PCOS and Cancer Risk

PCOS women have a higher risk of getting cancer, especially endometrial cancer. Long-time exposure of excessive quantities of estrogen hormones is considered as the risk factor for cancer as are other factors, such as obesity, hypertension, and diabetes, which are also well established correlates of cancer of the endometrium. It is hence a common notion to test all the women with PCOS for cancer risk, even if they are considered too young to be diagnosed with endometrial cancer (Carmina & Lobo, 1999; Azziz, Carmina, & Wailly, 2015)

Ovarian cancer is also greater in women with PCOS (Schildkraut et al., 1996). Non obese women are at an increased risk for developing the ovarian cancer; there is also an enhanced risk in women who have not been on oral contraceptives. Because of the known protective effect of oral contraceptives on ovarian and endometrial cancer

risk, use of oral contraceptives should be strongly considered as a preventative therapy (Carmina & Lobo, 1999).

Prevalence of PCOS

PCOS is found to be the most common hormonal anomaly among women of reproductive age. Although many studies have explored the prevalence of PCOS, there inconsistencies exist in their results. Even while utilizing the same diagnostic criteria, the findings present different pictures. Based on the results, we undertake a common generalizable prevalence of the disorder effects, which states that around 6.5 to 8 percent of women around the world are affected by PCOS (Azziz, Carmina, & Wailly, 2015).

Other researchers stated that PCOS is a complex metabolic, endocrine and reproductive disorder which affects approximately 5-10% women of child bearing age in the developed countries (Abbott, Colman, Dumesic, Eisner, & Kemnitz, 1998; Tsatsoulis, & Xita, 2006). The prevalence of PCOS is on the rise in developing countries (Li et al., 2007). Current findings from developing countries like China and India report comparable prevalence rates of PCOS (Allahbadia & Merchant 2008; Li et al., 2007; Sundararaman & Sridhar, 2008). It can be inferred that the high trend of PCOS in such countries is also attributable to higher diagnosis of diseases like obesity and type 2 diabetes mellitus (Allahbadia & Merchant, 2008).

Findings of Pasquali et al. (2011) revealed that 30-75% cases of PCOS contend with being overweight or obese although PCOS can be found in non-obese women as well. It was assessed that 40% of women attending infertility clinics have PCOS on examination. The highest reported prevalence of PCOS in the clinical setup was reported to be 52% which was found to be among the south Asian immigrants in Britain (Jones et al., 2010).

The prevalence of PCOS among the infertility clinics in Iran was found to be 33%. In Pakisatn, Haq et al. (2017) found that the frequency of PCOS in the infertility hospitals was 17.6%. Hussein and Alalaf (2013) estimated that 40% of women who undergo infertility treatments have PCOS on ultrasound examination.

Diagnostic Criteria for PCOS

Different criteria have been developed to rationally segregate the diversity of clinical features of PCOS. Some arrays of clinical criteria that have been put forth include: The National Institutes of Health Criteria (NIH) which defined it in 1990 entail only the presence of clinical and/or biochemical hyperandrogenism and oligo/amenorrhea anovulation (Zawadski & Dunaif, 1992). In 2003, the Rotterdam Criteria was established which used polycystic ovarian picture to be found on the ultrasound as the basic criterion to be present in order to diagnose a woman with PCOS; it also added to the two prior criterias of NIH. The European Society of Human Reproduction and Embryology/American Society for Reproductive Medicine Rotterdam consensus (ESHRE/ASRM) also established and took the definition to a further level requiring two of three features: anovulation, hyperandrogenism, and polycystic ovarian morphology (PCOM) seen on ultrasound. Finally, the Androgen Excess Society rationalized PCOS as hyperandrogenism with dysfunctionality of the ovaries or more commonly the polycystic ovaries (Azziz et al., 2004). Thus the Androgen Excess Society (AES) established the fact that excess androgen is a key finding in the occurrence and development of polycystic ovary syndrome, and demarcated that excess of androgens should be there along with oligomenorrhea or PCOM or both of them (Azziz et al., 2004).

While diagnosing a woman with PCOS, other androgen excess diseases should be eliminated e.g. non-classical congenital adrenal hyperplasia, Cushing's syndrome, androgen-secreting tumors, hyperprolactinemia, thyroid diseases, drug-induced androgen excess, as well as other causes of oligomenorrhea or anovulation (Spritzer, 2014).

It is important to establish valid definitions to attain an exact diagnosis of PCOS, because of the overlapping of different features of PCOS and physiological findings found in other diseases (Mohammad & Seghinsara, 2017)

Psychological Impairments in Women with PCOS

Qualitative psychological studies have highlighted increased amounts of depression, psychosexual and psychological morbidity and an enhanced reaction to stress in women with PCOS. Lowered self-esteem, diminished social behavior and decreased sexual satisfaction were found in women with PCOS. Weight and hirsutism

simultaneously provoked concerns along with infertility and menstrual problems. The wide range of symptoms associated with PCOS, namely hirsutism, acne, diabetes mellitus and obstructive sleep apnea syndrome (OSAS) are all found to reduce HRQoL in individual studies. Research showed that HRQoL was deteriorated in women having PCOS especially in the domains of general health perceptions, behavior, physical functioning and family activity (Nicandri & Hoeger, 2013).

Many researches have shown that women with PCOS, specifically those having hirsutism, have an enhanced prevalence of reactive depression and minor psychological morbidities (Barth, Catalan, Cherry, & Day, 1993) and also enhanced psychological distress and an elevated catecholamine reaction to available stress. The overall quality of life is diminished in hirsute women having PCOS (Sonino, Fava, Mani, Belluardo, & Boscaro, 1993). Negative impact on the psychosocial development of younger patients is found to be especially due to the presence of hirsutism and menstrual irregularities which is extremely distressing (Carmina & Lobo, 1999).

Self Esteem

Self-esteem is used both popular language and in psychology and is a widely used concept. It has been related to different facets of health and health-related attitudes. It is defined as a person's insight of his or her value or worth, or the extent to which a person values, approves of, appreciates, prizes, or likes him or herself. Rosenberg's (1965) definition has been found to be the most elaborative and comprehensive one who defined it as a favorable or unfavorable attitude toward the self (Blascovich & Tomaka, 1991).

Self-esteem is a broader representation of the self and is considered to be the evaluative component of the self-concept. Generally, self-esteem is considered the evaluative component of the self-concept, which not only includes cognitive and behavioral aspects but also the evaluative or affective ones. It is also a widely accepted fact that self-esteem operates as a trait, that is, it is stable through time within the individuals. Self-esteem is a substantially renowned concept in psychology, and has been found to be linked to almost every other psychological concept or domain, including personality (e.g., shyness), behavioral (e.g., task performance), cognitive (e.g., attributional bias), and clinical concepts (e.g., anxiety and depression) (Blascovich & Tomaka, 1991).

Theories of Self-Esteem. As the term is used, self-esteem pertains to an individual's concept of his or her worth. Global self-esteem refers to a global index of evaluation about the self, whereas domain-specific self-esteem comprises of thinking of one's value in a specific domain (such as on social, intellectual, or athletic dimensions). At its core, self-esteem refers to how we feel about ourselves (Scheff, Retzinger, & Ryan, 1989) and Brown (1993) persuasively argued that self-esteem is inherently rooted in affective processes. There are different theorists who defined and explained self-esteem in different perspectives including:

Maslow's theory of self-esteem needs. Maslow in 1943 stated that almost everyone in our surroundings (with a few pathological exclusions) have a desire or need for a strong and stable high estimation of themselves, for self-esteem, or self-respect, and for the dignified esteem from others (McLeod, 2007). By strongly based self-esteem, he meant of a self-esteem that practically demonstrates the actual capacity within the individual, a sense of achievement and respect from others.

These needs may be divided into two categories. First one being the desire for strength that leads to a sense of achievement, adequacy, confidence, independence and freedom. Secondly, there is something known as there the desire or prestige and reputation. Meaning, they want to be respected by society. In addition, they want attention, importance and appreciation.

The reproductive, weight and body hair concerns among women with PCOS pose them in a position where they are vulnerable in front of the society. The societal image of a women is that she has to be thin and is able to reproduce in order to be perfect. These deficiencies in women with PCOS diminishes the self-esteem as they are unable to acquire certain position in society in front of others (Carmina & Lobo, 1999).

Carl Rogers's self-esteem theory. Rogers was a humanistic psychologist. Even though he agreed with the main assumptions provided by Abraham Maslow, he has some of his own points to add on Maslow's theory (Sherer et al., 1982). His added points were that, in order for an individual to "grow", they require a genuine environment that promotes acceptance and empathy. Without these necessities, relationships and healthy personalities will not develop as well as they should. It is almost like a metaphor for a tree that develops without sunlight and water. Roger's vision was that everyone hat every person is capable of achieving their life goals, wishes

and desire; in short, the believed that everyone could reach the stage of self-actualization.

Since women with PCOS are unable to reproduce, their marital relationships get affected. The divorce rate among women with PCOS is high owing to the fact that they will not able to conceive. This important aspect can be explained through Carl Rogers's self-esteem theory which states that every individual needs a certain conducive environment in order to achieve a certain level of self-esteem (Nicandri & Hoeger, 2013).

Alfred Adler's self-esteem theory. According to Adler (1927), self-esteem of an individual develops once they feel like they are a member of society. Feeling like a member of society is important because, the individuals constantly assess themselves relative to other members of society. Hence, self-esteem should be primarily based on social influences of superiority or inferiority. Adler developed a holistic theory for personality, psychopathology, and psychotherapy; which was the first theory closely connected to a humanistic philosophy of living. His lectures and books written for the general public are said to have high levels of common sense. His clinical books and journal articles are written on the understanding of mental disorders; however, his opinions are uncommon and provide an insight of the art of healing, as well as providing inspiration for invoking optimal human development (Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005).

According to him, once individuals feel encouraged, they feel capable and appreciated. Due to which, they act in a connected and cooperative way. On the other hand, when individuals are discouraged they tend to act in an unhealthy manner, which includes withdrawing themselves from social interactions. Hence, the feeling of optimism can be achieved through finding ways of expressing and accepting encouragement, respect and social interest. Adler psychology focuses on the efforts of people to compensate for their self-perceived inferiority to others. These feeling of inferiority can result from one's position in society. Especially if, there were any particular if experiences of humiliation, or if any specific physical condition or defect existed at any point. It can also be a result of a lack of social feeling for others (Walster, 1965).

This also explains that self-esteem is related to the understanding of the unique and private beliefs and strategies that each individual has in society. This intellectual scheme and life style serve as the individual's reference for their attitudes, behaviors, their view of themselves and the world around them.

The menstrual and reproductive concerns among women with PCOS segregate them from societal standard of being a perfect woman. (Malaisse, Lauvaux, Franckson, & Bastenie, 1966). They are labelled bearded women with diabetes. This stigma and labelling segregates them from so called normal population hence decreasing their self-esteem.

Hirsutism and self-esteem. Hirsutism is the presence of terminal hair in a male-like pattern within females. It is a common clinical condition which effecting around 5– 10% of women that are of reproductive age. Hirsutism has a negative impact of the psychological development of women with PCOS, as it is extremely worrying for the patients. Women with PCOS demonstrate marked clinical heterogeneity. The commonly associated features are acne, polycystic-appearing ovaries, obesity, and acanthosis nigricans; however, these may vary from person to person (Talaei, Adgi, & Kelishadi, 2013).

According to Bazarganipour et al. (2013), hirsutism is negatively associated with self-esteem. They stated, that half of the women with suspected PCOS felt that facial hair has a negative impact on their self-confidence, because they thought it effected their physical appearance.

Psychological Distress

Psychological distress is a condition of feeling stressed and distressed (Ridner, 2004). Psychological distress is displayed in the form of anxiety, sorrow, aggression, and numerous other negative emotions and feelings that can either be temporary or everlasting (Hodes et al., 2011). Psychological distress can lead to unpleasant, tiredness, and at odds with interpersonal relationships (Kessler et al., 2002)

Psychological distress has no main measurements. Both lenient and harsh symptoms can be present in normal emotional states, such as, sadness, anxiety and depression (Cosci, Carrozzi, Lazzarini, & Pistelli, 2011). Due to this negative emotional state, the views of the individuals become negative towards their environment and

others. Due to negative emotional state negative thoughts, harms, and threats give birth. Furthermore, psychological distress can lead to inadequate enjoyment, stressors, harms, problems, danger, or threats (Lazarus & Folkman, 1984). In simple words, psychological distress is the response to stress that contains the power of negativity and other parts such as depression, anxiety, and stress.

Depression. Depression displays physical, behavioral, or emotional distress. Emotional symptoms can be seen in depression, in the form of tiredness, restless, unpleasant feeling and sorrow. Physical symptoms include: touchiness, complaints about minor disturbances, memory loss, low concentration levels, poor decision making skills, no sexual desires, feeling guilty, weight loss, not feeling hungry, laziness and increased heart rate are common signs of depression (Edwards & Burnard, 2003). In addition, depression is also a state of deprivation of a healthy life, self-census, and lack of interest in entertaining environments. Moreover, they also lack of empathy (Lovibond & Lovibond, 1995)

Anxiety. It's basically a feeling of fear about the future, or a state of negative thoughts. In addition, it invokes having faith in misfortune, physiological responses, and negative behavior. A person suffering through anxiety would always anticipate negativity about their future, hence why this form of anxiety is known as a future oriented state. Hence, individuals try to control their negative or fearful feelings, in order to protect themselves. As a result, they allow themselves to hold down the feelings of anxiety through more negative thoughts. The result of this negative thinking or cognition is displayed in the form of anxious behavior (Foucault, Dabisson, & Burchell, 2010). This behavior can affect the skeletal muscles (Lovibond & Lovibond, 1995). Cognitive psychologists are convinced that people who tend to think in a more negative or irrational manner also display more anxiety (Beck, 1979).

According to studies, anxiety disorder is mainly saturated in individuals who have mostly by experienced something unpleasant and traumatizing in the past and are no longer satisfied with their life. The determining factor in measuring the level of anxiety is how the person thinks. Individuals with different types of thinking and worries portray different types of fear and it depends upon the type of negative mood or feeling (Greenberg et al., 1990).

Stress. According to, Lazarus and Folkman (1984) there is a relationship between an individual and the environment they are assessed in. They are assessed by the uniqueness or exceeding their resources and risk of their wellbeing. A stressor can induce a stress response. Yet, all individuals experience stress differently, and it is a possibility that there may not be a negative reaction associated with stressful situations. If the negative situation is taken as a challenge the individual achieves a positive outcome, however, if the individual perceives that negative situation as a burden or threat, then a negative outcome is obtained. It was described that environmental demands are like remarkable stressors, they can take a form of sensitive incident, or a continuing injury or pain (Pearlin, 1989).

Theories of psychological distress. Following are the theories of psychological distress as proposed by different theorist.

Medical model. The medical model is a main and dominant view of pathology (Ruhela & Singh, 2016). According to medical model, psychological distress is similar to any other physical disease, and should classify in the same category. This model uses a similar model in the defining of psychological distress, as that used by medical doctors. In other words, psychological distress is a neurological defect responsible for disordered thinking and behavior, which is why it requires medical treatment and care (Carson, 1996).

Hence, the psychological distress experienced by women with PCOS should be catered a medical disorder with neurological basis. It should not be ignored as this seriously detroiters their quality of life (Hahn et al., 2005)

Interpersonal theory. Interpersonal theories characterize psychological difficulties and compare them to dysfunctional patterns of interaction (Carson et al., 1996). The theory emphasizes that humans are social beings, and who we are is defined through our relation with others. Psychological distress is described as the maladaptive behavior caused by unsatisfactory relationships. Psychological distress is identified when examining the distressed person's different patterns of interpersonal relationships, as interpersonal relations are important to humans.

Due to infertility, the marital relationships among women with PCOS gets seriously debilitated due to PCOS, leading to low marital satisfaction. This tension in

relationship enhances the psychological distress among women with PCOS as well explained by the Interpersonal theory (Kumarapeli, Seneviratne, & Wijeyaratne, 2010).

Cognitive theory. The cognitive model states that negatively biased cognition is important in psychological distress (Barlow & Durand, 1999). This process is reflected when distressed patients view themselves in a negative manner, as well as their environment and their future (Weinrach & Thomas, 1996). They tend to view themselves as worthless, inadequate, unlovable and deficient. According to cognitive theorists, people's excessive affect and dysfunctional behavior is a result of having inappropriate ways of interpreting their experiences. The essence of this model is that, emotional difficulties begin when the way we see events gets exaggerated beyond the available evidence, and that manner of seeing things tends to have a negative influence on feelings and behavior in their vicious life cycle.

Having PCOS makes one moody and emotional. This exaggerated response to the distress caused by PCOS is well explained by the cognitive theory where women tend to heighten their emotional responses as a result of having PCOS (Deurenberg, Yap, & Guricci, 2002)

PCOS and Psychological Distress

Hirsutism, menstrual irregularity and infertility are considered the most upsetting symptoms in adults suffering through PCOS; while, gaining weight is considered the most distressing symptom in adolescent females (Zangeneh, Jafarabadi, Naghizadeh, Abedinia, & Haghollahi, 2012). Menstrual symptoms including: Severe pains, irregular and heavy periods were frequently reported in women suffering through PCOS. Specially, a common feature is central obesity, which tends to make the psychological distress worse.

PCOS has a close relation to psychological distress. In addition, it comes with important implications other than that derived from necessitate diagnosis and treatment of the disorders. According to Zangeneh, Jafarabadi, Naghizadeh, Abedinia, and Haghollahi (2012), the treatment of PCOS should tackle both physical and psychological complaints. The reason behind that is that psychological distress reduces motivation, and good motivation is the key to agreement with medication and dietary management of PCOS. As a result of depression, increased cortisol levels are measured as well as increased sympathetic activity and decreased serotonin levels in the central

nervous system. Furthermore, these features can also result in insulin resistance. Hence, depression is more common among women with PCOS.

