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Gender- and violence-related prevalence of mental disorders in prisoners

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Abstract *Objectives* To clarify the prevalence of mental diseases including personality disorders in a sample of German prisoners regarding delinquency and gender specificity. *Method* Crime history, present state and lifetime mental disorders, as well as personality disorders, were assessed amongst 415 inmates and compared regarding gender and type of delinquency. *Results* Female offenders more often committed homicide while male offenders more frequently committed assault and robbery. Men had a higher prevalence of alcohol abuse and dissocial PD while women more often showed depression, anxiety disorders and Borderline PD. Violent offences were related to a higher prevalence of alcohol abuse and dissocial PD, as well as higher comorbidities of mental disorders. *Conclusion* Results emphasize the complexity of the needs and requirements of imprisoned offenders. Our findings reveal an urgent need for psychiatric–psychotherapeutic services to provide suitable care to inmates in order to contribute to a more favorable legal prognosis.

Key words mental disorders · prevalence · prisoners · violence · gender

Introduction

Although, in recent literature, numerous studies about prevalence of mental disorders in imprisoned offenders can be found, violence- and especially gender-related research is rare. In the review by Andersen [1] and the analysis by Fazel and Danesh [9], it is shown that mental disorders can be found significantly more frequently in prisoners in comparison to normal populations. However, findings vary considerably between the studies; reported prevalence ranges from 37% [10] up to 94% [7]. The focus of many surveys was to diagnose mental disorders according to axis I of the DSM-IV [2]. Some studies only paid attention to severe disorders, such as schizophrenia, bipolar affective disorders and depression. An instrumental assessment of personality disorders was only conducted in a few of the studies, and, in most cases, only the diagnosis of dissocial or antisocial personality disorder was specifically mentioned.

The majority of studies agree that personality disorders and substance abuse represent the most frequent disorders in prisoner populations [1, 13, 17]. Dissocial [25] or antisocial personality disorder [2], respectively, was examined extensively in prisoners [24] and can be found very frequently in these populations [4, 17, 24]. For antisocial personality disorder according to DSM-IV, prevalence ranging from 40% to 60% has been reported [18]. These findings are not surprising when one considers that six out of seven diagnostic categories of the disorder according to DSM-IV [2] represent delinquent behavior, which has naturally lead to a circularity in the examination of this disorder in offender populations. In the assessment of dissocial personality disorder according to the diagnostic criteria of ICD-10, this circularity occurs to a lesser extent as only one of the defining criteria is related to delinquent behavior. Hence, the reported prevalence of dissocial personality disorder is lower and ranges from 19%

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[23] to 36% [13, 17]. Thus, it seems that diagnostic approaches of antisocial PD according to the criteria of DSM-IV represent very sensitive, but less specific assessments of the disorder.

In addition, a high prevalence of 36% [17] to 66% [6] has been reported for alcohol, as well as for drug abuse, in samples of sentenced offenders.

Lower prevalences have been reported with regard to unipolar affective disorders—5% [5] to 14% [4] and with regard to anxiety disorders—10% to 20% [1]. Despite the fact that schizophrenia has been repeatedly linked to delinquency [21], comparatively low prevalences from 2% [4] to 4% [5] in prisoners have been reported.

In prison samples, high comorbidities of mental disorders were found. As reported by Roesler et al. [20], 64% of a sample of young adult prison inmates suffered from at least two psychiatric disorders.

Psychiatric epidemiologic data are mainly available on male offenders, perhaps due to the small proportion of female prisoners. Worldwide, about 7% [11] to 19% [9] of prisoners are women.

There is very little information about the prevalence of mental disorders in female prisoners. A study by Teplin et al. [22] showed that all mental disorders, except schizophrenia and panic disorder, could be found significantly more often in female prisoners than in women from normal populations. Also, in comparison with imprisoned men, female inmates more frequently suffered from mental disorders as reported in US-prisons [8] as well as in England and Wales [16]. Consequently, higher rates of dependence syndromes and anxiety disorders [1], as well as unipolar affective disorders [9], were found in female prisoners. The prevalence of antisocial personality disorder is reportedly lower in imprisoned women [9].

Most findings refer to US or UK prisoner samples. In contrast, studies on mental disorders in German prisoners are rare.

Andersen [1] points out that the prevalence of mental disorders differs between countries, especially with regard to severe personality disorders.

