# Impact of sex and gender aspects in depression/Expert

The following article describes sex and gender differences primarily with regard to unipolar depression. For more information on sex and gender differences please refer to the AWMF Guidelines on Unipolar Depression.

## Epidemiology

### Incidence/Prevalence

Epidemiological studies show that women suffer from depression significantly more often than men. Longitudinal studies, which allow an estimation of the incidence rates of depressive disorders within a particular time frame, find consistently higher rates of new cases in girls and women (a period of 12 to 20 months showed incidences between 1.6 and 3.4 percent) compared to boys and men. [1] [2] According to data collected in a study evaluating the health of adults in Germany, 13.1 percent of women and 6.4 percent of men aged 18 to 64 years were suffering from depression in 2014 (12-month prevalence). [3] Therefore, women are presumed to suffer from depressive symptoms about twice as often as men. The so-called "gender gap" is especially noticeable with seasonal and atypical depression. [4] [5] [6] In general, differences in prevalence between the sexes have been shown to be internationally consistent. Less clear however, are the conclusions regarding differences in the clinical course of depression in men and women. Nevertheless, the majority of studies show higher relapse and chronification rates in women than in men. [7]

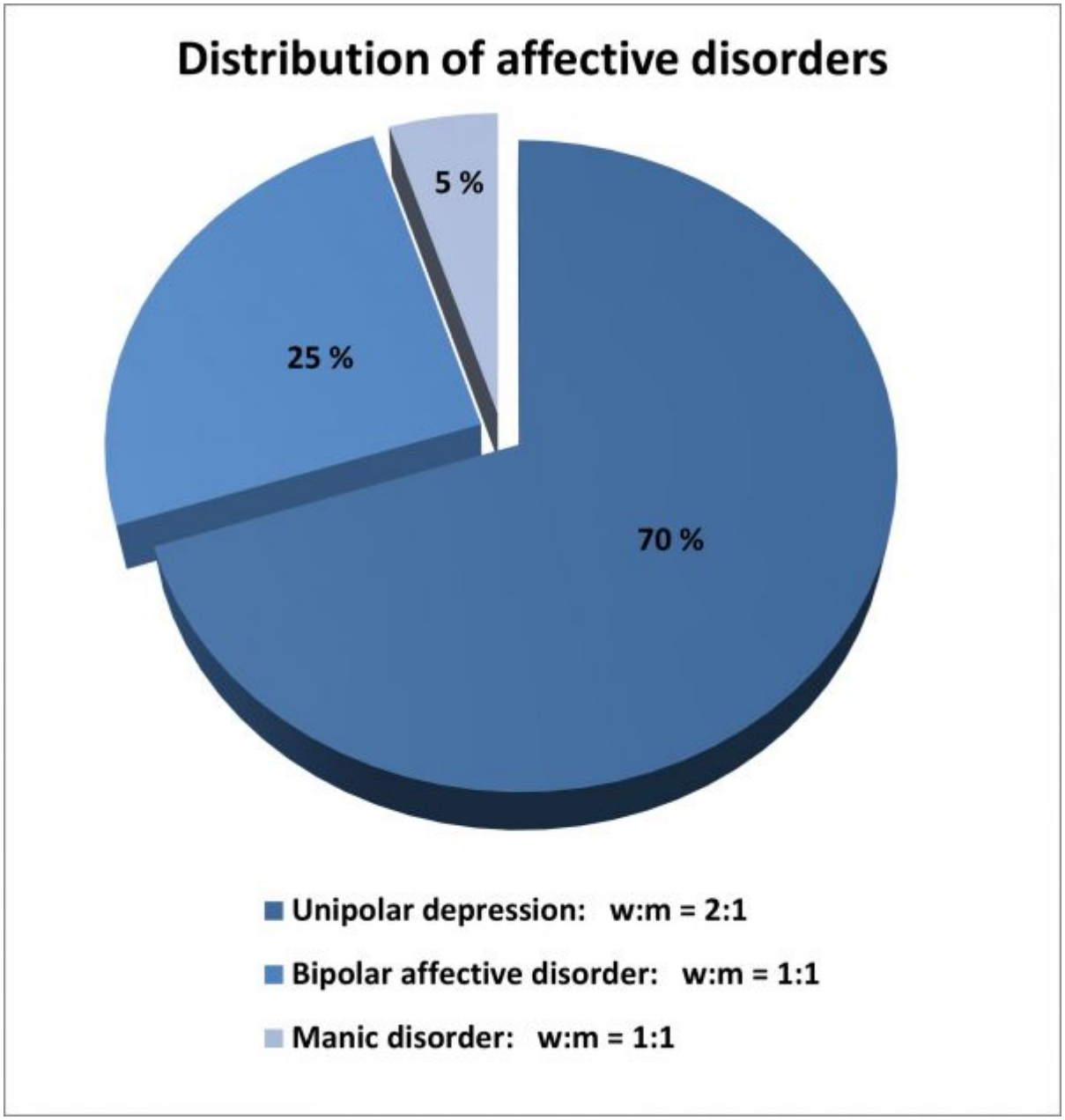



**Figure 1: Distribution of affective disorders and sex ratio (female: male) [Source: GenderMed-Wiki]**

In contrast to unipolar depression, bipolar disorders and manic disorders do not appear to demonstrate any sex difference in prevalence rates; women and men seem to be affected equally. A general sex-specific difference in the prevalence of affective disorders can therefore not be assumed (see Figure 1). Nevertheless, the course and exact symptoms of bipolar disorders vary between the sexes. [7]

