Review paper

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Depression and Suicide in Regards to Sex

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Abstract - Psychiatric disorders represent one of the leading problems of the public health community in the modern world today, especially because their incidence is steadily increasing and they are one of the main reasons for the overall disease burden in Europe. One of the most frequently diagnosed, yet under recognized diseases, is depression. Depression, whether a symptom, part of a syndrome or an independent diagnosis, is characterized by feelings of sadness, loss of interest and pleasure in activities that normally bring joy to a person, and can affect how a person feels, thinks and behaves. It affects all age and social groups, as well as both sexes, it is often comorbid with other physical diseases, and increases the risk of developing other physical diseases. There are certain differences between the sexes in the prevalence, the way a certain sex group deals with problems caused by depression, and the possible causes of these differences, which we present in more detail in this paper. Differences are observed in all cultures, environments and across different age groups. Patients suffering from depression have a particularly high risk of committing suicide. Suicide is a psychopathological phenomenon of multifactorial aetiology that is most often associated with psychiatry and mental disorders and is not a diagnosis in itself, but a complication of many psychiatric disorders. here are many differences in the rate of suicide by age and sex, as well as in the method of suicide, which we also present in more detail in this paper.

Key words: depression; sex; suicide

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Introduction

Today, psychiatric disorders represent one of the biggest public health challenges, especially since their incidence is on a constant rise [1,2]. They are among the leading causes of dysfunction and overall disease burden in Europe [2,3]. Moreover, the largest number of overall hospitalizations are associated with excessive alcohol consumption, depressive disorders and schizophrenia [3]. People with severe psychiatric disorders, such as schizophrenia and other psychotic disorders, and affective disorders, such as bipolar disorders and moderate to severe depression, on average die ten to twenty years earlier than the general population [4]. The latter is mostly a result of physical illnesses, such as respiratory diseases, cardiovascular diseases and infections, but also a great part of the deaths are due to suicides, murders and accidents [5-7]. Suicide is a psychopathological phenomenon of multifactorial aetiology that is most often associated with psychiatry and psychiatric disorders, and is not a diagnosis in itself, but a complication of many psychiatric disorders. Within a year

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of discharge from hospital treatment, suicides make up a large proportion of deaths of people with psychiatric disorders [8]. Patients suffering from bipolar disorder, alcohol addiction and depression have the highest risk of committing suicide.

Depression

Depression is one of the earliest diseases described in medicine. The word depression itself comes from the Latin word deprimere, which means to press, to impress, and thus vividly describes the main features of this disease. Depression is characterized by a feeling of sadness, loss of interest and pleasure in activities that would normally bring joy to a person, and can affect how a person feels, thinks and behaves, as well it can lead to various emotional and physical problems [9]. It is one of the leading public health problems today and is one of the most frequently diagnosed medical diseases [1,9]. It is estimated that in 2030, depression will become the most frequently diagnosed disease [2]. Since the diagnosis of depression is still accompanied by stigma, it remains unrecognized in half of the patients, and in three quarters of those diagnosed, it remains untreated [10]. It affects all age, sex and social groups, it is a common comorbidity with other physical diseases, such as heart attack, neoplasms and other conditions and it increases the risk of developing other physical diseases (e.g., diabetes and cardiovascular diseases) [10]. Depression can be a symptom, part of a syndrome or as an independent diagnosis.

About 3.8 % of the world's population suffers from depression and the number is continuously growing; in the period from 2005 to 2015, there was a 19 % increase in the number of people suffering from depression [11,12]. It is believed that every fifth woman and every tenth man experience at least one depressive episode during their lifetime [9]. The peak of prevalence is at an older age - from 55 to 74 years, while the most hospitalized patients are from 35 to 55 years, at the time of greatest working potential [2,1]. About half of the diagnosed patients recover completely, a third partially, and every fifth patient has a chronic course [9].

Sex related specifics of depression

There are certain differences between the sexes in the prevalence and the way a certain sex deals with problems caused by depression. Differences are observed in all cultures, environments and across different age groups, and are caused by numerous factors [13]. In general, psychiatric disorders are twice as common in women [14]. Hormonal regulation during the reproductive cycle is considered to play an important role in the aetiology of depression in women. In addition to depression, men more often have comorbid substance abuse, personality disorders, and have a greater tendency to take risks and seek excitement, weak impulse control, and reluctance to seek professional health care. While women suffer more often from depression, they recognize depression symptoms more frequently and more often seek professional help, because they have a less negative attitude towards depression [15,16].

In general, with regard to sex, there is a different prevalence of certain types of depression. Chronic major depression is more common in older men, while depression with atypical features, which includes symptoms such as weight gain and hypersomnia, is three times more common in women than in men. Dysthymic disorders are generally more common in women and include symptoms such as overeating and poor appetite, fatigue and sleep problems, hopelessness and problems with concentration. A fifth of patients with dysthymic disorder develop a more severe mood disorder, such as major depressive disorder and bipolar affective disorder. No association was found between sex and social status with depression [15].