Additionally, he emphasized that many studies showed methodological weaknesses, e.g., small sample sizes and shortcomings in instrumental diagnostics. Thus, the examination of representative samples with standardized diagnostic procedures is needed.

The study of the present literature makes clear that there is an urgent need for detailed information regarding the prevalence of mental disorders in male and female prisoners, including explicit consideration of the present state, as well as lifetime mental diseases and personality disorders.

Such information about German inmates, to our knowledge, is scarcely available, though it is required for the appropriate estimation of the amount of psychiatric care needed in German prisons [12].

Aim of the study: The aim of the present study is to clarify the prevalence of mental diseases, including personality disorders, in a sample of German prisoners regarding delinquency and gender specificity.

Material and methods

The present study was conducted between 2000 and 2002 on a sample of 415 incarcerated subjects. The participants of the study were recruited from six German prisons in Halle, Dessau, Eisleben, Volkstedt, Naumburg and Halberstadt. In order to obtain a homogeneous sample, only subjects with an age of over 20 years whose native language was German were included in the study. Subjects gave written consent for participation. All interviews were conducted in the prisons by specifically trained and clinically experienced psychological and medical staff and supervision was provided by two of the present authors (S.U. and A.M.).

An adapted version of the SOBI—the SOBI-St—was utilized in the assessment of sociodemographic data. The SOBI-St is a standardized instrument, which was developed by the present authors and used in several of our other studies. Instrumental diagnostics of mental disorders according to ICD-10 (8) was conducted using two structured clinical interviews. Both the “Schedules for Clinical Assessment in Neuropsychiatry (SCAN)” [26] and the “International Personality Disorder Examination (IPDE)” [27] were put into use. These two instruments were developed by the WHO. While the SCAN represents an instrument for assessing the most important present state and lifetime mental disorders, the IPDE evaluates the spectrum of personality disorders. The categorical diagnoses of present state disorders at study intake, as well as lifetime diagnoses, were assessed.

Using a standardized evaluation instrument to assess the judicial files, the index crime (the crime that led to the current imprisonment) was evaluated, along with lifetime offences and other crime-related variables.

Of the 415 subjects, 49 (11.8%) were women, with ages ranging from 21 to 54 years ($M = 34.3$ years; $SD = 9.16$), 366 were men (88.2%) between the ages of 21 and 70 years ($M = 31.6$ years; $SD = 7.97$). Thus, women were largely underrepresented in the sample ($\chi^2(df = 1) = 242.142$; $P < 0.001$), which corresponds with the proportions generally found in prisons.

Women in the sample tended to be older than men (Mann-Whitney- $U = 7446.5$; $P = 0.054$). Hence, binary logistic models calculating the gender differences were controlled for age. Due to the unequal proportions of men and women in the sample and heterogeneity of variances between the groups, the requirements for the use of parametric statistical procedures were not met. Thus, sex-related differences on interval variables were calculated non-parametrically.

Results

Gender-related delinquency

Table 1 presents the frequency of lifetime offences for men, women and the total sample. Comparisons between male and female offenders were performed on the afore-mentioned violent and non-violent offender groups using binary logistic regression, controlling for age.

While male and female offenders were equally often convicted of violent and non-violent offences, it

Table 1 Gender-related lifetime offences

(N = 415)	Men (n = 366)		Women (n = 49)		Exp(B) (95% KI)
	n	%	n	%	
Violent crime^a	195	53.3	21	42.9	0.708 (0.385–1.303) n.s.
Homicide	13	3.6	12	24.5	25.406 (8.669–74.455)***
Sexual offences	27	7.4	1	2.0	0.239 (0.029–1.984) n.s.
Assault and battery	147	40.2	9	18.4	0.244 (0.095–0.626)**
Assault on one's personal liberty	53	14.5	2	4.1	0.278 (0.063–1.237) n.s.
Robbery and extortion	133	36.3	5	10.2	0.143 (0.049–0.414)***
Non-violent crime^a	171	46.7	28	57.1	0.708 (0.385–1.303) n.s.
Offence against public safety	64	17.5	6	12.2	0.374 (0.139–1.004) n.s.
Theft and embezzlement	109	29.8	22	44.9	2.216 (0.841–5.834) n.s.
Betrayal	71	19.4	12	24.5	1.016 (0.448–2.305) n.s.
Damage to property	27	7.4	2	4.1	0.372 (0.082–1.687) n.s.
Offence against public order	47	12.8	6	12.2	0.714 (0.270–1.891) n.s.
Traffic-related offences	95	26.0	9	18.4	0.375 (0.159–0.884)*