60% of the women reporting PCOS had moderate or severe levels of psychological distress. This can indicate probable moderate to severe depression or anxiety. These findings support previous studies, by reporting high levels of psychological distress amongst women suffering through PCOS (Teede, Deeks & Moran, 2010). Lower self-esteem, higher negative self-image, higher levels of depression and psychological distress are experienced by women suffering through PCOS. These symptoms arise because PCOS leads to physical appearance of hyperandrogenism like: obesity, hirsutism, cystic acne, seborrhea and hair loss (Zangeneh, Jafarabadi, Naghizadeh, Abedinia, & Haghollahi, 2012).

According to studies, stress scores are negatively co-related with age and the duration they had the illness for. Through evaluating this relation, it was revealed that this concept was true at ages when things such as finding a partner, sexual activity and marriage are important. The associated cosmetic and psychosexual implications cause emotional distress in the affected women. Women's health concerns, when combined with inadequate information, may exacerbate their already high levels of distress (Portuges & Culley, 2013), and highlight the need for support and education around the time of diagnosis.

Body Image Concern

Body image has conceptually been defined as the internal representation of the own outer appearance (Thompson, Heinberg, Altabe, & Dunn, 1999). Concerns about body image range from a normal desire to look attractive, body dissatisfaction, to a pathological concern with thinness or perfection (Weinshenker, 2012).

Body image can be referred to as the discernments, feelings and opinions associated with a person's body. It incorporates body the evaluation of the attractiveness of the body, size estimation, and the emotions relating with the body's shape and size (Grogan, Evans, Wright, & Hunter, 2010). Body image can be defined with regards to perceptual and attitudinal factors by others. Researchers have further differentiated between evaluative-affective and cognitive behavioral dimensions (Cash, 2004).

Socio-Cultural model of body image. The determining factors of body image development are sociocultural factors as also proposed by cognitive–behavioral perspectives (Cash, 2004), Three primary sources that affect risk factors for the development of body image problems have been defined through this model. Bottom-line findings specified that the three sociocultural constructs are: awareness, perceived pressures, and internalization. All of which are expressively associated with numerous measures of the evaluation of body image (Levine & Tiggemann, 2004).

Even though a more particular type of socio-cultural framework exists, this framework may be best of a conceptual hypothesis, and that provides a general system to review and investigate body image. In simple words, the socio-cultural model explains four things, which include (i) Presence of exceptional societal beliefs inside a specific culture, (ii) The societal beliefs are communicated through the assortment of socio-cultural channels, (iii) The societal beliefs are incorporated by people, (iv) The people that incorporate societal beliefs hope to achieve fulfilment (Borzekowski & Bayer, 2005).

Hence, the present societal norms for female excellence pressurize the charm to reduce weight. These beliefs are then transported through strong socio cultural influences, extraordinary friends, family, and the media. Thus, the socio cultural model is considered as the multilateral framework.

Social comparison theory. Festinger (1954) investigated the fundamentals of how a person forms beliefs and opinions about their own capabilities and body image. He stated that, human have the desire to assess their opinions and to gain more information on their about abilities. However, when they are incapable of doing so, they start comparing themselves to others.

Festinger's social comparison theory (1954) states that, people who compare themselves with people similar to them produce accurate results of their beliefs and capabilities. Comparisons make more sense when the comparison target has the same aspects as them. The aspects include factors, such as gender or age. Moreover, the feeling to compare oneself with others diminishes as the difference between their beliefs and capabilities become more significant. Festinger (1954) further added that comparison with others can invoke weights of equality. There is a feeling to lessen the

differences between the assessor and appraisal group by persuading others, or by changing their personal beliefs to achieve uniformity.

Festinger (1954) supposed that individuals feel the need for self-evaluation, to recognize their position in comparison to a criterion. He made the assumption that, individuals relate themselves to an objective standard. If the objective standard does not exist, they compare themselves to others. Furthermore, Festinger (1954) believed that individuals were expected to compare themselves with people are similar to them, as that is an evaluation which would provide meaningful information (Goesthals & Darley, 1977). This theory was developed originally to apply to belief and ability assessment. Now, however, it has been useful for different conditions including assessment of appearance and health related quality of life (Richins, 1991).

Explaining PCOS in context of social comparison theory, it can be concluded that having PCOS destroys a women's body image since excessive growth or obesity related concerns lead us to compare ourselves to others, hence PCOs can lead to a distorted body image (Himelein & Thatcher, 2006).

A cognitive–behavioral perspective. A cognitive–behavioral perspective on body image makes several distinctions regarding the multidimensional body image construct (Cash, 2004). Body image can be associated with the satisfaction or dissatisfaction with the appearance of one's self, as a result of equivalence or inconsistency of one's physical appearance. On the contrary, body image investment denotes towards the psychological importance that individuals place on their physical appearance.

Since women with PCOS have body hair issues and weight concerns they tend to be dissatisfied with the way they appear to others and to themselves (Bazarganipour et al., 2003).

PCOS and body image concern. In the literature, the treatment of women with PCOS is generally emphasized on the physical outcomes (Benson et al., 2009). Obesity is common among women with PCOS. Approximately two thirds of women with PCOS are overweight or obese, and obesity has been implicated in depression and body image in women with PCOS (Azziz et al., 2004). Furthermore, it has been shown that women with PCOS and clinical symptoms of hirsutism and acne have greater negative body image than in healthy control (Himelein & Thatcher, 2006). Pastore et

al. (2011) suggests that among non-obese PCOS women, their subjective body image was strongly associated with the severity of their depression symptoms. He suggested that a strong positive association between depression symptom severity and dissatisfaction with their physical appearance and physical conditioning in women with PCOS. Schreiber et al. (2006) reported that women with PCOS had greater fear of negative appearance evaluation as compared to control women.

Hence, Polycystic Ovary Syndrome comes with negative perception of body image. The implications of these negative perceptions include: dissatisfaction with appearance, perceived loss of femininity, feeling less sexually attractive, and being self-consciousness (Bazarganipour et al., 2013).

Health Related Quality of Life (HRQoL)

The term health related quality of life overlaps with —quality of lifel. Although both of them share the same meaning contextually; however, they have different origins. Quality of life takes different aspects of life such as health status, physical functioning, symptoms, psychosocial adjustment, well-being, life satisfaction, and happiness into account. As a result, the definition of health, quality of life and health related quality of life needs to be defined consecutively.

Health. The World Health Organization (WHO) states that health is, A state of complete physical, mental, and social well-being not merely the absence of disease'.

Quality of Life (QoL). There is no consensus with regards to a definition of Quality of Life. However, through establishing it as a concept, it can be known through a description of the different aspects (Radivojac, 2013). Nevertheless, as suggested by Fayers and Machin (2007), the western world tends to relate this to the concept of achieving happiness and satisfaction in life. Thus, the quality of life will always be related to the situation observed by the individuals according to the environments in which they develop (Romero, 2013).

According to WHO, Quality of Life as an individual's perception of their position in life, with reference to their culture and value systems. It also takes into account their relation to their goals, expectations, standards and concerns. It is a wide concept, affected in a complex way by the person's physical health, psychological state,

personal beliefs, social relationships and their relationship with the salient features of their environment.

Health related quality of life. Health-related Quality of Life (HRQoL) is a huge concept that has a multi-dimensional approach. It contains areas related to physical, mental, emotional, and social functioning. Thus, this goes far beyond direct measures of population health, life expectancy, and causes of death. In addition, it focuses on the impact on the quality of life, as a consequence of health status. Concepts relating to HRQoL include well-being, that assesses the positive aspects of a person's life, like positive emotions and life satisfaction (Taghavi et al., 2015).

Health related quality of life is a multi-dimensional concept that is used to understand the impact of health status on quality of life, and is a valuable indicator for overall health, because it gathers information on the physical, mental health status of individuals and the impact of health status on quality of life (Williams, Sheffield, & Knibb, 2016).

Health related quality of life is assessed through multiple indicating factors of self-perceived health status, physical and emotional functioning. (Guyatt et al., 1998). Once these measures are combined, a complete assessment is achieved for the burden of preventable diseases, injuries, and disabilities (Cronin et al., 1998).

Despite health seeming inherent the concept of quality of life and health specifically is moving away from the concept of quality of life. World Health Organization (1946) achieved a milestone in connecting health with the quality of life. This gave birth to a different category known as the Health Related Quality of Life. This is different from the general measure of quality of life, and directly associated with the health state of an individual.

Numerous definitions of HRQoL accept and the HRQoL proposed by the WHO (1997); which is that an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (WHO, 1993). An example is Patrick and Erickson (1993), who defined it as the measure in which the assigned value is modified to the duration of the life in function of the perception of physic, psychological and social limitations and the decrease of opportunities due to the disease, its sequels, the treatment and/or the health policies (Patrick & Erickson 1993); or Schumaker, Elis and

Naughton (1997) who mentioned it as a subjective perception, influenced by the current health status, of the ability to perform those activities important for the individual. Despite the different approaches towards the definitions, it is confirmed and universal that HRQoL is based upon the perception by the individual among their well-being.

Polycystic Ovary Syndrome and Health Related Quality of Life

Health Related Quality of Life (HRQoL) is referred to as the —physical, psychological and social domains of health seen as distinct areas that are influenced by a person's experiences, beliefs, expectations and perceptionsl. Quality of Life faced by women diagnosed with PCOS, is a consequence of two things. One is the symptoms that are causing the issues currently, as well as fearing possible disorders in the future. The features of PCOS that have the strongest influence on HRQoL are not clear in affected women. Nevertheless, the negative impacts are a consequence of: obesity, infertility, hirsutism, acne, hyperandrogenism, metabolic disturbances, and menstrual irregularity. In addition, it is highly likely that cultural-gender identity, religions and ethnicity and cultural influences and impacts HRQoL.

Models of HRQoL

HRQoL has a wide variety of models that are applied across different health and illness conditions through different stages of the lifespan, individuals, their families and communities. Commonly, HRQoL is achieved common as dynamic, subjective, and multidimensional. In addition, the dimensions often include physical, social, psychological, and spiritual factors. However, the specific dimensions are labelled differently by different authors.

While the theoretical underpinnings of HRQoL may be consistent across models, variations in terminology for analogous concepts make comparing studies very difficult. Common HRQoL models provide essential structure to the conceptualization of HRQoL using common language that can be shared across studies. Identification and evaluation of common HRQoL models can help guide research and practice toward promoting or attaining optimum HRQoL for populations of interest (Bakas et al., 2012).

Wilson and Cleary's model. Wilson and Cleary (1995) presented conceptual model, focusing on the relationships between the different aspects of health. Their model managed to link physiological variables, symptom status, functional health,

general health perceptions, and overall quality of life (Ferrans, Zerwic, Wilbur, & Larson, 2005).

According to Wilson and Cleary, this health-related quality of life (HRQoL) conceptual model could potentially unify the paradigms biomedical and social sciences. The biomedical paradigm is focused on etiologic agents, pathological processes and biological, physiological, and clinical outcomes. It provides a confirmation that the philosophic view and the complex phenomena are ultimately taken from a single primary principle, as well as mind-body dualism, which is the doctrine that views a separation between mental aspects from somatic ones (Ferrans, Zerwic, Wilbur, & Larson, 2005).

Mainly, the goal of the biomedical paradigm is to understand causal relationships, and to classify patients into groups with specific prognostic or therapeutic meaning. On the contrary, the social science paradigm focuses on functioning and overall well-being. The patients are taken patients into consideration, as well as the social context in which they live, and the corresponding system created by society to deal with their illness and its effects. Thus, the social science paradigm assesses all the factors contributing to illness, with a primary focus on the way numerous social structures and institutions influence individuals. The integration of these two perspectives makes the Wilson and Cleary conceptual model a potentially useful and relevant model for health care providers (Ferrans, Zerwic, Wilbur, & Larson, 2005).

An atheoretical approach. This is basically an atheoretical approach to conceptualizing HRQoL. Since this is a multidimensional construct, it has given birth to variables that have no hypotheses about the associations in them. Hence, measuring HRQoL without reference to a conceptual model has delayed the development of a knowledge base for HRQoL research to be carried out. The Conceptual model places concepts in a context, and through that guides the development of new theories. The use of a theory based conceptual model will enhance the applicability of this concept as a reliable. A valid HRQoL conceptual model will decode the clinical relevance of HRQoL. The analysis estimates the primary pathways of the Wilson and Cleary HRQOL conceptual model. This model contains parts that are extensively applied to different populations. Examples contain patients suffering through cancer, Parkinson's disease, and PCOS (Ferrans, Zerwic, Wilbur, & Larson, 2005).

The conceptual model. The conceptual model includes physiological variables, symptom status, functional health, general health perceptions, and overall quality of life. Adding on, this model is also responsible for linking individual and environmental characteristics. However, they were not a part of this analysis. Theory of this model states that physiological variables influence symptom status, symptom status influences functional health, and that in turn influences general health perceptions. General health perceptions influence overall quality of life and ultimately the health related quality of life. Functional health in the conceptual model has been defined as the ability of an individual to perform and adapt to one's environment. It is measured both objectively and subjectively over a given time period. Symptom status and functional health have been included in many HRQoL outcome studies (Ferrans, Zerwic, Wilbur, & Larson, 2005).

Relationship of Body Image and Psychological Distress

Body Image holds immense significance in the causing of psychological distress. It is said that, that obesity is one of the most important features of PCOS, and its occurrence varies between 61 and 76% (Glueck et al., 2005). Specifically, childhood obesity has been known and established as a risk factor for PCOS. In addition, obese girls are at a greater risk of developing insulin resistance, metabolic syndrome, and PCOS later on in life (Pasquali et al., 2011). Conversely, it is said that women with PCOS are at a higher risk of developing obesity which causes the psychological distress observed in such patients (Randeva et al., 2012).

A distorted body image is responsible for many underlying psychological derailments observed in women with PCOS. There is a positive correlation between body image and psychological distress, proving that women with PCOS have a worse body image causing psychological distress and depression symptom. Society puts a lot of importance of a woman's physical appearance, which is why women face problems related to body image which further exacerbates the distress that they experience. Negative body image can affect their social functioning and interpersonal relations, and it becomes even more complicated when the woman suffers physical changes or disfigurement due to PCOS (Bazarganipour et al.,2013).

Relationship of Body Image and Health Related Quality of Life

Irregular mensuration cycle, changes in appearance and difficulties in conceiving can cause psychological problems and distress. This distress affects women because it affects their feminine identity. They can compare their body to society's ideal body, and that can have a negative effect on her quality of life. The importance of addressing body positivity as a public health issue is more common and recognized now (Azziz et al., 2004).

With the absence of vaginal bleeding a woman can become insecure about woman can become insecure about her femininity. This is because; it makes her question her fertility (Bazarganipour et al., 2013). Women with PCOS tend to have lower levels of self-esteem which affects their quality of life in general (Pastore et al., 2011).

Relationship of Body Image and Self-Esteem

BMI unfavorably affects body satisfaction, as it is related to weight. Research and studies have shown that obesity can cause health problems. In addition, it can also lead to losing self-esteem and having a poor body image. This can result in, a decreased quality of life and psychological distress among women (Bazarganipour et al., 2013).

Speaking of body image, studies state that patient with menstrual irregularities, infertility and obesity had a more negative body image, in comparison to women that were fertile, had normal a regular mensurational cycle and body weight (Elsenbruch et al., 2003). Speaking of self-esteem, women with higher hirsutism or infertility have lower self-esteem than women without those symptoms (Benson et al., 2009)

In relation to weight, poor body image in PCOS can be a result of cultural influences, as being fat is considered unattractive in many cultures. Previous studies have shown that, obesity not only acts as a risk factor for other health problems, but it can also lead to the loss of self-esteem and poor body image; resulting in a decreased quality of life and psychological morbidity (Stunkard, Faith, & Allison, 2003).

Studies have shown that hirsutism is negatively associated with self-esteem. Similarly, hirsutism is negatively associated with sexual self-esteem. This indicated that, the risk for clinically relevant depression was enhanced in patients who reported to have hirsutism. In addition, half of the women with suspected PCOS felt that facial

hair greatly affected their self-confidence and made them worry doubt their appearance (Bazarganipour et al., 2013).

PCOS women have lower self-esteem due to the negative body image they perceive for themselves. A theme noticed among qualitative research for PCOS women is a lack of feeling feminine, and stigmatization related to PCOS symptoms (Weiner, Primeau, & Ehrmann, 2004)

PCOS, obesity and body image. In the past decade, just like PCOS obesity has become a recent worldwide epidemic, especially in developed countries.

It's been recognized that the pathogenesis of PCOS is influenced by genetics, and not just environmental factors such as, diet and lifestyle. Studies on PCOS have conveyed that hyperandrogenism is linked with obesity during the early stages of puberty. If hyperandrogenism is prevented by weight loss in during the early stages of puberty, it is possible that PCOS can be better maintained or even prevented in adult life. (Pasquali et al., 2011).

Obesity leads to several problems. It intensifies the pre-existing PCOS phenotypes, and also projects poor treatment outcomes. Women seeking infertility treatment who have a high BMI are most likely to require medical assistance (Vahratian & Smith, 2009).

PCOS can also result in mood disorders. This is the case with most obese patients. However, there is changing study about the effects of obesity on depression. Adali et al., (2008) stated that obesity is a factor for psychological distress and depression in patients with PCOS and causes poor body image.

