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# Compare Between the Level of Contamination Obsessions of Male Athletes and Non-Athletes

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**Abstract**

The aim goal of this study is to determine and compare the level of obsessive-compulsive disorder in young male athletes and non-athletes in Mahabad. The type of research is a practical and methodical descriptive survey and comparative causal. The statistical population of the research is all the young men of Mahabad for comparison obsessive-compulsive disorder from each group 100 people were selected as a sample by a simple random method. The Data collection tool is the Padua Obsessive Compulsive Disorder Standard Inventory (PPI). Research findings indicate that there is a significant difference between the rate of obsessive-compulsive disorder among young male athletes and non-athletes.

It was also observed that there was a significant difference between the dimensions of contamination obsessions, order and discipline compulsions, checking compulsions, Obsessive thoughts of harming oneself and others, and obsessive thoughts of violence in male athletes and non-athletes. However, it was not observed that a significant difference is between the dimensions of washing compulsions, obsessive impulses to harm oneself and others, and obsessive impulses to steal in male athletes and non-athletes.

**Keywords:** Obsessive disorder, Obsessive-compulsive Disorder, Practical obsession, athletes, non-athletes.

## Introduction

The recognition of those types of neurosis which are specified under the title of obsessive-compulsive disorder has attracted the attention of psychologists, psychiatrists, and researchers. It is said that this disorder has always existed throughout human history and today it has been dedicated to a considerable proportion of neurotics. The continuity and intensity of this disorder sometimes reach to limit which totally lowers a person's strength and efficiency and leaves a crippling effect on the patient's individual and social life. Obsessive-compulsive disorder consists of two parts, obsessions and Compulsions. (Overall lifetime prevalence) they have estimated this disorder is 2/5 percent. (American Psychiatric Association, 2000). Research shows that the prevalence rate of this disorder is similar in many different cultures of the world. Although obsessive-compulsive disorder usually begins in adolescence or early adulthood, it may also begin in childhood. The average starting lifetime of men is lower than that of women, that is, it's between 6 and 15 for men and between 20 and 29 for women. In most cases the onset of the disorder is gradual, but in some cases, an acute and sudden onset has been observed. In most people, the course of the disorder is marked by chronic fluctuation concomitant with the intensification of symptoms which are probably related to psychological pressure. (The same source). Obsessive-compulsive disorder, despite its low relative prevalence, Includes very complex and interesting mental disorders which has attracted the attention of psychiatrists since the early 19th century. Theories proposed by different psychiatrists for this disease and its contributing factors in the interim, are baseless empirically and have not yielded any effective treatment.

According to the earliest obsessive behavioral theories, obsession may follow Mowrer's two-factor theory to the formation and continuity of fear. According to this theory, anxiety is conditioned (such as thoughts or images) with mental events (classical conditioning), and scientific obsessions are formed to reduce the disturbance caused by these thoughts. With the passing of time, the obsessive-compulsive's ability to reduce anxiety leads to its negative reinforcement.

The mental and physical effort of an individual a group or a sports team in order to achieve a certain goal, it can be called sports performance. This is a common definition of sports performance, which includes any sports action. In a sense, it is used for both professional athletes and those who exercise for physical health. The factors that influence the progress of sports or improve the performance of an athlete or a sports team are very different. These factors include economic, social and cultural, climate, sociology, management conditions, and Psychological and physical factors of athletes like personality type, confidence level, self-esteem, the kind of relationship between athletes and coaches and sports managers in terms of intimacy and friendship, and physical fitness of athletes, and, etc. Although all the above factors are very effective in the quality of sports performance, from the point of view of the researcher, psychological factors of the athlete are more effective in improving the performance of sports performance than other factors. Therefore with these interpretations, the current research aims to

determine the level of obsessive-compulsive disorder in young male athletes and compare it with non-athletes in Mahabad.

**Psychosurgery**

For some obsessive-compulsive disorder patients, neither drugs nor psychological treatments are helpful in relieving obsessive-compulsive disorder symptoms. These patients may choose psychosurgery as a way out. In this method, surgery is performed in an area of the brain called cingulate. **[11]** in a study, they found that 30 percent of participants diagnosed with obsessive-compulsive disorder significantly benefited from this method. The most common complication of psychosurgery is the occurrence of convulsions, which can be treated with Phenytoin in almost all cases. Dougherty et al (2002) determined that psychosurgery is only useful for one-third to one-fourth of patients and most patients continue with drug treatment after cingulotomy. Rach (2000 p. 169) stated: "The overall effectiveness of psychosurgery for obsessive-compulsive disorder is very low and the cost is very high and it has many risks.

**Problem Statement**

Obsessive-compulsive disorder (OCD) with a prevalence of approximately 2/5 percent, is considered the fourth psychiatric disorder after phobia, substance abuse, and major depression (Regier, Narrow, and Rae 1990). This disorder is comorbidity with mood and anxiety disorders (Rasmussen and Eisen,, 1992, Regier and et al 1990).

Some people, especially athletes, use powders or protein-prepared substances because of the obsession to gain extra strength and muscle and sometimes overconsume too much. The consumption of protein enough in the amount recommended by nutritional scientific societies, is essential for humans, in this case, however, if it is over-consumed, it leads to adverse complications and disorders including the following:

1. It increases blood uric acid and causes gout.
2. High protein consumption (high dose protein) prevents the absorption of calcium; therefore, Therefore, it damages growth, during childhood and adolescence, in adulthood, it disturbs the strength of the bones and it develops the complication of osteoporosis in middle and old age.
3. Generally, consumption of medicinal sources of nutrients leads to kidney disorders and renal disorders because mostly contain large amounts of them. So, to get enough strength, it's better to use rich protein sources in sufficient quantities instead of using medicinal sources. Notably in addition to protein, other nutrients such as energetic substances (carbohydrates and vegetable oil sources), vitamins, and minerals also contribute to increasing the physical power and maintaining human health and may have a more useful influence on enhancing the physical power and human health protection.

The psychological states of a person that arise from her/his past experience and training and also determine her/his present performance, determine her/his current performance. These psychological factors can be examined as positive and negative psychological factors, of course, their positive and negative are characterized by their extremeness. In other words, psychological states need to be balanced so that one athlete displays the best performance. For instance, more stress and anxiety as well as low stress and anxiety reduce a person's performance.

A number of psychological factors influencing the performance of sport are:

1. Confidence
2. Stress and anxiety
3. Concentration
4. Depressed moods
5. Aggression morale
6. Ability to create proper social contact‹, etc.

The victory of an athlete or a sports team on sports fields depends on many factors, such as club management, how to coach and establish a relationship with the athlete or sports team, the athlete's physical power the environmental conditions of competition, and so on. But definitely, the psychological factor is one of the most important success factors in the sports competition. I'm sure you all have the same opinion. And if so, can't we consider many sports failures as psychological factors

Basharat (2004) states that in competitions beyond commercial profit, in c the competition beyond commercial interest, economic value, and the effort that exists to prove personal, national, and international competencies, the pressure and stress of the players converge to a tipping point. For the scientific and professional management of sports, it is essential to identify the psychological factors of mental health that affect the behavior and success of sports (Basharat, 2004).

Many athletes undergo emotional states when or before the sports competition, which adversely affects their sporting performance. In other words, the athlete who might easily win a match or fight might lose the battle because of anxiety or fear of losing. Many of these fears and anxieties are due to the conditions of the competition, and many other of those fears and anxieties are rooted in unpleasant past experiences of the person. Experience has shown that not only these fears and anxieties can be eliminated by hypnotherapy and psychological counseling, but it can even increase individual motivation in the performance of sports. Of course, attention to other factors such as family issues and athlete‘s psychological states should also be noted.

According to these interpretations, the present study tries to investigate the rate of OCD in male athletes and compare it with non-athletes in Mahabad.

**Necessity and Importance of Research**

OCD is a common mental disorder that is typically chronic, intense, and debilitating (Stein et al, 1997, Skoog, 1999, Quoted from Abelson et al, 2004). Sometimes severity and continuity of this disorder reach a point that increases the person's strength and efficiency and leaves a paralysing effect on the patient's personal and social life (American Psychiatric Association 2000). People who are afflicted with obsessive-compulsive disorder are often single, or they marry at an older and their fertility rate is lower. (Rachman 1985, Quoted from Clark, 2004). The rate of separation or divorce, marital dysfunction, and sexual dissatisfaction in obsessive-compulsive disorder is higher than the other anxiety and depression disorders (Rasmussen and Eisen 1992, Quoted from Clark, 2004). These patients are also, subject to secondary depression. (Rasmussen and Eisen 1992, Welter et al. 1976, Quoted from Clark 2004). Obsessive-compulsive disorder is a common

disorder in children and adults if untreated it will become chronic (Levin and. et al., 2005, Quoted from Stroch, 2007).

For many years this neurosis was a very rare disease. The exact number of people infected was kept secret because people were embarrassed to share their problems with anyone.

Recent research has shown that about 3 million Americans between the ages of 18 and 54 may suffer from this disease during of own lifetimes. This disease afflicts men and women equally. The subject of this research is one of the fields that have been considered recently and there has been very little effort in this regard, according to previous research. Therefore, the current research has a special place in increasing the existing knowledge and providing a clear understanding of the subject of an upcoming degradation. Considering the importance of the issues that are mentioned, and the unanswered questions in this regard, the aim of this research will be to compare the level of OCD in young male athletes and non-athletes in Mahabad.

**Research Purposes**

1. **Main Purpose**

The main purpose of the present research is to determine and compare the rate of OCD in male athletes and non-athletes in Mahabad.

2. **Sub-Purpose**

- Comparison rate of contamination obsessions of young male athletes and non-athletes in Mahabad.
- Comparison of the rate washing compulsions in male athletes and non-athletes in Mahabad.
- Comparison of the rate of discipline compulsions in young male athletes and non-athletes in Mahabad.
- Comparison of the rate checking compulsions in young male athletes and non-athletes in Mahabad.
- Comparison of the rate of obsessive thoughts of harming oneself and others in young male athletes and non-athletes in Mahabad.
- Comparison of the rate of obsessive thoughts of violence in young male athletes and non-athletes in Mahabad.
- Comparison of the rate of impulses of harming oneself and others in young male athletes and non-athletes in Mahabad.
- Comparison of the rate of obsessive impulses to steal in young male athletes and non-athletes in Mahabad. Research hypotheses

1. **Main Hypothesis**

There is a significant difference between the rate of OCD in young male athletes and non-athletes in Mahabad.

2. **Sub-Hypotheses**

- There is a significant difference between the rate of contamination obsessions of young male athletes and non-athletes in Mahabad.
- There is a significant difference between the rate of washing obsessions in young male athletes and non-athletes in Mahabad.
- There is a significant difference between the rate of discipline compulsions in young male athletes and non-athletes in Mahabad.
- There is a significant difference between the rate of checking compulsions in young male athletes and non-athletes in Mahabad.
- There is a significant difference between the rate of obsessive thoughts of harming oneself and others in young male athletes and non-athletes in Mahabad.
- There is a significant difference between the rate of the rate obsessive thoughts of violence in young male athletes and non-athletes in Mahabad.
- There is a significant difference between the rate of the rate impulses obsessive of harming oneself and others in young male athletes and non-athletes in Mahabad.
- There is a significant difference between the rate of rate obsessive impulses to steal in young male athletes and non-athletes in Mahabad.

