The Journal of Forensic Psychiatry & Psychology

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rjfp20

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To cite this article: Victoria Andrén, Torun Lindholm, Jenny Yourstone & Mattias Damberg (2023) Gender and arson: psychosocial, psychological, and somatic offender characteristics at the time of the crime, The Journal of Forensic Psychiatry & Psychology, 34:1, 113-130, DOI: 10.1080/14789949.2023.2180421

To link to this article: https://doi.org/10.1080/14789949.2023.2180421

Published online: 22 Feb 2023.

THE JOURNAL OF FORENSIC PSYCHIATRY & PSYCHOLOGY
2023, VOL. 34, NO. 1, 113–130
https://doi.org/10.1080/14789949.2023.2180421

Gender and arson: psychosocial, psychological, and somatic offender characteristics at the time of the crime

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ABSTRACT

Deliberate fire-setting, such as the crime of arson, can have devastating, even lethal, consequences. This study compared factors at the time of arson by female and male offenders in Sweden between 2000–2010. The women (n = 100), and men (n = 100) included in this study were randomly chosen from among all individuals who had been convicted for arson during this period and who underwent forensic psychiatric investigations. Information regarding psychiatric and somatic characteristics, their psychosocial situation, and whether they were in contact with health or social services before the arsons were examined. The results showed that both women and men have complex psychiatric and somatic characteristics, as well as psychosocial situations. Women showed more self-destructive behaviour, lower Global Assessment of Functioning scores, and had been in contact with psychiatric health services to a greater extent than men. More women than men had children. These findings suggest that specific actions may be needed for preventing and treating women compared with men at risk for committing arson.

ARTICLE HISTORY Received 27 September 2022; Accepted 8 February 2023

KEYWORDS Arson gender; psychiatric; psychosocial; somatic factors

Introduction

Arson and gender in the legal setting

Deliberate fire-setting, such as the crime of arson, can have devastating, even lethal, consequences. In Sweden, it is estimated that more than 10,000 deliberately set fires occur annually (Blomqvist & Johansson, 2008). Despite

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the consequences and given the frequency, knowledge about the offenders committing these crimes is limited. More men than women commit arson and researchers typically focus on male offenders (Gannon, 2010; Saunders & Awad, 1991). Although proportions vary between 4–28%, women are estimated to commit about 15% of deliberately set fires (Gannon, 2010; Nanayakkara et al., 2020). Swedish crime statistics for 2017–2021 show that women accounted for 19–26% of arson convictions (Brottsförebyggande rådet, 2022). Accordingly, females serving long-term sentences in Swedish prisons are as much as six times more often convicted of arson compared to corresponding men (Johansson et al., 2010). However, little is known about the specific characteristics of female as compared to male arsonists (Cunningham et al., 2011).

In contrast to most other countries, individuals can be convicted of a crime in the Swedish legal system despite suffering from mental disorders. In Sweden, forensic psychiatric investigations (FPIs) of crime suspects are conducted if the criteria according to the law are met (Lag, 2014). If the criteria for being legally insane not are fulfilled, individuals can be convicted to serve their sentence in prison. However, individuals who are concluded to have been under the influence of a severe mental disorder (SMD) during the crime and the investigation are admitted to forensic psychiatric care. The medico-legal term, SMD, does not refer to a particular diagnosis, but is concerned with the individual´s functional level and symptoms (Kullgren et al., 1996).

Individuals committing some types of crimes, such as arson, are referred to FPI more often than other offenders (Grann, 1996). Moreover, more women compared to men suspected of arson undergo this type of psychiatric examination (Dickens & Sugarman, 2012). Swedish studies indicate that the gender ratio related to arson differs from that of other violent crimes. For example, Yourstone et al. (2009) found that arson was a much more common crime among women who underwent an FPI (30%) compared to men (8%). Indeed, the absolute number of women in treatment for arson in Swedish forensic psychiatric facilities is larger than that of male arsonist, even though women only constitute 15% of all perpetrators (Degl'innocenti et al., 2014). Thus, even if a higher absolute number of arsons are committed by men, arson is over-represented within the group of violent female perpetrators. Hence, more knowledge about the specific characteristics and needs of female arsonists compared to male arsonists is warranted (Cunningham et al., 2011). This study aims to increase our knowledge about the circumstances characterising female compared to male arsonists at the time of their crime.

Social, psychiatric, and somatic characteristics of female and male arsonists

Psychosocial situation

Burton et al. (2012) found that arsonists are often unemployed, have low levels of education and are single. Estimations using Global Assessment of Functioning (GAF) scores for the psychosocial functional levels of general offenders undergoing FPI in Sweden generally show lower functional levels for women than for men (Grann, 1996; Sturup & Kristiansson, 2007). However, evidence for the potential differences in GAF scores between female and male arsonists is lacking to date.