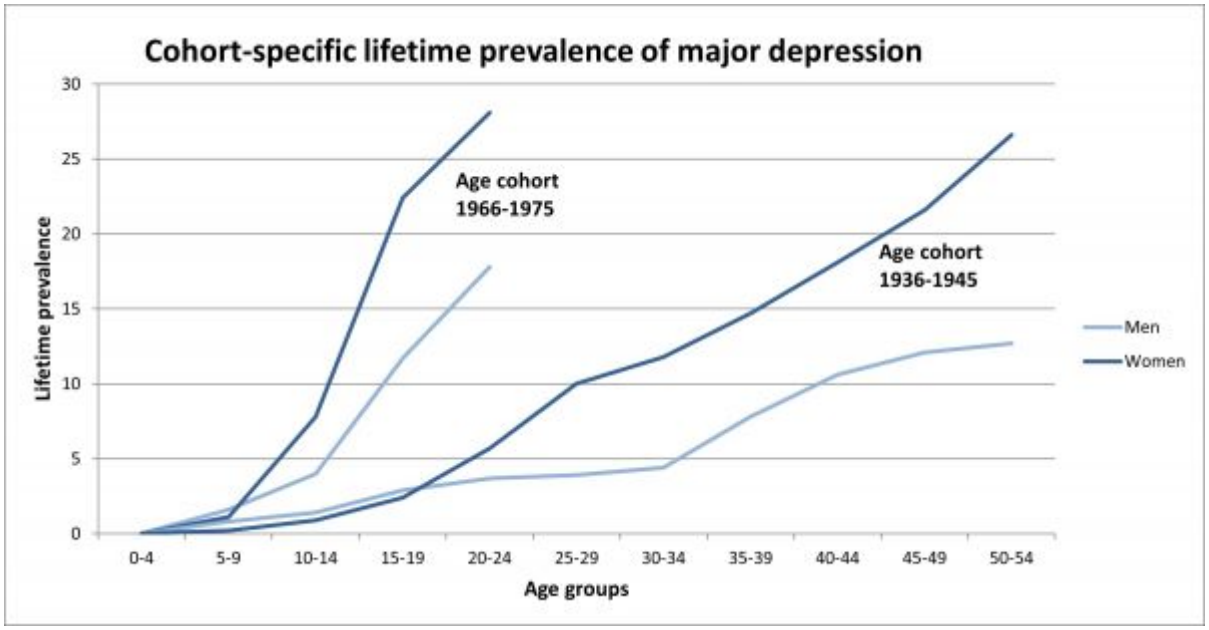



**Figure 2: Cohort-specific lifetime prevalence of major depression in women and men [Source: GenderMed-Wiki, by Kessler et al., 1994].**

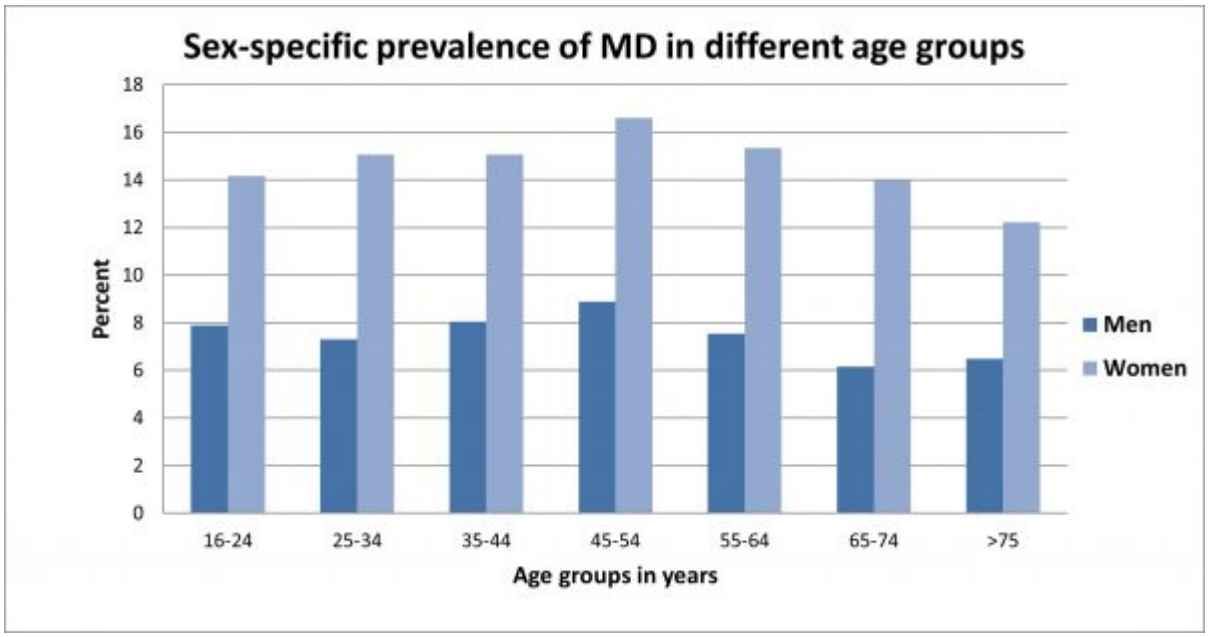



**Figure 3: Sex-specific differences in the prevalence of major depression in different age cohorts (6-month prevalence) [Source: GenderMed Wiki, according to Angst et al., 2002].**