PCOS, obesity and sexual dysfunction. PCOS has also appeared to be associated with sexual dysfunction, especially if there are problems with obesity (Eden, 2009). Women with PCOS have been proved to have less sexual satisfaction. Some investigators that studied the connection between PCOS and sexual satisfaction found that patients with PCOS were significantly less satisfied with their sex life (Elsenbruch et al., 2013). Another study examined and evaluated how women with PCOS differed from controls with regard to their body image. They found that patients with PCOS did not differ from controls with regards to the amount of sex or the importance of a satisfying sex life (Hart, 2017).

Body Image as a Mediator

The mediating effect of body image on the association among different variables has been reported in literature. In some cases, body image was found to be the strongest mediator. For instance, talking about one of the researches carried out to examine the mediating role of body image for relationship between Body Mass Index and health related quality of life among black women with PCOS, it was found out that that body hair may impact HRQoL. This study was the first one to explicitly test body image as a mediator in the BMI-HRQoL relationship. These findings demonstrate that in black women, weight-related QOL is influenced by how far one is from her desired body size (Cox et al., 2004).

Psychological Distress as a Mediator

The mediating role of psychological distress as a mediator between clinical features of PCOS and HRQoL has been undertaken by Bazarganipour et al. (2014). The highest effect of PCOS symptoms on HRQOL impairment among patients was reported to be exerted by psychological distress. The use of SEM permitted simultaneous evaluation of the effects of individual and disease characteristics on the variables within the model. The findings from the specific HRQOL model presented by Bazarganipour et al. (2014) suggested that HRQOL and the mediating factors such as psychological distress can be regarded as distinct phenomena.

Rationale of the Study

PCOS is a disorder that can lead to various diseases. It is a known factor for infertility amongst women; hence why it is considered the thief of womanhood (Kitzinger & Willmott, 2002). It is a hormonal disorder, depriving a woman of her feminism, this disease results in chronic infertility and various psychosexual changes. PCOS can also be characterized by the existence of hyperandrogenism, ovulatory dysfunction, and poly cysts in the ovaries. Not only this disease is the leading cause of female infertility, but it is also responsible for the ovulatory and menstrual dysfunction. The research states that, although other signs and symptoms vary, the three most common factors associated with PCOS include: ovulation irregularities, causing no periods or a disturbed cycle, with sometimes no periods at all. Other than that, menstrual irregularities increased androgen levels, and ovarian cysts are outcomes of this disease. Moreover, hirsutism, acne, and alopecia (male patterned hair loss) are also directly associated with this disease. The hirsutism and acne creates issues regarding body image and other psychosocial problems. The excessive concern about the appearance creates psychosocial and anxiety issues (Khomami, Tehrani, Hashemi, Farahmand & Azizi, 2015). Current pharmacological and surgical treatments for reproductive symptoms can be utilized; however, they are associated with negative side effects, such as cardiovascular complications and multiple, hence the treatment is also associated with some other complications pregnancies (Johansson & Victorin, 2013).

From the previous researches that have been done PCOS is regarded as a disease that destroys a women's notion of herself as a female. They perceive themselves as 'freakish', 'abnormal', and not 'proper' women hence it is also called the —Diabetes of bearded woman (Kandarakis & Christakou, 2009). Based on a review of literature on PCOS symptoms and its disorder, the clinicians identified the physical symptoms of PCOS, but the psychological aspects of PCOS have not been explored so far. In Pakistan consistent research has been done regarding the physiological aspect for PCOS; however, scarcity in the psychological aspects of the disease still exists. Hence, the present research was undertaken in order to bridge this gap, and shed light on various psychological issues, such as: self-esteem, psychological distress, body image and health related quality of life that are connected with PCOS.

When relating this concept to Pakistan it was concluded that, Haq et al. (2007) found that the frequency of PCOS in women attending infertility clinics was 17.6%. Ding et al. (2017) estimated that 40% of women who attend infertility clinics have PCOS. The prevalence of PCOS in Pakistani women is much higher (52%) as compared to White population (20 - 25% in UK) (Iqbal, Roohi, Akram, & Khan, 2015). The present study was undertaken owing to the fact that Pakistani literature lacks the relationship of psychological concerns related to married women with PCOS. Hence, this study was also conducted to report the psychological concerns of women with PCOS in Pakistani perspective.

Researches state that since PCOS affects the ability of women to bear children, it is the most distressing factor for women of reproductive along with other distressing factors associated (Sagle, 1998). Pregnancy loss has been reported to be one of the most concerning factor for women with PCOS (Rai & Regan, 2000). Also, in PCOS one in every third pregnancy undergoes spontaneous abortion. Therefore, married women with PCOS were selected in the study to explore the psychological morbidities that they endure while having the disease.

When relating this concept to rural areas it was revealed that, proportion of PCOS was higher in urban population as compared to rural counterparts. Previous studies have reported a prevalence of PCOS ranging from 2.2 to 26% in the urban populations (Tehrani, Simbar, Tohidi, Hosseinpanah, & Azzizi, 2011). Previous literature also shows that the prevalence of menstrual disorders, in general, was higher in PCOS women living in urban comparing to rural areas (Schoggins et al., 2014). Hence, data was collected from urban areas of Rawalpindi and Islamabad to address the psychological impairments women have in the urban setup.

From a cultural perspective, there are various myths associated with PCOS that vary from culture to culture. In Pakistan, these myths are primarily a result of lack of education and awareness. These include non-curable nature of PCOS, never being unable to lose weight, or never being able to conceive, among many others. There exists a lack of awareness regarding its treatment outcomes as well. This research was carried out to address the myths and misconception that women have regarding the disease as well. Hence, Qualitative part was carried out to make a judgment of the misconceptions of women regarding the disease.

METHOD

Chapter-II

METHOD

Objectives

The present study aims to

1. explore the relationship between self-esteem, body image concern, psychological distress and health related quality of life among married woman with PCOS.
2. study the relationship of demographic variables i.e. age, education, work status, duration of marriage, miscarriage history with the study variables.

Hypotheses

Following hypotheses have been formulated on the bases of available literature:

1. There will be a negative relationship between body image concern, psychological distress and health related quality of life among married women with PCOS.
2. There will be a positive relationship between self-esteem and health related quality of life among married women with PCOS.
3. Self-esteem will positively predict the HRQoL of married women with PCOS.
4. Psychological distress and body image concern will negatively predict the HRQoL among married women with PCOS.
5. Psychological distress mediates the relationship between self-esteem and HRQoL.
6. Body image concern mediates the relationship between self-esteem and HRQoL.
7. Women with PCOS who had a miscarriage will score higher on psychological distress as compared to women with no miscarriage history.
8. Women with PCOS who already have children will score less on psychological distress as compared to those having no kids.

Conceptual and Operational Definitions of the Variables

Self-esteem. Self-esteem has been defined as a favorable or unfavorable attitude toward the self (Rosenberg, 1965). To assess self-esteem among married women with PCOS Rosenberg's Self-esteem scale (1965) in English language was used. High score on the scale indicates high self-esteem and vice versa.

Body image concern. Body Imagel has conceptually been defined as the internal representation of the own outer appearance (Thompson, Heinberg, Altabe, & Dunn, 1999). Concerns about body image range from a normal desire to look attractive, body dissatisfaction, to a pathological concern with thinness or perfection (Weinshenker, 2012). Body Image Concern Inventory (English version) has been used to measure Body Image among married women with PCOS. The Body Image Concern Inventory (BICI) is a brief, self-report measure of appearance concern. A high score on body image concern inventory will represent high concern for body image in the individual and vice versa (Littleton, Axsom & Pury, 2005).

Psychological distress. Conceptually psychological distress has been characterized by a range of symptoms including lack of enthusiasm, problems with sleep (trouble falling asleep or staying asleep), feeling downhearted or blue, feeling hopeless about the future, and feeling —emotional; for example, crying easily or feeling like crying (Burnette & Mui, 1997; Decker, 1997). Kessler distress scale (English version) has been used for measuring psychological distress (Katon, Lin, Russo, & Unutzer, 2003). High score on Kessler's distress inventory will indicate high psychological distress and vice versa. (Prochaska, Sung, Max, Shi, & Ong, 2013)

Health related quality of life. Health-related quality of life (HRQoL) is a multidimensional concept that includes subjective reports of symptoms, side effects, functioning in multiple life domains, and general perceptions of life satisfaction and quality (Revicki, Kleinman, & Cella, 2014). To measure HRQoL among women with PCOS, English version of Polycystic Ovarian Syndrome Questionnaire (PCOSQ) was used (Cronin et al., 1998). The scale further has 5 domains including emotional (8 items), body hair (5 items), weight (5 items), infertility (4 items), and menstrual domain (4 items). High score on Polycystic Ovary Syndrome Questionnaire (PCOSQ) indicated a high health related quality of life and vice versa (Cronin et al., 1998).

Emotion. Emotion is a complex set of interactions among subjective and objective factors, mediated by neural hormonal systems, which can either give rise to affective experiences such as feelings of arousal, pleasure/displeasure or generate cognitive processes such as emotionally relevant perceptual effects, appraisals, labelling processes (Kleinginna & Kleinginna, 1981). High score on emotion domain of PCOSQ indicates low emotional concerns and a high health related quality of life and vice versa (Cronin et al., 1998).

Body hair. Body hair or hirsutism is defined as the development of male-pattern terminal hair growth in women (Azziz et al., 2004). High score in this domain will indicate less body hair problems and a high health related quality of life and vice versa (Cronin et al., 1998)

Body weight. Body weight refers to a person's mass or weight. It is the measurement of weight without items located on the person (So, Farrington & Absher, 2009). High score in this domain will indicate less body weight concerns and a high health related quality of life vice versa (Cronin et al., 1998).

Infertility. Infertility may be used synonymously with sterility with only sporadically occurring spontaneous pregnancies (Gnoth et al., 2005). High score in this domain will indicate less infertility concerns and a high health related quality of life and vice versa (Cronin et al., 1998).

Menstruation. Menstruation, also known as a period or monthly is the regular discharge of blood and mucosal tissue (known as menses) from the inner lining of the uterus through the vagina (Emem & Hassan, 2017). High score in this domain will indicate less menstruation concerns and a high health related quality of life and vice versa (Cronin et al., 1998).

Instruments

Rosenberg's self-esteem scale. Rosenberg self-esteem scale is a 10-item scale. All items are answered using a 4-point Likert scale ranging from strongly agree to strongly disagree where strongly disagree = 1 point, disagree = 2 points, agree = 3 points, and strongly agree = 4 points. Score ranges in-between 10 to 40. The Rosenberg self-esteem scale presented high ratings in reliability areas; internal consistency was .77. Items 2, 5, 6, 8, 9 are reverse scored (Rosenberg, 1979).

Kessler's distress scale. Kessler's distress scale has been utilized for measuring psychological distress; it is a four point Likert scale consisting of six items each ranging from 0-4 score, where 0 = all the time, 1 = most of the time, 3 = undecided, 4 = sometimes, 5 = a little of times. The reliability of the scale is .89 and none of the items were reverse coded (Katon, Lin, Russo, & Unützer, 2003)

Body image concern inventory (BICI). Body image concern inventory is a five point Likert scale used to measure body image concern. It consists of questions in which respondents were asked to rate how often they had the described feeling or performed the behavior in the last thirty days by 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always. The reliability of the scale is .93 (Littleton, Axsom & Pury, 2005).

Polycystic ovary syndrome questionnaire (PCOSQ). This scale was developed by Cronin et al. (1998) and is utilized for measuring health related quality of life among patients with PCOS. The scale consists of five domains, each relating to a common symptom of PCOS; emotional (8 items i.e. 2,4,6,11,14,17,18 and 20), body hair (5 items i.e. 1,9,15,16 and 26), weight (5 items i.e. 3,10,12,22 and 24), infertility (4 items i.e. 5,13,23 and 25), and menstrual domain (4 items i.e. 7,8,19 and 21). Each question is associated with a 7-point scale in which 7 represents optimal function and 1 represents the poorest where 1 = a severe problem, 2 = a major problem, 3 = a moderate problem, 4 = some problem, 5 = a little problem, 6 = hardly any problem, 7 = no problem (Cronin et al., 1998). The scale and all its subscales were sufficiently reliable with α ranging between .89 to .95 with body hair (.95), emotions (.93), infertility (.92), menstrual problems (.89) and weight (.95) reliabilities. The total score of HRQoL is calculated by adding the mean score from each domain. The mean score is calculated by adding the raw score from each domain by the total number of item in each domain. None of the items were reverse coded (Jones et al., 2004).

Sample

The sample of the present research consisted of 200 married women diagnosed with PCOS by an Obstetrics/ Gynaecology physician. The patients were selected from different public and private sector hospitals of Rawalpindi and Islamabad by convenience and purposive sampling techniques. Snow ball sampling technique was used to collect data among the university students. Inclusion criteria included married women diagnosed with PCOS by a physician, minimum education of matric who could

read the questionnaires and respond to them. Unmarried women or those women diagnosed with some other hormonal disease other than PCOS were excluded from the sample as the study solely focus on psychological concerns of married women with PCOS. Married women were solely selected because of relevance of item of PCOSQ to married sample.

Table 1

Frequencies and percentages of demographic variables (N=200)

Demographic variables	*f(%)*
Age	
20-26 years	89 (44.5)
27 above years	111 (55.5)
Education	
Matric	114(57)
Above matric	86(43)
Work status	
Working	104(52)
Non-working	96(48)
Miscarriage history	
Yes	55 (29)
No	145 (71)
Duration of marriage	
2 years	110(55)
Greater than 2 years	90(45)
Previous kids	
Yes (secondary infertility)	48(24)
No (primary infertility)	152(76)
Duration of PCOS symptoms	
0-2 years	90(45)
Above 2 years	110(55)

In *Table 1* demographic variables and their frequencies along with their percentages have been summarized. 44.5% of the sample was between twenty to twenty-six years of age, while 55.5% of the sample was above twenty-seven years. 57% of the sample had minimum education of matric while 43% were educated above matric level. 52% of the sample was working while 48% of the sample was non-working. Miscarriage history indicated that 29% of the women had undergone one or more miscarriages during their pregnancy, while 71%% of the sample reported no miscarriage history. 55% of the sample was married for two years while 45% of the women reported marriage of more than two years. 24% of the sample reported previous kids (secondary infertility) while 76% of the sample reported of no previous kids (primary infertility). The duration of symptoms of the sample indicated that 45% of the women had PCOS symptoms from two years while 55% of the sample had it for more than two years.

Procedure

Majority of the questionnaires were filled directly from the participants. Around 20-25 participants who were approached for data collection refused to fill the questionnaire because of their reluctance to discuss the infertility as they were so related issues of the disease. Also, 30 questionnaires were distributed in a private hospital trough a doctor. The return rate of these questionnaires was 24 out of which 3 of them were discarded because of response set.

Ethical considerations. As the sample was sensitive to work with therefore following ethical issues were considered while collecting the data.

1. Permission was taken from the concerned department for data collection.
2. The research material was shown to the administration of the hospital or clinic in order to address any concern if there was any.
3. The participants were informed about the purpose of the research clearly and the benefits of research to society and possibly to the individual were told to them.
4. Informed consent i.e. permission was taken from the participants and they had the right to leave at any step during the research process, if they felt so.

5. Participants were assured about confidentiality of all the provided information such that the data collected would be used for research purpose only which is of academic nature.
6. It was insured that participants will not be harmed psychologically or physically while obtaining information,
7. Participants were informed about the length of time i.e. approximately 10-15 minutes which were accepted to fill the questionnaires.
8. In case anybody felt anxiety and had queries during the course of data collection they were provided with appropriate answers and for psychological help they were recommended to contact counselling centre of National Institute of Psychology of QAU for any sort of counselling if needed.

Overall, the data collection phase was not smooth, as numbers of hurdles were faced by the researcher. Some private hospitals refused to give permission despite approaching them in every possible way. On the other hand, while dealing with the participants many problems were faced, as some of them asked multiple questions about the confidentiality of the data. They were answered satisfactorily and assured by explaining the true purpose of the data collection in addition to this the researcher also encountered many intense emotional experiences as those participants who were going through infertility or had a miscarriage just a month ago had strong emotional response towards the disease. Positive regard and empathy was extended towards them and some of them were recommended to seek counselling in order to get rid of the feelings of distress if they were trouble having those feelings.

RESULTS

RESULTS

To explore the objectives and the hypothesis of the present study, quantitative analysis was carried out by using SPSS version 21. The statistical analysis consists of descriptive and inferential statistics. Descriptive statistics include Cronbach α, mean, standard deviation, range, skewness, and kurtosis. Furthermore, graphs were used to show percentages of group difference on demographics. Whereas, in inferential statistics Pearson Product Moment Correlation, t-test, ANOVA, Simple Linear Regression and Mediation were used. All of the results were displayed in tabular form.

