

**Key statements**

- Studies point to gender differences in the perception and expression of the symptoms of depression, in the attitude to seeking help, in the diagnosis of depression, as well as in the effects of social circumstances on mental health.
- GEDA-results show that a stronger connection between low social status and being diagnosed with depression is to be observed in men of working age than in women.
- Low-level social support is more clearly associated with a diagnosis of depression in women than in men.
- Women and men who are lone parents and those who live alone are particularly often affected by depressions.

Diagnosis Depression: Differences in Women and Men

Depressive disorders are among the most significant mental disorders. Due to their frequency, complications and consequences, they are of outstanding importance with regard to health policy and the health economics (RKI 2010). In medium and / or high income countries, depressive disorders occupy top spot with regard to the Burden of Diseases (WHO 2008; Murray et al. 2012; Vos et al. 2012).

In recent years, advances have been made and mental disorders are put on top agenda. They are also gaining in significance with regard to care and social security systems. The accessing of pensions due to reduced earnings capacity caused by affective disorders (see box) have more than doubled between 2000 and 2011, with a slightly greater increase among women than men (Deutsche Rentenversicherung Bund 2013).

The health insurance funds in Germany also report a significant increase in sick notes in recent years due to mental and in particular, depressive disorders in their health reports. The proportion of days of incapacity to work per compulsory member due to mental disorders has increased dramatically since 2007 (BKK 2010). It remains unclear, whether the arising numbers of mental disorders are linked to a real increase in prevalences within the society or if this is due to an increasing social acceptance. An elevated acceptance within society might lead to higher awareness of mental health problems.

For the European Union (EU-27) there is an estimated 12-month prevalence of depression (Major Depressive Disorder according to DSM-IV) of 6.9 % in the 14 to 65 year age group (Wittchen et al. 2011). The most recent epidemiological data for Germany, which was collected on the basis of a standardised diagnostic interview, originate from the years 1998 / 1999. In the 18 to 65 year-old age group it indicated an overall 12-month prevalence of major depressive disorders of 8.3 %, which at 11.2 % for women was higher than for men at 5.5 % (Jacobi et al. 2004).

Self-reports regarding diagnosed depression or depressive mood in the past twelve months prior to the survey were surveyed in the »German Health Update« (GEDA) conducted by the Robert Koch Institute. The data of the 2010 GEDA-Study shows comparable prevalences for men at 5.1%, yet lower for women at 9.0 % (RKI 2012). According to the results of »German Health Interview and Examination Survey for Adults« (DEGS1) conducted by Robert Koch Institute in 2008 to 2011, the 12-month prevalence of diagnosed depressive disorders is 8.1 % for women and 3.8 % for men (Busch et al. 2013).

One stable result of all studies and data is the difference between women and men in prevalence of depression. Women are affected approximately twice as frequently as men. This difference is also seen in an international context (Culbertson 1997; Jacobi et al 2004; Klose, Jacobi 2004; RKI 2010; Busch et al. 2011; Kurth 2012; RKI 2012).

Causes of gender-specific differences in depression

The differences in the frequency of mental disorders in women and men are based on a variety of complex factors. In the following the major reasons for the differences will be presented as discussed in research community.

In this regard, biological causes, the artefact theory and the effects of the socio-economic and psycho-social circumstances on mental health are viewed as being of particular relevance.

Biological causes

Differences between women and men in biological functions, for example in hormone status, may have an influence on mental health. Hormonal fluctuations in connection with reproductive bodily processes or reactions to certain hormone levels may lead to depressive mood in women due to premenstrual syndrome, postnatal depression or depressive disorders during the menopause.

These biological differences, however, are not solely responsible for the varying prevalences of mental disorders in women and men (cf. Bebbington 1998; Klose, Jacobi 2004). It can be assumed that these gender differences are due to other mechanisms.

Artefact theory

As part of the so-called artefact theory the variation in in depression prevalence is interpreted as an »artificial« difference due to a variety of causes. They include differences in the assessment of women and men within the scope of a diagnostic process due to various existing stereotypical role attributions, which may lead to a distortion in the diagnosis of depressive disorders. (Piccinelli, Wilkinson 2000; Möller-Leimkühler 2005).