Research on the age-related sex difference shows that the depression rate between female and male patients only really begins to differ at the onset of puberty. [8] During puberty, the prevalence increases overall, with a much greater increase in girls. By the age of 18, women are already twice as likely to suffer from depression as men. [2] It is currently unclear whether the prevalence figures of both sexes converge again in late adulthood. [9]

# Risk and protective factors

Studies overwhelmingly confirm the female sex as a risk factor for the development of a depressive episode. The following table lists important biological and psychosocial predictors that are scientifically investigated as causes of this sex difference (Table 1). Psychosocial factors influencing both sexes can be found in section 4.4 ('Psychosocial factors').

**Table 1: Biological and psychosocial factors in comparison.**

| Biological factors | Psychosocial factors |
|---|---|
| **Genetic risk:**<br>Recent studies indicate a stronger genetic predisposition in women compared to men (heritability for women between 40 to 42 percent and for men 29 to 31 percent). [10] In addition, there are indications that some genetic risk factors may have different effects on women than men or only be relevant to one sex. [11] | **Primary anxiety disorder:**<br>It is estimated that the presence of primary anxiety disorder explains about 50 percent of the association between sex and the prevalence of depression: epidemiological studies show that the diagnosis of an anxiety disorder significantly increases the risk of developing depression in both men and women. However, women are affected by anxiety disorder significantly more often than men, which give this risk factor a sex-specific orientation. [12] |

**Phases of hormonal change:**

*1. Puberty:*

Pubertal maturation is a good predictor of adolescent depression in girls. [13] Under certain circumstances, the increase in sex hormones may be directly related to the development of negative affect in girls. [14] Pubertal status should not be considered an isolated biological factor; rather there exists a complex interaction with social and cultural variables (e.g. the search for identity). [9]

*2. Premenstrual dysphoric syndrome (PMDS):*

An increased sensitivity to changes in estrogen and progesterone levels is believed to have a negative effect on serotonin metabolism. However, reliable measurement of central nervous serotonin functionality is not yet possible. [9] It is suggested that PMDS be regarded as an independent disorder, as it differs from a depressive episode in its primary symptoms (irritability, affect lability), phase duration and drug latency (SSRI). [15]

*3. Postpartum phase:*

Postpartum depression is defined as a major depression that begins within four weeks of giving birth. While up to 70 percent of women develop individual depressive symptoms after childbirth, about 13 percent appear to suffer from a depressive episode during this period. Studies show that in the first three to four days after giving birth, the estrogen level drops dramatically. In proportion to this loss of estrogen, the level of the enzyme monoaminooxidase A (MAO-A) in the female brain seems to increase significantly. This enzyme is found in higher concentrations in glial cells and monoamine-releasing neurons, where it reduces the availability of the neurotransmitters serotonin, dopamine and norepinephrine. Among other things, these neurotransmitters have an impact on mood. If these neurotransmitters are deficient, there may initially be feelings of sadness, but later an increased risk of developing depression. [16] Predictors such as depressive illness in the medical history and/or during pregnancy, lack of social support and stressful life events were also identified. [17] In some cases, men can also develop postpartum depression, although the prevalence here is significantly lower (4 to 5 percent). [18]

*4. (Peri-)Menopause:*

Several studies confirm an increased risk of relapse in women with earlier depressive episodes [19] and an increase in depressive symptoms in women who are not already depressed [20] during perimenopause. It remains unclear whether hormonal changes have a direct influence or indirectly modulate the relationship via vasomotor symptoms and/or critical life events. [9] The effectiveness of estrogen replacement therapies for depressive symptoms remains inconsistent. [21]

**Personality traits:**

Sex differences in personality related vulnerability factors are particularly evident in late adolescence and young adulthood: For example, lower self-esteem [22] and higher neuroticism [23] seem to increase the risk of depression in girls and women in these phases of life.

In addition, girls show significantly higher anxiety scores than boys even before the onset of puberty (and thus before depression rates drift apart between the sexes). [22]

A prominent cognitive approach to gender differences in depression is the ''Response Styles Theory'', which deals with coping strategies in managing depressive disorders. Emotionally focused, symptom-related worrying (rumination) can result in an exacerbation of depressive symptoms. In most cases, feelings of rumination are much more pronounced in women than in men. In comparison, men are more likely to cope through cognitive and behavioral distraction, which frequently has depression-reducing effects. These different coping styles are mainly due to gender-specific socialization processes. [24]