Due to the assessment of multiple offences, the numbers in the subgroups (violent versus non-violent crime) do not add up to 100%

^a Offences classified according to the definitions contained in the German crime statistics (Polizeiliche Kriminalstatistik [3])

n.s. Group difference not significant

* Significant with $P < 0.05$

** Significant with $P < 0.01$

*** Significant with $P < 0.001$

was found that female offenders committed homicide nearly seven times as often as men, while male offenders committed assault and battery twice as often and robbery and extortion three times as often as women. Concerning non-violent crime, male offenders broke the law in traffic-related offences slightly more frequently.

Gender-related mental disorders

At study intake, we found a present state mental disorder prevalence (including personality disorders) of 70.6%. A total of 262 (71.6%) male subjects and 31 (63.3%) female subjects fulfilled the criteria of mental disorder.

Distribution of present state diagnoses is shown in Table 2. Prevalence differences between male and female subjects regarding distinct mental illnesses were calculated using binary logistic regression, controlling for comorbidity and the age of the subjects (except for personality disorders).

Disorders with low prevalence (no occurrence in at least one of the groups) were excluded from the analysis.

Present state mental disorders (F00–F50) at study intake were found in 65.8% of the subjects. With a prevalence of 59.2% women were slightly less affected than male subjects, who had a present state mental disorder prevalence of 66.7%.

Male and female subjects differed significantly in their prevalence of mental and behavioral disorders due to the use of alcohol. Male subjects fulfilled these criteria in 46.7% of the cases ($n = 171$), while women were less likely to show this disorder ($n = 13$; 26.5%).

Compared to male subjects, women in the sample were more likely to show depressive disorders. While 12.2% of the female subjects showed a clinically relevant depression at study intake, only 3.3% of the male subjects did.

The observed difference in neurotic, stress-related and somatoform disorders is, in essence, due to the higher prevalence (24.5%) of phobic and anxiety disorders in female subjects. In male subjects, only 7.4% were affected.

Concerning the lifetime prevalence of mental disorders (excl. personality disorders), results are quite similar. Lifetime mental disorders were found in 76.4% of the sample. Again, male subjects showed a slightly higher prevalence (76.8%) than female subjects (73.5%) ($\text{Exp}(B) = 0.937$; $0.469 < 95\% \text{ KI} < 1.873$; $P = 0.854$).

Personality disorders were found in 24.6% of the total sample. Male subjects were diagnosed with PD in 26.2% of the cases. Female subjects were significantly less affected with 12.2% ($\text{Exp}(B) = 0.392$; $0.162 < 95\% \text{ KI} < 0.951$; $P = 0.038$). The prevalence of personality disorders is shown in Table 3.

Men and women in the sample differ with regard to their prevalence of dissocial personality disorder, which was found to occur significantly more often in male (20.8%) than in female subjects (8.2%). On the other hand, women had a higher prevalence (6.1%) of emotionally unstable personality disorder (Borderline type), while only 1.6% of the men were affected.

Gender-related comorbidities

Regarding comorbidity, we found high frequencies of concurrently existing disorders in the total sample, as well as in the male and female subs-

Table 2 Prevalence of present state mental disorders for male and female subjects