In addition, gender stereotypes conveyed via socialisation processes may lead to differences in the perception

and expression of symptoms between men and women, which can also have the consequence of differing diagnoses (Gijssbers van Wijk, Kolk 1997; Hünefeld 2012). This was shown, for example, in an experimental study from 2009: In women, physical complaints were more frequently attributed to mental disorders than they were in men (Maserejian et al. 2009).

Finally it is discussed whether depression is fundamentally expressed via differing symptoms in men and women. In a study conducted on in-patients being treated for depression, the symptom pattern of »irritability«, »aggressiveness« and »anti-social behaviour« was established more frequently among men, whereas in women in contrast it was »restlessness«, »depressed mood« and »complaintiveness« (Möller-Leimkühler et al. 2004).

Deliberations resulted as to whether depression in men is being under-recorded with most of the instruments used for diagnosis. The scales for measuring depressive disorders normally used for both women and men are more oriented toward female-specific than male-specific symptoms (Piccinelli, Wilkinson 2000). This can lead to a systematic underestimation of depression among men. The »Gotland Male Depression Scale« was developed to specifically record »male depression«. In addition it contains the dimensions of substance abuse, irritability, aggressiveness, self-pity and feelings of stress (Rutz et al. 1997).

However, varying willingness among women and men to report on symptoms connected with their depression and the severity thereof, can also lead to a distorted estimation of the level to which they are affected (Woltersdorf et al. 2006). However, differences in attitude towards asking for help, perception of symptoms, recollection (women more frequently remember depressive episodes) and in case definition in epidemiological studies are also not sufficient to completely explain the differences in the mental health between women and men (Klose, Jacobi 2004).

Socio-economic and psycho-social circumstances

Further explanatory attempts refer to gender-differences in social living conditions and their effect on mental health. Significant factors in this regard are socio-economic status, family and relationship, social networks and influencing factors connected with working life.

People in lower socio-economic groups are more affected of depressive disorders than people in higher socio-economic positions (Klose, Jacobi 2004; Lampert 2005; Mauz, Jacobi 2008; Busch et al. 2013). The gender specific differences remain unclear in the scientific community, as different results reported.

Furthermore, burdens and resources of family life, as well as household tasks are not equally distributed between women and men. Women are performing more frequently and to a greater extent unpaid tasks within the household and in bringing up children; the participation in the labour market of women with children is lower than that of men with children (Deutsches Jugendinstitut, Statistisches

Affective Disorders

Affective disorders is a collective term used for various forms of depressive and so called manic and/or manic-depressive illnesses (also called bi-polar disorders).

The group of affective disorders is classified according to the International Statistical Classification of Diseases and Related Health Problems (ICD-10) as follows:

- F30 Maniac episode
- F31 Bipolare affective disorder
- F32 Depressive episode
- F33 Recurrent depressive disorder
- F34 Persistent mood (affective) disorder
- F38 Other mood (affective) disorder
- F39 Unspecified mood (affective) disorder

Further Information regarding subcategories see www.who.int/icd10

Bundesamt 2005; Statistisches Bundesamt 2012). More frequently they experience breaks over the course of their life and in their employment history, as well as lower level recognition for family tasks in comparison to occupation (Piccinelli, Wilkinson 2000; Hünefeld 2012) and have to expect lower income upon return to work (Ziefle 2004).

On the other hand, experienced role diversity can also be a beneficial resource with regard to mental health (Möller-Leimkühler 2005). Compared to childless individuals, lone parents are more frequently diagnosed with depression, even in comparable socio-economic situations (RKI 2003; Klose, Jacobi 2004; Lange, Saß 2006; von der Lippe, Rattay 2013).

Living with a partner is viewed as being a protective factor for mental health. Men who are widowed, divorced or living apart have a twofold higher risk to suffer from depressive disorder than married men. A link between relationship status and mental health is more obvious in men than in women (Klose, Jacobi 2004). A high level of social support is associated with good mental health in both women and men (Hapke et al. 2012; RKI 2012).