**Domain of Research**

**1. Thematic Domain of Research**

The domain of the research approach is to explain and compare the rate of OCD in young male athletes and non-athletes.

**2. Local Domain of Research**

The local domain of this research is Mahabad County of West Azerbaijan province.

**3. Time Domain of Research**

The time domain of this research is beginning from early September 1993 to latest February 1393.

**Research Limitations**

1. Demotivation and delinquency of some of the young men about the careful of the questions.
2. Unresponsiveness correct to some of the questions.
3. The findings of the research are not generalizable to the youth of other cities and other age groups.

**Conceptual and Operational Definitions of Words**

**Conceptual Definitions**

**Obsessive Compulsive Disorder**

OCD is characterized by practical or obsessive compulsions that cause distress and it often interferes with daily functioning.

According to the DSM-IV-TR (2000), the exponent characteristics of OCD are as follows: obsessions compulsives, thoughts, images, or impulses that seem meaningless to a person. Practical obsessions or rituals: deliberate repetitive behaviors or mental behaviors occur to answer the obsessions compulsives. Even though, this attempt is not always obvious to the observer, They are specifically designed to repress or neutralize anxiety or prevent fearful events (American Psychiatric Association 2000).

**Sport**

Sport is a stabilization activity that requires the usage of intense physical power using complex physical skills that are stimulated by internal and external factors, (Koshafer, 2011, 58) including individual and group sports. Individual sports are activities that involve physical skill in an organized manner and have a competitive nature in which the athlete performs the skill individually.

Group sports, is an activities that have a physical nature an organized manner, and a competitive nature the athlete depending on the type of sport, works as a group to achieve the goals of that sport.

**Operational Definition**

**Obsessive-Compulsive Disorder**

It is the scores that examiners get to answer the standard inventory of revision Padua OCD.

**Athlete**

In the present study, an athlete is a person who is interested in sports and is constantly exercising, in other words, one athlete has an activity in one of the sports fields.

**Non-Athletes**

It means a person who does not have any activity in any of the sports activities.

**Other Treatments**

Family therapy is often used to support families and help them not have marital discord as a result of this disorder and it is useful to create a therapeutic alliance with family members. Group therapy can be useful as a support system for some patients.

Electric shock therapy (ECT) should be considered for patients who are severely resistant to treatment and who are chronically disabled. Electric shock is not as effective as psychosurgery. But it should be tried before surgery (Sadoc and Sadoc, 2003).

Evidence has shown that regular nicotine treatment is beneficial in the improvement of obsessive-compulsive disorder symptoms, although the pharmacodynamics mechanism of this improvement remains unknown, and many complete studies need to confirm this hypothesis. It should be noted that there are reports that smoking worsens obsessive-compulsive disorder (Lundberg et al, 2004).

**Definition of Obsessive-Compulsive Disorder**

OCD is an anxiety disorder that is made up of two important components; obsession and practical compulsions (Muller & Roberts, 2005). The main features of obsessive disorder are regressive obsessive or practical compulsive which is the time-consuming causes of being severed (i.e., taking more than an hour a day) or leads to Visible distress or major disruption in the normal and common course of life, occupational function, common social activities, or individual relationships (Sadock & Sadock, 2003). At this juncture, in the course of this disorder, one finds that compulsive or practical obsessives are excessive or irrational( American Psychiatric Association, 2000). But they are unable to prevent it, this level of consciousness distinguishes people with obsessive-compulsive disorder from delusions or strange beliefs.

**Anxiety and Obsessive-Compulsive Disorder**

The main anxiety and emotion of fear, that is the cosmic human experience، plays an essential role in the person's adaptation and survival.

The main function of fear is that represents a threat or a risk (Barlow 2002). If anxiety is severe, people learn certain rituals or habitual methods in response to severe anxiety, to temporarily relieve this distress. This anxiety disorder is called an OCD (Clark, 2004). The most common theory is that OCD should be classified as an anxiety disorder، because the profile of OCD is similar to disorders, such as Generalized Anxiety, Specific Phobia, Hypochondriasis, and Body dysmorphic disorder (Braun, 1998, quoted by Clark, 2004). The features that put OCD into the category of anxiety disorder, include the following:

1. A mental sensation of anxiety or distress that is created by obsessive thoughts
2. Obsessive cognitive or behavioral actions in response to obsessive thoughts
3. External or internal triggers for obsessive thoughts and cognitive obsessive actions
4. Sadness or anxiety from a stimulus
5. Reduction of anxiety by taking obsessive action
6. Seek reassuring
7. Fear of distress
8. Disruptive event of occurrence which can interfere with the act of obsession or invalidate it.
9. Avoidant behavioural

According to these characteristics, DSM-IV-TR placed OCD into the category of anxiety disorders (The same source).

Some clinical researchers of refutability theory have challenged OCD as an anxiety disorder. Endler and Summerfeldt (1998) concluded that except for the act of germaphobia, OCD can be an anxiety disorder.

As the selective bias for the threat posed in most cases of anxiety, it is not present in all cases of obsessive thoughts. Enright submitted there are a lot of differences between OCD and other anxiety disorders. Like: 1Possible differences in biochemistry 2 - The existence of more functional damage in the obsessive-compulsive disorder. 3 - Increasing complexity and ambiguity of fear-eliciting stimulus in OCD some showed that an OCD may have a common etiology with chronic (multiple) tic disorder and Tourette's syndrome (O'Connor 2001). It is probable that further instability of the Syndrome and the abstract nature of most obsessive thoughts leads to the connection of OCD with other classes of psychological pathology.

Further heterogeneity of OCD shows that OCD has a less coordinated and coherent diagnosis than other anxiety disorders. Overall empirical evidence shows that when the interviewees use the structured clinical interview based on DSM - IV - TR standards, the diagnosis of OCD can be stable(Brown, Dinrdo, Lehman, & Campbell، 2001). In order to be diagnosed with OCD according to DSM-IV one has to either obsessive actions or obsessive thoughts, and the large majority of diagnosed individuals experience both types of syndrome. (Foa & Kozak, 1995 Quoted from klark, 2004).

**Symptoms of Obsessive-Compulsive Disorder**

OCD is determined by obsessive thoughts and actions (compulsions) that cause distress and often interfere with daily functioning.

**Obsessive Compulsive**

Obsessions are: recurrent and disturbing thoughts, sensations, cogitation, or feelings.

**Practical Obsessions**

Unlike obsession-compulsive, which is a mental process, practical obsession (or compulsion) is a type of behavior. Compulsion is a conscious, standardized, and recrudescence behavior, such as: counting, checking, or avoiding the patient with OCD is conscious of the illogicality of her/his obsessions and she/he finds these obsessions or compulsions ego dystonic with herself /himself (i. e. as an unwanted behavior). However, obsessive action may be carried out in an effort to reduce anxiety with obsessive thoughts, but it does not always lead to the reduction of this anxiety.

The anxiety may not have differed, or even increased, after the completion of the obsessional act. When the person resists the compulsion, anxiety also increases. It's heterogeneous to show obsessive thoughts and actions in adults as well as children and adolescents. The symptoms of each patient may change or overlap over time. However, in general, it has four main patterns.

**Main Signs**

**Pollution:** The most common pattern of obsession, is pollution which is associated with washing or forced avoidance of the polluted object. A frightening object is often something that is not possible to avoid (like urine, feces, microbes, and dust). Such patients may rub the skin of their hands from excessive washing, or they may not be able to leave the house due to the fear of germs. Although anxiety is the most common emotional response to a frightening object, shame and obsessive hatred are also common. Patients with pulsation obsessions believe that pollution spreads from one object to another, from one to another, and with partial contact.

**Pathological Doubt:** The second prevalent pattern of obsession is uncertainty, which is followed by forced action to try. These obsessive thoughts usually involve aggressive behavior that the patient blames on them.

**Symmetry:** The fourth common pattern is precision and symmetry, which can lead to obsessive sluggishness. Such a patient might spend hours eating or shaving himself/herself.

**Other Sign**

Obsessive religious thoughts, moral doubts, obsessive hoarding, listing, touching and counting, repeating phrases mentally, and obsession with saying, asking, or confessing are also common in people with OCD.

**Criteria of Obsessive-Compulsive Disorder**

According to DSM-IV-IR the criteria of obsessive-compulsive disorder are followed (Sadock & Sadock, 2003).

A) There should be obsession or compulsion. The definition of obsession is:

1. Thoughts, impulses, or regressive and permanent imaginations that a person sometimes feels during the period of illness are intrusive and inappropriate and cause suffering.
2. These thoughts, impulses, or imaginations should not be stresses just arising from life problems.
3. The person should try to ignore or frustrate these thoughts, impulses, or imaginations or naturalize them with another idea or action.
4. The person should be aware that these thoughts, impulses, or obsessive imaginations come out of oneself mind (not that they were imposed from outside like planting thoughts).

**The Definition of Compulsion is:**

1-A repetitive behavior (like washing hands, organizing things, checking) or a repetitive mental problem (like praying or imploration, counting, repetition of words in silence) that one feels having to do in reacting to an obsession, or according to some rules that should be applied.

- **A.** 2The objective of doing these behaviors or mental problems is prevention or reduction of the person's anxiety, or prevention of a terrible event or situation, however, these behaviors or mental problems are not realistically associated with what they are designed to prevent or naturalize or are clearly extreme.
- **B.** During the process of this disorder, the person should be aware that these obsessions or compulsions are extreme or unreasonable. Note: this criterion is not necessary for children.
- **C.** These mentioned obsessions or compulsions should cause intense suffering, be time-consuming (take at least an hour a day), or significantly disrupt the regular routine of the person's life, professional or academic functions, usual social activities, or communications.
- **D.** If there is another disorder in Axis I, the content of mentioned obsessions or compulsions should not be limited to it (like mental occupation with food in eating disorder, mind occupation with cutting hair in tweezing hair, worrying about own appearance in Body-Dysmorphic disorder, mind occupation with drugs in Substance Use disorder, mental occupation with a serious illness in Hypochondriasis, mental occupation with urge or sexual fantasy in Paraphilia, or mind ruminations with the content of guilt feeling in Major Depressive disorder.
- **E.** The mentioned symptoms should not be caused by direct physical effects of a substance like the abuse of drugs or a general medical disease.

Determine whether the following exists: The little insight is that during most of the current attack, the person should not be aware these obsessions and compulsions are extreme.

**Epidemiology**

Historically, OCD has been described as a rare psychiatric disorder with a prevalence of less than 1%. This survey is based on the statistics obtained from the number of people admitted to the hospital (Woodruff & Pitts, 1964 quoted from Macdonald & Desilva, 1999). However, in recent years OCD has been considered the most common (fourth) mental disorder after phobias, Substance-Related disorders, and MDD, and its lifetime prevalence is reported to be 2.5% (Regier, Narrow & Rea, 1990 quoted from Goodarzi, 2005). According to Jenike, (1989, quoted from Goodarzi, 2005) this disorder has a hidden prevalence. While the debate about the prevalence of this disorder continues, few studies have shown that the experience of obsessive-compulsive phenomenon is common among almost all. Most normal people experience at least some of the symptoms of OCD without any significant discomfort (Macdonald & Desilva, 1999, quoted from Goodarzi, 2005). Two recent epidemiological studies reported an annual prevalence of OCD of 7% (Kringlen et al., 2001; Andrews et al., 2001).