(N = 415)	Men (n = 366)		Women (n = 49)		Exp(B) (95% KI)
	n	%	n	%	
Total prevalence of mental disorders (incl. Personality disorders)	262	71.6	31	63.3	0.741 (0.393–1.394) n.s.
Present state mental disorders (excl. personality disorders)	245	66.7	29	59.2	0.770 (0.415–1.428) n.s.
Organic mental disorders (F00–F09)	7	1.9	0	0.0	–
Mental and behavioral disorders due to psychoactive substance use (F10–F19)	221	60.4	19	38.8	0.386 (0.202–0.738) **
Mental and behavioral disorders due to use of alcohol (F10.x)	171	46.7	13	26.5	0.331 (0.164–0.669) **
Mental and behavioral disorders due to use of drugs (F11–F19)	75	20.5	9	18.4	0.966 (0.411–2.271) n.s.
Schizophrenia, schizotypal und delusional disorders (F20–F29)	1	0.3	0	0.0	–
Mood (affective) disorders (F30–F39)	20	5.5	6	12.2	3.692 (1.301–10.477) *
Bipolar affective disorders (F31.x)	4	1.1	0	0.0	–
Depressive disorders (F32.x/F33.x)	12	3.3	6	12.2	7.723 (2.454–24.308) ***
Persistent affective disorders (F34.x)	4	1.1	0	0.0	–
Neurotic, stress-related and somatoform disorders (F40–F48)	45	12.3	16	32.7	3.750 (1.846–7.618)***
Phobic and anxiety disorders (F40.x/F41.x)	27	7.4	12	24.5	5.900 (2.566–13.565) ***
Obsessive compulsive disorders (F42.x)	3	0.8	0	0.0	–
Reactions to severe stress, and adjustment disorders (F43.x)	17	4.6	4	8.2	1.575 (0.463–5.535) n.s.
Somatoform disorders (F45.x)	1	0.3	0	0.0	–
Eating disorders (F50.x)	1	0.3	1	2.0	9.285 (0.394–219.040) n.s.
Due to assessment of comorbid disorders, the numbers in the subgroups do not add up to 100%					

n.s. group difference not significant

* Significant with $P < 0.05$

** Significant with $P < 0.01$

*** Significant with $P < 0.001$

Table 3 Gender-related type of personality disorders

(N = 415)	Men (n = 366)		Women (n = 49)		Exp(B) (95% KI)
	n	%	n	%	
Personality disorders (F60.x)	96	26.2	6	12.2	0.392 (0.162–0.951) *
Paranoid personality disorder (F60.0)	11	3.0	1	2.0	0.407 (0.026–6.406) n.s.
Schizoid personality disorder (F60.1)	9	2.5	0	0.0	–
Dissocial personality disorder (F60.2)	76	20.8	4	8.2	0.324 (0.108–0.969) *
Emotionally unstable personality disorder impulsive type (F60.30)	9	2.5	0	0.0	–
Emotionally unstable personality disorder Borderline type (F60.31)	6	1.6	3	6.1	6.393 (1.124–36.363) *
Histrionic personality disorder (F60.4)	2	0.5	1	2.0	2.907 (0.095–88.845) n.s.
Anankastic personality disorder (F60.5)	2	0.5	0	0.0	–
Anxious personality disorder (F60.6)	3	0.8	0	0.0	–
Dependent personality disorder (F60.7)	0	0.0	0	0.0	–
Personality disorder, unspecified (F60.9)	1	0.3	0	0.0	–
Due to assessment of comorbid disorders, the numbers in the subgroups do not add up to 100%					

n.s. Not significant

* Significant with $P < 0.05$

** Significant with $P < 0.01$

*** Significant with $P < 0.001$

amples. In the total sample, 83 subjects (20%) showed comorbid present state mental disorders (F0–F5). Lifetime comorbidity of mental disorders (F0–F5) was found in 31.8% ($n = 132$) of the subjects. Of the total sample, 22 (5.3%) had comorbid personality disorders. Comorbidity of present state mental disorders (F0–F5) with personality disorders was found in 84 (20.4%) of the total sample, and

lifetime mental disorders with comorbid personality disorders were found in 21.7% ($n = 90$) of the total sample. Table 4 shows rates of comorbidity in the male and female subsamples. Again, tests on group differences were calculated with binary logistic regression with a statistical control for age.

Additionally, male subjects had a higher number of comorbid personality disorders ($M = 0.33$, $SD = 0.61$)

Table 4 Comorbidity of mental disorders

Comorbidities of two or more	Men (<i>n</i> = 366)		Women (<i>n</i> = 49)		Exp(B) (95% KI)
	<i>n</i>	%	<i>n</i>	%	
Present state mental disorders (incl. Personality Disorders)	80	21.9	4	8.2	0.316 (0.110–0.907) *
Lifetime mental disorders (incl. Personality Disorders)	86	23.5	4	8.2	0.288 (0.100–0.825) *
Present state mental disorders (excl. Personality Disorders)	70	19.1	13	26.5	1.611 (0.806–3.220) n.s.
Lifetime mental disorders (excl. Personality Disorders)	113	30.9	19	38.8	1.498 (0.803–2.792) n.s.
Personality Disorders	20	5.5	2	4.1	0.762 (0.171–3.387) n.s.