| | |
|---|---|
| **Neuroendocrine stress response:**<br>There is a hypothesis being discussed that sex hormones modulate a greater dysregulation of the HPA axis in women. [25] However, studies show that women with low estrogen production (luteal phase) respond to psychological stress with a similar cortisol release as men. With high estrogen production (follicular phase or taking contraceptives) women respond with a lower cortisol release than men. [26] | **Psychosocial stressors:**<br>Women are particularly vulnerable to psychosocial stressors in the macro-social sphere: Factors such as low levels of education, low socio-economic status (even poverty) or low control over behavior are structural aspects that have a negative impact on the mental health of women and men. However, it is usually women who are significantly disadvantaged with regard to these factors. [27]<br>Life-event research also confirms that although women and men tend to have a similar risk of responding to stressful life events with depression, women are subjected to significantly more negative events affecting their social environment than men. [10]</ref> Even in adolescence, girls experience interpersonal stress more often, to which they respond with depression. [28] |
| **Oxytocin:**<br>High interpersonal needs and the desire for intimacy in women are regulated in part by the sex hormone oxytocin. Women in particular are vulnerable to the development of depression with regard to interpersonal stress. Risk factors here are an unstable parental attachment, an anxious, repressive nature and low instrumental coping strategies (e.g. rumination). [29] Sufficient empirical results from human research are not yet available. | **Sexual and non-sexual physical violence:**<br>Sexual and non-sexual physical violence are traumatic stressors that can lead to the development of various mental illnesses. [30] In these cases, men and women become victims of violence. While men are exposed to physical violence in public places much more often, women are significantly more prone to severe forms of domestic and sexual violence. According to data from the BMFSFJ from 2004, approximately 13% of women in partnerships are exposed to domestic violence. [31] The consequences of this violence may not only be psychological and physical injuries, but also chronic pathological changes in the HPA axis. [32] |

# Pathophysiology

Physiological changes can certainly promote the development of depression, but do not necessarily cause this disorder. Gonadal steroids seem to have a much bigger impact in the development of depression. In most studies there are no apparent differences in LHRH-induced FSH and LH secretion between depressed male patients and female patients and the healthy reference populations. Many authors conclude from this that the hypothalamic-pituitary-gonadal axis function is not impaired in depressed patients. [33] Nevertheless, an acute decrease in gonadal steroids (e.g. postpartum) seems to facilitate the development of depressive symptoms. [34] Not only estrogen and progesterone in women, but also testosterone in men may well play a role in the development of depression. The connection between an affective response and testosterone becomes particularly clear with a testosterone deficit. [35] Table 2 shows the findings that suggest a connection between estrogen in women and testosterone in men and the etiology of depressive disorders.

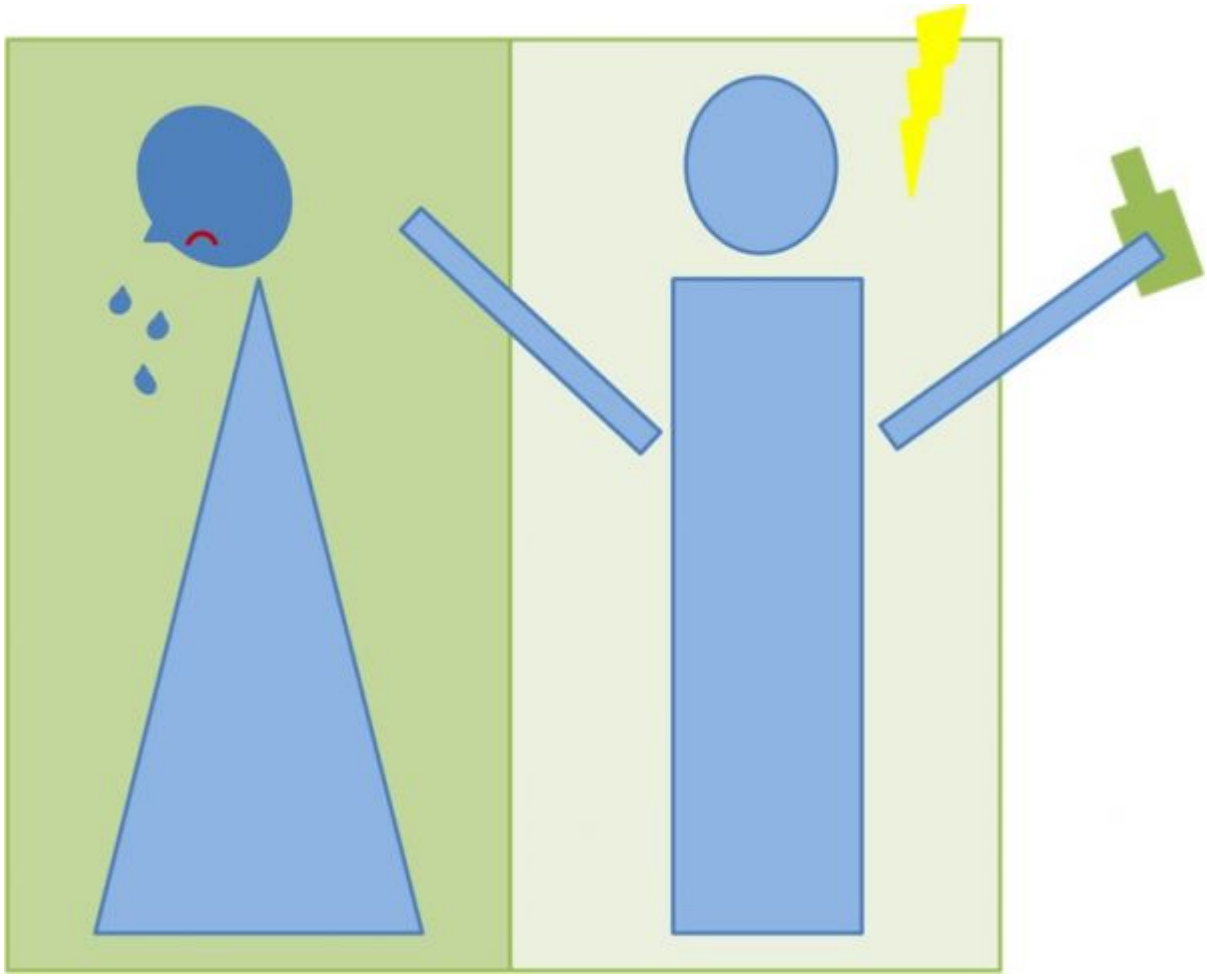
**Table 2: The role of gonadal steroids in the development of depression.**