Table 2

Analysis along demographic variables (N=200)

Variables	*f(%)*	Variables	*f(%)*
History of PCOS in Family		**Family History of Diabetes**	
None	138 (69%)	None	83 (41.5%)
Mother	22 (11%)	Mother	40 (20%)
Sister	11 (5.5%)	Father	44 (22%)
Cousins	29 (14.5%)	Grandparents	20 (10%)
Duration of Marriage in Years		Cousins / aunts	2 (1%)
2 years	110 (5%)	Both parents	11 (5.5%)
3-5 years	72 (36%)	**Period History**	
5 & above years	18 (9%)	Amenorrhea	20 (10%)
Duration of PCOS Symptoms in years		Irregular cycle	104 (52%)
Below 1 year	40 (20%)	Prolonged cycle	38 (19%)
1-2 years	50 (25%)	Regular cycle	38 (19%)
2-5 years	110 (55%)	**Psychiatric Medication**	
BMI Frequency		None	191(95.5%)
Healthy Weight	68 (34%)	Acetalopram	9 (4.5 %)
Over Weight	79 (39.5%)		
Obese	53 (26.5%)		

Variables	*f(%)*	Variables	*f(%)*
Weight reduction method used		**Perception of women regarding cause of PCOS**	
None	11 (5.5%)	No idea	37 (18.5%)
Walk	36 (18%)	Hormones	80 (40%)
Dieting	42 (21%)	Obesity	20 (10%)
Exercise	19 (9.5%)	Unhealthy diet	7 (3.5%)
All	92 (46%)	Mental/ Physical distress	8 (4%)
Types of infertility		Insulin inheritance	27 (13.5%)
Primary	152 (76%)	Miscellaneous	21 (10.5%)
Secondary	48 (24%)	**Perception of women regarding link between PCOS and food items**	
Miscarriage history		No Idea	54 (27%)
None	55 (27.5%)	No link	35 (17.5%)
1-month App.	48 (24%)	Unhealthy food	49 (24.5%)
2 Months A	72 (36%)	Chicken and eggs	62 (31%)
2 Months or more	25 (12.5%)	**Possibility of conceiving with PCOS**	
Specific symptoms encountered		No idea	9 (4.5%)
Amenorrhea	5 (2%)	Maybe	2 (1%)
Irregular menses	42 (21%)	Great difficulty	21 (10.5%)
Hirsutism	19 (9.5%)	Yes	140 (70%)
Acne	22 (11%)	No eggs, so not conceived	28 (14%)
Infertility	37 (18.5%)	**What aspect of PCOS distresses you the most**	
Obesity	51 (25.5%)	Delayed conception	39 (78%)
Prolonged cycle	25 (12.5%)	Obesity	26 (13%)
Other treatments that you got		Hirsitism	26 (13%)
None	106(53%)	Acne	22 (11%)
Herbal	33 (16.5%)	Irregular cycles	48 (24%)
Hakeem	20 (10%)	**Fears regarding treatment**	
Roohani	23(11.5%)	No fears	30 (15%)
Homeopathic	18(9%)	Relapse	41 (20.5%)
		Will conceive or not	99 (49.5%)
		Will lose weight or not	22 (11%)
		Will the acne & hair go away	8 (4%)

Variables	*f(%)*	Variables	*f(%)*
Is there a complete cure for PCOS?		**Change in personality due to PCOS**	
No	58 (29%)	No change	10 (5%)
Maybe	63 (31.5%)	Humble/God fearing	34 (17%)
Yes	79 (39%)	Depression	82 (41%)
Can PCOS lead to diabetes		More self-conscious	36 (18%)
Maybe	62 (31%)	Self-esteem issues	38 (19%)
No Link	57 (28.5%)		
Yes	78 (39%)		
No Idea	3 (1.5%)		

The data compilation indicates that 69% of the respondents reported that PCOS was not associated with their family history. However, 14.5% of the respondents reported that their cousins had PCOS. Adding on, while looking at marriage duration of the respondents (in years), it was concluded that 55% of the women were married up to two years; meaning, a large amount of them were married for a short amount of time. Furthermore, 55% of the women reported to have this disorder since more than five years. It can also be inferred that 39.5% of the women were overweight, and 41.5% of women reported that they had no history of diabetes in their families; however, 22% of women reported that their fathers had diabetes. In addition, it can be deduced that 52% women having PCOS had an irregular period cycle, and 95.5% women having PCOS had not used any psychiatric medication; whereas,4.5% of women having PCOS took anti-depressants i.e. acetalopram. 46% women having PCOS tried all the methods of weight reduction, whereas, 21% tried dieting. Moreover, it can be deduced that 76% of the sample women had primary infertility; meaning, they had no children previously; whereas 24% of the women reported that they had secondary infertility meaning they already had given birth to children. Furthermore, it can be interpreted that 36% of women suffering from PCOS showed miscarriage history of two months. However, 27.5% of the sample women had no miscarriage history. 25.5% of women suffering from PCOS reported that most distressing factor for them was obesity, and 53% of women suffering from PCOS had not used any other treatment options.

Adding on, 40% of women reported that the disease was caused by a hormonal imbalance, while 18.5% women had no idea about the cause of the disease. Moreover,

it can be inferred that 31% of women reported that chicken and eggs were mainly causing PCOS symptoms, and 27% of women had no idea about the link of PCOS with food items. 70% of the women suffering from PCOS reported that it was possible to conceive while having PCOS; whereas, 14% of women reported that it was impossible to conceive since there were no eggs produced by the woman. In addition, 78% of women suffering from PCOS reported that problems in conceiving distressed them the most. Moreover, it can be inferred that 49.5% of women showed fears of never being able to conceive, and 39% of women suffering from PCOS reported that it was possible to conceive with PCOS, while 31.5% of women reported that they were not sure whether a complete cure was possible or not. 29% reported that it there was no cure of the disease. It can be inferred that 39% of women suffering from PCOS reported that diabetes and PCOS had a link; however, 28.5% of women suffering from PCOS reported that diabetes and PCOS had no link. Lastly, it can be inferred that 41% of women suffered from depression after being diagnosed with PCOS; while, 9% of women suffering from PCOS had self-esteem issues, and 18% of women suffering from PCOS were more self-conscious of themselves.

Table 3

Alpha Reliabilities and Descriptive Statistics for Self Esteem, Psychological Distress, Body Image Concern and Health Related Quality of Life (N=200)

Scales / Subscales	Items	α	*M*	*SD*	Range		Skewness	Kurtosis
					Actual	Potential		
SE	10	.82	19.73	3.25	14-30	10-40	.73	.10
PD	6	.84	19.73	3.25	14-30	6-30	.73	.10
BIC	19	.91	55.77	12.86	30-82	19-95	-.15	-.81
HRQoL	26	.87	13.29	3.61	6-26	5-35	1.01	1.54
INF	4	.86	2.53	1.37	1-7	1-7	1.25	.92
W	5	.75	2.72	1.10	1-6	1-7	1.17	.45
BH	5	.78	2.66	1.10	1-6	1-7	1.04	.13
EM	8	.57	2.75	.73	2-5	1-7	1.45	1.55
MEN	4	.46	2.63	1.05	1-6	1-7	1.24	1.44

Note. SE = Self Esteem; PD = psychological distress; BIC = body image concern; HRQoL = health related quality of life; INF = infertility; W = weight; BH = Body Hair; EM = Emotions; MEN = Menstruation.

Table 3 shows the alpha reliabilities, means, standard deviation, range (actual and potential), skewness and kurtosis for all the study variables. It can be inferred that all scales and subscales had good reliability. However, it can be inferred that the reliabilities of emotional and menstruation subscales of polycystic ovary syndrome questionnaire were .57 and .46. *Table 2* also shows skewness and kurtosis values that shows data was normally distributed.

Table 4

Correlation Matrix of the Study Variables (N=200)

Sr. No.	Measure	1	2	3	4	5	6	7	8	9
1	SE	-	-.15*	-.24**	.16*	.13	.06	.09	.15*	.10
2	PD		-	.18**	-.44**	-.36**	-.24**	-.15*	-.39**	-.36**
3	BIC			-	-.20**	-.01	-.19**	-.19**	-.18**	-.15*
4	HRQoL				-	.85**	.67**	.52**	.85**	.74**
5	INF					-	.12	.03	.40**	.47**
6	W						-	.35**	.67**	.28**
7	BH							-	.28**	.12
8	EM								-	.73**
9	MEN									-

Note. SE = Self Esteem; PD = psychological distress; BI = body image concern; HRQoL = health related quality of life; INF = infertility; W = weight; BH = Body Hair; EM = Emotions; MEN = Menstruation.

*$p<.05$, **$p<.01$*

From *table 4* it can be inferred that self-esteem is negatively related with psychological distress and body image concern, whereas it is related positively with health related quality of life among women with PCOS. Psychological distress is related positively with body image concern and health related quality of life among women with PCOS.

Table 5

Multiple Regression Showing the Effects of Self Esteem, Psychological Distress and Body Image Concern on the Health Related Quality of Life of among Women with PCOS (N=200)

			Health related quality of life	
			CI (95%)	
Variables	*β*	*S.E*	*LL*	*UL*
Constant		2.12	14.30	22.66
SE	.07	.07	-.06	.22
PD	-.41***	.05	-.42	-.22
BIC	-1.6	.02	-.06	.07
R^2	.21			
F	17.49			

Note. SE = Self Esteem; PD = Psychological Distress; BIC = body image concern; LL= lower limit; UL = Upper Limit

In the *Table 5* multiple regression analysis was used with self-esteem, psychological distress and body image as predictors of HRQoL among married women with PCOS. Results indicated that psychological distress negatively predicts the HRQoL. The overall model accounts for 21% of variance.

Mediation

A mediation model is one that seeks to identify the mechanism or process that underlies the observed relationship between independent variables (X) and a dependent variable (Y) via the inclusion of third variable, known as mediator (M). In the present study, mediating role of psychological distress and body image in predicting health related quality of life among women with PCOS has been undertaken. Mediation is hypothesized casual chain in which one variable (self-esteem) effected by second variable (psychological distress and body image) and in turn, affects a third variable (health related quality of life of married women with PCOS). The intervening variable M is the mediator since it mediates the relationship. Mediation can only occur based on assumptions proposed by Barron and Kenny (2014), that all three intervening variables must be significantly related with each other, either positively or negatively.

The mediation process stated below occurred due to significant relationship among variables. The dependent variable Y (health related quality of life) has been tested in model 1 to see direct effect of independent variable X (self-esteem) as mediation process (X →Y) with mediators (psychological distress and body image). Whereas, in model 2 psychological distress and body image was tested to see its indirect effect (X→M →Y) on the relationship between self-esteem and health related quality of life.

Table 6

The Mediating Role of Psychological Distress between Self Esteem and Health Related Quality of Life (N=200).

	Model 1	Model 2		95% CI	
Variables	*β*	*β*	*S.E*	*LL*	*UL*
Constant	9.85	16.54***	1.74	13.10	19.97
SES	.17**	.10	.07	-.03	.24
PD		-.33***	.05	-.43	-.23
R^2	.02*	.20***			
F	4.99*	24.77***			

Note. Sobel Test (z=2.25, p>.05); CI = Confidence Interval; UL = Upper limit; LL = Lower Limit.

****p* < .001, **p* < .05.

Table 6 shows mediating effect of psychological distress on self-esteem and health related quality of life. The first part of the table (without mediator) depicts that health related quality of life was significantly predicted by self-esteem ($B = .17, p<.05$). The R^2 value shows that 2% of variance in health related quality of life by self-esteem. Model 1 shows that self-esteem significantly predicts psychological distress. The R^2 value shows 2% of variance explained by Self-esteem in psychological distress. Model 2 shows that psychological distress is significant predictor ($B = -.33, p<.05$) of Health Related Quality of Life in the presence of Self-esteem. The variance accounted for this model is 20% which is different from model without mediator.

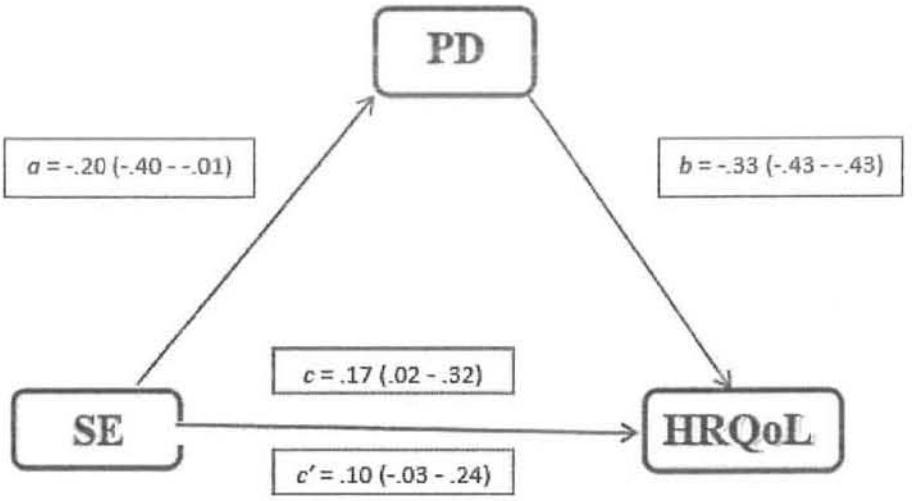

Figure 1. The Mediating Role of Psychological Distress between Self Esteem and Health Related Quality of Life

Table 7

The Mediating Role of Body Image Concern between Self Esteem and Quality of Life (N=200)

Variables	Model 1 β	Model 2 β	S.E	95% CI LL	95% CI UL
Constant	9.85***	13.37***	2.14	9.14	17.59
SES	.17**	.13*	.07	-.02	.28
BIC		-.04**	.02	-.08	.00
R^2	.02	.05			
F	4.99	5.35			

Note. Sobel Test (z=2.25, p>.05); CI = Confidence Interval; UL = Upper limit; LL = Lower Limit.

****p* < .001, **p* < .05.

Table 7 shows mediating effect of body image on self-esteem and health related quality of life. The first part of the table (without mediator) depicts that health related quality of life was significantly predicted by self-esteem ($B = .17, p<.05$). The R^2 value shows that 2% of variance in health related quality of life by self-esteem. Model 1 shows that self-esteem significantly predicts body image. The R^2 value shows 6% of variance explained by self-esteem in health related quality of life. Model 2 shows that Self-esteem is significant predictor ($B = -.04, p<.05$) of health related quality of life in the presence of self-esteem. The variance accounted for this model is 5% which is different from model without mediator.

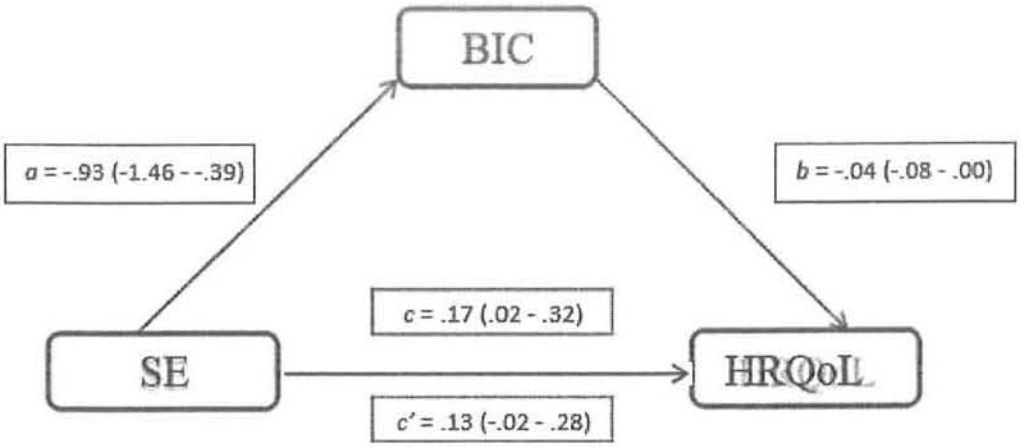

Figure2. Mediating role of Body Image Concern between Self-esteem and Health Related Quality of Life.

Table 8

Mean Differences in Duration of Marriage among the Study Variables (N=200)

Variables	2 year (n = 110)		more than 2 years (n = 90)				95% CI		Cohen's d
	M	*SD*	*M*	*SD*	$t_{(198)}$	*p*	*LL*	*UL*	
SE	19.75	3.08	19.70	3.46	.09	.92	-.86	.96	
PD	15.55	4.63	16.42	4.51	1.34	.18	-2.16	.40	
BIC	57.61	12.53	53.52	12.96	2.25	**.02**	.51	7.65	.32
HRQoL	13.25	3.52	13.35	3.74	.18	.85	-1.11	.91	
INF	13.15	5.17	13.51	5.92	.45	.65	-1.90	1.19	
W	13.15	5.17	14.14	5.91	1.27	.20	-2.54	.54	
BH	10.31	5.82	9.91	5.11	.50	.61	-1.14	1.94	
EM	10.80	3.98	10.19	4.44	1.02	.30	-.56	1.78	
MEN	21.71	5.72	22.33	6.00	.75	.45	-2.26	1.01	

Note. SE = Self Esteem; PD = psychological distress; BIC = body image concern; HRQoL = health related quality of life; INF = infertility; W = weight; BH = Body Hair; EM = Emotions; MEN = Menstruation; LL = Lower limit; UL = Upper Limit

Table 8 elicits significant mean differences on body image concern where women with two years of duration of marriage scored higher as compared to women who were married for more than two years.

Non-significant differences were observed for self-esteem, psychological distress, and health related quality of life among married women with PCOS along duration of marriage.

Table 9

Mean Differences in Miscarriage History among the Study Variables (N=200)

	Yes ($n = 56$)		No ($n = 144$)				95% CI		Cohen's
Variables	*M*	*SD*	*M*	*SD*	$t_{(198)}$	*p*	*LL*	*UL*	*d*
SE	19.80	3.27	19.70	3.25	.20	.84	-.91	1.12	
PD	15.69	4.73	16.03	4.55	.47	.63	-1.78	1.09	
BIC	53.78	13.00	56.52	12.77	1.34	.17	-6.75	1.26	
HRQoL	12.80	3.55	13.48	3.63	1.18	.23	-1.80	.45	
INF	2.68	.64	2.78	.76	.87	.38	-.33	.12	
W	2.65	1.02	2.67	1.13	.12	.90	-.36	.32	
BH	2.43	.99	2.83	1.13	2.41	**.01**	-.71	-.07	.37
EM	2.49	1.50	2.55	1.32	.26	.79	-.48	.37	
MEN	2.56	.94	2.66	1.09	.59	.55	-.42	.22	

Note. SE = Self Esteem; PD = psychological distress; BIC = body image concern; HRQoL = health related quality of life; INF = infertility; W = weight; BH = Body Hair; EM = Emotions; MEN = Menstruation; LL = Lower limit; UL = Upper Limit

Table 9 elicits significant mean difference for body hair where women with no miscarriage history scored higher as compared to women with a miscarriage history.