The demands of working life, be they physical, environment or time related, stress, or job insecurities, may have detrimental mental and health consequences. In particular, this can manifest in the feeling of burnout, and the feeling of being inadequately compensated or appreciated in one's professional efforts (something which points to an effort-rewards imbalance) which can lead to depressive symptoms (Siegrist 2013). Employment not only facilitates a regular income, it also provides meaningfulness and goes hand in hand with social respect and social inclusion (Kroll et al. 2011). Unemployment on the other hand, promotes mental stress and is associated in both women and men with the

risk of developing a depressive disorder. In this regard, a whole series of studies indicate that the link between unemployment and depression is more pronounced in men than in women (Artazcoz et al. 2004; Klose, Jacobi 2004; Lange, Lampert 2005; Kroll, Lampert 2012).

Assessment of Depression in GEDA

Data on depression was captured via the questions »Has a doctor or psychotherapist ever determined that you suffered from depression or depressive mood? Was it in the past 12 months?«.

No screening-instrument was used which could help identify people suspected of suffering from depression.

It must be taken into account here that these self-reports only permit conclusions to be drawn regarding the frequency of diagnosed depression. Undetected or as yet undiagnosed depressive disorders are not included.

Results of the GEDA-Study

Whilst it was not possible to examine biological factors influencing mental health or gender-specific distortions in diagnosis and service uptake using the data collected by RKI, the data pooled as part of GEDA 2009 and 2010 is very well suited for investigating detailed interrelationships between social characteristics and diagnosed depression.

In order to be able to include the characteristic of employment in the analyses, only data for the 18 to 64 year-old section of the population was used. The essential question here is to what extent the connection between social characteristics and diagnosed depression differs between women and men. It has to be taken into account here that the existence of diagnosed depression, which has been self-reported by the respondents, may already be distorted due to gender-specific uptake of the healthcare system, gender-specific description of symptoms and the diagnostic instruments used (see section on the artefact theory).

Women more frequently diagnosed with depression than men

The pooled data from the GEDA-Study confirms the findings that depression is diagnosed significantly more frequently among women in Germany than in men. Overall, 8.9 % of women and 5.2 % of men aged between 18 and 64 years reported that they had been diagnosed with depression or depressive mood by a doctor or psychotherapist in the preceding twelve months. The deviation from the GEDA-data quoted at the beginning is a result of the pooling of the data from the 2009 and 2010 GEDA studies.

In addition, the data also shows a clear age trend (Table 1). Whilst only just under 6 % of women and barely 3 % of men between the age of 18 and 29 years reported being

German Health Update (GEDA)

Data owner:	Robert Koch Institute
Goals:	Provision of updated data on health-related topics and the analysis of current developments and trends
Survey method:	Computer-assisted telephone interviews (CATI)
Population:	People resident in Germany aged 18 years and over
Sample:	GEDA 2009: 21,262 women and men GEDA 2010: 22,050 women and men
Cooperation rate:	GEDA 2009: 51.2 % GEDA 2010: 55.8 %
Survey period:	GEDA 2009: July 2008 to June 2009 GEDA 2010: September 2009 to July 2010
Study population:	People between 18 and 64 years from GEDA 2009 und 2010 (n=35,133)

For more Information visit www.geda-studie.de

diagnosed with depression or depressive mood within the preceding 12 months, the figures rise among 45 to 64 year-olds to 11.0 % and 7.2 % respectively. A slight reduction in the differences between women and men with increasing age is to be observed here.

In addition, prevalence differences in men between the eastern and western federal states are also emerging (Table 1). Whilst 3.3 % of men in the eastern federal states report diagnosed depression, the figure in the west (including Berlin) is 5.6 %. In contrast, among women there are no such differences with figures of 8.0 % in eastern and 9 % in the western states.