| Women/Estrogen | Men/Testosterone |
|---|---|

| | |
|---|---|
| The increased risk of developing depression exists primarily during the reproductive years, during which cyclical fluctuations in the concentration of gonadal steroids are characteristic. [36] | Depressed men show higher cortisol levels, but lower testosterone levels compared to healthy control subjects. [37] |
| The estrogen concentration in the follicular phase is significantly lower in depressed patients than in healthy control subjects of comparable age. [38] | In older men, testosterone levels are inversely correlated with the incidence of depression. [39] |
| Preclinical studies show: Estrogen supports serotonergic neurotransmission by enhancing serotonin synthesis or by inhibiting the breakdown or reuptake of serotonin. [21] | Certain subgroups of depressed men suffer from marked hypogonadism. For example, age-related depression in men is, among other things, dependent on the CAG-repeat polymorphism of the androgen receptor gene. [40] |
| Depressed women respond better to sertraline (SSRI), while depressed men respond more positively to imipramine (tricyclic antidepressant). The differences between the sexes in efficacy appear to be due to the positive effects of estrogen on serotonergic neurotransmission. [41] | Double-blind studies provide the first indications of an anti-depressive effect of testosterone substitution therapy. The increased risk of prostate cancer, however, speaks against the broad clinical use. [42] |
| There is evidence for the clinical efficacy of estrogen monotherapy in depressed patients. However, this effectiveness cannot be confirmed with sufficient certainty. [43] | |

# Clinical applications

## Symptoms



**While women tend to show core symptoms such as sadness, in men these can be masked by external symptoms such as aggressiveness. [Source: GenderMed Wiki, 2016]**

While depressive core symptoms such as sadness, depression and anhedonia are mentioned by both sexes with about the same frequency, other depressive symptoms can differ between the sexes. [44] For this reason, depression in men often goes unrecognized. Researchers speak of "depression blindness" in men, which seems to have various causes. One important aspect is that depression symptoms sometimes manifest themselves differently in men than in women. For example, men tend to react aggressively and take risks during a depressive episode and resort to alcohol and drugs more often than women. These external signs often mask the "classic" clinical symptoms, such as loss of self-esteem, listlessness or loss of pleasure, especially at the onset. [45] Such behavioral patterns are often not recognized by professionals as possible depression symptoms but are classified as "typical male defense strategies". [46] In contrast, women are more likely than men to react with atypical symptoms (e.g., increased appetite instead of loss of appetite) or somatic complaints and pain. [44] Overall, they report more symptoms than their male counterparts. [5]

Although the prevalence of depression is significantly higher among women, men are three times more likely to commit suicide than women (with women more likely to make an attempt). Women tend to be more parasuicidal, while men tend to use more aggressive methods. Up to 70 percent of all suicides occur in the context of a depressive illness. [47]

The increased suicide rate accompanied by a lower rate of attempted suicide in the male population compared to the female population is scientifically discussed as a so-called ''gender paradox'' and allows the hypothesis that the low depression prevalence in men is due less to a lower risk of depression than to underdiagnosis (detailed information on gender differences in suicide and suicidal behavior can be found here). [48] [49]

Concerning the clinical picture of men with depression, the following can be observed: The stronger

the adherence to stereotypical ideals of masculinity (normative or hegemonic masculinity), the more pronounced the externalized symptoms of depression [50] and the more probable a suicide attempt. [51] In order to be able to reduce suicide rates in men, a male pattern of symptoms must be taken into account in diagnosis and therapy. [52]

The following table (Table 3) illustrates the distribution of depressive symptoms between the sexes. No clear differences between sexes can be assumed here; only trends and results of individual studies are shown.