According to the National Institute of Mental Health (2006), about 2.3% of the American population aged 18 to 54 suffer from OCD which includes

about 3.3 million Americans. A million children and young adults are getting this disorder as well. The disease typically begins during early childhood or adolescence and affects men and women alike. The average age of getting started of this disorder is around 20 years old of course a little earlier in men (around 19) and a little later in women (around 22). Young adults aged 18 to 24 are at the highest risk of having OCD (Kareno et al., 1998 quoted from Clark, 2004). In 65% of cases of OCD, it begins before the age of 25, and less than 5% of patients report the onset of the disease after the age of 40 ( Rachman & Hogsen, 1980; Rachman &Ethan, 1992 quoted from Clark, 2004 ). Single people suffer from OCD more than married ones, although this finding can be a sign of the problem that patients with OCD have in maintaining their relations.

In the recent review article, Abramowitz et al., (2003) concluded that a number of OCD patients experience onset or worsen their OCD syndrome during pregnancy or postpartum period. However, it is not obvious whether this is related to postpartum depression or not. Although life conditions such as pregnancy increase vulnerability to OCD, we must note that many people cannot identify environmental triggers for their patients.

Gender differences have been confirmed in epidemiological studies (Andrews et al., 2001; Kringlen et al., 2001). Men have a younger age of onset, but it's not obvious whether gender has an effect on OCD. The evidence that confirms the gender difference in the occurrence of OCD syndrome is that women are more involved in washing and cleaning rituals, and men have more sexual thoughts (Rasmussen & Hogsen, 1980; Lancey et al., 1996).

**Obsessive-Compulsive and the Family**

There is a lot of stress on family members living with OCD. Family members may directly spread the disease by both trying to stop the syndrome and cooperating with compulsions. Family members and relatives often adapt themselves to the practical obsessions of the patient, so that the stress and de function of the family increases. (Kalvocoressi et al., 1995 quoted from Clark, 2004). More criticisms from the family may have a negative effect on the intensity of the syndrome and the level of depression and anxiety in the family members, the way they respond, and the obsessive thoughts and actions of the patient. (Amir, Freshman & Foa, 2000).

Obviously, the family members get into difficult trouble. By rejecting the patient's obsessions or getting along with them, the family members end the bad feelings of the disease. OCD has a great negative effect on a person's ability to perform socially and professionally (Clark, 2004).

**Process and Prognosis**

Checking the natural process of OCD is difficult because most sufferers eventually seek treatment, and multiple treatments lead to partial recovery of the disorder. Therefore, it affects the natural process and outcome of the disorder (Clark, 2004). Despite the changes that researchers face, there are few observations about the natural process of the disorder. During a long-term follow-up study (average=47 years), Skoog & Skoog showed that OCD has a chronic process throughout life. And after 5 decades, only 20% of patients showed complete recovery. These results are in line with other research that showed the process of OCD is low and the possibility of spontaneous recovery is low (Demal, 1993; Foa & Kozak, 1996; Kareno & Golding; 1991).

The symptoms of more than half of patients with OCD begin suddenly. In almost fifty to seventy percent of them, the symptoms begin after a stressful event such as pregnancy, a sexual problem, or the death of a relative. Since many of these patients try to hide their symptoms from others, most of them refer to a psychiatrist with a delay of 10 years, and of course, with the increase of specific and general awareness of this disorder, the said delay has probably decreased. OCD is a long-term but variable process; in some patients, it fluctuates and in others, it's steady. About 20 to 30% of patients with this disorder recover significantly and 20 to 50% find moderate recovery in their symptoms. 20 to 40% remain unwell or their symptoms get worse. About one-third of patients with OCD also have major depression, and the risk of suicide is held true in all patients with OCD. Giving in compulsions (not resisting them), the onset of the disorder in childhood, being of strange compulsions, the necessity of being hospitalized, simultaneously suffering from major depressive disorder, the existence of delusional thoughts, the presence of overvalued thoughts, (that is, a kind of acceptance of obsessions and compulsions), the presence of personality disorder (especially schizotypal personality disorder) indicate a bad prognosis. The good adaptation of the patient regarding social and professional, the presence of a precipitating event, and the intensity of the symptoms, indicate a good prognosis of the disorder. The content of obsessions doesn't seem to be related to the prognosis of the disorder (Sadock & Sadock, 2003).

**Clinical Attributes**

Patients with OCD are often referred to non-psychiatrist doctors. Patients who have both mental and practical obsessions make up at least seventy-five percent of all patients with this disorder. Some researchers and clinicians are of the opinion that if we carefully evaluate patients in terms of mental compulsions in addition to behavioral ones, this figure may be accompanied to get to 100%. For instance, the obsession to hurt own child may be accompanied by mental compulsion in the form of repetition of certain words at certain times. Of course, some researchers and clinicians also believe that some patients actually only have obsessive thoughts but without any compulsions. These are patients who may momentarily have repeated thoughts about some kind of sexual or aggressive action that they find abhorrent and shameful. For more clarification, the best to do is to think of obsessions as a thought and compulsions as a behavior.

These are common features of obsession and compulsion: A thought or an urge impose oneself by force and permanently on the field of self-conscious awareness of a person. The feeling of fear mixed with anxiety is associated with this central pretense and makes the person repeatedly do naturalizing actions against that initial thought or urge. Obsession or compulsion is ego-alien, that is, the person finds it alien to the feeling has of himself as a mentally ill being. The person with OCD usually sees a deep tendency in oneself to resist them. However, about half of all these patients don’t show much resistance to compulsion. About 80% of all patients believe that their compulsion is unwise. Sometimes obsession and compulsion become important to the patient. For instance, even if the patient loses his own job because of the time spent washing, will stick to the belief that forced washing is morally correct (the same source).

**Comorbidity**

Clinical disorders rarely occur in isolation. Like other anxiety disorders, OCD has a high degree of diagnostic overlap. Although, there is so much variation across the whole studies, the most consistent findings are that half or one-third of people with OCD have at least an extra disorder ( Antony et al., 1998; Brown et al., 2001; Karno & Golding, 1991, YuryuraTobeaus et al., 2000). When the comorbidity is considered lifelong, there is less than 15% of pure OCD (Brown & Campbell et al., 2001; Kareno & Andrews, 1996).

Although, OCD and MDD are two distinct disorders, people with OCD frequently report depressive syndrome (Basiroglu et al., 2006). Deniz et al. (2004) found that the prevalence of MDD in the whole population is 10 times higher than obsessive-compulsive disorder, while 60 to 80% of OCD patients experience a period of depression in their lifetime. Some studies have reported 30-50% comorbidity of OCD and Dysthymia disorder (Brown et al., 2001; Karno & Golding, 1991; Lensi et al., 1996; Bellodi et al., 19992). When the period of obsessive thoughts begins and as long as the period continues, people are at a high risk of getting mood and anxiety disorders and eating and tic disorder, (Yuryura-Tobias et al., 2000). Moreover, the presence of depression increases the syndrome of obsessive thoughts, thereby helping intensify the disorder. However, the more common pattern is that the inability against OCD leads to secondary depression (Clark, 2004). Family history of Tourette syndrome is associated with increasing the risk of OCD, and Tourette syndrome is a common comorbidity of OCD that consists of about 35 to 50% of cases (Evanz, King & Leckman, 1995 quoted from Evanz et al., 2003). The comorbidity of this syndrome is also discussed with the syndrome of anxiety, so the more anxiety a person has, the more negative it has on performance (Welkowitz, Struning, Pittman, Guardino & Welkowitz, 2000).

The comorbidity of OCD has been reported 35 -41% with social phobia, 17-21% with specific phobia, and 0.7% with generalized anxiety disorder (Kareno & Andrews, 1996; Brown & Campbell et al., 2001; Antony et al., 1998). Goldsmith et al. estimated the comorbidity of 15-37% for body dysmorphic disorder in cases of OCD patients.

**Differential Diagnosis**

The necessity of individuals suffering and getting disturbed by functions that are specified in DSM-IV-IR to diagnose this disorder; differentiates it from everyday or slight thoughts and habits. The main neurological disorders that should be considered in the differential diagnosis of OCD are Tourettet's disorder, other tic disorders, temporal lope seizures, and sometimes head injuries and post-encephalic complications.

**Tourette's Disorder**

The characteristic symptoms of Tourette's disorder are jumps (Tics) in motor muscles and voice articulation muscles that occur frequently and almost every day. Tourette's disorder and OCD begin at the same age and have similar symptoms. About 90% of patients with Tourette's disorder also have obsessive-compulsive symptoms, and for many of them, two-thirds, process the diagnostic criteria of OCD.

**Other Psychiatric Disorders**

The major psychiatric disorders that are mentioned in the differential diagnostic of OCD are schizophrenia, Obsessive-compulsive Personality Disorder (OCPD), types of phobias, and depressive disorders. OCD can usually be differentiated from schizophrenia based on the absence of other symptoms of schizophrenia, the presence of less strangeness in the nature of the symptoms, and the patient's insight into their own disorder. In OCPD the person's functions are not disturbed as much as in OCD. Phobias are differentiated based on the absence of a relationship between obsessive thoughts and compulsive actions (which are usually in the form of avoidance). MDD is sometimes accompanied by obsessive thoughts, but a patient who only has OCD cannot possess of diagnostic criteria for MDD (Sadock & Sadock, 2003).

Psychiatric disorders that have common clinical characteristics with OCD are called Obsession Compulsion Spectrum Disorders (OCSDs), which include hypochondriasis, body dysmorphic disorder, impulse-control disorders, paraphilia, and movement disorders like Tic and Tourette's syndrome (Goldsmith et al, 1998; Hollander et al., 1993; Hollander & Wong, 2000). In all these disorders, the patient either has a repetitive thought (worrying about their own body) or a repetitive behavior (stealing).

**Relation Between Types of Syndrome in OCD and Types of Disorders**

In a study, Hasler et al. investigated the relation between types of syndrome and types of disorders. Using factor and cluster analysis, they searched for the relationship between dimensions of OCD syndrome and psychiatric conditions.

From all the 317 OCD patients who participated, a systematic diagnostic interview using a structured clinical interview based on DSM-IV was conducted. OCD syndrome was evaluated with the Yale-Brown scale. Based on the cluster analysis of dimensions of OCD syndrome, it showed a specific relation with comorbidity of psychiatric disorder as follows:

- Factor I (aggressive, sexual, religious thoughts, and checking compulsion) is highly correlated with the comorbidity of anxiety disorders and depression.
- Factor II (obsessive thoughts of symmetry and accuracy, repetition and counting, and order compulsions) are related to bipolar disorder, panic disorder, and Agoraphobia.
- Factor III (obsessive thoughts of contamination and compulsions of cleanliness) is related to the eating disorder.
- Factors I and II are related to early onset of OCD.