Non-significant differences were observed for self-esteem, psychological distress, body image concern and health related quality of life and its infertility, weight, emotions, and menstruation domains among married women with PCOS along miscarriage history.

Table 10

Mean Differences upon Having Previous Kids among Study Variables (N=200).

	Yes (n = 48)		No (n = 152)				95% CI		Cohen's
Variables	*M*	*SD*	*M*	*SD*	$t_{(198)}$	*p*	*LL*	*UL*	*d*
SE	19.69	3.24	19.83	3.30	.26	.79	-1.20	.92	
PD	15.99	4.42	15.79	5.12	.25	.79	-1.30	1.69	
BIC	56.10	12.54	54.73	13.89	.64	.52	-2.83	5.57	
HRQoL	13.40	3.77	12.97	3.06	.70	.48	-.76	1.60	
INF	13.49	5.71	12.77	4.81	.78	.43	-1.08	2.51	
W	13.68	5.66	13.33	5.11	.37	.70	-1.46	2.15	
BH	9.83	5.36	11.08	5.88	1.37	.16	-3.04	.53	
EM	10.80	4.52	9.67	2.81	2.06	**.04**	.04	2.21	.30
MEN	22.45	6.15	20.52	4.47	2.01	**.04**	.03	3.82	.35

Note. SE = Self Esteem; PD = psychological distress; BIC = body image concern; HRQoL = health related quality of life; INF = infertility; W = weight; BH = Body Hair; EM = Emotions; MEN = Menstruation; LL = Lower limit; UL = Upper Limit

Table 10 illustrates significant mean differences for emotional and menstruation subscales of health related quality of life among women with and without kids where women who already have kids scored higher means on the respective scales.

Non-significant differences were observed upon self-esteem, psychological distress, body image concern and infertility, weight, body hair subscales of health related quality of life among married women with PCOS on history of previous kids.

Table 11

Mean Differences upon Age among the Study Variables (N=200).

	20-26 years (n = 89)		27 years above (n = 111)				95% CI		Cohen's
Variables	*M*	*SD*	*M*	*SD*	*t*(198)	*p*	*LL*	*UL*	*d*
SE	19.94	3.23	19.55	3.26	.85	.39	-.51	1.30	
PD	15.12	4.67	16.59	4.44	2.27	**.02**	-2.74	-.19	.32
BIC	54.00	12.55	57.19	12.98	1.75	.08	-6.78	.40	
HRQoL	13.96	3.80	12.76	3.38	2.33	**.02**	.18	2.19	.33
INF	13.99	5.97	12.77	5.07	1.52	.12	-.35	2.78	
W	14.33	5.95	13.01	5.11	1.65	.10	-.25	2.88	
BH	10.51	6.03	9.83	5.04	.84	.39	-.90	2.25	
EM	11.27	4.54	9.93	3.81	2.26	**.02**	.17	2.50	.31
MEN	22.79	6.24	21.35	5.44	1.73	.08	-.19	3.06	

Note. SE = Self Esteem; PD = psychological distress; BIC = body image concern; HRQoL = health related quality of life; INF = infertility; W = weight; BH = Body Hair; EM = Emotions; MEN = Menstruation; LL = Lower limit; UL = Upper Limit

Table 11 indicates that women with age above twenty-seven years scored higher on psychological distress and lower means on health related quality of life and its emotional subscales as compared to women who were above twenty-seven years of age.

Non-significant differences among the study groups were observed for self-esteem, body image concern and infertility, weight, body hair, and menstruation subscales of health related quality of life among married women with PCOS.

Table 12

Mean Differences in Education among the Study Variables (N=200).

	Matric ($n = 96$)		Above matric ($n = 104$)				95% CI	
Variables	*M*	*SD*	*M*	*SD*	*t*(198)	*p*	*LL*	*UL*
SE	19.54	3.09	19.97	3.45	-.90	.36	-1.33	.49
PD	16.17	4.76	15.64	4.36	.80	.42	-.76	1.82
BIC	56.54	12.65	54.74	13.13	.98	.32	-1.82	5.42
HRQoL	13.13	3.79	13.51	3.37	.74	.46	-1.40	.63
INF	12.96	5.44	13.79	5.59	1.06	.29	-2.38	.71
W	13.15	5.47	14.19	5.57	1.31	.19	-2.59	.51
BH	10.08	5.92	10.20	4.92	-.15	.88	-1.67	1.43
EM	10.61	4.25	10.42	4.15	.31	.75	-.99	1.37
MEN	21.90	6.42	22.10	5.00	.24	.80	-1.79	1.39

Note. SE = Self Esteem; PD = psychological distress; BIC = body image concern; HRQoL = health related quality of life; INF = infertility; W = weight; BH = Body Hair; EM = Emotions; MEN = Menstruation; LL = Lower limit; UL = Upper Limit

Table 12 indicates that non-significant mean differences upon education were observed for self-esteem, psychological distress, body image concern and health related quality of life among married women with PCOS.

Table 13

Mean Differences in Work Status among the Study Variables (N=200)

	Non-working (n = 114)		Working (n = 86)				95% CI	
Variables	*M*	*SD*	*M*	*SD*	*t*(198)	*p*	*LL*	*UL*
SE	19.66	3.38	19.79	3.11	.27	.78	-1.03	.78
PD	16.32	4.47	15.53	4.70	1.21	.22	-.49	2.06
BIC	57.18	13.37	54.24	12.16	1.62	.10	-.63	6.51
HRQoL	13.15	3.43	13.45	3.81	.58	.55	-1.31	.70
INF	12.99	5.17	13.67	5.85	.86	.38	-2.21	.86
W	13.70	5.63	13.48	5.43	.28	.77	-1.32	1.76
BH	9.63	4.91	10.68	6.05	1.34	.18	-2.59	.49
EM	10.59	4.03	10.46	4.39	.21	.83	-1.04	1.30
MEN	22.07	5.93	21.91	5.78	.19	.84	-1.47	1.79

Note. SE = Self Esteem; PD = psychological distress; BIC = body image concern; HRQoL = health related quality of life; INF = infertility; W = weight; BH = Body Hair; EM = Emotions; MEN = Menstruation; LL = Lower limit; UL = Upper Limit

Table 13 elicits non-significant differences upon work status for self-esteem, psychological distress, body image concern, and health related quality of life among married women with PCOS

Table 14

Mean Differences in Duration of PCOS Symptoms among the Study Variables (N=200)

	0-2 years (n = 90)		Above 2 years (n = 110)				95% CI		Cohen's
Variables	*M*	*SD*	*M*	*SD*	*t*(198)	*p*	*LL*	*UL*	*d*
SE	20.52	3.46	19.07	2.95	3.15	**.00**	.54	2.35	.45
PD	15.37	4.52	16.41	4.61	1.60	.11	-2.32	.24	
BIC	54.53	12.82	56.78	12.86	1.23	.22	-5.84	1.35	
HRQoL	13.78	3.94	12.90	3.28	1.71	.08	-.13	1.88	
INF	13.48	5.45	13.18	5.58	.37	.70	-1.25	1.84	
W	13.80	5.76	13.43	5.35	.47	.63	-1.18	1.92	
BH	10.69	5.82	9.67	5.21	1.30	.19	-.52	2.55	
EM	11.20	4.56	9.97	3.80	2.03	**.04**	.03	2.41	.29
MEN	22.79	6.68	21.34	4.99	1.70	.09	-.22	3.13	

Note. SE = Self Esteem; PD = psychological distress; BIC = body image concern; HRQoL = health related quality of life; INF = infertility; W = weight; BH = Body Hair; EM = Emotions; MEN = Menstruation; LL = Lower limit; UL = Upper Limit

Table 14 indicates that women who reported PCOS symptoms for past two years scored higher means on self-esteem and emotional subscale of health related quality of life as compared to women who reported PCOS symptoms for more than past two years.

Non-significant differences were apparent upon psychological distress and body, body image concern and health related quality of life and its infertility, weight, body hair, and menstruation subscales among married women with PCOS.

DISCUSSION

Chapter IV

DISCUSSION

This research was conducted in order to understand how self-esteem affects psychological distress, body image and health related quality of among women who are married and have polycystic ovary syndrome (PCOS). It also intended to study the relationship of various demographics (age, education, work status, duration of marriage, miscarriage history, having previous kids) on the study variables. The major constructs of the study were assessed with Rosenberg's self-esteem scale (Rosenberg, 1979), Kessler's distress scale (Kessler & Mroczek, 1992), body image concern inventory (Littleton, Axsom & Pury, 2003) and Polycystic Ovary Syndrome Questionnaire (PCOSQ) (Cronin et al., 1998).

To determine the soundness of scale with regards to psychometric properties used, alpha reliabilities were computed for study variables. Evidently, alpha values of all the scales and their subscales in this study were psychometrically sound; self-esteem (.82), psychological distress (.84), body image (.91), HRQoL (.87), while its subscales ranging from .46 to .86 (see table 3) which shows scales are reliable and internally consistent. However, low reliabilities on emotional and menstruation subscales of polycystic ovary syndrome questionnaire (PCOSQ) can be attributed to less number of items in the respective scales. The values of skewness and kurtosis lies between absolute values of ±2 therefore data can be considered as normally distributed (Jondeaua & Rockinger, 2003).

Data has been collected by purposive and convenient sampling technique from different public and private sector hospitals of Rawalpindi and Islamabad and also via snowball sampling technique from married women with PCOS from Quaid-e-Azam University Islamabad. The sample consisted of married women diagnosed with PCOS by a physician. The age range was targeted from 18 to 35 years. To find out the relationship between variables studied in the population, Pearson product moment correlation, multiple hierarchal regression, and t-test was conducted along with mediation analysis.

The qualitative inquiry phase was carried out with an objective to develop and improve the perception of women regarding PCOS. The response is present in *table 2* on this study. In the present study, the family history of the respondents indicated that

although majority of them had no history of PCOS in their families, but a sufficient amount of them reported that their cousins had PCOS. Adding on, a large number of the respondents indicated that their mother or sisters had PCOS (see *table 2*). Family history can be used to determine the potential risk of developing PCOS (Azziz & Miller, 1998). In fact, many investigators have proposed that genetics has an important and strong role in the etiology of PCOS, as a woman has nearly 40% chance of developing PCOS if her sister is affected by it (Azziz & Miller, 1998).

Adding on, 55% of the women were married for 2 years, while, 36% of the women were married for 3-5 years, and, 9% of the women were married for more than five years. Whilst, comparing normal ovaries with PCOS, the result obtained shows that women at a younger age had more chances of having psychological impairments. This proves that, PCOS not only affects younger women more, but also causes significant psychological impairments for them (Kousta, White, Cela, McCarthy, & Franks, 2000).

Furthermore, it can be deduced that 20% of women in this study sample had PCOS since 1 to 2 years, whereas, 25% of women had it for one year. In addition, 55% of the sample reported that they had this disease for more than five years. In fact, no comprehensive evidence has been found from previous literature for duration of PCOS symptoms and its impact on distress and appearance.

Moreover, 39.55% of women were overweight, while, 34% had healthy weight. Obesity can be associated with abnormal function of hypothalamic-pituitary-ovarian axis, and it can potentially affect the occurrence and progression of PCOS on multiple aspects as verified by Wang, Dai, Yang, Guo and Sun (2016). The polycystic ovarian syndrome (PCOS) has also been recognized as the major cause of irregularities in the menstrual cycle and endocrine infertility in adult women that are obese women, as validated by Azziz and Miller (2001).

The percentage of women having family history of diabetes was 41.5%, while 24% had diabetic mothers, 18% had fathers with diabetes, while 16.5% had diabetes in cousins or grandparents. There is an increased prevalence of diabetes amongst women and their relatives with PCOS. However, it is more common in the mother's side of the family; this was verified by Eslami and Moini (2009). Norman, Masters and Hague (1998) authenticated that amount of women suffering through diabetes is frequent in

women with PCOS and their relatives, because PCOS itself has been accepted as a major risk factor in the development of type II diabetes (Gilbert, Valois, & Koren, 2006).

In addition, 52% of the women indicated that they had menstrual irregularities that accompanied their PCOS, while 19% had prolonged menstrual cycles and 19% reported normal menstrual cycles. 10% reported that they had no periods what so ever; a condition known as amenorrhea. Especially in Muslim settings, menstrual irregularities have important social consequences. They may also have consequences on the intimate relations of the women, as well as relations and other aspects of their reproductive and general health. Prolonged bleeding can potentially disrupt household patterns in a way in which family and community members may become aware of a woman's situation. This happens if her period persists for more than the expected number of days. Similarly, amenorrhea may signal menstrual disruption to family members, as they do not notice the expected 4–5-day monthly break in the woman's religious or household duties. The findings from this study agree with a study reporting that Muslim women with PCOS identified menstrual irregularity and infertility as their great concerns, and that resulted in a decrease in the health quality of life (Taghavi, Bazarganipour, Jones, & Hosseini, 2015).

In addition, it has been observed 4.5% women use antidepressants as the result of the psychological distress that they face. The high rate of depression and accompanying the use of anti-depressants in women with PCOS has been validated by studies conducted earlier. The previous studies have identified a positive correlation between depressive symptoms and use of antidepressants among women with PCOS. Levels of anxiety and depression are found be higher in women suffering through PCOS, in comparison to women not suffering through PCOS as endorsed by Barry, Kuczmierczyk, and Hardiman (2011). The higher incidence of psychiatric morbidity is seen with the higher use of antidepressants and anxiolytic drugs in the PCOS patients (Mansson et al., 2008). Therefore, these respective researches validate our findings that PCOS leads to the use of anti-depressants among the women having PCOS.

Furthermore, it has been observed that 46% women used all the methods of dieting in an attempt to reduce their weight, while 21% used dieting as mode of weight reduction. 18% reported that they walked in order to reduce their weight, while 9.5%

switched to exercise. Previous findings indicate that women use all methods of weight reductions as compared to diet or walk alone (Kayman, Bruvold, & Stern, 1990).

Moreover, it can be deduced that 76% of the sample women had primary infertility meaning they had no children previously; whereas 24% of the women reported that they had secondary infertility meaning they already had children. . Results of previous researches confirm the findings that women with PCOS encounter primary infertility more, while secondary infertility is reported less (Atay, Cam, Muhcu, Cam, & Karateke, 2006).

Adding on, it has been found that 27.5% reported that they had no previous miscarriages, while 24% had it at one month. 36% had a miscarriage at two months of pregnancy, while 21% reported that they had it at three months. Previous studies validate the fact that PCOS women have high risk of having miscarriages at early stages of pregnancy hence approving our findings. According to Sagle et al. (1988), reported that the prevalence of PCOS is higher (82%) among women that have a history of recurrent pregnancy losses. This 22% prevalence contrast in the general population (Poison et al., 1988), has approved that the women with PCOS have a high risk for recurrent pregnancy losses.

To add on, it has been found that 25% of the women reported obesity as the most specific symptoms they had encountered while having PCOS. 21% had menstrual irregularities, 18.5% reported infertility, 12.5% reported prolonged menstrual cycles, 11% reported acne, and 9.5% reported hirsutism while 2.5% reported amenorrhea. Findings from previous researches indicate that women with PCOS encounter menstrual irregularities, and have infertility concerns (Azemi, Omu, & Omu, 2004). Researches also indicate that women specifically had obesity while having PCOS (Felemban, Tan, & Tulandi, 2010)

Adding on, different treatments employed by women having PCOS have been summarized. 53% women indicated that they had not employed any other method besides allopathic one. 16.5% women designated that herbal method was employed by them which is in accordance with findings of Ried and Stuart (2011) who said that the management of female infertility which used Chinese herbal medicine improved pregnancy rates by 2-fold within a 4-month period, in comparison compared to western medical fertility drug therapy. 10% women in the study sample reported that they used

hikmat, while 11.5% reported that they had used roohani method of treatments of PCOS. 9% reported that used employed homeopathy for their treatment.

Moreover, perceptions of women having PCOS about the cause of PCOS have been illustrated. The findings indicate that 40% of women attributed the causative factor to be hormonal. This finding is in line with the previous literature by Teede, Helm, Robert, Norman, and Boyle (2014) who attributed hormone imbalance as a key feature of PCOS. 18.5% had no idea about the cause of PCOS. 10% women attributed obesity as the cause of PCOS which is against the theoretical evidence. Evidence is found for obesity as outcome of the disease and not as the causative agent (Kitzinge & Willmott, 2002). Women attributed unhealthy diet (3.5%), stress (4%), and other causes (24%) including Low Hb, genetics, insulin resistance, and irregular periods. Insulin resistance has been found out to be the main cause of PCOS as also confirmed by Das et al., (2010)

Adding on, perception of women with PCOS with regards to link of with foods has been illustrated. 28.5% regarded PCOS cause with excessive consumption of chicken and eggs. 27.5% had no idea about the link while 24.5% attributed unhealthy foods as the cause of PCOS. Johnston and Swanson (2003) stated that the patterns of food myths are inherited in a society due to lack of awareness and teaching styles of the mother. In our societies mothers use traditional methods of teaching, inculcating various myths and misconceptions they have had while they were growing up, hence these myths are prevailing in our society.

Furthermore, perception of women about the possibility to conceive with PCOS has been demonstrated. 70% of the women reported that it was very difficult to conceive with PCOS which has also been confirmed by various findings. Jones, Hall, Balen, and Ledger (2008) identified various manifestations of PCOS in which lowered fertility hence problems in conceiving had been addressed. Hence the literature confirms women's notion of the fact that it is very difficult to conceive with PCOS.