n.s. Not significant

* Significant with $P < 0.05$

** Significant with $P < 0.01$

*** Significant with $P < 0.001$

than female subjects ($M = 0.18$, $SD = 0.57$) (Mann-Whitney- $U = 7756.00$, $P = 0.041$), whereas men and women did not differ regarding the total number of mental disorders (incl. personality disorders) (Men: $M = 1.21$, $SD = 1.07$; Women: $M = 1.10$, $SD = 1.20$; $P = 0.290$), the total number of lifetime mental disorders (incl. personality disorders) (Men: $M = 1.43$, $SD = 1.15$; Women: $M = 1.37$, $SD = 1.33$; $P = 0.457$); nor did they differ in the number of present state mental disorders (F0–F5) (Men: $M = 0.89$, $SD = 0.78$; Women: $M = 0.92$, $SD = 0.95$; $P = 0.900$) or the number of lifetime mental disorders (F0–F5) (Men:

$M = 1.11$, $SD = 0.87$; Women: $M = 1.18$, $SD = 1.03$; 0.754).

■ Violence-related mental disorders

Finally, the relation between psychopathology and violence was examined. About 52.0% ($n = 216$) of the sample committed an offence, which was classified according to criminological criteria as a violent crime [3], namely, homicide, sexual offences, assault and battery, assault on one's personal liberty, robbery and extortion. Violent offences were committed by 195

Table 5 Prevalence of present state mental disorders for violent and non-violent offenders

(N = 415)	Violent offenders (<i>n</i> = 216)		Non-Violent Offenders (<i>n</i> = 199)		Exp(B) (95% KI)
	<i>n</i>	%	<i>n</i>	%	
Total prevalence of mental disorders (incl. personality disorders)	167	77.3	126	63.3	0.532 (0.345–0.821) **
Present state mental disorders (excl. Personality Disorders)	160	74.1	114	57.3	0.490 (0.322–0.743) ***
Organic mental disorders (F00–F09)	3	1.4	4	2.0	1.741 (0.367–8.259) n.s.
Mental and behavioral disorders due to psychoactive substance use (F10–F19)	150	69.4	90	45.2	0.364 (0.242–0.548) ***
Mental and behavioral disorders due to use of alcohol (F10.x)	117	54.2	67	33.7	0.372 (0.245–0.565) ***
Mental and behavioral disorders due to use of drugs (F11–F19)	53	24.5	31	15.6	0.587 (0.342–1.006) n.s.
Schizophrenia, schizotypal and delusional disorders (F20–F29)	0	0.0	1	0.5	–
Mood (affective) disorders (F30–F39)	14	6.5	12	6.0	1.174 (0.513–2.685) n.s.
Bipolar affective disorders (F31.x)	2	0.9	2	1.0	1.248 (0.163–9.557) n.s.
Depressive disorders (F32.x/F33.x)	10	4.6	8	4.0	1.115 (0.415–2.997) n.s.
Persistent affective disorders (F34.x)	2	0.9	2	1.0	1.470 (0.187–11.589) n.s.
Neurotic, stress-related and somatoform disorders (F40–F48)	30	13.9	31	15.6	1.184 (0.671–2.088) n.s.
Phobic and anxiety disorders (F40.x/F41.x)	21	9.7	18	9.0	0.998 (0.495–2.010) n.s.
Obsessive compulsive disorders (F42.x)	2	0.9	1	0.5	0.816 (0.060–11.125) n.s.
Reactions to severe stress and adjustment disorders (F43.x)	7	3.2	14	7.0	2.041 (0.771–5.403) n.s.
Somatoform disorders (F45.x)	0	0.0	1	0.5	–
Eating disorders (F50.x)	1	0.5	1	0.5	1.443 (0.071–29.259) n.s.
Due to assessment of comorbid disorders, the numbers in the subgroups do not add up to 100%					

n.s. Group difference not significant

* Significant with $P < 0.05$

** Significant with $P < 0.01$

*** Significant with $P < 0.001$

(53.3%) of the men and 21 (42.9%) of the women ($\text{Exp}(B) = 0.708$; $0.385 < 95\% \text{ KI} < 1.303$; $P = 0.268$). Violent criminals in the sample had a mean age of 30.9 years ($SD = 7.77$) and were significantly younger than subjects with a non-violent crime history ($M = 32.9$; $SD = 8.45$; $t = 2.529$; $P = 0.012$). Consequently, the following tests on group differences between violent and non-violent offenders were controlled for age (except tests on personality disorders). Additionally, we again controlled for comorbidity.