**Table 3: Potential Differences in the manifestation of symptoms between men and women**.

| **Women > Men** | **Men > Women** |
|---|---|
| Physical symptoms: energy loss, fatigue, sleep disorders, appetite disorders, motor and cognitive retardation [53] [6] | Emotional arousal: aggressiveness, anger, [54] fits of anger and irritability [46] |
| Atypical symptoms: Weight gain, increased appetite, increased sleep. [5] | Substance abuse/dependence: alcohol, nicotine, drugs [45] |
| Other: Comorbid anxiety with nervousness and/or panic attacks [5], physical complaints and pain [53] | Social interaction: hostility, uncontrolled actions, tendency to reproach outwardly, antisocial behavior. [46] [45] |

# Diagnostics

An appropriate diagnosis of depression in men is complicated by the fact that men, in contrast to women, are significantly less likely to take action and seek help less intensively. The European DEPRES study shows that 52 percent of the male subjects and 41 percent of the female subjects who have experienced some form of depressive symptoms do not seek professional support. When help is sought, the first contact point is often not a mental health or psychotherapy practice. As a rule, the family doctor or an internist is usually the first person consulted, who may not always possess sufficient expertise. [55] [5]

More often men repress their psychological complaints and attribute mental health issues to momentary stress and/or occupational strain. Early symptoms of depression, such as increased exhaustion or sleep disorders, are ignored and suitable treatment steps cannot be initiated. Men with psychological symptoms tend to project their complaints onto the environment and not interpret their feelings correctly. They often consult a doctor only when somatic complaints such as severe exhaustion or feelings of "burnout" have a clear effect on everyday functionality. Comorbid alcohol and/or nicotine consumption often leads to health consequences and therefore to increased pressure to treat. **Cite error: The opening <ref> tag is malformed or has a bad name**

Even when medical consultation takes place, a correct diagnosis is not always guaranteed. Rather, gender stereotypes related to sex of a person seem to have a fundamental influence on the identification (and thus treatment) of depressive disorders (see also: interaction between doctor and patient). Indeed, the results of a prospective study with 500 patients showed that in general medical practices, when clinically relevant depression scores are present, men are significantly less likely to be diagnosed with depression than women. [56]

In their 2009 study, Zierau et al. examined a sample of 87 alcohol-dependent patients for depressive symptoms. In addition to the classic depression symptoms, they also recorded clinically non-relevant

behaviour patterns that are common in men. If these behavioural patterns were used as diagnostic criteria, a significantly higher percentage of men suffering from depression could be identified. [57] The criteria of a "male depression" ("Gotland Male Depression Scale") developed in this study are shown in Table 4. Martin et al. (2013) reported a similar finding: By diagnosing the symptoms ''anger attacks'', ''aggression'', ''risk behavior'' and ''substance abuse'' sex differences in the prevalence of depression disappeared. [58]

**Table 4: Proposed diagnostic criteria according to Zierau et al (2002) and Pollack & Levant (1998) from Möller-Leimkühler (2009)** [57] [58][59]

| **Possible diagnostic criteria "male depression": ''Gotland Male Depression Scale** |
|---|
| • Increased social withdrawal, which is often denied<br>• Burn-out: professional over-commitment masked with complaints about stress<br>• Denial of grief and sadness<br>• Increasingly rigid demands for autonomy (to be left alone)<br>• Not accepting help from others: the "I can do this by myself" syndrome<br>• Decreasing or increasing sexual interest<br>• Increasing intensity or frequency of anger attacks<br>• Impulsiveness<br>• Increased to excessive consumption of alcohol and/or nicotine (addicted to TV, sports, etc.)<br>• Pronounced self-criticism, related to alleged failure<br>• Fear of failure<br>• Making others responsible for their own problems<br>• Covert or overt hostility<br>• Restlessness and agitation<br>• Problems with concentration, sleep and weight |

# Management of patients

## Therapy

## Interaction between doctor and patient

Men are three times more likely to commit suicide than women and 70 percent of suicides are caused by a depressive illness. [47] This fact suggests that the number of undetected mental illness is significantly higher in men than in women. Therefore, at present there appears to be clear deficits in the diagnosis and treatment of depressive episodes (and mental illness in general), especially in men. [45]

Male patients often display a stereotypical "male" communication style in contact with doctors. Intra- and interpersonal problems are often played down, and the external facade is maintained. [60]

Psychological complaints are often seen as personal failures and therefore not communicated. The consequence is that men's psychological and psychosomatic symptoms are not mentioned during the medical examination and are overlooked by physicians. Women more often attribute their symptoms of illness to stress and psychological problems than men. [61] However, physicians also tend to interpret symptoms in a psychosomatic manner more often with women than with men. In contrast, psychological stress due to occupational stress, for example, is often overlooked in men, even though (according to the Men's Health Report 2013) men are much more likely than women to suffer psychological stress due to their profession. Gender-specific interaction effects can ultimately lead to errors of observation and delay or even prevent a correct psychiatric (or somatic) diagnosis. [62]

## Treatment success/outcome

With regard to the effectiveness of psychotherapeutic methods, the impact of sex and gender cannot be drawn; empirically supported results are limited. [63] Nevertheless, a trend seems to exist: Despite the fact that psychotherapy is stereo-typically classified as a rather female domain, there are no sex differences in its effectiveness, at least with regard to cognitive and interpersonal behavior therapy. [64] [65] Men with psychotherapy seem to benefit from behavior therapy in the same measure as women. The sex of the patient alone cannot be a suitable predictor of psychotherapy success, but rather should always be analyzed in conjunction with other variables (for example, the sex of the therapist). However, the challenge and requirement for professionals is to motivate men to undergo such treatment in the first place. The female sex makes up the vast majority of psychotherapy patients, and women from the middle class in particular make much more frequent use of (outpatient) psychotherapy than men. [63] During psychotherapy, it is necessary for patients to adequately integrate gender aspects of the living environment into therapeutic treatment. [46]</ref>