Moreover, the most distressing factor related to PCOS have ben elaborated. 78% of the sample reported infertility to be the most distressing factor. Infertility has been shown to be the most distressing factor for women with PCOS. In the Pakistani culture (especially with regards to traditional beliefs), marriage is based off family arrangements. Hence, psychological distress and little marital satisfaction especially among women is a public problem (Bazarganipour et al., 2013). This validates our

result that infertility is the most distressing aspect faced by women with PCOS. 37% of the women reported that obesity was the most distressing factor which also has been proven by Overall obesity is present in approximately 44% of women suffering through PCOS. Obesity makes the clinical presentation of PCOS worse, by increasing the insulin resistance and resulting in a further increase in psychological distress (Kitzinge & Willmott, 2002). Hair and acne have been reported to be 13% and 13.5% respectively which has been verified by Bazarganipour et al. (2013) who reported that the risk of clinically relevant depression was higher in patients who had hirsutism. In addition, they also reported that half of the women with suspected PCOS felt their excessive facial hair largely affected their self-confidence, and caused psychological distress. Acne has also been found to be distressing for women with PCOS (Adali et al., 2008) women reported that their distress was acne related.

To add on, the fears of women regarding the treatment of PCOS are elaborated. 49.5% women reported that their fears were related to whether they will be able to conceive or not. 20% reported that they feared a relapse of the disease, while 15 reported no fears at all. Robinson, Faris, and Scott (1999) reported that women have more fears for gynecological concerns as compared to any other disease. These fears are more prevalent in our society due to cultural norms that women should have no birth related problems which validate our findings that 49.5% of the women reported fears regarding conceiving, in association with PCOS.

In addition, when women were asked about their notion that whether PCOS is curable or not 29% reported that it was curable. However, 31% women were doubtful about their knowledge regarding complete cure of PCOS. 29% women were of the notion that there was no complete cure for PCOS. Sharma and Nestler (2006) reported that although many advances have been made regarding the treatment of PCOS, there still lacks a number of medical concerns which could ensure the complete recovery. Hence, according to researches it has been validated that her is no complete cure of PCOS as yet, which confirms our findings.

Furthemore, when women were asked about their perceptions that whether PCOS can lead to diabetes they were found to be having different opinions. 31% women informed that there might be some link of PCOS with Diabetes. 13% women reported that the link of PCOS with Diabetes was due to insulin resistance (Kandarakis &

Christakou, 2009). In the longitudinal study by Dahlgren (1992), it was discovered that 16% of women with PCOS started developing type 2 diabetes by the age of menopause. Insulin resistance is another symptom that majority of women with PCOS suffer through, especially if there is usage of more sensitive probes. Therefore, all women with PCOS are at risk of developing impaired glucose tolerance and overt type 2 diabetes (Legro, Kunselman, Dodson, & Dunaif, 1999). Thus, it can be validated that diabetes is a consequence of PCOS, mainly due to insulin resistance.

In order to test hypotheses on the basis of existing literature, the very first objective is to test the relationship between the study variables. *Hypothesis 1* states that there is a negative relationship between body image concern, psychological distress and health related quality of life. It has been verified by Deurenberg, Yap, and Guricci (2002) that enhanced body image concerns in PCOS women may be influenced by cultural influences as it has been shown that obesity is considered unattractive in many cultures. Previous studies have also validated that obesity is not only a potential risk factor for many other health problems but also leads to a poor body image, resulting in distress and decreased health related quality of life (Ching, Burke, & Stuckey, 2007). Also, a distorted body image is responsible for many underlying psychological derailments observed in women with PCOS (Randeva et al., 2012). The mentioned literature validates our findings that the women with PCOS have a worse body image causing psychological distress and depression symptoms. *Hypothesis 1* also states that psychological distress and health related quality of life are related negatively with each other. This is because irregular mensuration cycle, changes in appearance and difficulties in conceiving can cause psychological problems and distress. This distress affects women because it affects their feminine identity. They can compare their body to society's —ideal body, and that can have a negative effect on her quality of life (Azziz et al., 2014). On the basis of the aforementioned literature, it is conveniently assumed that enhanced body image concerns diminish the health related quality of life among the married women with PCOS

Hypothesis 2 states that there will be a positive relationship between self-esteem and health related quality of life among married women with PCOS. This can be verified by the fact that with the absence of vaginal bleeding a woman can become insecure about her femininity because it makes her question her fertility (Bazarganipour et al., 2013). Women with PCOS tend to have lower levels of self-esteem which affects

their quality of life in general (Pastore et al., 2011). In addition, many Pakistani women feel strongly that their childbearing pattern influences the way people treat them; they are more respected in the family when they have children. Therefore, self-esteem is also a common factor that has been found to be affected by the clinical features of PCOS and hence decrease the HRQoL (Taghavi, Bazarganipour, Jones & Hosseini, 2015). As also confirmed by Bazarganipour et al. (2013) that the highest effect upon the HRQoL was exerted by self-esteem, where the most variance in clinical variable was related to reproductive history Women, whose reproductive history was defective, showed a poor self-esteem and a worsened health related quality of life. Also, according to Bazarganipour et al. (2013), hirsutism in PCOS women has a negative association with self-esteem and health related quality of life. They stated that half of the women with suspected PCOS felt that facial hair has a negative impact on their self-confidence, decreasing their health related quality of life because they thought it affected their physical appearance, hence these findings validate our second hypothesis that a good self-esteem ensures a better health related quality of life and vice versa. Furthermore, hirsute women experienced poorer self-esteem than women without hirsutism. A diminished sense of self-worth can develop, not only because her body has failed, but also because her self-esteem has been damaged (Greil, 1991). Based upon the afore mentioned literature it can be conveniently stated that there will be a positive relationship between self-esteem and health related quality of life among married women with PCOS

Hypothesis 3 states that psychological distress will negatively predict health related quality of life among married women with PCOS. It was found by Bazarganipour et al. (2013) that the highest effect on the HRQoL was exerted by psychological distress where patients in PCOS group scored more on depression and anxiety symptoms and significantly predicted the HRQoL of the study sample as also inferred from the findings (table 5). It is well known that the derailments in the health condition related to PCOS deleteriously affects the emotional condition of patients with PCOS hence depression, anxiety and aggressive symptoms have been noted. These findings validate our findings that psychological distress will positively predict the HRQoL of the patients with PCOS.

Hypothesis 5 and 6 state that psychological distress and body image concern mediate the relationship between self-esteem and HRQoL. The mediating role of

psychological distress as a mediator between clinical features of PCOS and HRQoL has been undertaken by Bazarganipour et al. (2014). The highest effect of PCOS symptoms on HRQOL impairment among patients was reported to be exerted by psychological distress. It has been reported that childlessness is an enormous psychological burden often associated with divorce, low social status which decreases the self-esteem of the women because motherhood is perceived as an important part of female identity, failing which women starts questioning her identity ultimately decreasing her self-esteem and enhancing the psychological distress that she faces. This enhanced psychological distress will decrease the health related quality of life of the women as verified by (Grail, 1991) who stated that this induced distress in the women with PCOS affects the health related quality of life (Kandarakis & Christakou, 2009) of the women with PCOS. *Hypothesis 6* states that body image concern will mediate the relationship between self-esteem and HRQoL. The mediating effect of body image on the association among different variables has been reported in literature. In some studies, body image was found to be the strongest mediator The fact that also verified since clinical features such as decrease the self-esteem of the women which cause body image concerns, since women may be influenced by cultural influences due to their enhanced weight (Teede, Deeks, & Moran, 2010) Poor body image in PCOS ultimately decreases the health related quality of life (Deurenberg, Yap, & Guricci, 2002) since society demands women to be of certain weight in order to be perfect (Teede, Deeks, & Moran, 2010) this proves our findings that body image concern also mediates the relationship between self-esteem and HRQoL.

Hypothesis 7 and 8 state that women who have no previous children or had a miscarriage will score higher on psychological distress. It can be concluded from previous literature that PCOS has a close relation to psychological distress. As stated by cognitive theory by Barlow and Durand (1999), the cognitive processes of distressed women differ from non-distressed. Women who already have children tend to be engrossed more in their infertility issues that their psychological distress is enhanced as compared to women who have no children, which validates our findings as well. It has also been validated through literature that in couples trying to conceive, recurrent miscarriages have been proven to be a daunting factor if the woman has PCOS. This fear of uncertainty leaves them with enhanced distress and anxiety as compared to women who had a miscarriage (Clifford et al., 1994; Sagle et al., 1988).

To see the difference of duration of marriage on the study variables t-test analysis has been done. Findings indicated that women who were married for two years scored higher on body image concern as compared to women who had been married for more than two years. This can be validated by the fact that PCOS women are more concerned with regards to their body image as PCOS is highly linked with obesity and in the early years of their marriage the pressure of conceiving is too high hence women tend to have more body image concerns (Meltzer & McNulty, 2010)

Furthermore, to see the difference across age on the study variables t-test analysis has been done. Findings indicated that women in early adulthood scored higher on psychological distress, body image concerns, and emotional subscales of health related quality of life as compared to women in their middle adulthood. These findings can be validated by the fact that women in their early adulthood are more affected by the manifestations of PCOS symptoms. As a result, younger women are more prone to the psychological impairments of the disease. Hence age of the mother is also a contributing factor towards the psychological morbidity in PCOS women (Aydogdu et al., 2012)

Further, to see the differences upon duration of PCOS symptoms upon the study variables t-test analysis has been done. Findings indicated that women with history of PCOS symptoms for more than two years scored low on self-esteem and emotional subscale of health related quality of life as compared to women who were diagnosed since two years This can be validated by the fact that as time passes by PCOS women tend to have a lower self-esteem, because of their infertility concerns. In our society, women who have children are respected more and childlessness is seen as a flaw. Hence, as time passes, their self-esteem tends to decrease (Abbey, Andrews, & Halman, 1992).

Conclusion

Judging from the results obtained on the effects of PCOS on women's physical health and emotional well-being, the HRQoL impairment related to body image concerns and psychological distress are not shocking. PCOS can also result in infertility, as it can cause stress and other psychosocial factors including low self-esteem. These findings suggest that HRQoL and the mediating factors can be declared to be a distinct phenomenon. It is recommend based on these findings that there should

be more awareness in healthcare providers about HRQoL impairment of PCOS women. They should know that is mainly caused by their infertility and menstrual disturbances, and these factors need appropriate management. In a HRQoL clinical routine, it is advised that mediating factors such as psychological distress and body image concern should be taken into consideration and treated appropriately if they are present.

Limitations and Suggestions

This study contains a few limitations. Firstly, the data was self-reported; meaning, there were some inaccuracies and uncertainties present in the data. Moreover, since the study is off a cross-sectional nature, it was tough to determine the causalities. Convenience sampling was incorporated in this study to select the participants in this study, and causes the findings to be generalized. Furthermore, majority of the patients were recruited as participants from a gynaecological clinic. Such patients might differ in a variety of socio-cultural and psychological parameters once they are compared with a community sample. As a result, it can be argued that there was a bias towards patients with PCOS with menstrual disturbance and infertility. Furthermore, all the patients in this study were married. Hence, the results of the present study have to be interpreted with caution. Further studies need to be carried out on a larger sample, and community participants need to be included, as well as women from other regions in Pakistan. Some suggestions for this study are that, ethical considerations should be taken into account, as this study deals with a sensitive topic. The women incorporated in this study should be approached with integrity and respect, they should be greeted properly and the purpose of this study should be introduced to them. They should be informed that the purpose of this study is to obtain information and create awareness regarding women with PCOS and their psychological correlates. Furthermore, they should be informed that their names will not be included in this study; in this manner no one will obtain personal information about them. As a result, their input in this study will be anonymous, and they will feel more comfortable in providing the required information. After the required information is collected, they should be thanked for their input in the study, and questions should be asked in a way that does not make them uncomfortable or make them feel threatened. Instead, the women should feel comfortable while being asked these questions and it should act as a therapy session. Lastly, the women should be provided with the researchers contact number and should be asked to contact them if they need help, in that way they will feel like they were incorporated in the study

because the researcher wanted to increase information regarding this topic in Pakistan and create awareness regarding their psychological correlates, due to which they will not feel miss used and feel like they were incorporated in the study for a purpose.

Implications

The study makes comprehensible relationship between self-esteem, psychological distress; body image and health relate quality of life among married women with PCOS. Moreover, it adds to the above mentioned gap in the literature regarding the psychological correlates of PCOS. Present study also has theoretical implication as it supports the already existing literature. Findings of the present study show implication in health and clinical domains along with psychiatry and psychology. Prevention programs can be designed to overcome psychological sufferings of people with PCOS.

REFERENCES

REFERENCES

Abbey, A., Andrews, F. M., & Halman, L. J. (1992). Infertility and subjective well-being: The mediating roles of self-esteem, internal control, and interpersonal conflict. *Journal of Marriage and the Family, 54*(2), 408-417. doi:10.2307/353072

Abbott, D. H., Dumesic, D. A., Eisner, J. R., Colman, R. J., & Kemnitz, J. W. (1998). Insights into the development of polycystic ovary syndrome (PCOS) from studies of prenatally androgenized female rhesus monkeys. *Trends in Endocrinology & Metabolism, 9*(2), 62–67. doi:10.1016/s1043-2760(98)00019-8

Adali, E., Yildizhan, R., Kurdoglu, M., Kolusari, A., Edirne, T., Sahin, H. G., & Kamaci, M. (2008). The relationship between clinico-biochemical characteristics and psychiatric distress in young women with polycystic ovary syndrome. *Journal of International Medical Research, 36*(6), 1188-1196.

Allahbadia, G., & Merchant, R. (2008). Polycystic ovary syndrome in the Indian Subcontinent. *Seminars in Reproductive Medicine, 26*(1), 22–34. doi:10.1055/s-2007-992921

Atay, V., Cam, C., Muhcu, M., Cam, M., & Karateke, A. (2006). Comparison of letrozole and clomiphene citrate in women with polycystic ovaries undergoing ovarian stimulation. *Journal of International Medical Research, 34*(1), 73-76.

Aydogdu, A., Tasci, I., Tapan, S., Sonmez, A., Aydogan, U., Akbulut, H. A. L. İ. L, & Taslipinar, A. (2012). Women with polycystic ovary syndrome have increased plasma chitotriosidase activity: a pathophysiological link between inflammation and impaired insulin sensitivity? *Experimental and Clinical Endocrinology & Diabetes, 120*(05), 261-265.

Azemi, M., Omu, F. E., & Omu, A. E. (2004). The effect of obesity on the outcome of infertility management in women with polycystic ovary syndrome. *Archives of Gynecology and Obstetrics, 270*(4), 205-210.

Azziz, M., &, Miller R. (1998). The development of the polycystic ovary syndrome: family history as a risk factor. *Trends in Endocrinology & Metabolism, 9*(2), 55-58.

Azziz, R., Carmina, E., Dewailly, D., Diamanti-Kandarakis, E., Escobar-Morreale, H. F., Futterweit, W., Witchel, S. F. (2006). Criteria for defining polycystic ovary syndrome as a predominantly hyperandrogenic syndrome: An androgen excess society guideline. *The Journal of Clinical Endocrinology & Metabolism, 91(*11), 4237–4245. doi:10.1210/jc.2006-0178

Azziz, R., Sanchez, L. A., Knochenhauer, E. S., Moran, C., Lazenby, J., Stephens, K. C., Boots, L. R. (2014). Androgen excess in women: experience with over 1000 consecutive patients. *The Journal of Clinical Endocrinology & Metabolism, 89*(2), 453–462. doi:10.1210/jc.2003-031122

Azziz, R., Woods, K. S., Reyna, R., Key, T. J., Knochenhauer, E. S., & Yildiz, B. O. (2004). The prevalence and features of the polycystic ovary syndrome in an unselected population. *The Journal of Clinical Endocrinology & Metabolism, 89*(6), 2745–2749. doi:10.1210/jc.2003-032046

Bakas, T., McLennon, S. M., Carpenter, J. S., Buelow, J. M., Otte, J. L., Hanna, K. M., & Welch, J. L. (2012). Systematic review of health-related quality of life models. *Health and Quality of Life Outcomes, 10*(1), 134. doi:10.1186/1477-7525-10-134

Barlow, D. H.., & Durand, V. M (1999). *Abnormal psychology: An introduction.* New York, NY: Wadsworth/Thomson Learning.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Barry, J. A., Kuczmierczyk, A. R., & Hardiman, P. J. (2011). Anxiety and depression in polycystic ovary syndrome: A systematic review and meta-analysis. *Human Reproduction, 26*(9), 2442-2451.

Barth, J. H., Catalan, J., Cherry, C. A., & Day, A. (1993). Psychological morbidity in women referred for treatment of hirsutism. *Journal of Psychosomatic Research, 37*(6), 615-619.

Bazarganipour, F., Ziaei, S., Montazeri, A., Foroozanfard, F., Kazemnejad, A., & Faghihzadeh, S. (2014). Health-related quality of life in patients with polycystic ovary syndrome (PCOS): A model-based study of predictive *Factors. The Journal of Sexual Medicine, 11*(4), 1023-1032.

Bazarganipour, F., Ziaei, S., Montazeri, A., Foroozanfard, F., Kazemnejad, A., & Faghihzadeh, S. (2013). Psychological investigation in patients with polycystic ovary syndrome. *Health and Quality of Life Outcomes, 11*(1), 141.

Bazarganipour, S. A., Taghavi, F., Montazeri, A., Kazemnejad, A., Chaman, R., & Khosravi, A. (2013). Health-related quality of life in polycystic ovary syndrome patients: A systematic review. *Iranian Journal of Reproductive Medicine, 13*(8),473.

Beck, A. T. (Ed.). (1979). *Cognitive therapy of depression.* New York, NY: Guilford press.