**Etiology**

**Biological Factors of Neuro-Transmitters, Serotonergic System**

Many clinical experiments conducted on all kinds of drugs confirm the hypothesis that some sort of serotonin dysregulation is involved in the development of obsessive-compulsive symptoms in this disorder. Data shows that serotonergic drugs are more effective than drugs that affect other neurotransmitter systems. However, it's still unclear whether serotonin plays a role in the cause of OCD or not.

In the clinical studies, the density of serotonin metabolites (such as Hydroxy indole acetic acid-5 [HIAA-5]) in cerebrospinal fluid, the tendency of platelet junctions to imipramine with 3 hydrogens (which binds to serotonin reuptake areas) and the number of these junctions are measured and the diverse findings have reported about these amounts in patients with OCD. In one of the studies, the density of HIAA-5 in cerebrospinal fluid decreased

after treatment with clomipramine, and this issue has drawn more attention to the serotonergic system (Sadock & Sadock, 2003).

**Noradrenergic System**

At the moment, there's little evidence about the dysfunction of the noradrenergic system in OCD. Case reports have shown some degrees of improvement in OCD symptoms with oral clonidine. Clonidine reduces the amount of norepinephrine released from presynapses neuroterminals (the same recourse).

**Neuroimmunology**

Childhood Streptococcus infections in some cases play a in the occurrence of OCD. Streptococcus antibodies are involved in autoimmune processes. If it's true that OCD is caused by bacteria, it should be hoped that antibodies can be used to treat this disorder (Belkin, 2006). Arnold et al., (2001) showed that OCD and tic disorder are caused in some children by autoimmune response to Streptococcus bacteria. Group A beta-hemolytic Streptococcus infection can cause rheumatic fever. About 10 to 30% of these patients suffer from Sydenham chorea and show obsessive-compulsive symptoms (Sadock & Sadock, 2003).

**Brain Imaging Studies**

Neuroimaging studies showed that people with OCD have different brain activity (Tennen, 2005). The studies carried out by using of neuroimaging techniques in OCD patients have achieved convergent results, which all indicate changes in the function of the Orbital Frontal Cortex (OFC), caudate nucleus, and thalamus. Positron Emission Tomography (PET) studies of OCD have reported increased blood flow and metabolism in the medial frontal and anterior cingulate and right frontal and OFC areas (Bakhtar et al., 1998; Nordal et al., 1989; Sawle et al., 1999; Saxena et al., 2998; Szesko et al., 1999; Piacentini & Bergman, 2000).

Neuroimaging findings include the convergent cortico-striae-thalamocortical network. OCD studies show hyperactivity in the anterior cingulate cortex OFC and caudate nucleus (Rauch, 2000). Nakao et al., Showed that hyperactivity of OFC, ACC, and basal ganglia is decreased after the improvement of the syndrome. In addition, the temporal cortex and cerebellum play a role in improving cognitive performance. Banich et al., reported more activity in the posterior areas of patients using Stroop tasks. Kerns et al., brought up the hyperactivity of ACC. Milham et al. showed that ACC is involved with the right frontal cortex in controlling attention at the level response and with the left frontal cortex at the non-level response. Researchers are trying to explain the role of the areas. Paus brought up that the functional overlap of different areas in ACC shows that this cortex has the ability to translate attention into actions. Mesulam (1999) reported the attention network between the partial, frontal, and cingulate cortex. Posner et al., (1997) showed that the orienting network for visual attention is located in posterior structures such as the partial lobe, pulvinar and superior ridges, and the executive network is located more in the anterior frontal areas including the medial frontal and basal ganglia. These results show that the abnormal activity in frontal areas in OCD patients affects the cognitive task related to posterior areas and improves after treatment.

The ACC is involved in behavioral monitoring (Posner & Rothbart, 1998 Quoted from Hammond, 2003). An event-related potential that called error-related negativity (ERN) is a type of wave associated with making a mistake (Gehring et al, 1990 quoted from Hammond, 2003). The wave of (ERN) is a reflection of the activity of the general system of error processing and one of the syndromes of OCD including excessive checking, rumination, and doubt. The size of the ERN wave is sensitive to the size of the error. The ERN wave is generated from a single source in the medial frontal cortex (Gehring et al., 1993; Deheane, Posner & Tucker, 1994; Holroyd, Dien & Coles, 1998; Luu, Collins &Tucker, 2000).

Gehring, Himel, and Nisenson (2000) found that the wave of ERN increases in OCD patients compared to the matched control group, and the bigness of this wave is related to the severity of the syndrome. A functional magnetic resonance imaging (FMRI) study (Yurso et al., 2001) confirmed increased error-related activity in the anterior cingulate cortex in OCD patients. In support of Gehring et al., (2000), Hajcak and Simons (2002) also found that in students diagnosed with OCD compared to those who did not receive such a diagnosis, the greatest negativity in the central frontal area is significantly associated with wrong answers.

In the studies conducted with computer tomography (CT) and Magnetic resonance imaging (MRI), it was found that the size of the caudate nucleus of the brain was decreased bilaterally in patients with OCD. The study with functional and structural imaging of the brain corresponds with the observation that surgeries operated on the cingulum are sometimes effective in the treatment of OCD patients.

**Hereditary**

Even though obsessive-compulsive disorder has a family aspect (Nestadt et al, 2000) the genetic and environmental contribution to develop it, is not well known (Alonso et al, 2004). In fact, the results of family studies show that obsessive-compulsive disorder is genetically heterogeneous (Dore and Sarpo et al, 2005).

(Alonso et al, 2004) found that socio-cultural variables such as parenting style play a role in the interaction with genetic and biological factors in the emergence of obsessive-compulsive disorder phototype.

Familial temperament, suggests a genetic role in obsessive-compulsive disorder. In identical twins more synchrony is seen than in fraternal twins and children of obsessive-compulsive disorder patients compared to the general population are more at risk of this disorder (Lenan et al 1990; Pauls et al 1991, 1995, quoted by Evans 2003). Another study of twin children showed that genetics is effective in the development of obsessive-compulsive disorder and the risk is 45-65% (Grootheest et al, 2005). Recent research has shown that the possibility of genetic mutation can be the cause of obsessive-compulsive disorder. The International Institute of Health (2006) has reported a mutation in the human serotonin transporter gene (HSERT) in obsessive-compulsive disorder families. In addition, Rasmussen (1994) in his study of identical twins, collected data that supports this theory. There is a hereditary factor for neurotic anxiety. In addition, he said that environmental factors play an important role in the occurrence of these syndromes. Another possible genetic cause for obsessive-compulsive disorder was discovered by scientists at Dick University Medical Center in 2007. They genetically examined rats whose SAPAP3 gene had been blocked. This protein was found in abundance in the striatum, a region of the brain involved in planning and initiating appropriate actions. These rats spent

3 times more grooming themselves than normal rats. Feng et al (2007) also found that the function of the protein made by SAPAP3 is higher in the cortex-striatum circuit.

Through electrophysiological studies, studies with electroencephalography (EEG) sleep, and neuro-hormonal studies, data was obtained that indicates the existence of some aspects of commonality between depressive disorders and obsessive-compulsive disorder. The level of non-specific abnormalities is more than usual in the EEG of patients with obsessive-compulsive disorder. Through the studies conducted with sleep EEG, it has been found that abnormalities such as shortening of the period of latent rapid eye movements, which are seen in depression disorders, are also present in this disorder. Through neuro-hormonal (Neuroendocrine) studies, similarities with depression disorders have been obtained, including non-sedation in the dexamethasone suppression test in about a third of these patients. And reducing growth hormone secretion in response to clonidine injection (Sadoc and Sadoc, 2003). Studies have shown that obsessive-compulsive disorder has abnormal hormone levels, and these hormones play a triggering role in obsessive-compulsive disorder (Altemus et al, 1999). For example, another research group showed that in women with obsessive-compulsive disorder during the menstrual period when estrogen levels are high, their symptoms get worse (Rapkin, 2002). 2-14 Other biological data Hollander and Wong (2000) found that obsessive-compulsive disorder has many common features with disorders such as body shape disorder, eating disorder, impulse control disorder, as well as physical movement disorders and Tourette's syndrome. These features include: 1-A profile of symptoms that involve intense obsessive thoughts and repetitive behaviors. 2-cognitive collective characteristics, family history, co-occurrence, and clinical course 3 - common biological nerve 4- Response to certain drug and behavioral treatments, especially for obsessive-compulsive problems 5- Genetic and environmental etiology.

**Behavioral Factors**

Believers in learning theory consider obsession as a conditioned stimulus. According to them, if a relatively neutral stimulus is associated with innately harmful or anxiety-provoking events through the process of responsive conditioning, it will be associated with fear or anxiety and evoke this state. In this way, the object or thought that was neutral until now becomes a conditioned stimulus that is able to produce anxiety or discomfort in one.

However, the stabilization of practical obsession (compulsion) is done in another way. One discovers that certain practices relieve the anxiety associated with obsessive thinking. In this way, active avoidance strategies that have the form of coercion or ritualistic behaviors, are found to curb anxiety and since the aforementioned avoidance strategies reduce the secondary painful driver which is anxiety, are effective, they are gradually stabilized and, in this way, compulsive behaviors are formed in the form of learned patterns in one. To explain some aspects of obsessive-compulsive phenomena (such as anxiety-provoking thoughts that are not inherently and necessarily scary and how to form and stabilize compulsive behaviors) more useful concepts can be obtained from learning theory (Sadoc and Sadoc, 2003).

**Psychological Factors**

In the early 1910s, Freud attributed the causes of obsessive-compulsive disorder behavior to unconscious conflicts, and in his initial conceptualization, of what we call obsessive-compulsive disorder today, he called obsessional neurosis. He assumed when faced with anxiety-provoking oedipal desires, a kind of defensive retreat takes place. According to Freud, the patient suffering from obsessive-compulsive neurosis has returned to the anal stage of psycho-sexual development. When patients with obsessive-compulsive disorder face situations such as confrontation or loss of the objects of affection of one of the important people in their lives and feel the danger of anxiety, they withdraw from this stage and take refuge in the anal stage. A stage that is psychologically associated with extreme hesitancy. This hesitation is a product of schism which occurs in the subtle unity of the characteristic drives of the oedipal stage, that is, sexual and aggressive drivers happen. The simultaneous existence of hatred and love toward a single person makes the patient weak indecisive, and doubtful (Sadoc and Sadoc, 2003).

**Treatment**

Obsessive-compulsive disorder in children and adults is a common disorder that will become chronic if not treated (Storch et al, 2007). Treatment for obsessive-compulsive disorder is unpredictable, many patients respond very poorly to treatment. Current standard treatments are drug therapy and behavioral therapy (Robin et al, 2002)

**Drug Therapy**

The effectiveness of drug treatment for obsessive-compulsive disorder has been proven in several clinical trials. All the drugs that are used to treat depression or other mental disorders can be used in the treatment of obsessive-compulsive disorder in their usual dosage. The initial effects of the drugs are generally seen after four to six weeks of treatment, but to obtain the maximum therapeutic benefit; it usually takes eight to sixteen weeks. Treatment with antidepressants is still controversial, but a significant proportion of patients with obsessive-compulsive disorder who respond to antidepressant treatment appear to relapse when the medication is discontinued. The standard approach is to first treat with one of the specific serotonin reuptake inhibitors (specific serotonin reuptake inhibitors) or start with clomipramine, then, if this drug is not effective, follow another drug strategy. With the advent of serotonergic drugs, the percentage of patients with obsessive-compulsive disorder who are likely to respond to treatment has increased and reached about 50 to 70% (Sadoc and Sadoc, 2003).