Table 1
12-month prevalence for diagnosed depression and / or depressive mood according to age and residential region (East, West incl. Berlin)
Data source: GEDA 2009, 2010

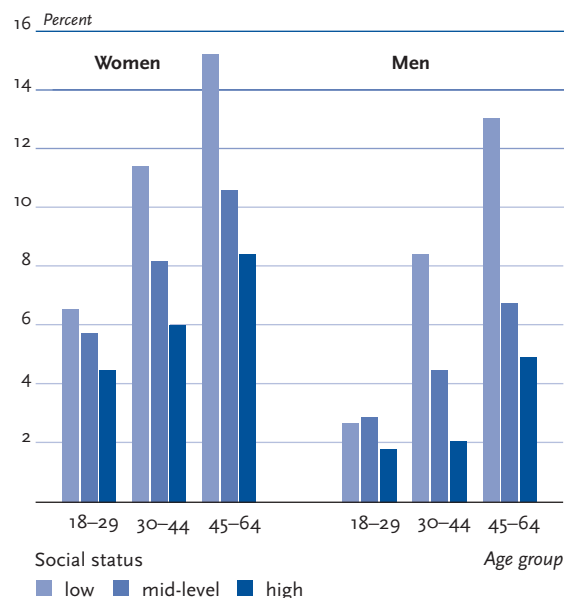
	Age			Residential Region	
	18–29 years	30–44 years	45–64 years	East	West
Women	5.8 %	8.1 %	11.0 %	8.0 %	9.0 %
Men	2.7 %	4.4 %	7.2 %	3.3 %	5.6 %

Depression diagnosis linked with social status

Depressive disorders are more frequently diagnosed in women and men with low social status (multi-dimensional index derived from education, occupational status and income; cf. Lampert et al. 2013) than in those with high socio-economic status (Figure 1).

For women of low social status, the prevalence is 11.7 % and for women with high status 6.9 %. In men, the com-

Figure 1
12-month prevalence for diagnosed depression and / or depressive mood according to age and social status
Data source: GEDA 2009, 2010



parable prevalence rates are 8.7 % and 3.4 % respectively. These differences are primarily evident in women and men from mid-adulthood onwards (30 years and older).

Depression diagnosed less frequently in full-time employment

With regard to employment status it is evident that depression prevalences for unemployed or non-working women and men are higher than for those in employment (Table 2). Overall, a diagnosed depression is to be found in 11.0 % of unemployed or non-working men, whereas this is the case in only 3.6 % in full-time gainful employment.

Table 2
12-month prevalence for diagnosed depression and / or depressive mood according to age and employment status
Data source: GEDA 2009, 2010

	Employment		
	Unemployed / not working	Part-time / occasional	Fulltime
Women			
18–29 Years	7.1 %	5.7 %	4.5 %
30–44 Years	10.1 %	7.6 %	6.9 %
45–64 Years	15.8 %	8.6 %	8.6 %
Men			
18–29 Years	3.1 %	3.3 %	2.4 %
30–44 Years	15.1 %	10.2 %	3.0 %
45–64 Years	15.4 %	9.2 %	4.6 %

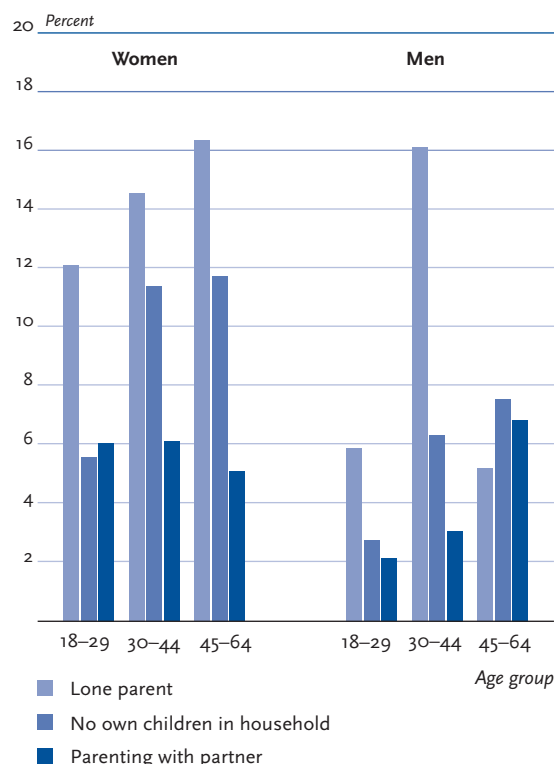
This is also to be observed in women with a difference between the unemployed at 12.0 % and those in full-time employment at 6.9 %. In addition, in men, there is a clear difference between those in full-time and those in part-time employment. For the former, the overall prevalence of diagnosed depressive disorders is at 3.6 % and for the latter it is 6.9 %. Barely any differences can be established in this regard in women.