Blascovich, J., & Tomaka, J. (1991). Measures of self-esteem. *Measures of Personality and Social Psychological Attitudes, 1*, 115-160.

Boomsma, C. M., Eijkemans, M. J. C., Hughes, E. G., Visser, G. H. A., Fauser, B. C. J. M., & Macklon, N. S. (2006). A meta-analysis of pregnancy outcomes in women with polycystic ovary syndrome. *Human Reproduction Update, 12(*6), 673-683.

Borzekowski, D. L., & Bayer, A. M. (2005). Body image and media use among adolescents. *Adolescent Medicine Clinics, 16*(2), 289-313. doi:10.1016/j.admecli.2005.02.010

Brassard, M., AinMelk, Y., Baillargeon, J. P. (2014). Environmental effects upon women with polycystic ovary syndrome. *Medical Clinics of North America, 92*,1163–1192.

Burnette, D., & Mui, A. C. (1997). Psychological well-being of the oldest-old Hispanics. *Journal of Clinical Geropsychology, 3*(3), 227-244.

Carmina, E., & Lobo, R. A. (1999). Polycystic ovary syndrome (PCOS): Arguably the most common endocrinopathy is associated with significant morbidity in women. *The Journal of Clinical Endocrinology & Metabolism, 84*(6), 1897-1899.

Carson, R. C. (1996). Aristotle, Galileo, and the DSM taxonomy: The case of schizophrenia. *Journal of Consulting and Clinical Psychology, 64*(6), 1133.

Cash, T. F. (2012). Body image: Past, present and future. *An International Journal of Research, 1*, 1–5.

Ching, H. L., Burke, V., & Stuckey, B. G. A. (2007). Quality of life and psychological morbidity in women with polycystic ovary syndrome: body mass index, age and the provision of patient information are significant modifiers. *Clinical endocrinology, 66*(3), 373-379.

Clifford, K., Rai, R., Watson, H., & Regan, L. (1994). Pregnancy: An informative protocol for the investigation of recurrent miscarriage: preliminary experience of 500 consecutive cases. *Human Reproduction, 9*(7), 1328-1332.

Cosci, F., Pistelli, F., Lazzarini, N., & Carrozzi, L. (2011). Nicotine dependence and psychological distress: outcomes and clinical implications in smoking cessation. *Psychology Research and Behavior Management, 4*, 119. doi:10.2147/prbm. s14243

Cox, A. (1976). *The role of the Supreme Court in American government/by Archibald Cox.* New York, NY: Oxford University Press.

Cronin, L., Guyatt, G., Griffith, L., Wong, E., Azziz, R., Futterweit, W., ... & Dunaif, A. (1998). Development of a health-related quality-of-life questionnaire (PCOSQ) for women with polycystic ovary syndrome (PCOS). *The Journal of Clinical Endocrinology & Metabolism, 83(*6), 1976-1987.

Dahlgren, E., Johansson, S., Lindstedt, G., Knutsson, F., Oden, A., Janson, P. O., & Lundberg, P. A. (1992). Women with polycystic ovary syndrome wedge resected in 1956 to 1965: A long-term follow-up focusing on natural history and circulating hormones. *Fertility and Sterility, 57*(3), 505-513.

Das, K., Das, K., Mukherjee, P. S., Ghosh, A., Ghosh, S., Mridha, A. R., & Dhali, G. K. (2010). Nonobese population in a developing country has a high prevalence of nonalcoholic fatty liver and significant liver disease. *Hepatology, 51*(5), 1593-1602.

Decker, F. H. (1997). Occupational and nonoccupational factors in job satisfaction and psychological distress among nurses. *Research in Nursing & Health, 20*(5), 453-464.

Deurenberg, P., Deurenberg-Yap, M., & Guricci, S. (2002). Asians are different from Caucasians and from each other in their body mass index/body fat per cent relationship. *Obesity Reviews, 3*(3), 141-146.

Dewailly, D., Gronier, H., Poncelet, E., Robin, G., Leroy, M., Pigny, P., Catteau-Jonard, S. (2011). Diagnosis of polycystic ovary syndrome (PCOS): Revisiting the threshold values of follicle count on ultrasound and of the serum AMH level for the definition of polycystic ovaries. *Human Reproduction, 26*(11), 3123–3129. doi:10.1093/humrep/der297

Diamanti, E., & Kouli, C.R. (2013). An essay on development of polycystic ovary syndrome: Hormonal and metabolic profile. *The Journal of Clinical Endocrinology & Metabolism, 84*, 4006–4011.

Diamanti-Kandarakis, E., & Christakou, C. D. (2009). Insulin resistance in PCOS. In *Diagnosis and management of polycystic ovary syndrome (*pp. 35-61)., Boston, MA: Springer.

Diamanti-Kandarakis, E., & Dunaif, A. (2012). Insulin resistance and the polycystic ovary syndrome revisited: an update on mechanisms and implications. *Endocrine Reviews, 33*(6), 981-1030.

Ding, T., Hardiman, P. J., Petersen, I., Wang, F. F., Qu, F., & Baio, G. (2017). The prevalence of polycystic ovary syndrome in reproductive-aged women of different ethnicity: A systematic review and meta-analysis. *Oncotarget, 8*(56),96351.

Donnellan, M. B., Trzesniewski, K. H., Robins, R. W., Moffitt, T. E., & Caspi, A. (2005). Low self-esteem is related to aggression, antisocial behavior, and delinquency. *Psychological Science, 16*(4), 328-335.

Dunaif, A. (1997). Insulin Resistance and the Polycystic Ovary Syndrome: Mechanism and Implications for Pathogenesis1. *Endocrine Reviews, 18(*6), 774–800. doi:10.1210/edrv.18.6.0318

Eden, J. A. (1991). The polycystic ovary syndrome presenting as resistant acne successfully treated with cyproterone acetate. *The Medical journal of Australia, 155*(10), 677-680.

Edwards, D., & Burnard, P. (2003). A systematic review of stress and stress management interventions for mental health nurses. *Journal of Advanced Nursing, 42*(2), 169-200.

Elsenbruch, S., Benson, S., Hahn, S., Tan, S., Mann, K., Pleger, K., & Janssen, O. E. (2013). Determinants of emotional distress in women with polycystic ovary syndrome. *Human Reproduction, 21(*4), 1092-1099.

Elsenbruch, S., Hahn, S., Kowalsky, D., Öffner, A. H., Schedlowski, M., Mann, K., & Janssen, O. E. (2003). Quality of life, psychosocial well-being, and sexual satisfaction in women with polycystic ovary syndrome. *The Journal of Clinical Endocrinology & Metabolism, 88*(12), 5801-5807.

Emem, E. A. E., & Hassan, H. E. (2017). Correlation between quality of life and dysmenorrhea among nursing schools students. *International Journal of Nursing Science, 7*(6), 123-132.

Eslami, B., & Moini, A. (2009). Familial associations between polycystic ovarian syndrome and common diseases. *Journal of Assisted Reproduction and Genetics, 26*(2-3), 123-127.

Farrington, E., So, T. Y., & Absher, R. K. (2009). Evaluation of the accuracy of different methods used to estimate weights in the pediatric population. *Pediatrics, 123*(6), 1045-1051.

Fayers, P., & Machin, D. (2007). *Quality of life: The assessment, analysis and interpretation of patient-reported outcomes* (2nd ed.). West Sussex, England: John Wiley & Sons.

Felemban, A., Tan, S. L., & Tulandi, T. (2010). Laparoscopic treatment of polycystic ovaries with insulated needle cautery: A reappraisal. *Fertility and Sterility, 73*(2), 266-269.

Ferrans, C. E., Zerwic, J. J., Wilbur, J. E., & Larson, J. L. (2005). Conceptual model of health-related quality of life. *Journal of Nursing Scholarship, 37*(4), 336-342.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*(2), 117-140.

Foucault, M., Davidson, A. I., & Burchell, G. (2010). *The government of self and others: Lectures at the Collège de France 1982–1983*. New York, NY: Springer.

Gilbert, C., Valois, M., & Koren, G. (2006). Pregnancy outcome after first-trimester exposure to metformin: A meta-analysis. *Fertility and Sterility, 86*(3), 658-663.

Glueck, C. J., Dharashivkar, S., Wang, P., Zhu, B., Gartside, P. S., Tracy, T., & Sieve, L. (2005). Obesity and extreme obesity, manifest by ages 20–24 years, continuing through 32–41 years in women, should alert physicians to the diagnostic likelihood of polycystic ovary syndrome as a reversible underlying endocrinopathy. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 122*(2), 206-212.

Gnoth, C., Godehardt, E., Frank-Herrmann, P., Friol, K., Tigges, J., & Freundl, G. (2005). Definition and prevalence of subfertility and infertility. *Human Reproduction, 20*(5), 1144-1147

Goethals, G. R., & Darley, J. M. (1987). Social comparison theory: Self-evaluation and group life. In *Theories of group behavior* (pp. 21-47). New York, NY: Springer.

Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeder, M., Kirkland, S., & Lyon, D. (1990). Evidence for terror management theory II: The effects of mortality salience on reactions to those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology, 58*(2), 308.

Greil, A. L. (1991). *Not yet pregnant: Infertile couples in contemporary America.* New Brunswick, New Jersey:Rutgers University Press.

Grogan, S., Evans, R., Wright, S., & Hunter, G. (2010). Femininity and muscularity: Accounts of seven women body builders. *Journal of Gender Studies, 13*(1), 49–63.

Guyatt, G., Cronin, L., Griffith, L., Wong, E., Azziz, R., Futterweit, W., ... & Dunaif, A. (1998). Development of a health-related quality-of-life questionnaire (PCOSQ) for women with polycystic ovary syndrome (PCOS). *The Journal of Clinical Endocrinology & Metabolism, 83*(6), 1976-1987.

Haq, N., Khan, Z., Riaz, S., Nasim, A., Shahwani, R., & Tahir, M. (2017). Prevalence and knowledge of polycystic ovary syndrome (PCOS) among female science students of different public universities of Quetta, Pakistan. *Imperial Journal of Interdisciplinary Research, 3*(6).

Hart R. (2017) Definitions, prevalence and symptoms of polycystic ovaries and the polycystic ovary syndrome. In Allahbadia, G.N., Agrawal, R. (Eds.) *Polycystic ovary syndrome.* (pp. 15–26) Kent, UK: Anshan, Ltd.

Himelein, M. J., & Thatcher, S. S. (2006). Depression and body image among women with polycystic ovary syndrome. *Journal of Health Psychology, 11*(4), 613-625.

Hodes, G. E., Pfau, M. L., Leboeuf, M., Golden, S. A., Christoffel, D. J., Bregman, D., & Labonté, B. (2014). Individual differences in the peripheral immune system promote resilience versus susceptibility to social stress. *Proceedings of the National Academy of Sciences, 111*(45), 16136-16141.

Hussein, B., & Alalaf, S. (2013). Prevalence and characteristics of polycystic ovarian syndrome in a sample of infertile Kurdish women attending IVF infertility center in maternity teaching hospital of Erbil City. *Open Journal of Obstetrics and Gynecology, 3*(07), 577.

Iqbal, M. A., Roohi, N., Akram, M., & Khan, O. (2015). Egg quality and egg geometry influenced by mannan-oligosaccharides (MOS): A prebiotic supplementation in four close bred flocks of Japanese quail breeders (Coturnix coturnix japonica). *Pakistan Journal of Zoology, 47*(3), 641-648.

Johansson, J., & Stener-Victorin, E. (2013). Polycystic ovary syndrome: effect and mechanisms of acupuncture for ovulation induction. *Evidence-Based Complementary and Alternative Medicine,20*,1–16. doi:10.1155/2013/762615

Johnston, D. D., & Swanson, D. H. (2003). Invisible mothers: A content analysis of motherhood ideologies and myths in magazines. *Sex Roles, 49*(2), 21-33.

Jondeaua, E., & Rockinger, M. (2003). How Higher Moments affect the allocation of assets. *Finance Letters, 1*(2), 1-5.

Jones, G. L., Benes, K., Clark, T. L., Denham, R., Holder, M. G., Haynes, T. J., & Balen, A. (2004). The polycystic ovary syndrome health-related quality of life questionnaire (PCOSQ): A validation. *Human Reproduction, 19*(2), 371-377.

Jones, G. L., Hall, J. M., Lashen, H. L., Balen, A. H., & Ledger, W. L. (2011). Health-related quality of life among adolescents with polycystic ovary syndrome. *Journal of Obstetric, Gynecologic & Neonatal Nursing, 40*(5), 577-588.

Jones, G. L., Palep-Singh, M., Ledger, W. L., Balen, A. H., Jenkinson, C., Campbell, M. J., & Lashen, H. (2010). Do South Asian women with PCOS have poorer health- related quality of life than Caucasian women with PCOS? A comparative cross- sectional study. *Health and Quality of Life Outcomes, 8*(1), 149.

Katon, W. J., Lin, E., Russo, J., & Unützer, J. (2003). Increased medical costs of a population-based sample of depressed elderly patients. *Archives of General Psychiatry, 60*(9), 897-903.

Kayman, S., Bruvold, W., & Stern, J. S. (1990). Maintenance and relapse after weight loss in women: Behavioral aspects. *The American Journal of Clinical Nutrition, 52*(5), 800-807.

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L., & Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*(6), 959-976.

Kessler, R., & Mroczek, D. (1992). An update of the development of mental health screening scales for the US national health interview study. *Ann Arbor, MI:*

Survey Research Center of the Institute for Social Research. University of Michigan.

Khomami, M. B., Tehrani, F. R., Hashemi, S., Farahmand, M., & Azizi, F. (2015). Of PCOS symptoms, hirsutism has the most significant impact on the quality of life of Iranian women. *PLoS One, 10*(4), 0123608.

Kitzinger, C., & Willmott, J. (2002). The thief of womanhood ': Women's experience of polycystic ovarian syndrome. *Social Science & Medicine, 54*(3), 349-361.

Kleinginna, P. R., & Kleinginna, A. M. (1981). A categorized list of emotion definitions, with suggestions for a consensual definition. *Motivation and Emotion, 5*(4), 345-379.

Kousta, E., White, D. M., Cela, E., McCarthy, M. I., & Franks, S. (2000). The prevalence of polycystic ovaries in women with infertility. *Obstetrical & Gynecological Survey, 55*(5), 299-300.

Kumarapeli, V. L., Seneviratne, R. D. A., & Wijeyaratne, C. N. (2011). Health-related quality of life and psychological distress in polycystic ovary syndrome: A hidden facet in South Asian women. BJOG: *An International Journal of Obstetrics & Gynaecology, 118*(3), 319-328.

Lazarus, R. S., & Folkman, S. (1984). Coping and Adaptation. In W. D. Gentry (Ed.), *The Handbook of Behavioral Medicine* (pp. 282-325.). New York, NY: Guilford Press.

Legro, R. S., Kunselman, A. R., Dodson, W. C., & Dunaif, A. (1999). Prevalence and predictors of risk for type 2 diabetes mellitus and impaired glucose tolerance in polycystic ovary syndrome: a prospective, controlled study in 254 affected women. *The Journal of Clinical Endocrinology & Metabolism, 84*(1), 165-169.

Li, L., Yang, D., Chen, X., Chen, Y., Feng, S., & Wang, L. (2007). Clinical and metabolic features of polycystic ovary syndrome. *International Journal of Gynecology & Obstetrics, 97*(2), 129-134.

Littleton, H. L., Axsom, D., & Pury, C. L. (2005). Development of the body image concern inventory. *Behaviour Research and Therapy, 43*(2), 229-241.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33*(3), 335-343.

Malaisse, W., Lauvaux, J. P., Franckson, J. R. M., & Bastenie, P. A. (1966). Diabetes in bearded women (Achard-Thiers-Syndrome). *Diabetologia, 1*(3-4), 155-161.

Månsson, M., Holte, J., Landin-Wilhelmsen, K., Dahlgren, E., Johansson, A., & Landén, M. (2008). Women with polycystic ovary syndrome are often depressed or anxious—a case control study. *Psychoneuroendocrinology, 33*(8), 1132-1138.

Meltzer, A. L., & McNulty, J. K. (2010). Body image and marital satisfaction: Evidence for the mediating role of sexual frequency and sexual satisfaction. *Journal of Family Psychology, 24*(2), 156.

Merwe,S. (2014). Clinical assessment of PCOS in women. *The Journal of Clinical Endocrinology & Metabolism, 21*, 1440–1447.

Mohammad, M. B., & Seghinsara, A. M. (2017). Polycystic ovary syndrome (PCOS), diagnostic criteria, and AMH. *Asian Pacific Journal of Cancer Prevention, 18*(1), 17.

Nicandri, K., & Hoeger, K. (2013). The psychological correlates of polycystic ovarian syndrome in adolescents. *Current Opinion in Endocrinology, Diabetes and Obesity, 19*(6), 497–504.

Norman, R. J., Masters, S., & Hague, W. (1996). Hyperinsulinemia is common in family members of women with polycystic ovary syndrome. *Fertility and Sterility, 66*(6), 942-947.

Paradisi, G., Fulghesu, A. M., Ferrazzani, S., Moretti, S., Proto, C., Soranna, L., & Lanzone, A. (1998). Endocrino-metabolic features in women with polycystic ovary syndrome during pregnancy. *Human Reproduction, 13*(3), 542-546.

Patrick, D., & Erickson, P. (1993). *Health policy, quality of life: Health care evaluation and resource allocation.* New York: Oxford University Press.

Portuges, C., & Culley, M. (2013). *Gendered Subjects (RLE Feminist Theory): The Dynamics of feminist teaching.* New York, NY: Routledge.

Prochaska, J. J., Sung, H. Y., Max, W., Shi, Y., & Ong, M. (2012). Validity study of the K6 scale as a measure of moderate mental distress based on mental health treatment need and utilization. *International Journal of Methods in Psychiatric Research, 21*(2), 88-97.