**Specific Serotonin Reuptake Inhibitors**

All of the specific serotonin reuptake inhibitors available in the United States, namely fluoxetine, fluvoxamine, paroxetine, and sertraline, have been approved by the Food and Drug Administration (FDA) for the treatment of obsessive-compulsive disorder. Although specific serotonin reuptake inhibitors have fewer side effects than tricyclic antidepressants, some people may experience side effects such as sleep disturbance, nausea, diarrhea, headache, anxiety, and restlessness but these side effects are often transient About 15 to 20 percent of patients who take specific serotonin reuptake inhibitors suffer from insomnia. Another side effect of these drugs is poor performance (John & Williams, 2008). Hollander et al, (2000) found that in 65 to 70% of patients treated with specific serotonin reuptake inhibitors, their

symptoms show 30 to 60% improvement. Many neuroimaging studies have confirmed that 40 to 60 percent of obsessive-compulsive disorder patients recover with specific serotonin reuptake inhibitor drugs (Louise & Marks, 2002) among the specific serotonin reuptake inhibitors, sertraline has fewer side effects and drug interactions and is healthier. Studies have shown that sertraline is completely effective in doses of 50 and 200 mg. Another benefit of sertraline is that its half-life is short which means that it is eliminated from the body faster (John & Williams, 2008).

**Clomipramine**

Among all tricyclic and tetracyclic drugs, the most selective drug in terms of its effect on serotonin reuptake compared to its effect on norepinephrine reuptake is clomipramine, in this respect, only specific serotonin reuptake inhibitors are superior. The strength of clomipramine in terms of its effect on serotonin reuptake is only lower than the strength of sertraline and paroxetine. Clomipramine was the first drug approved by the Food and Drug Administration for the treatment of obsessive-compulsive disorder. Its amount should be increased within 2 to 3 weeks so that it does not cause gastrointestinal side effects and lower blood pressure. (Sadoc and Sadoc, 2003). This drug, like other tricyclics, has significant anticholinergic and anticholinergic effects, including dry mouth, blurred vision, erectile dysfunction, sweating, dizziness, and delayed ejaculation (Hammond, 2003). Another study (Pato et al, 1988 quoted by Hammond, 2003) found that 89% of patients treated with clomipramine (Anafranil) relapse after stopping the drug. In a recent study (Ackerman and Greenland 2002), out of 25 drug studies, found that the most effective drug treatment for obsessive-compulsive disorder (clomipramine) on the Yale-Brown scale has an average therapeutic effect of 10.64 (with a standard deviation of recovery of 1.33). While in fluoxetine studies, the therapeutic effect was 5.4 on the same scale. They stated that the longer the use of clomipramine continues, the less the healing effects of clomipramine. Older patients had less improvement with clomipramine. These results are in line with the results of Ackerman et al (1996) and Abramowitz (1997), (Hammond, 2003).

**Other Drugs**

If clomipramine treatment with one of the specific serotonin reuptake inhibitors does not succeed, many therapists add lithium, valproate, or carbamazepine to strengthen the same drug. Other drugs that can be tried in the treatment of obsessive-compulsive disorder are venlafaxine, pindolol, and monoamine oxidase inhibitors, especially phenelzine. Other drugs that are considered for the treatment of unresponsive patients are buspirone, 5-hydroxytryptamine (HT-5), L-tryptophan, and clonazepam (Sadoc and Sadoc, 2003)

**EEG and Brain Waves**

Electroencephalography (EEG) is the most common brain imaging method, and it was invented in 1929 by Hans Berger. He named 4 frequency bands as alpha, beta, delta, and theta (Schwartz Andrasik, 2003) Electroencephalography is a digital or paper recording of brain wave signals. The human brain is an electrochemical organism. The electrical activity of brain neurons reaches the surface of the skull. This electrical activity is very weak and in the range of microvolts. The electroencephalogram device records this activity through electrodes attached to the skull and shows it in the form of brain waves. Thus, electroencephalographic measurements reflect the relationship between intracranial electrical currents and the resulting voltages on the head. These voltages reflect specific aspects of the brain's electrical processing and function - such as how different brain regions are electrically active or how they respond to stimuli and during cognitive tasks.

**Figure 1: General View of Register EEG**

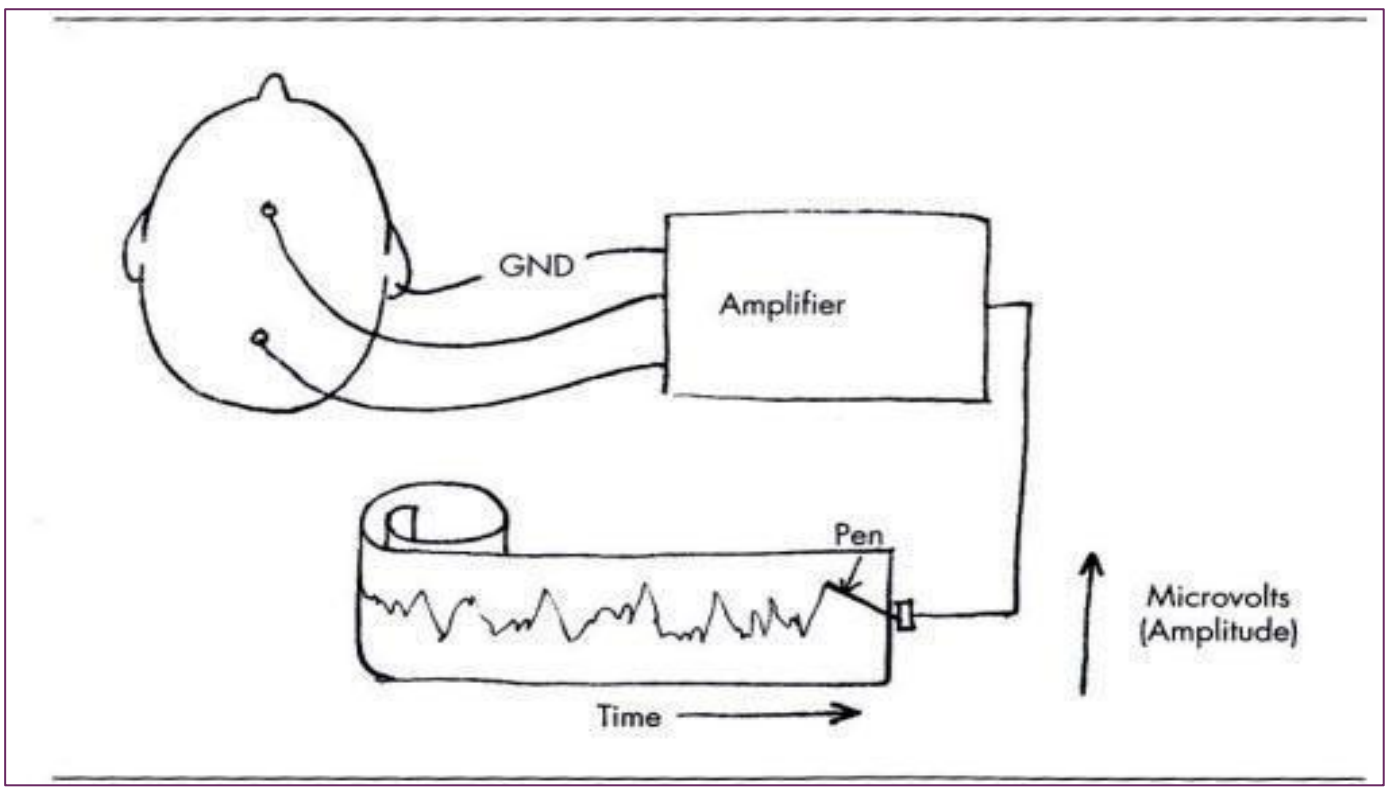
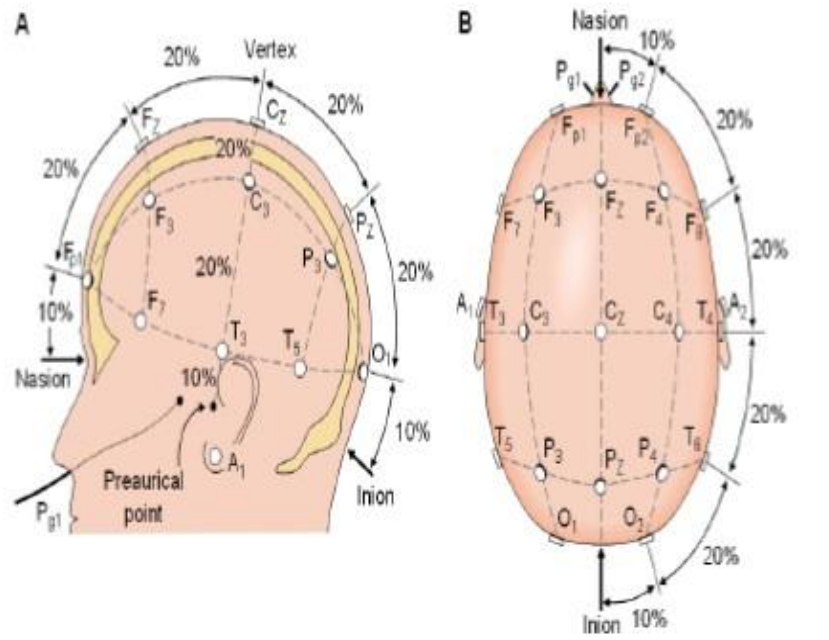



**Figure 1** shows a general view of a simple electroencephalography. The signals received from the skull are amplified through the amplifier and displayed in the form of brain waves or data.

International system 10-20 is used to stick the electrodes on the head. Based on this system, 19 electrodes are placed in certain places (Hammond, 2016).