Significant differences between the two groups were found regarding both the total prevalence of mental disorders (incl. personality disorders) and the prevalence of present state mental disorders (excl. personality disorders). For any considered mental illness, we found a higher prevalence for violent offenders than for non-violent offenders. Table 5 shows the prevalence and statistics for group comparisons between violent and non-violent offenders.

Prevalence differences between violent and non-violent offenders mainly evolved from differences regarding the use of alcohol. Violent offenders were affected in 54.2% of the cases, which was a significantly higher rate than in non-violent offenders (33.7%).

Also, we found significant differences between the two groups regarding the prevalence of personality disorders (Table 6).

Subjects with a violent crime history significantly more often presented a dissocial personality disorder (23.6%) than subjects with a non-violent crime history (14.6%).

■ Comorbidities in violent and non-violent offenders

Regarding comorbidity, subjects with violent offences significantly more often had diagnoses of multiple present state mental disorders (F0–F5), multiple lifetime mental disorders (F0–F5), comorbid diagnoses of personality disorders with present state mental disorders (F0–F5), and comorbid

Table 6 Prevalence of personality disorders for violent and non-violent offenders

(N = 415)	Violent offenders (n = 216)		Non-Violent Offenders (n = 199)		Exp(B) (95% KI)
	n	%	n	%	
Personality disorders (F60.x)	63	29.2	39	19.6	0.592 (0.375–0.935) *
Paranoid personality disorder (F60.0)	7	3.2	5	2.5	0.535 (0.125–2.279) n.s.
Schizoid personality disorder (F60.1)	3	1.4	6	3.0	2.668 (0.626–1.376) n.s.
Dissocial personality disorder (F60.2)	51	23.6	29	14.6	0.515 (0.302–0.876) *
Emotionally unstable personality disorder impulsive type (F60.30)	4	1.9	5	2.5	1.621 (0.380–6.923) n.s.
Emotionally unstable personality disorder Borderline type (F60.31)	6	2.8	3	1.5	0.356 (0.063–2.018) n.s.
Histrionic personality disorder (F60.4)	0	0.0	3	1.5	–
Anankastic personality disorder (F60.5)	0	0.0	2	0.9	–
Anxious personality disorder (F60.6)	1	0.5	2	1.0	3.350 (0.272–41.275) n.s.
Dependent personality disorder (F60.7)	0	0.0	0	0.0	–
Personality disorder, unspecified (F60.9)	1	0.5	0	0.0	–
Due to assessment of comorbid disorders, the numbers in the subgroups do not add up to 100%					

n.s. Group difference not significant

* Significant with $P < 0.05$

** Significant with $P < 0.01$

*** Significant with $P < 0.001$

Table 7 Comorbidity of mental disorders for violent and non-violent offenders

Comorbidities of two or more	Violent offenders (n = 216)		Non-Violent Offenders (n = 199)		Exp(B) (95% KI)
	n	%	n	%	
Present state mental disorders (incl. Personality Disorders)	56	25.9	28	14.1	0.463 (0.279–0.769) **
Lifetime mental disorders (incl. Personality Disorders)	59	27.3	31	15.6	0.487 (0.299–0.796) **
Present state mental disorders (excl. Personality Disorders)	52	24.1	31	15.6	0.597 (0.363–0.982) *
Lifetime mental disorders (excl. Personality Disorders)	81	37.5	51	25.6	0.589 (0.386–0.901) *
Personality Disorders	12	5.6	10	5.0	0.924 (0.387–2.202) n.s.

n.s. Group difference not significant

* Significant with $P < 0.05$

** Significant with $P < 0.01$

*** Significant with $P < 0.001$

diagnoses of personality disorders with lifetime mental disorders (F0–F5). The results of group comparison regarding comorbidity are shown in Table 7.