Radivojac, P., Clark, W. T., Oron, T. R., Schnoes, A. M., Wittkop, T., Sokolov, A., & Pandey, G. (2013). A large-scale evaluation of computational protein function prediction. *Nature Methods, 10*(3), 221.

Rai, R., Backos, M., Rushworth, F., & Regan, L. (2000). Polycystic ovaries and recurrent miscarriage—A reappraisal. *Human Reproduction, 15*(3), 612-615.

Randeva, H. S., Tan, B. K., Weickert, M. O., Lois, K., Nestler, J. E., Sattar, N., & Lehnert, H. (2012). Cardiometabolic aspects of the polycystic ovary syndrome. *Endocrine Reviews, 33*(5), 812-841.

Revicki, D. A., Kleinman, L., & Cella, D. (2014). A history of health-related quality of life outcomes in psychiatry. *Dialogues in Clinical Neuroscience, 16*(2), 127-130.

Richins, M. L. (1991). Social comparison and the idealized images of advertising. *Journal of Consumer Research, 18*(1), 71-83

Ridner, S. H. (2004). Psychological distress: Concept analysis. *Journal of Advanced Nursing, 45*(5), 536-545.

Ried, K., & Stuart, K. (2011). Efficacy of Traditional Chinese Herbal Medicine in the management of female infertility: A systematic review. *Complementary Therapies in Medicine, 19*(6), 319-331.

Robinson, J. W., Faris, P. D., & Scott, C. B. (1999). Psychoeducational group increases vaginal dilation for younger women and reduces sexual fears for women of all ages with gynecological carcinoma treated with radiotherapy. *International Journal of Radiation Oncology, 44(*3), 497-506.

Rosenberg, M. (1979). *Conceiving the self.* New York: Basic Books.

Rosenberg, M. (2015). *Society and the adolescent self-image.* New York: Princeton university press.

Ruhela, S., & Singh, A. (2016). Management of psychological distress and counselling interventions: A qualitative analysis. *Indian Journal of Health and Wellbeing, 7*(12), 1127.

Sagle, M., Bishop, K., Ridley, N., Alexander, F. M., Michel, M., Bonney, R. C., & Franks, S. (1988). Recurrent early miscarriage and polycystic ovaries. *British Medical Journal, 297*(5), 1027.

Sam, S., & Dunaif, A. (2003). Polycystic ovary syndrome: syndrome XX? *Trends in Endocrinology & Metabolism, 14*(8), 365-370.

Scheff, T. J., Retzinger, S. M., & Ryan, M. T. (1989). Crime, violence, and self-esteem: Review and proposals. In Mecca, A., Smelser, N. & Vasconcellos, J., The Social Importance of Self-Esteem, (165-199). Berkeley, CA: Univesity of California Press.

Schildkraut, J. M., Schwingl, P. J., Bastos, E., Evanoff, A., Hughes, C., & Curtin, J. P. (1996). Epithelial ovarian cancer risk among women with polycystic ovary syndrome. *Obstetrics & Gynecology, 88*(4), 554–559. doi:10.1016/0029-7844(96)00226-8

Schoggins, J. W., MacDuff, D. A., Imanaka, N., Gainey, M. D., Shrestha, B., Eitson, J. L., & Dabelic, R. (2014). Pan-viral specificity of IFN-induced genes reveals new roles for cGAS in innate immunity. *Nature, 505*(7485), 691.

Schreiber, G., Amin, A., Van Assem, M., De Boer, V., Hardman, L., Hildebrand, M., & Omelayenko, B. (2006). *Multimedian e-culture demonstrator. In International Semantic Web Conference* (pp. 951-958)., Berlin, Heidelberg: Springer.

Schumaker, S., Elis, S., & Naughton, M. (1997). Assissing health-related quality of life in HIV disease: Key measurements issues. *Quality of Life Research, 6*(6), 475-80.

Sharma, S. T., & Nestler, J. E. (2006). Prevention of diabetes and cardiovascular disease in women with PCOS: Treatment with insulin sensitizers. *Best Practice & Research Clinical Endocrinology & Metabolism, 20*(2), 245-260.

Sonino, N., Fava, G. A., Mani, E., Belluardo, P., & Boscaro, M. (1993). Quality of life of hirsute women. *Postgraduate Medical Journal, 69*(809), 186-189.

Spritzer, P. M. (2014). Polycystic ovary syndrome: reviewing diagnosis and management of metabolic disturbances. *Arquivos Brasileiros de Endocrinologia & Metabologia, 58*(2), 182-187.

Stunkard, A. J., Faith, M. S., & Allison, K. C. (2003). Depression and obesity. *Biological Psychiatry, 54*(3), 330-337.

Sundararaman, P. G., & Sridhar, G. R. (2008). Psychosocial aspects of women with polycystic ovary syndrome from south India. *The Journal of the Association of Physicians of India, 56*, 945-948.

Taghavi, S. A., Bazarganipour, F., Hugh-Jones, S., & Hosseini, N. (2015). Health-related quality of life in Iranian women with polycystic ovary syndrome: A qualitative study. *BMC Women's Health, 15*(1), 111.

Taghavi, S. A., Bazarganipour, F., Montazeri, A., Kazemnejad, A., Chaman, R., & Khosravi, A. (2015). Health-related quality of life in polycystic ovary syndrome patients: A systematic review. *Iranian Journal of Reproductive Medicine, 13*(8), 473

Talaei, A., Adgi, Z., & Mohamadi Kelishadi, M. (2013). Idiopathic hirsutism and insulin resistance. *International Journal of Endocrinology,2* ,1–5. doi:10.1155/2013/593197

Teede, H., Deeks, A., & Moran, L. (2010). Polycystic ovary syndrome: A complex condition with psychological, reproductive and metabolic manifestations that impacts on health across the lifespan. *BMC Medicine, 8*(1). doi:10.1186/1741-7015-8-41

Teede, H., Gibson-Helm, M., Norman, R. J., & Boyle, J. (2014). Polycystic ovary syndrome: perceptions and attitudes of women and primary health care

physicians on features of PCOS and renaming the syndrome. *The Journal of Clinical Endocrinology & Metabolism, 99*(1), 107-111.

Tehrani, F. R., Simbar, M., Tohidi, M., Hosseinpanah, F., & Azizi, F. (2015). The prevalence of polycystic ovary syndrome in a community sample of Iranian population: Iranian PCOS prevalence study. *Reproductive Biology and Endocrinology, 9*(1), 39.

Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance.* Washington, DC, American Psychological Association.

Tsatsoulis, A., & Xita, N. (2006). Fetal programming of polycystic ovary syndrome by androgen excess: evidence from experimental, clinical, and genetic association studies. *The Journal of Clinical Endocrinology & Metabolism, 91*(5), 1660-1666.

Vahratian, A., & Smith, Y. R. (2009). Should access to fertility-related services be conditional on body mass index? *Human Reproduction, 24*(7), 1532-1537.

Walster, E. (1965). The effect of self-esteem on romantic liking. *Journal of Experimental Social Psychology, 1*(2), 184-197.

Wang, F., Dai, W., Yang, X. H., Guo, Y. H., & Sun, Y. P. (2016). Analyses of optimal body mass index for infertile patients with either polycystic or non-polycystic ovary syndrome during assisted reproductive treatment in China. *Scientific Reports, 6*, 34538.

Weiner, C. L., Primeau, M., & Ehrmann, D. A. (2004). Androgens and mood dysfunction in women: comparison of women with polycystic ovarian syndrome to healthy controls. *Psychosomatic Medicine, 66*(3), 356-362.

Weinrach, S. G., & Thomas, K. R. (1996). The counseling profession's commitment to diversity-sensitive counseling: A critical reassessment. *Journal of Counseling & Development, 74*(5), 472-477.

Weinshenker, N. (2012). Adolescence and body image. *School Nurse News, 19*(3), 12-16.

Williams, S., Sheffield, D., & Knibb, R. C. (2016). A snapshot of the lives of women with polycystic ovary syndrome: A Photovoice Investigation. *Journal of Health Psychology, 21(*6), 1170-1182.

Wilson, I. B., & Cleary, P. D. (1995). Linking clinical variables with health-related quality of life: a conceptual model of patient outcomes. *Jama, 273*(1), 59-65.

Zangeneh, F. Z., Jafarabadi, M., Naghizadeh, M. M., Abedinia, N., & Haghollahi, F. (2012). Psychological distress in women with polycystic ovary syndrome from Imam Khomeini Hospital, Tehran. *Journal of Reproduction & Infertility, 13*(2), 111.

Zawadski, J.K., & Dunaif, A. (1992). Effects of obesity upon polycystic ovary syndrome. In: Givens, J.H.F., & Merriman, G., (Eds.) *The Polycystic Ovary Syndrome* (pp. 377–384). Cambridge, MA: Blackwell Scientific.

APPENDICES

Appendix A

Consent Form

About Research Objectives:

My name is Afifa Naz and I am a student of National Institute of Psychology, Quaid-e-Azam University, Islamabad. National Institute of Psychology is Centre of excellence where research projects related to various aspects of life are being conducted. Current research is undertaken for the partial fulfillment of my Master's degree. I invite you to be a part of this study that is aimed to determine the most significant predictors of the Health Related Quality of Life (HRQoL) among the patients with **Polycystic Ovary Syndrome.**

- This study will maintain anonymity of the participants and general findings will be reported without disclosing the identity of any participant. We will not be collecting or retaining any information about your identity.
- The records of this study will be kept strictly confidential and will be used for academic research purpose only.
- The decision to participate in this study is entirely up to you. If you agree to participate, please show your consent by signing the statement given below related to your consent.
- If you want us to share findings of this research or specifically to share interpretation of your own data kindly give your email address as well or you can also contact the researcher on below mentioned email.
- It is requested to fill complete measure if you agree to participate.
- Do not leave any statement without response as it may affect our findings.

I agree to be a part of this study.

_____

(Signature)

For queries you can contact:

Afifa Naz (Msc Student)

National Institute of Psychology

Centre of Excellence

Quaid-e-Azam University, Islamabad

Email address: afifahnaz3@gmail.com

Appendix B

Demographic sheet:

Age: _____

Marital status: _____

Monthly income: _____

Education: _____

Occupation: _____

Duration of marriage: _____

Duration of PCOS symptoms: (in months/years):_____

Weight (kg): _____

BMI: _____ [weight in kg/ height in m^2]

Family history of diabetes: (specify relation)

History of PCOS in family (please specify relation):_____

Period history (prolonged, absent,): if prolonged, specify total days of cycle:_____

Any psychiatric medication: if yes, please specify: _____

Diagnosis of any other medical illness: _____

Weight reduction methods: if yes, please specify (dieting, walk, exercise):_____

Types of infertility: (Primary/secondary):_____

History of miscarriage: (if yes, please specify number, and at which month): _____

Specific symptoms that you encountered regarding PCOS: _____
_____
_____

What other treatments have you sought before coming here: (Hakeem/homeopathic/Herbal?):_____

Your perceptions about PCOS:

1) What causes PCOS?

2) Is there any link between eating certain foods and chances of having PCOS?

3) Is it possible to conceive with PCOS? If NO, please explain the reason.

4) Which aspect of having PCOS distresses you the most: please explain

5) Any fears do you have regarding PCOS treatment:

6) Is there a complete cure for PCOS?

7) Can PCOS lead to diabetes (sugar?) if YES please explain the reason:

8) Did this disease change you as a person? If yes in what ways:

Appendix C

Kessler's distress scale

Sr. no	statements	All the time	most of the time	undecided	Some times	a little of the times
1.	About how often during the past 30 days did you feel nervous					
2.	During the past 30 days, about how often did you feel hopeless					
3.	During the past 30 days, about how often did you feel restless or fidgety?					
4.	How often did you feel so depressed that nothing could cheer you up?					
5.	During the past 30 days, about how often did you feel that everything was an effort?					
6.	During the past 30 days, about how often did you feel worthless?					

Appendix-D

Body image concern inventory

Please respond to each item by selecting how often you experience the described feelings or how often you perform the described behaviors.

Sr no	Statements	Never	Rarely	Sometimes	Often	Always
1.	I am dissatisfied with some aspect of my appearance					
2.	I spend a significant amount of time checking my appearance in the mirror					
3.	I feel others are speaking negatively of my appearance					
4.	I am reluctant to engage in social activities when my appearance does not meet my satisfaction					
5.	I feel there are certain aspects of my appearance that are extremely unattractive					
6.	I buy cosmetic products to try to improve my appearance					
7.	I seek reassurance from others about my appearance					
8.	I feel there are certain aspects of my appearance I would like to change					
9.	I am ashamed of some part of my body					
10.	I compare my appearance to that of fashion models or others					
11.	I try to camouflage certain flaws in my appearance					
12.	I examine flaws in my appearance					
13.	I have bought clothing to hide a certain aspect of my appearance					
14.	I feel others are more physically attractive than me					

15.	I have considered consulting/consulted some sort of medical expert regarding flaws in my appearance					
16.	I have missed social activities because of my appearance					
17.	I have been embarrassed to leave the house because of my appearance					
18.	I fear that others will discover my flaws in appearance					
19.	I have avoided looking at my appearance in the mirror					

Appendix-E

Polycystic ovary syndrome questionnaire

During the last two weeks, how often have you:
To what extent have you felt that growth of visible hair on your chin has been a problem for you during the last two weeks:

Sr. no	Statements	A severe problem	A major problem	A moderate problem	Some problem	A little problem	Hardly any problem	No problem
1.	growth of visible hair on chin							
	During the past few weeks, how many times have you felt	All of the time	Most of the time	A good bit of time	Some of the time	A little of the time	Hardly anytime	None of the time
2.	Depressed as a result of having PCOS							
3.	Concerned about being overweight							
4.	Easily tired?							
5.	Concerned_about infertility problems							
6.	Moody as a result of having PCOS?							
	During your last menstrual period, how much the following were a problem for you	A severe problem	A major problem	A moderate problem	Some problem	A little problem	Hardly any problem	No problem
7.	Headaches?							
8.	Irregular menstrual problems?							
	To what extent has growth of visible hair on your upper lip been a problem for you during the last two							

	weeks							
9.	Growth of visible hair on upper lip?							
	During the last two weeks how much of the tiem have you							
10.	Had trouble dealing with your weight?							
11.	Having low esteem as result of having PCOS?							
12.	Felt frustration in trying to lose weight							
13.	Felt afraid of not having children							
14.	Felt frightened of having cancer							
15.	Problem due to growth of visible hair on face							
16.	Embarrassment of having visible body hair?							
	During the past few weeks, how much of the time the have you been	All of the time	Most of the time	A good bit of time	Some of the time	A little of the time	Hardly anytime	None of the time
17.	Worried about having PCOS?							
18.	Self conscious as a result of having PCOS							
	In relation to your last menstruation, how much the following problems were an	All of the time	Most of the time	A good bit of time	Some of the time	A little of the time	Hardly anytime	None of the time

	issue for you							
19.	Problem with abdominal bloating?							
20.	Problem with late menstrual period?							
21.	Problem with menstrual cramps							
	How much of the time during the last 2 weeks have did you	All of the time	Most of the time	A good bit of time	Some of the time	A little of the time	Hardly anytime	None of the time
22.	Feel like you are not sexually attractive due to having PCOS							
23.	Feel a lack of control over the situation with PCOS?							
24.	Having difficulties staying at your ideal weight?							
25.	Feel sad due to on fertility problems?							
	To what extent has growth of visible hair been a problem for you during the last two weeks							
26.	Problem with growth of visible body hair?	A severe problem	A major problem	A moderate problem	Some problem	A little problem		

Appendix-F

Rosenberg's self-esteem scale

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

Sr.no	statements	Strongly Agree	Agree	undecided	Disagree	Strongly Disagree
1.	On the whole, I am satisfied with myself					
2.	At times I think I am no good at all					
3.	I feel that I have a number of good qualities.					
4.	I am able to do things as well as most other people.					
5.	I feel I do not have much to be proud of.					
6.	I certainly feel useless at times.					
7.	I feel that I'm a person of worth, at least on an equal plane with others.					
8.	I wish I could have more respect for myself.					
9.	9. All in all, I am inclined to feel that I am a failure.					
10.	I take a positive attitude toward myself.					

Appendix-G1

0/11/2018 **Kessler's distress scale's permission**

:quest for using K-6 - afifahnaz3@gmail.com - Gmail

Kang, Amie <Kang@hcp.med.harvard.edu>
to me Mon, Apr 23, 7:31 PM

Hello,

Thank you for contac ng Dr. Kessler regarding the use of the K6 and K10.

Use of the K6/K10 is free and does not require any formal permission or approval. We do ask that you please cite the below ar cle and include the World Health

Organiza on copyright when using the K6/K10. In addi on, we would appreciate it if you would send us the cita ons to all final publica ons that use the K6/K10.

Kessler, R.C., Barker, P.R., Colpe, L.J., Epstein, J.F., Gfroerer, J.C., Hiripi, E., Howes, M.J, Normand, S-L.T., Manderscheid, R.W., Walters, E.E., Zaslavsky, A.M. (2003). Screening for serious mental illness in the general popula on. *Archives of General Psychiatry*. 60(2), 184-189.

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Should you have any addi onal ques ons regarding scoring rules or the use of the K6/K10, please feel free to follow-up with me or refer to our website. Kind regards,

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Appendix-G2

Polycystic ovary syndrome questionnaire's permission

Case #00461373 - Fwd: Request for the use of PCOSQ-50 scale [ref:_00D30oeGz._5000 c1W4FP8:ref] Inbox

customercare@copyright.com <customercare@copyright.com> Mon, Feb 26, 5:07 AM
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