Even at the beginning of the drug treatment for depression it was suspected that women and men react differently to treatment with antidepressants. For example, meta-analyses of available studies confirm that men respond better than women to the tricyclic antidepressant imipramine. [66] At present, there is initial evidence of a sex-specific effect of selective serotonin reuptake inhibitors (SSRIs). Since ovarian hormones modulate serotonergic functions, [67] female estrogen appears to increase the effectiveness of SSRIs. [68] The general study findings suggest that male patients respond better to tricyclic antidepressants, while treatment with SSRIs appears more effective in female patients. These results have not yet been uniformly confirmed. Various studies have shown a sex difference in the pharmacokinetics of commonly used antidepressants. Women and men seem to differ in their side effect profile with antidepressants. Further research on sex-specific dosage is needed to ensure positive efficacy and the highest possible patient compliance. [69] The study data on drug treatments are listed in the following table (Table 5).

**Table 5: Sex differences in drug response.**

| Study | Tricyclic antidepressants |
|---|---|
| *Hamilton et al., 1996 (Metaanalyse)* | Men respond significantly better to tricyclic imipramine than women. [66] |
| *Kornstein et al., 2000* | Women discontinue treatment with tricyclic imipramine significantly more frequently than treatment with SSRI sertraline. [41] |

| | |
|---|---|
| *Frackiewicz et al., 2000 (Review)* | Tricyclic antidepressants show higher plasma levels in women compared to men. (In addition, various studies confirm sex differences in the pharmacokinetics of common antidepressants. Women seem to differ from men in their side effect profile. [69] |
| *Hildebrandt et al., 2003* | The administration of the tricyclic antidepressant clomipramine results in higher plasma levels in women than in men, the consequences for the clinical effect remain unclear. [70] |
| *Parker et al., 2003* | No sex difference could be proven regarding the activity of tricyclic antidepressants. [71] |
| *Wohlfahrt et al., 2004 (Metaanalyse)* | Women and men do not differ in their response rate to tricyclic antidepressants. [72] |

| **Study** | **Serotonin reuptake inhibitors (SSRIs)** |
|---|---|
| *Lewis-Hall et al., 1997* | In a study involving 800 patients, SSRI fluoxetine showed no superiority in efficacy over tricyclic antidepressants. [73] |
| *Kornstein et al., 2000* | Women with chronic depression or "double depression" respond significantly better to SSRI sertraline than to the tricyclic antidepressant imipramine.<br>When taking SSRI sertraline, significantly more men discontinue treatment prematurely than when taking tricyclic imipramine.<br>In postmenopausal women the response rate does not differ between SSRI sertraline and tricyclic imipramine. [41] |
| *Parker et al., 2003* | No sex difference in the effect of SSRI could be proven. [71] |
| *Baca et al., 2004* | In women, SSRI sertraline has been shown to be more tolerable and effective than tricyclic imipramine. [74] |

| **Study** | **Monoamine oxidase inhibitors (MAO)** |
|---|---|
| *Davidson & Pelton, 1986* | Women with atypical depression and panic attacks respond better to MAO inhibitors, while tricyclics are more effective in men with the same symptoms. [75] |

# Psychosocial factors

Psychosocial factors influence the individual stress experience and have been shown to increase the risk of depression. The sex ratio with regard to the depression rate varies depending on certain social characteristics such as employment or marital status. Women are more frequently exposed to psychosocial stressors such as poverty, role strain or abuse than men. [9] Table 6 explains certain psychosocial factors from a gender perspective.

**Table 6: Psychosocial factors in comparison.**

| Psychosocial factor | Gender difference |
|---|---|
| ***Social inequality*** | Socio-structural inequalities (in terms of social status, education, decision-making power, etc.) have a negative impact on the health of women and men. However, women are still significantly disadvantaged in comparison to men in most cultures. [76] For example, poverty is one of the most consistent predictors of the development of depression in women. [77] Data from the WHO General Practitioner Study (1999) show that about 50 percent of the gender-specific prevalence difference in depression can be explained by social role inequality. [78] |
| ***Relationships*** | Traditional relationships and marriage are more protective against depression in men than in women. [79] [80] Separation and divorce represent an increased risk of depression, especially in men. [46]<br>In women, more than in men, qualitative aspects of partnership seem to be related to feelings of depression. [81] Single mothers have an increased risk of developing depression. [46] |