Additionally, violent offenders showed a higher total number of comorbid mental disorders (incl. personality disorders) regarding both present state (violent: $M = 1.36$, $SD = 1.04$; non-violent: $M = 1.03$, $SD = 1.11$; $P < 0.001$) and lifetime (violent: $M = 1.59$, $SD = 1.11$; non-violent: $M = 1.25$, $SD = 1.22$; $P < 0.001$) disorders.

Accordingly, the number of comorbid mental disorders (F0–F5) in present state (violent: $M = 1.01$, $SD = 0.77$; non-violent: $M = 0.76$, $SD = 0.81$; $P < 0.001$), as well as in lifetime disorders (violent: $M = 1.25$, $SD = 0.85$; non-violent: $M = 0.98$, $SD = 0.92$; $P = 0.001$) differed between the groups. Subjects with a violent crime history also had higher numbers of comorbid personality disorders (violent: $M = 0.35$, $SD = 0.58$; non-violent: $M = 0.27$, $SD = 0.62$; $P = 0.033$).

Discussion

Male and female offenders differ with regard to the crimes committed. Although the two groups were equally often convicted of violent and non-violent offences, the women who committed violent offences more often committed homicide, while the men who committed violent offences more frequently committed assault and battery, as well as robbery and extortion. In the non-violent offender group, differences between male and female prisoners were less manifest. Men more often committed traffic-related offences. In the examined prisons, a high prevalence of mental disorder was found. As shown in a detailed survey by Marneros et al. [17], the prevalence of drug and alcohol abuse and addiction, as well as the rates of dissocial personality disorder are significantly higher for offenders than for normal populations. In the German general population in particular, a 12-month prevalence of 6.8% for men and 1.3% for women has been reported for alcohol abuse and dependence [14]. Compared to these figures, the prevalence of 46.7% for men and 26.5% for women in the present study is significantly higher.

In the present study, the prevalence of mental and behavioral disorders due to the drug use of 20.5% in men (compared to 1.0% in the normal population [14]) and 18.4% in women (compared to 0.5% in the normal population [14]) indicate that drug abuse in forensic samples in general, and in prisoner populations specifically, is a serious and increasing problem.

Additionally, for offenders with alcohol or drug abuse, high recidivism of criminal behavior was found. It was shown that 47% of the delinquents with

drug abuse and 27.3% with alcohol abuse recidivated with a crime [18]. Moreover, it was shown that addiction to alcohol is associated with chronification of criminal behavior [19].

In the general population, dissocial personality disorders are found in about 3% of men and about 1% [2] of women. Thus, dissocial personality disorders are overrepresented in the study sample as well.

For the female subsample, the prevalence of phobic and anxiety disorders (at a rate of 24.5%) can be described as slightly increased in comparison to women from the normal population, where a 12-month prevalence of 19.8% was found [14].

Men and women in the present sample differ in the observed prevalence of various disorders. While depressive disorders, as well as phobic and anxiety disorders, are more frequent in female inmates, men show a higher prevalence of mental and behavioral disorders due to alcohol use and dissocial personality disorders. Additionally, male prisoners have higher comorbidity rates with regard to mental disorders (current and lifetime) with comorbid personality disorders, as well as a higher average number of comorbid personality disorders.

Substantial differences between violent and non-violent offenders were found in the prevalence of mental and behavioral disorders due to alcohol use and dissocial personality disorders. Additionally, violent offenders had a higher number of comorbid current mental disorders, more comorbid lifetime mental disorders and a higher number of comorbid personality disorders.

These findings indicate that violent offenders show a more complex psychopathology than non-violent offenders.

The results of this study are consistent with the literature [1, 9] and emphasize again the necessity of understanding the complexity of the needs and requirements of imprisoned offenders. The high prevalence and high comorbidity rates of mental disorders result in an urgent need for psychiatric-psychotherapeutic services to provide suitable care to inmates both during their imprisonment and after their release [15]—possibly contributing to a more favorable legal prognosis [13].

Finally, some limitations of our study have to be taken into account. Despite the aim of a total assessment of prisoners in the above-mentioned prisons, we cannot rule out selection biases and methodological weaknesses. According to Andersen [1], the following may be considered potential sources of error: those with severe mental disorders that were incarcerated in a custodial-forensic institution are not represented in our study; furthermore, we cannot clarify whether those inmates who rejected the opportunity to take part in the study perhaps suffered from more severe disorders; and additionally, it is possible that the symptoms were understated by the subjects themselves.

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