Depression diagnosed more frequently in lone parents

Depression is diagnosed significantly more frequently in lone-parenting women than in women raising their child or children together with a partner (Figure 2). In the GEDA-Study, 14.7 % of lone-parenting women reported depression during the preceding 12 months. In contrast, in the case of mothers living together with a partner the figure is only 5.9 %.

A similarly high depression prevalence can be observed in lone-parenting men in the 30 to 44 year-old age group (n=177) as among lone-parenting women of the same age (n=1.480). Even in the youngest age group of between 18 and 29 years, this prevalence is higher for lone-parenting

Figure 2
12-month prevalence for diagnosed depression and /or depressive mood
according to age and parenting status
Data source: GEDA 2009, 2010



males than compared to men without children or men raising children with a partner.

This distribution pattern cannot be identified in men above the age of 45 years. Significant differences in diagnosed depression are to be seen in both sexes of all age groups between those living alone and those not living alone (Figure 3). Whilst overall the prevalence of depression among women living alone is 15.6 % and in women in

multi-person households it is 8.1 %, the figures for men are 10.6 % and 4.5 % respectively. Consequently in relation to adults living with several people in a household, approximately twice as many women and men who live alone are affected by diagnosed depression.

Social support - an important resource

To ascertain the levels of social support, enquiries were made as part of GEDA as to how many people an individual could depend on given serious personal problems, how much interest and concern is shown by others in what an individual does and how easy it is to obtain practical help from neighbours (Oslo-3-Scale, cf. Dalgard et al. 1995).

An applicable diagnosis was found to exist in 17.7 % of women with low level social support, 8.8 % of women with medium level and 5.6 % of women with high level support. In men the comparative values were 10.4 %, 5.0 % and 3.5 % respectively. As shown in Table 3, low level social support is accompanied in all age groups, women and men alike, by a significant increase in the prevalence of diagnosed depression.

Table 3
12-month prevalence for diagnosed depression and /or depressive mood
according to age and social support
Data source: GEDA 2009, 2010

	Social Support		
	Low	Middle	High
Women			
18-29 Years	15.6 %	6.2 %	3.3 %
30-44 Years	15.3 %	8.1 %	4.9 %
45-64 Years	20.0 %	10.7 %	7.5 %
Men			
18-29 Years	7.9 %	2.7 %	1.9 %
30-44 Years	8.4 %	4.2 %	3.1 %
45-64 Years	12.4 %	6.8 %	5.0 %

Figure 3
12-month prevalence for diagnosed depression and /or depressive mood
according to age and size of household
Data source: GEDA 2009, 2010