**Figure 2** summarizes the method of measurements related to this system and different points. In this system, odd numbers are associated with the left hemisphere and even numbers are associated with the right hemisphere




A1,A2 :(Ear Lobes)

T5,T6, T3, T4 :(Posterior Temporal Areas)

P3,P4 :(Parietal Areas),

F3,F4,F7,F8:(Frontal Areas)

Fp1.Fp2 :(Prefrontal Areas)

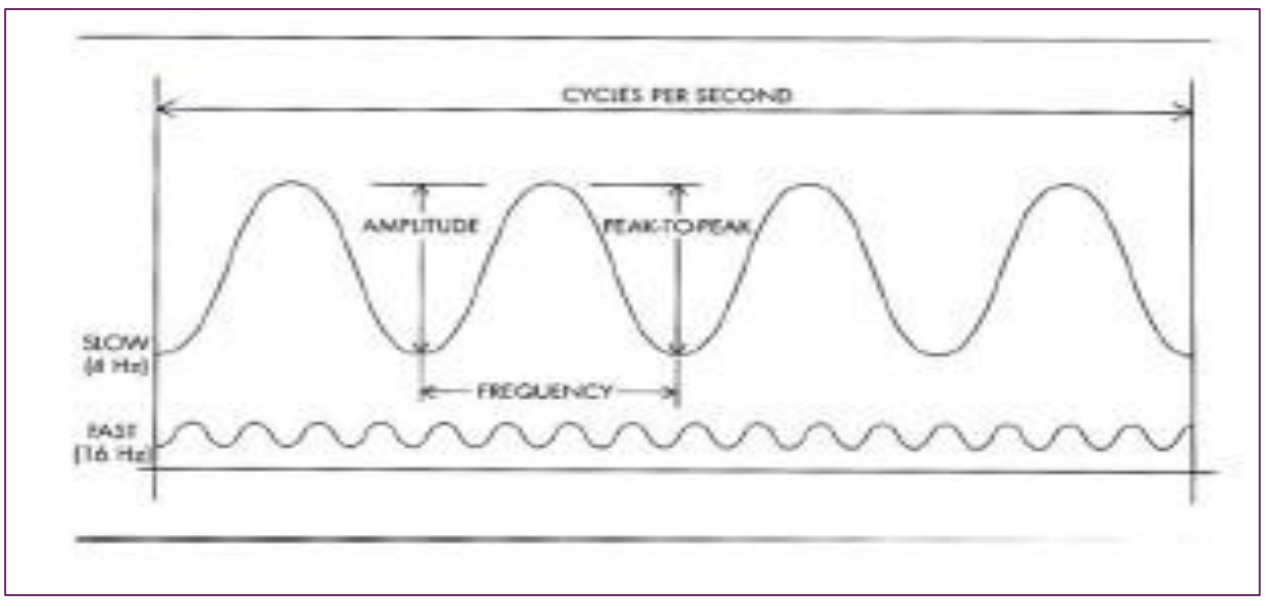
O1,O2:(Posterior Areas)

C3,C4:(Central Areas)

figure 2-2: order 20-10

Brain frequency is defined by Hertz or Microvolt. Hertz is indicative of wavy pulsation and one hertz is equal to one round per second. Slow frequencies are less than 10 Hz and rapid frequencies are more than 13 Hz. Microvolt examines how much is the wave height. Microvolts are very variable and they are able to change from 0 to 100 microvolts. The slow waves usually have a larger range than rapid waves, but not always. When the slow waves have dominated the brain, the activity of the brain gets slow, or preparing to do. In contrast, when the rapid waves have dominated, the brain gets to different activities (Nosrat Abady, 2007). Figure 3, shows the relation between hertz and range.

**Figure 3,** Relation Between Hertz and Range.




The brain waves are named according to their frequency band. The brain waves are called from 0/5 to 4 Hz Delta, 4 to 8 Hz Theta, 8 to 12 Hz Alpha, 13 to 15 Hz SMR, and 15 to 30 Hz Beta. Take notice that EEG waves are a combination of several different frequency bands that are deformed and have been quantized for further analysis. Although the EEG signal, moreover, can be analyzed in different frequency bands, all of them belong to a collective dynamic that works in coordination. Therefore, despite specific behavioral and cognitive traits, they are related to a certain frequency band, but it is the connection between frequencies in other areas of the brain that creates complex behaviors. Usually, each of the waves dominates in the brain, it makes a connection with special mental states.

**Brain Waves Have Been Seen in the Brain Include**

**Alpha (8-12 Hz)**

Alpha is usually seen in the entire lobe. Their obvious activities, especially, the back-head area occurred in normal adult persons with closed eyes. These waves show the relaxation of the body and are stopped by particular sensory stimulations and open eyes. So, Beta waves substitute them (Schwartz and Andrical, 2003). Their activities rise in meditation and hypnotism (Anand et al, 1961; a quotation from Schwartz and Andrical, 2003). It was reported that Alpha waves are made from the Thalamocortical orbit during the awakening state and are related to calm, awareness, and inactivities (Giya et al, 2005). The efficacy of neurofeedback training on Alpha waves can cause relaxation (Demos, 2004).

**Theta (4-8 Hz)**

Theta waves may be seen in many lobes. It is believed that Limbic system activity is reflected in Theta waves (hippocampus, cingulate gyrus, dendritic gyrus, and amygdala) and they play an important role in memory and emotion (Giya et al, 2005). If neurofeedback increases Theta waves, a state similar to trance and involuntary will be created. Also, if they are decreased they can improve concentration and the ability to notice.

**Delta (0/1-3)**

Delta waves may be created in the Thalamo-Cortical orbit, and mostly is a wave in the phase of the third or fourth of sleep (Giya et al, 2005). The efficacy of training of this wave is sleepiness, trance, and a state of deep relaxation.

**Beta (over 12 Hz)**

These waves have the most activity in open eyes and are pointed to physical activity. Also, with closed eyes, they record more in the parts of the central and forehead of the brain.

**Beta Waves is Divided into Three**

**1) Down Beta (12-15 Hz)**

Down beta or motion-sensory rhythm is contained through movement. If the body is controlled, may cause to increase in beta. If the sensory-motion rhythm increases through neurofeedback, concentration can able to rise.

**2) Up Beta (over 18 Hz)**

It is created a state of consciousness or maybe a confused mood with these waves, through neurofeedback training.

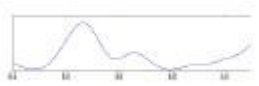
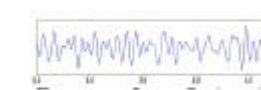
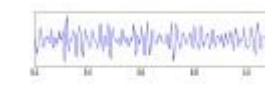
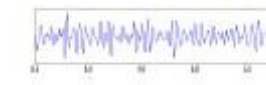
**3) Middle Beta (15-18 Hz)**

When middle beta is grown the mental ability, concentration consciousness, and IQ can rise.

**4) Gamma (over 26 Hz)**

Gamma is the only wave that Berger couldn't discover. This wave appears in the new cortex, hippocampus, and smell cortex, also, is also related to attention, perception, and cognition (Giya et al, 2005). The effects of gamma are unknown. As a whole, each of these waves, their range, and psychological states are placed in the table below.

**Table 1:** Brain wave bands and their function

| Name of Bands | Range of frequency | Psychological-Re Later State | Wave Form |
|---|---|---|---|
| **Delta** | 0/5-4 | sleep, coma |  |
| **Theta** | 4-8 | creative thinking, thinking without self-censorship |  |
| **Alpha** | 8-12 | being relaxed and vigilance |  |
| **Beta** | 13-21 | thinking, concentration, keeping concentration |  |
| **SMR** | 12-15 | physical relaxation, sensory-motion coordination |  |
| **Beta2** | 20-32 | anxiety, restlessness, excellent vigilance |  |
| **Gamma** | 38-42 | cognitive processing, learning |  |

**Evaluation Method of EEG**

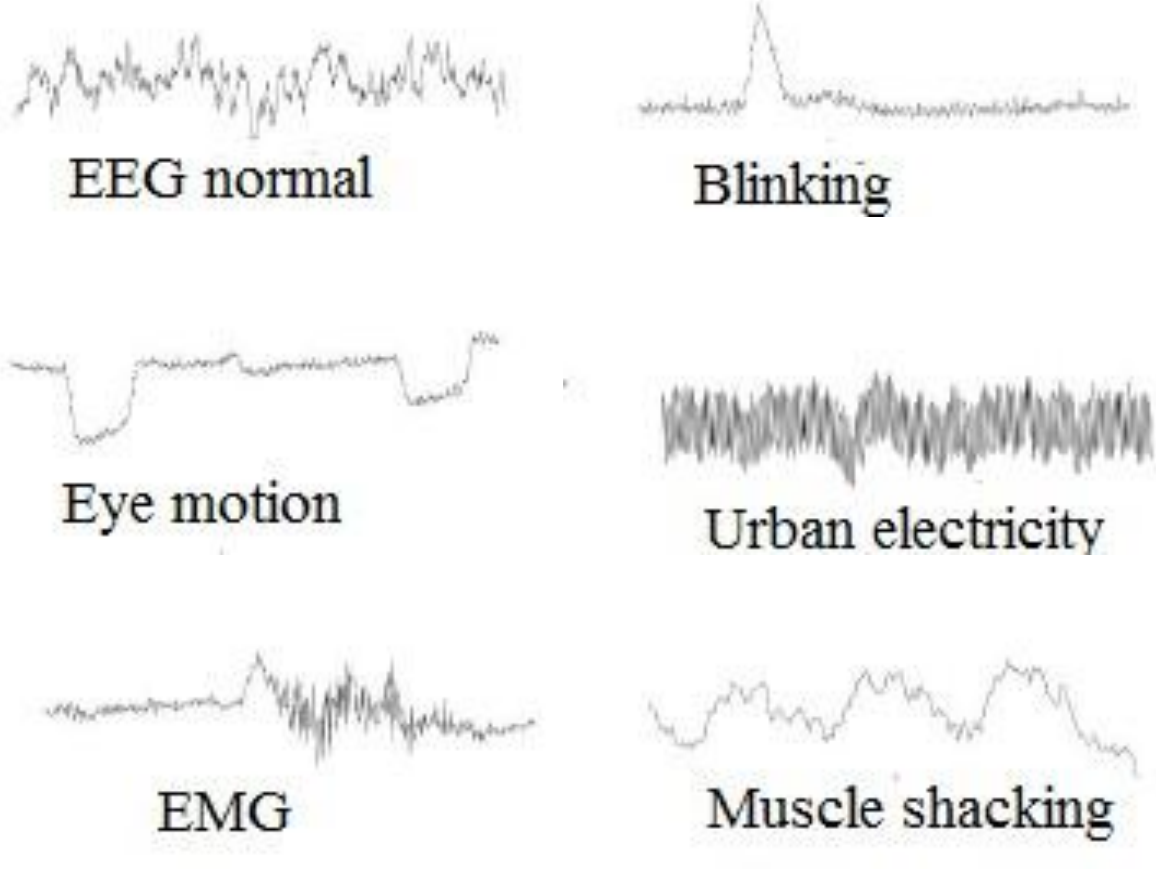
Basically, two general methods are used in the evaluation of EEG, checking raw EEG tape and quantitative electroencephalography analysis in EEG evaluation. The main emphasis on quantitative electroencephalography has been in the knowledge of psychology and psychiatry in recent decades (Nuwer, 1997; the quotation from Nosrat Abadi, 2007). Both methods are briefly explained in the following sentences:

**A. Visual Analysis**

The first step in EEG analysis is the visual study of the raw EEG tape by an electroencephalography specialist. Many of electroencephalography specialists believe that the visual study of the brain tape is very significant,

especially, for psychiatric patients who have not been neurologically checked before. Nowadays, with the digitization of brain tapes, different montages can be easily defined on the monitor screen and the structural pathology of the brain can be examined. In addition, many of the recorded noises that don't have an EEG aspect are recorded from other sources (like urban electricity, muscle tension, eye motions, and so on) (figure 4).

**Figure 4. Types of EEG Artifacts.**




**B) Spectral Analysis**

Evaluation of source location and QEEG of electric activities of the brain with developed technology has led to the exact quantification of the EEG activity. In the past, although they used to record time domain EEG (as two perpendicular axes voltage in time), since the 1960s, recording of EEG frequency-time domain (as two perpendicular axes power in frequency domain) which is used to control Fast Fourier Trans Formation. In fact, spectral analysis is the same as quantitative electroencephalography.