| | |
|---|---|
| ***Professional life*** | Employment is generally associated with a lower risk of depression for both sexes. [79] Nevertheless, chronic job stressors of modern working life, such as occupational gratification crises (the feeling of spending time at work without receiving appropriate rewards and appreciation), increase the risk of a depressive episode for both men and women. [82]<br>Employment can alleviate family stress for both sexes. However, working women often have to assume more roles than their partner (e.g. caring for children and parents/inlaws). [83] [84] The unequal role burden between women and men clears up a considerable proportion of the sex-specific depression rate. [85] In the case of multiple workloads, mental well-being decreases and the risk of depression increases. [86]<br>In addition, depressive illnesses seem to restrict women's ability to work much more than men's: The DAK Health Report reported in 2013 that women (two percent) were twice as likely as men (one percent) to be classed as unable to work due to a depressive episode or recurrent depressive disorder. [87] The data of the DAK Health Report of 2016 show that women with 147 days of absence from work due to depression were 71 percent more likely to be unable to work than men with around 86 days of absence. [88]<br>The professional role is the best studied male stressor. Compared to women, men not only have more risky jobs, but are also more affected by increasing job insecurity and have a higher risk of mental illness due to unfavorable psychosocial working conditions. [89] [46]<br>Unemployment in particular contributes to mental stress and is thus associated with the risk of depressive disorders in both women and men. However, various studies indicate that the link between unemployment and depression is more pronounced in men than in women. [90] [91] Men appear to be particularly vulnerable to depression when their occupational position is at risk. [46] |
| ***Stress events*** | Women and men have the same risk of reacting to stressful life situations with depressive symptoms. However, women are more vulnerable to social events and also more prone to them. [10]<br>As early as adolescence, girls are more frequently confronted with social stress compared to boys and are more likely to react to it with depressive symptoms. [28] |

# Prevention

Effective coping strategies for mental stress can prove to be successful in preventing the development of a depressive episode. Coping does not have positive (in the sense of health-promoting) effects per se, but rather "wrong" strategies can promote the development of depressive

symptoms or aggravate existing complaints. It is therefore necessary to differentiate between health-promoting and health-damaging coping in the prevention and treatment of depressive disorders. Studies confirm sex and gender differences exist in dealing with stressful situations on a cognitive and behavioral level. Overall, women seem to cope with stress in a more emotionally centered way, tend to brood more easily and are less able to distance themselves. Men are better able to distract themselves but tend to react with emotional inhibition in problem situations and are significantly less likely to seek professional help. [92] [5] The following overview (Table 7) presents research results on gender-specific coping behavior in table form.

**Table 7: Gender differences in coping behavior.**

| **Women > Men** | **Men > Women** |
|---|---|
| Women seem to cope more emotionally focused and use emotions as a "valve" (e.g. by crying, shouting or even laughing) In addition, they more often state that they find relief in their (religious) beliefs. [24] | Men cope more often in an action-oriented way, for example by becoming more active in sports (positive) or increasing their alcohol consumption (negative, risk of comorbid addiction). [24] |
| Women tend to cope in an emotionally focused and symptom-related way and have a stronger tendency to brood with thought processes (rumination). Rumination enhances the risk of exacerbation of depressive symptoms. [5] | Men are more likely to cope with cognitive and behavioral distraction, which prevents rumination and can reduce symptoms. [5] |
| Women tend to have an emotionally focused and avoiding coping style, cope less rationally and are less able to distance themselves. [92] | Men react more emotionally blocked in difficult situations than women. [92] |
| | Men are much less likely than women to seek professional support for psychological problems. [93] |

# Translation into patient care

# Open research questions

A paradox of "male depression" remains unexplained: male depression patients often show lower testosterone levels than the average healthy male. Aggression and anger are also symptoms that are often characteristic of "male depression". Symptoms of aggression and anger, however, imply a high testosterone level, which cannot be observed in depressed men. Future studies should therefore specifically investigate the extent to which aggressive symptoms in depressed patients are related to testosterone levels. [94] [95]

Further research is needed to clarify the causes of sex differences in the prevalence of depressive disorders. Sex differences in genetic stress and gene-environment interaction have not yet been clarified. Similarly, a direct connection with endocrine variables has not been sufficiently documented to date (the main cause here is insufficient reliability). In boys and girls in puberty, it is assumed that an interactive correlation of perceptible physical changes, sex-specific psychological processing patterns and social reaction patterns is the most likely explanatory model for sex differences. [9]

In order to guarantee adequate diagnostics for both sexes, further research into sex differences in depressive symptoms and development of sex -specific diagnostic tools are necessary. Structured procedures (e.g. the SKID, Structured Clinical Interview for DMS-IV) are currently limited to querying clinically relevant diagnostic criteria (according to DSM-IV or ICD-10), which do not capture externalized behavioral patterns such as aggressiveness or hostility. [96] Since depression in men is often concealed by external behaviors, a proper diagnosis of depression is missed. Consequently, appropriate treatment often does not occur. Greater awareness among professionals is necessary for the dissolution of stereotypical role models (such as that of the "strong man") in order to improve the deficit diagnosis rate, especially in general medical practices [97] and to promote more efficient care that is tailored to the needs of the patient. [46]

Further research should also take place in the field of imaging techniques. For example, in 2017 scientists from the universities of Cambridge and Oxford published an fMRI study on sex differences in adolescents with major depression. In a go/no-go task with sad versus neutral distractors, among other things, only men showed a reduced activity of the cerebellum in the group of depressive patients compared to the control group. [98]

# External Links

- Neurologen und Psychiater im Netz (2013). Reizbarkeit, Ärger, Sucht sind typische Depressionssymptome bei Männern.
- Möller-Leimkühler, A. M. (2012). Depression bei Männern: Eine Einführung. Journal für Neurologie, Neurochirurgie und Psychiatrie, 11(3), 11-20.

# Literature

Click here to expand literature references.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