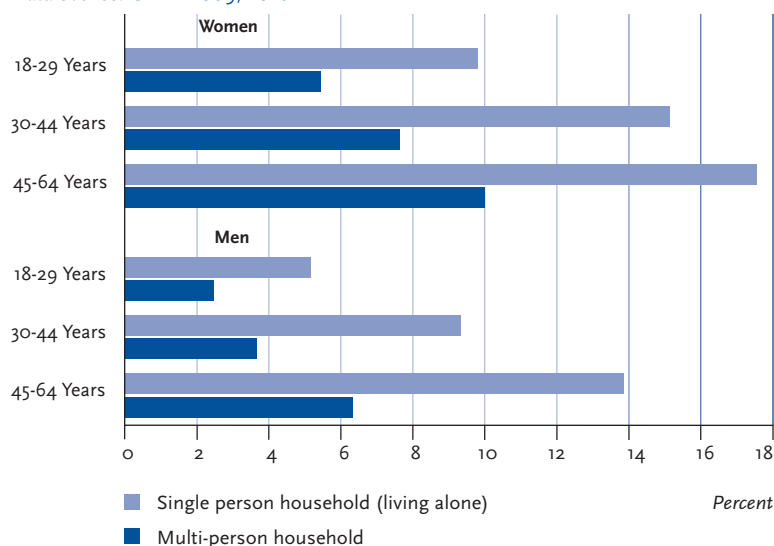
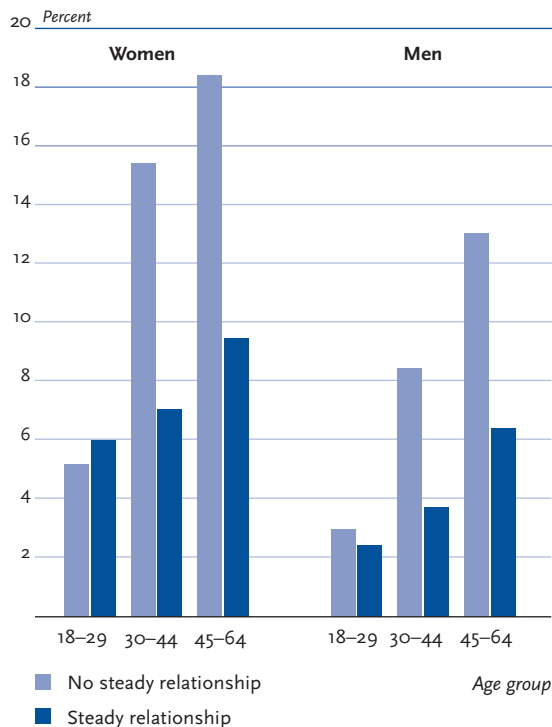


Figure 4
12-month prevalence for diagnosed depression and / or depressive mood according to age and relationship status

Data source: GEDA 2009, 2010



Correspondingly, a difference in diagnosed depression can also be established according to relationship status (Figure 4). In the age groups between 30 and 64 years the prevalences among women and men in steady relationships are significantly lower compared to those not living in a steady relationship. These differences cannot be found in the 18 to 29 year age group.

Depression diagnosis linked with social factors

In order to answer the question, if social determinants are linked to a diagnosis depression, binary logistical regression models were calculated and stratified for sex. In each case in these regression models the diagnosis of depression is the dependent variable with the socio-economic and psycho-social characteristics discussed above also being fed simultaneously into the two models for women and men as the independent variables (Figure 5).

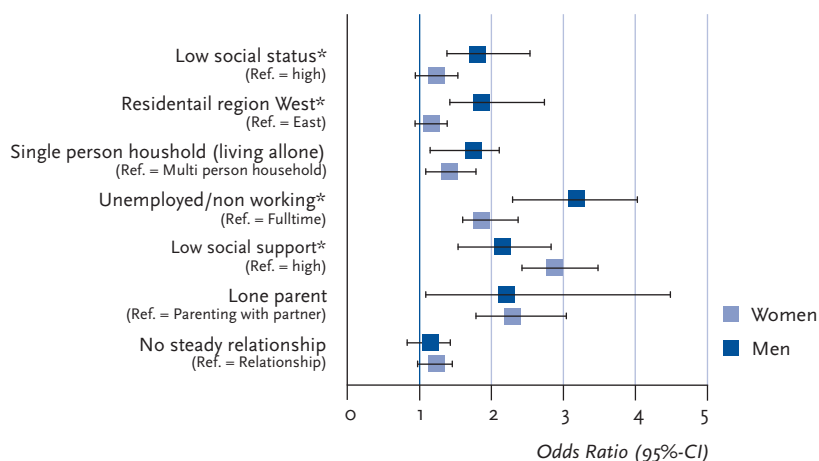
Odds ratios are reported, which indicate by which factor the statistical probability for the existence of a diagnosis of depression increases in a certain group when compared to a reference group. With regard to the question as to whether the characteristics included are associated with diagnosis of depression to varying degrees in women and men, interactions between the social characteristics and gender were checked statistically.

With regard to social status, different associations to a diagnosed depression were revealed in women and men. Men in the low social status group compared to those in the high status group have a 1.9 times higher odds of being diagnosed with depression. In women, in contrast, the difference between low and high social status groups in depression prevalence is significantly lower and is just under the threshold of statistical significance.