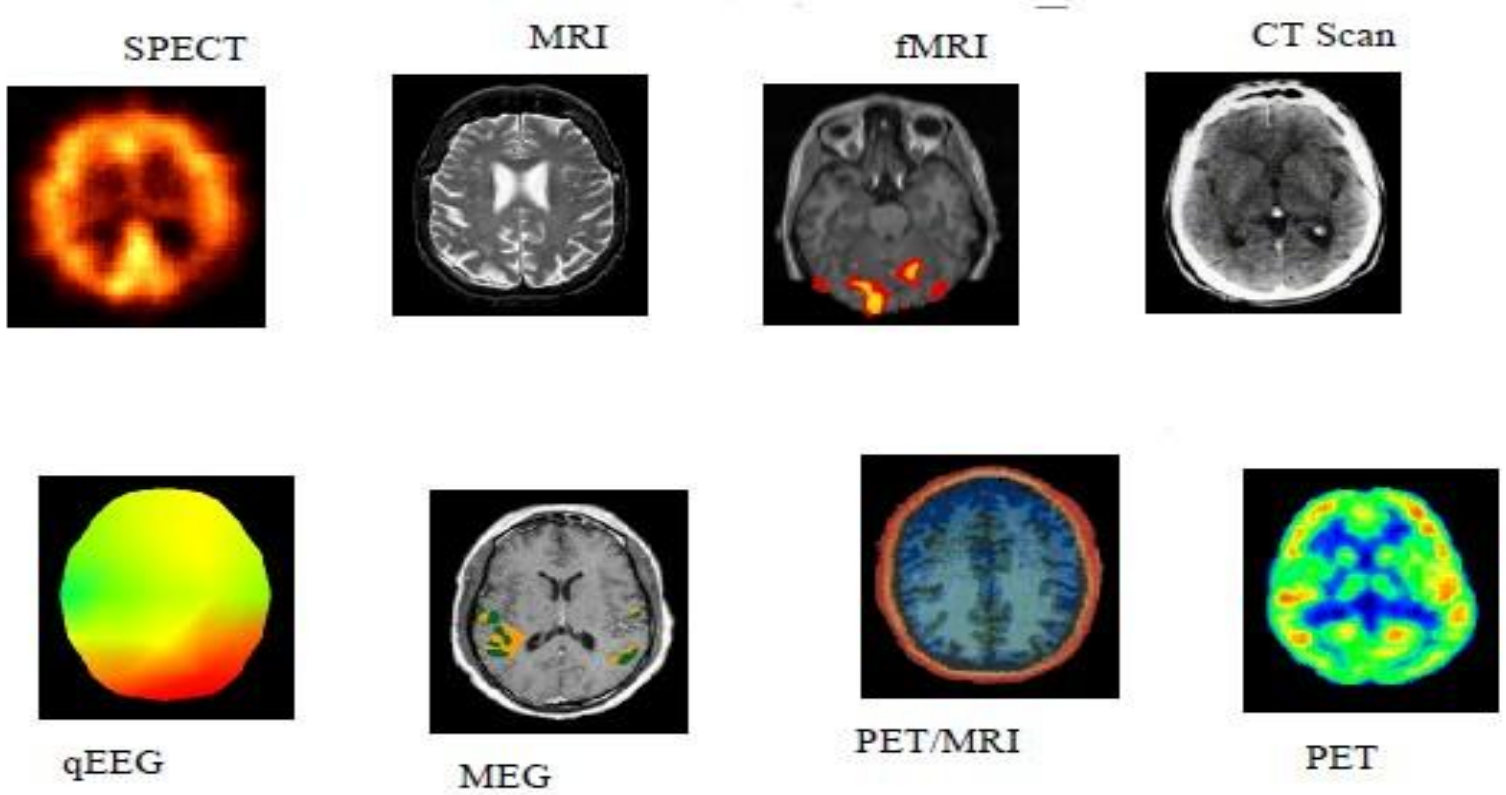
**Quantitative Electroencephalography**

The neurmetric method of quantitative electroencephalography was innovated by John et al (1988, 1977; the quotation from Nosrat Abadi, 2007 ), also, this quantitative electroencephalography makes comparisons between normal individuals in one database. The neurmetric method is a tool that has sensitivity and high precision, so it diagnoses electroencephalography dysfunction of the brain cortex in a group of children and adults who have neurological and psychiatric diseases (Monastra et al, 1999). Electroencephalography is the digital recording of EEG and measures the activity of brain waves (Amen, 2001). As you see in the figure, quantitative electroencephalography is a brain activity. Quantitative electroencephalography data was achieved of 19 places of the skull that basically determine 10-20 international systems. 19 electrodes are placed on the head to record the activity of the brain waves (Demosis, 2004). The EEG features in the EEG spectrum are one of the independent cultural and racial factors; this feature displays a common genetic heredity of mankind (Congedo and Lobar, 2003). Each clinical group shows special quantitative electroencephalography. Most disorders have many electroencephalographic indicators, such as hyperactive disorder, attention deficit disorder, and anxiety disorders (Demosis, 2004).

The methods used to check brain function like PET and SPECT, although they have a high cost, sometimes have risky side effects (such as injecting radioactive materials, being in an activity field of strong magnetic, and so on) (Lobar, 1997). In the meantime, the electroencephalography method that records brain activity, despite the fact that it is cheap, doesn't have any side effects.

In the last, specialists used the EEG to investigate the structure of the brain, and also, to diagnose epilepsy, convulsions, and tumors. During in 1960s-1970s and with the arrival of computers, examination of patients' EEG was significantly progressing and quantitative electroencephalography analysis was invented as a method with high reliability and validity. Unlike other methods, quantitative electrophotography was invented to examine brain function, not brain function. Therefore, it can be used to identify and diagnose brain dysfunction disorders such as Hyperactivity, Attention deficit, Anxiety, Depression, Alzheimer etc. In this method, the brain waves come from the patient's brain cortex activity (with the utilization of the electrodes that connected to the skull) entered into the computer, with a series of math operations, these waves change numbers, and the numbers turn into the charts or the images (showing the head figure with blue, yellow, red and green colors as two-dimensional or three-dimensional). Nowadays, it is possible to identify anomalies of the brain by comparing the quantitative electroencephalography of the patient with the quantitative electrophotography of the available database (quantitative electroencephalography analysis of normal individuals) and by comparing it with existing patterns, so it can be determined the type of disorder (brain images result from different neuroimaging methods as well as quantitative electroencephalography, all show in figure 5).

**Figure 5: Brain Image Results from Various Types of Neuroimaging and Quantitative Electroencephalography.**




As said before, quantitative electroencephalography of the individual is compared with normal individuals. For such comparisons, the underlying assumption is that various psychiatric diseases cause significant anomalies in the brain and also cause quantitative changes in electrophotography (Chabot et al, 1999 and 2001; La Vaque, 2003). Mentioning this point is necessary that when compared, the noises should be completely deleted (technically, these noises are called "Artifact"). Since the spectral combination of brain electrical activity changes with increasing age when compared to the normal group, the age of the person and the normal group should be the same. Based on quantitative electroencephalography the treatment of obsessive-practical disorder has some considerations. The location of the electrode is marked on the scalp, based on electrophotography. What range and frequency of EEG should be increased or decreased, and what electrical parameters should be inserted in the device, are all determined; the exact management of these special variables will greatly determine the success of treatment.

**Research Methodology**

**Introduction**

In this chapter, the researcher is looking for a discussion of the statistical methods of society, sample size, and tools used in order to provide a clear view for the audience and a logical basis for judgment about the correctness of the performance of different stages of research. In the following, the nature and manner of each of these steps is described.

This research is a descriptive research and since its used tool is a questionnaire it is considered as a survey research, in terms of use, it is applied research and in terms of method, it is a cross-sectional study of two-group comparison type.

Descriptive researches are researches that deal with the objective, real, and regular description of the characteristics of a situation or a topic.

Descriptive studies are divided into five groups: survey, correlational, research action, case, post-event (comparative causal) and the present research is of comparative causal type.

**Statistical Population, Statistical Sample, and Sampling Method**

The statistical population in this research consists of all the male athletes and non-athletes of Mahabad to compare the level of their obsessive-compulsive disorder, that were selected 100 people, 100 male athletes, and 100 non-athletes, from each group. In other words, the examined sample in the study is 200 people.

The way to access the subjects was that the researcher after receiving the letter from the university and obtaining the necessary permits from the office of the physical training of Mahabad was randomly given a questionnaire and the necessary explanations about it to 100 male athletes who were practicing and do workout in the Gyms of the city, and then in the same places where there were Gems another 100 questionnaires were randomly distributed among young non-athletes.

**Information Collection Methods**

In order to collect information in the field of theoretical foundations and subject research literature, library sources, articles, required books and the Internet have been used. Also, in the present study to collect data, the Padua Obsessive-compulsive Disorder Inventory (PPI), was designed by Sanavio in 1985 and contains 60 five-choice statements. It should be noted that this questionnaire was normalized in Iran by Shams et al. (2009) among 348 non-clinical samples of medical students of Tehran University, and its validity and reliability were also confirmed and adjusted to 39 statements

**Scoring Method and Interpretation**

This questionnaire has 39 questions and its purpose is to evaluate and measure the level of obsessive-compulsive disorder from different dimensions (contamination obsessions, washing compulsions, order and discipline compulsions, checking compulsions, obsessive thoughts of harming oneself and others, obsessive thoughts of violence, Obsessive impulses to harm oneself and others, obsessive impulses to steal). Its response range is of Likert type, and the score for each option is presented in the following **table 2**:

**Table 2:** Response range of Padua inventory

| Option | Not at all | Rarely | Sometime s | Much | Very Much |
|---|---|---|---|---|---|
| Score | 0 | 1 | 2 | 3 | 4 |

The above questionnaire has eight dimensions, and the questions related to each dimension are presented in the following **Table 3**

**Table 3:** The Dimensions of the Padua Inventory and the Related Questionnaires for Each Dimension

| Dimension | Question |
|---|---|
| Contamination Obsessions | 1,2,7,8,9,10 |
| Washing Compulsions | 3,4,5,6 |
| order and discipline compulsions | 11,12,13 |
| checking compulsions | 14,15,16,17,18,19,20,21,22,23 |
| obsessive thoughts of harming oneself and others | 24,25,26,27,30 |
| obsessive thoughts of violence | 28,29 |
| Obsessive impulses to harm oneself and others | 31,32,33,34,35,36,39 |
| obsessive impulses to steal | 37,38 |

To get the points related to each dimension, add the total points of the questions related to that dimension together. To get the total score of the questionnaire, add the total scores of all the questions together. Higher scores indicate higher obsessive-compulsive disorder and vice versa (Shams et al., 2009).

**Validity and Reliability of the Questionnaire**

In the research of Shams et al. (2009) to estimate the criterion validity, Padua's Persian inventory was compared with two Obsessive-compulsive Questionnaires and Madzli's Obsessive- compulsive Questionnaire, and the results were 0.69 and 0.58, respectively, which indicates the validity of this tool is good.