There are specific syndromes that include depressive symptoms and are associated with women. It is believed that along with a whole

range of other factors, female sex hormones have the biggest influence. These include: disorders related to menstrual syndrome, premenstrual dysphoric syndrome, postpartum disorders, postabortion syndrome and perimenopausal disorders.

Disorders related to menstrual syndrome

During the menstrual cycle, especially during the luteal phase, psychiatric disorders such as bulimia, depressive symptoms, panic attacks, and so on, often worsen. It has also been observed that during the luteal phase and the early follicular phase, the symptoms of borderline disorder worsen, in the form of an increased rate of self-harm, and thus the risk of suicide [14].

Premenstrual dystrophic disorder

Premenstrual dysphoric syndrome usually starts a week before menstruation and ends during the cycle. The onset is usually in the middle twenties, and affects 2 - 5 % of premenopausal women [3]. Although this topic is still insufficiently researched, a correlation has been observed between the level of estradiol, neurosteroids, such as allopregnanolone and pregnanolone sulphate with the intensity of symptoms of premenstrual dysphoric syndrome. A genetic link within the family has also been observed. For the diagnosis of premenstrual dysphoric syndrome, it is necessary to develop five or more symptoms, which include; depressed mood, affective lability, irritability and anger, concentration problems, excessive self-criticism and feeling of own insufficiency, anhedonia and abulia, sleep disorder, lack of energy, and physical symptoms such as pain in the joints, feeling of bloating, swelling of the breasts, weight gain [3]. The diagnosis is confirmed by various rating scales and by keeping a two-month diary. Some physicians recommend giving small doses of antidepressants from the group of selective serotonin reuptake inhibitors [fluoxetine, sertraline and paroxetine] during the luteal phase [14]. Hormonal therapy by inhibiting ovulation or by using gonadotropin-releasing hormone agonists is also mentioned in the literature. Symptoms can be alleviated by taking vitamins of the B group, especially B6 50 - 100 mg / day, vitamin E, calcium carbonate 600 mg / day, magnesium and fish oil. Psychotherapeutic interventions are also effective. The differential diagnosis of premenstrual dysphoric syndrome includes, a more common, premenstrual syndrome - the symptoms are milder and does not require a minimum of five symptoms to establish the diagnosis, as well as dysmenorrhea, bipolar affective disorder, major depressive disorder, dysthymia, and hormonal treatment, if the symptoms appear after taking contraceptives. Symptoms of premenstrual dysphoric disorder can cause impairments in social and work functioning in the week before menstruation, and can also result in marital disagreements, problems with children and other family members or friends.

Postpartum psychiatric disorders

The exact cause of postpartum psychiatric disorders is still not fully known, but according to research, the cause is a sudden drop in hormone levels in the mother's body after childbirth. During pregnancy, the level of sex hormones, estrogen and progesterone, increases up to ten times, and three days after childbirth, the level of hormones returns to the level that was before pregnancy [17]. The mildest psychiatric disorder in the postpartum period is postpartum grief, which is also the most common postpartum disorder. It occurs in 70 – 80 % of women who have given birth, and after the first postpartum week and lasts for two weeks. It is characterized by a mild degree of dysfunction, suicidality and homicidality are not present, and can be treated with solely a psychotherapeutic approach [14]. The second most common disorder is postpartum depression, which accounts for 10 - 20 % of postpartum disorders, and occurs within the first three months after childbirth and can last up to the first postpartum year. It is characterized by depressive symptoms, such as depressed mood,

tearfulness, anhedonia and abulia, loss of energy, sleep and appetite disorders, exaggerated worry and anxiety, along with feelings of guilt [14]. In postpartum depression, in addition to psychotherapy, antidepressants are indicated, and sometimes hospitalization [14]. Depression that occurs in a woman after childbirth can affect the development of a newborn.

The rarest, but most clinically dramatic disorder is postpartum psychosis, it occurs in 0.1 - 0.2 % of women in the postpartum period, most often in primiparous women, women with a previously diagnosed psychiatric disorder, and in women with a family history of psychiatric disorders, usually by the third postpartum week [9]. An increased association between postpartum psychosis and bipolar disorder was observed; that is, there is a 40 - 80 % chance of developing bipolar disorder in women with postpartum psychosis [9]. Postpartum psychosis can be characterized by delirium, a mood disorder or a schizophreniform type, and is accompanied by disorganized behaviour, auditory and visual hallucinations, and a series of paranoid insanities. Postpartum psychosis is associated with an extremely high risk of suicide, as well as the risk of infanticide, and it requires hospitalization, as well as treatment with atypical antipsychotics, mood stabilizers, high doses of estradiol, and even in some cases electroconvulsive therapy [9].

Postabortion syndrome

Postabortion syndrome can occur after any premature termination of pregnancy, whether spontaneous or induced. Abortion carries many biological and psychological changes and complications. The loss of a child causes a whole range of emotions such as sadness, melancholy, bereavement, anxiety, depression, shame and often leads to the loss of daily normal functioning. Post-abortion syndrome is similar to the experience of post-traumatic stress syndrome. The prevalence of postabortion syndrome is 2 - 4 %, and it depends on a whole range of causative factors. So far, no increased risk of suicide has been observed in post-abortion syndrome. Currently, psychotherapy is recognized as the best therapy for postabortion syndrome.