The gender-specific difference in the strength of the relationship between social status and diagnosed depression is statistically significant. Residential region only plays a role with regard to depression prevalence among men. Men from the western federal states (including Berlin) compared to men from the eastern states have a 2-fold higher odds of being diagnosed with depression. This difference is statistically significant. Among women, in contrast, no difference between western and eastern states is to be noted.

Figure 5
Relationships between socio-demographic characteristics and diagnosed depression and / or depressive mood in the preceding 12 months for people aged between 18 and 64 years.
(Results of binary logistic regressions with control for age)

Data source: GEDA 2009, 2010



* The difference between women and men is statistically significant (Interaction with $p < 0.05$).

There are also variations in the degree of the relationship between employment status and the odds of being diagnosed with depression in women and men. Whilst the odds of being diagnosed with depression amongst women who are unemployed or not working compared to women in full-time employment is twice as high, it is three times higher among men.

Social support levels are more strongly linked with depression among women than in men. Women who can only depend on low levels of social support have a three times higher odds of being diagnosed with depression compared to women who have high levels of social support. In men, the corresponding odds is approximately twice as high.

For people living alone, the odds of being diagnosed with depression compared to corresponding multi-person households is 1.5 or 1.6 times higher. Under consideration of all characteristics, no distinct association could be identified either in women or in men between a steady relationship and depression.

No fundamental difference was to be found between women and men with regard to parenting status and size of household. For lone parents, compared to mothers and fathers who bring up their child or children in a steady relationship, the odds is 2.3 or 2.2 times higher.

Even after taking the socio-economic and psycho-social characteristics examined in the above analyses into account, a 1.5 times higher odds of being diagnosed with depression still exists for women when compared to men. Thus, the characteristics considered here cannot completely explain the difference in depression prevalence between women and men.

Discussion and conclusion

The GEDA results indicate that in men of working age compared to women of working age there is a stronger association of being diagnosed with depression given lower social status and an employment status of »unemployed/not working«. In women, the availability of social support plays a greater role than in men. Being a lone parent of one or several children or living alone represent special circumstances often associated with mental burdens for both women and men.

Unlike the results of the DEGS1-Study (Busch et al. 2013), a clear social gradient is shown among men on the basis of the GEDA-Data. The differences to the DEGS1-results could be attributed to differences in age groupings and the sample size, although the DEGS1-data does show a social gradient in men aged 40 to 59 years.

In addition, it must also be taken into account that differences in methodology between the studies possibly contribute to the differing results. For example, slightly different formulations in questions (»Depression or depressive mood« in GEDA, »Depression« in DEGS1) and different survey modes (telephone interview in GEDA, personal interview in DEGS1) were used.

There is also variance in the willingness to participate in the two studies due to the different study settings (home telephone interview in GEDA, visit to a study centre in DEGS1). Furthermore, it remains unanswered as to whether the East-West differences observed in GEDA among men are due to region-specific differences in care or variations in the (self-)perception of mental health and the attitude toward seeking help.

The data analyses presented here are based on cross-sectional surveys and therefore do not allow any statements to be made regarding the direction and / or the causality of the connections. Thus, for example, an association between depression diagnosis and unemployment may well be traced back to both an effect of the unemployment on mental health (causality hypothesis) or an effect of the depression on working life (selection hypothesis). The varying degrees of association of the social characteristics examined with the diagnosis of depression, mirror traditional gender role assignments such as stronger identification and inclusion in the world of work among men, and a stronger inclusion via informal networks among women.

However, we must critically scrutinise whether the results - which exclusively examine the relationship of the social factors investigated to a diagnosis of depression - do not merely reflect traditional patterns in the attitude to seek help, the presentation of symptoms and in diagnosis and treatment.

The relationship of the factors examined and the differences highlighted in women and men say nothing with regard to the relationship of these or other factors to the mental health of women and men who have not sought help or who have not been diagnosed with depression.

It is therefore necessary to direct more attention toward constellations and burdensome life-situations that lay beyond the usual concepts of gender roles or stereotypes.

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