Also, the reliability of the questionnaire was calculated using Cronbach's alpha measurement method. Usually, the range of Cronbach's alpha reliability coefficient is from zero (0) which means no stability, to positive one (+1) which means full reliability, and the closer the value is to the positive number of one, the more reliable the questionnaire is. Cronbach's alpha for the Padua inventory (PPI) is presented in the following **table 4:**

**Table 4:** Cronbach's alpha value in the Padua inventory (PPI)

| Dimension | Cronbach's Alpha |
|---|---|
| Total | 0.92 |
| contamination obsessions | 0.77 |
| washing compulsions | 0.71 |
| order and discipline compulsions | 0.74 |
| checking compulsions | 0.87 |
| obsessive thoughts of harming oneself and others | 0.83 |
| obsessive thoughts of violence | 0.56 |
| Obsessive impulses to harm oneself and others | 0.86 |
| obsessive impulses to steal | 0.80 |

**Data Analysis Methods and Tools**

In the present research, depending on the purposes and research questions, different methods have been used for data analysis. In general, it has used indicators such as frequency distribution tables, mean and standard deviation at the level of descriptive statistics, and Kolmogorov Smirnov test, t-test independent samples at the level of inferential statistics.

**Statistical Population Statistical Sample And Sampling Method In More Detail**

The current research is a descriptive research, and since the instrument used is a questionnaire, it should be said that it is considered survey research, in terms of use, it is considered applied research, and in terms of method, it is a cross-sectional study of a two-group comparison type. The statistical population in this research consists of all young men (both athletes and non-athletes) of Mahabad city who are over 20 years old. In order to determine the sample size of the statistical population of athletes 20 years old and above in Mahabad city, a multi-stage cluster sampling method has been used in such a way that first, Mahabad city is divided into three northern, central and southern regions in terms of geographical divisions, then Two sports clubs were randomly selected from each region and a research questionnaire was given to the members of that club. So in the northern region, the number of people in clubs number 1 and 2 is 20 and 15, respectively; In the central region, there were 15 people and 18 people, and in the southern region, 15 people and 17 people, which means a total of 100 people. Considering that the number of athletes in 6 clubs was 100, therefore, in order to compare the level of obsessive-compulsive disorder among them, the same number of questionnaires were distributed among non-athletes, males 20 years and older, in those areas. Finally, 200 pure and filled questionnaires were collected. In order to collect information in the field of theoretical foundations and research literature, library resources, articles, required books, and the global information network have been used. Also, in the present study, the Padua Obsessive-Practice Disorder (PPI) questionnaire, which was designed by Sanavio in 1985 and contains 60 five-choice statements, was used to collect data. It should be noted that this questionnaire was standardized in Iran by Shams et al. (2009) among 348 non-clinical samples of medical students of Tehran University, and its validity and reliability were confirmed and adjusted to 39 statements. In the current research, depending on the goals and research questions, different methods have been used for data analysis. In general, at the level of descriptive statistics, indicators such as frequency distribution tables, mean and standard deviation, and at the level of inferential statistics, the Kolmogorov Smirnov test, independent samples t-test under SPSS 22 statistical software have been used.

**The Findings**

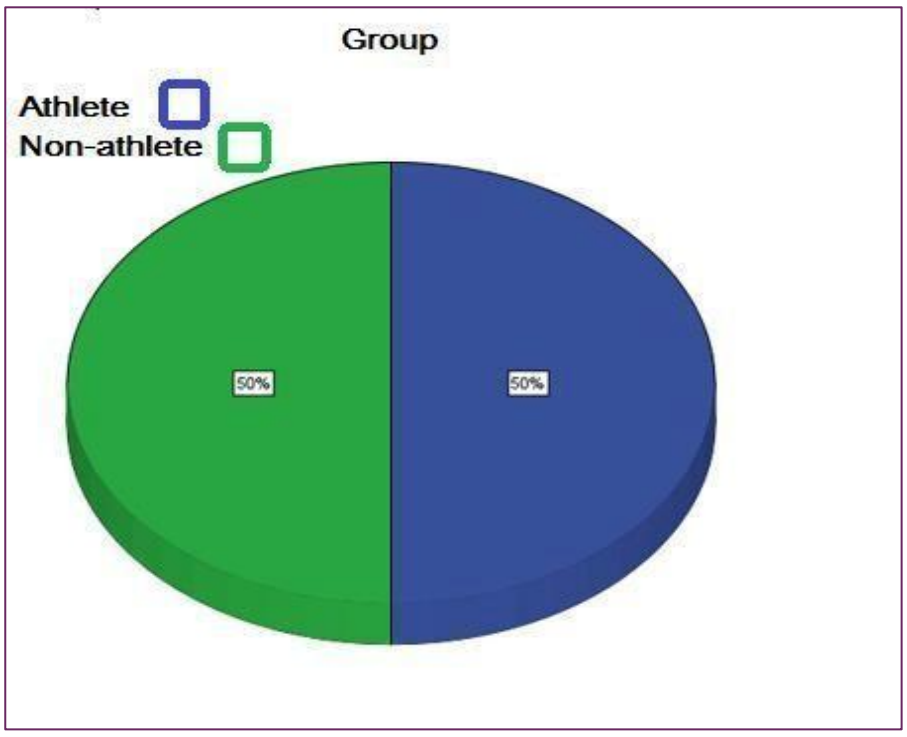
Showed the results of demographic factors that in the present study; are 50% of subjects (100 people) athletes and 50% (100 people) are non-athletes.

Based on the findings of number table 5, it can be seen that in the present study; are 50% of the subjects (100 people) are athletes, and 50% (100 people) are non-athletes.

**Table No. 5:** Distribution of the abundance and percentage of the subjects' athletic status

| | Athlete | Non-athlete | Total |
|---|---|---|---|
| Abundance | 100 | 100 | 200 |
| Percentage | 50 | 50 | 100 |

**Diagram No. 5:** Circle of the Sports Condition of the Subjects




that the average age of the respondents in the current research is 26.15 years, the median is 26 years, the mode is 23 years; the lowest age in the studied sample is 20 years and the highest age is 33 years.

The average of the research variables also showed that the rate of contamination obsessions in young male athletes was 8.10 and the amount of contamination obsessions in non-athletic male youths was 10.60.

There is no significant difference between the rate of contamination obsessions among male athletes and non-athletes in Mahabad H0: There is a significant difference between the rate of contamination obsessions among male athletes and non-athletes in Mahabad H1:

**Table No. 6:** The results of the independent t-test comparing the level of contamination obsessions disorder in male athletes and non-athletes.

| | Group | Abundance | Average | The standard deviation | F Leven | Significant level F | Test t | Degree of freedom | The significance level |
|---|---|---|---|---|---|---|---|---|---|
| contamination obsession | Athlete | 100 | 8/10 | 4/125 | 0/061 | 0/806 | 4/372 | 198 | 0/000 |
| | Non-athlete | 100 | 10/60 | 3/9 | | | | | |

As the results of the above table show, according to the assumption of homogeneity of variances (sig=0.806) and considering that the calculated t is significant at the level of 0.05 (sig=0.000), therefore, the H0 hypothesis is rejected, and hypothesis H1 is confirmed. In other words, it can be concluded that there is a significant difference between the level of contamination obsessions in male athletes and non-athletes in Mahabad. As shown in the above table, this average is lower among young athletes than non-athletes.

**Summary of the Research**

The aim of the present study was to compare the level of obsession with pollution in young athletes and non-athletes in Mahabad city. The current research was descriptive-survey and causal-comparative. In order to compare the rate of obsessive-compulsive disorder, 20 athletes and non-athletes were selected and questionnaires were provided to them. Simple random sampling method is used in this research. The research tool was the standard questionnaire of Padua Obsessive-Compulsive Disorder (PPI), which was provided to the samples, and 20 completed questionnaires were coded and entered into the computer for statistical analysis. Distribution tables of frequency, percentage, mean and standard deviation were used to explain the opinions of the statistical sample regarding the questions. SPSS 22 software was used to analyze and draw graphs and statistical tables. The results of the independent t test showed that there is no significant difference between obsessive-compulsive disorder and its eight dimensions in male athletes and non-athletes. (P-value ≥0.05)

Conclusions from the statistical description of the subjects' characteristics Based on the obtained information, it can be seen that 100% of the statistical sample consists of young men, 50% (100 people) are athletes and 50 people are % (100 people) are non-athletes. Also, the age of the examined sample was 15.26 years The results of the inferential analysis of the statistical data of the main hypothesis:

There is a significant difference between the level of pollution obsession in Mahabadi sportsmen and non-athletes.

Based on the test of this hypothesis from the t-test of independent samples, it was found that there is a significant difference between the level of pollution obsession in young athletes and non-athletes in Mahabad city (p-value ≤0/ considering that the findings indicate that The level of obsessive-compulsive disorder in non-athletes is higher than in athletes, it can be concluded that the level of obsessive-compulsive disorder in male athletes and non-athletes is not present in the study.

To explain the above hypothesis, we can also refer to the research done in the field of mental health. Considering that pollution obsession is one of the ten dimensions of mental health and so far no research has been done in Iran or abroad regarding the comparison of pollution disorder in athletes and non-athletes, the result of the above hypothesis was obtained with the results of the researchers. Such as Saeednia and Saeednia (2011), Zangeneh (2011), Hosseini et al. (2006) and Khorjahan et al. (2009), which is about the mental health of athletes and non-athletes, are in conflict. The results of Saeednia and Saeednia's research (2013) indicate that the average level of obsession of students who do sports exercises is lower than the level of obsession of students who do not do exercises. The result of this finding of the current research is contrary to the result of Shannon and Caleb's (2010) research entitled "The presence of intellectual and practical disorders in athletes" among students of Central Oklahoma and Florida universities.

Because the results of their research showed that there is no significant difference in the scores of mental disorders and the performance of athletes and non-athletes. It seems that the reason for the discrepancy between the results of this research and the research of Shannon and Kolb (2010) depends on the cultural context and psychological state of the sample studied in Mahabad.

Ghasminejad (2007) also states that sports and physical activities should be measured and calculated. Because struggling and obsessing over training and competition often leads to disruption at home, at work, and in general throughout one's life, overactivity leads to fatigue. Stress and depression.

The research that has been done on the relationship between sports and mental health in general shows the positive and significant role of exercises in the mental-psychological performance and mental health of athletes. Mental health is one of the issues that is obtained as a result of participating in sports activities and physical education. Such activities provide the best opportunity to engage measures of mental health. If mental health is defined as a feeling of comfort towards oneself and others, then its criteria will be success in emotional balance, realism, adaptability, adaptability, sociability and sense of worth. Therefore, by activating such measures, exercise not only contributes to physical health but also to mental health. A sense of self-esteem is important for everyone, and sports activities may help you feel positive and have a better self-image in many ways. Such a feeling can become a better context for the change and transformation of many psycho-social characteristics of a person. This feeling of well-being and positivity is essential in today's stressful world and is likely to affect the way people live.

The hypothesis of the degree of contamination obsession: There is a significant difference between the amount of pollution Obsessions of and non-athletic men in Mahabad city.

In this regard, the independent t-analysis showed that there is a significant difference between the level of obsession with pollution in young sportsmen and non-athletes in Mahabad, so that the findings indicate that the level of obsession with pollution is higher in male athletes. Regarding non-athletes, this finding of the present study is contrary to the results of Shannon and Caleb (2010). The present analysis needs to prove other findings in future studies.

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