Perimenopause and menopause

Menopause is a natural biological event, not a disease, caused by a gradual decrease in sex hormones (estrogen and progesterone). It is preceded by perimenopause, where the first symptoms appear. Depression is common in the perimenopausal period, many times more common than in premenopausal women. It is treated with antidepressants along with hormone replacement therapy. Hormonal changes in the body can cause physical symptoms such as hot flashes, night sweats, sleep disturbances, and mood changes, usually in the form of depression. Memory and concentration disturbances may also occur. In the case of more pronounced depressive disorders, treatment is required, and it includes psychopharmacotherapy and psychotherapeutic interventions.

Suicide

There are various models of suicidality (sociological, cognitive, psychoanalytic, stress diathesis model) that explain suicide as a complex psychopathological entity. According to the definition, suicide is a human act of self-destruction, the deliberate taking of one's own life, a conscious act consisting of intention and motivation, and the execution itself. However, suicide itself is not a diagnosis, but a complication of many psychiatric disorders. In most countries, one of the most common causes of death is suicide, and in many European countries it accounts for a larger share of deaths than the number of deaths caused by traffic accidents and homicides. For every committed suicide, there are at least twenty suicide attempts [18]. The largest number of people who attempt suicide meet the diagnostic criteria for depression [10,11]. Although there are many scales for assessing suicidal risk, none of them completely excludes the risk. Risk factors for suicidal behaviour are the presence of psychiatric disorders, inadequate treatment,

previous suicide attempt, repeated hospitalizations and episodes of self-harm, history of suicide in the family, psychiatric comorbidities, ambivalence and feelings of worthlessness [19]. Certain specific conditions, such as mixed bipolar disorder, psychotic depression, and acute intoxication, can significantly increase the risk. Other unfavourable factors are inadequate family support and unfavourable life events. Less than one-third of suicidal patients verbalize suicidal intentions to their doctors. This is especially true for the male sex, and younger men, who are prone to impulsive reactions, i.e., self-injury, and on the other hand, they see their mental state, usually depression, as a shame and do not seek help [20]. One can speak of a sexual paradox; suicidal thoughts and reflections occur more often in women, while men commit suicide more often [21]. This paradox occurs more in Western culture, while in China and India, for example, women commit suicide more often [22-24]. Social, economic, biological and cultural factors influence the rate of suicidal behaviour and suicides [25]. In men, the factors that contribute to an increase in suicide risk and suicide rate are unemployment and insufficiency at work, tensions in family relationships, as well as comorbidities in the form of depression and drug and alcohol addiction disorders. A quarter of all psychiatric diagnoses is alcohol dependence syndrome, which is a trigger for numerous psychiatric disorders, as well as suicide. Also, the rate of suicide among men is related to the role of men in society. More traditional cultures stigmatize and forbid men to show their 'vulnerability', therefore men tend to hide and ignore health, especially psychiatric disorders, and causes that men less often seek help.

Another important factor that affects the sex differences in the suicide rate is the method of suicide chosen by men and by women. The most common way of suicide in both groups is by hanging, and although it is not a universal rule, men more often resort to suicide with cold weapons and carbon monoxide intoxication, and women more often choose drug intoxication [19,26].

During and after crises, suicide rates increase, the last time humanity encountered such a problem was during the 1920s during the Spanish flu, when an increased suicide rate was recorded [27]. Now, near the end of the COVID-19 pandemic, it is clear that the rate of psychiatric disorders, such as anxiety, panic attacks, PTSD, and suicides, has increased, not only in people who have recovered from COVID-19, but also in healthy people. A large meta-analysis, that was conducted at the time of the COVID-19 pandemic, found an increase compared to previous studies, namely in suicidal thoughts and deliberations and self-injury by ten percent, while suicide attempts by about five percent [28]. It also emphasized that particularly vulnerable groups are the younger population, women and singles in more developed countries. In general, it can be said that the rate of suicide varies by age group and increases with age, but there is also an increase in the rate of successful suicides among adolescents and young adults, predominantly among young men [29,30].

In Croatia, the suicide rate has been on the decline since 1999.; amounts to between 15 and 25 suicides per 100,000 inhabitants [30-32]. About 90 % of people who committed suicide had a diagnosed psychiatric disorder before their death, 30 - 50 % of patients attempted suicide at least once during their lifetime, of which 15 % committed it [10,32]. The highest suicide rate is recorded in the 50 - 59 age group [25]. Almost two thirds of suicides are committed by men. In Croatia, the suicide rate can still be seen with regard to the geographical region, and it has been observed that the suicide rate is higher in the continental parts of Croatia compared to the coastal parts [30].

In conclusion, it could be said that although depression and suicide are in the psychiatric focus of recognition and treatment, they should represent a wider public health problem with the aim of timely diagnosis, adequate treatment and prevention of undesir-

able outcomes. For this purpose, various educational programs should be implemented in the educational system, public health services, and the media for the purpose of destigmatizing psychiatric disorders.

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Conflict of interest

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