Psychiatric characteristics

The psychiatric characteristics of arsonists are often complex (Alexander et al., 2015). While few individuals meet the diagnostic criteria for pyromania (Geller, 1992), diagnoses include psychosis, personality disorders, learning and affective disorders as well as autism, intellectual disabilities and substance abuse (Barnett & Spitzer, 1994; Collins et al., 2021; Horley & Bowlby, 2011; Rasanen et al., 1995).

Psychiatric complexity in this group seems particularly evident among women (Dickens et al., 2007; Ducat et al., 2017). Compared to their male counterparts, women are more frequently diagnosed with psychosis, depression, and personality disorders (Anwar et al., 2011; Gannon, 2010; Nanayakkara et al., 2020; but see also Enayati et al., 2008). Women also manifest self-harming behaviour more often than men (Swinton & Ahmed, 2001). It has been suggested that there is a link between self-harming behaviour and fire-setting (Coid et al., 1999; Knight et al., 2017; Miller & Fritzon, 2007). Fire-setting may have a self-regulating function, particularly for women (Nanayakkara et al., 2020; Wyatt et al., 2019). There are indications of lower IQ levels for female arsonists (Dickens et al., 2007; Rasanen et al., 1994), but strong evidence is still lacking (Nanayakkara et al., 2015). Studies of substance misuse/dependence linked to gender differences for arsonists have obtained inconsistent results (Alleyne et al., 2016; Dickens et al., 2007; Ducat et al., 2017; Enayati et al., 2008). No significant differences between female and male arsonists regarding SMD have been found (Sturup & Kristiansson, 2007). Thus, more knowledge about potential psychiatric differences between genders is warranted to formulate their different clinical needs.

Somatic diseases

Relatively few studies have investigated somatic health among these individuals. These have typically addressed specific aspects that could have motivated the crime, such as epilepsy, traumatic brain injury and neurobiological

problems (Brook et al., 1996; Fazel et al., 2011; Puri et al., 1995; Virkkunen et al., 1987, 1989). However, more knowledge on their general somatic characteristics is needed to better understand the clinical needs of this group and thereby enable adequate somatic treatment. There is a link between substance misuse and hepatitis C (Folkhälsomyndigheten, 2016). In addition, being diagnosed with schizophrenia is classified as belonging to an at-risk group for metabolic syndrome (Hägg et al., 2006). Given the prevalence of substance abuse and schizophrenia in arsonists (Anwar et al., 2011; Rasanen et al., 1995), there are reasons to believe that hepatitis C and metabolic syndrome may be prevalent in the population.

Health or social services contacts before their crime. While arsonists have often received psychiatric care before their crime (Blanco et al., 2010), evidence suggests poor treatment compliance in this group (Leong et al., 2018). In Sweden, Holmberg and Kristiansson (2006) found that 48% of the individuals prosecuted for arson and undergoing FPI had been in contact with psychiatric health services during a 6-month period before committing the crime. These contacts were generally more common for women, but no specific analysis for arsonists has been presented. Hence, more knowledge is needed to improve preventive and treatment interventions.

Aim of the current study. The literature suggests that arsonists generally have complex psychiatric and social problems. Importantly, research also indicate that this complexity is particularly evident among female arsonists. However, more specific knowledge about the potential gender differences in this group regarding their psychosocial, psychiatric, and somatic characteristics is still lacking. This study aimed at furthering our understanding of the circumstances characterising female and male arsonists at the time of their crime, and to explore potential gender differences. We focused on the offenders' psychiatric and somatic characteristics, their psychosocial situation and whether they have been in contact with health or social services before their crime to obtain a comprehensive picture of these women's and men's clinical needs. Knowledge about these differences is critical in determining whether female and male arsonists are a distinct group with different clinical needs, thereby requiring different treatment and preventive strategies.

Hypotheses. Given findings showing that female arsonists undergo FPI more often than men, we expected that

1) Women compared to men would show more complex psychiatric problems (e.g. self-destructive behaviour, Cluster B and personality disorder not otherwise specified [PD-NOS], psychosis, depression, and lower GAF scores). Considering previous results, we further expected that 2) female arson offenders more often than male offenders would have been in contact

with health or social services before their crime. Based on previous findings, we expected 3) no gender differences in SMD during the crime, metabolic syndrome, or epilepsy.

We also set out to examine the gender differences in other factors related to psychiatric and somatic characteristics, as well as psychosocial situations. Specifically, we compared these men and women with respect to their intelligence, neuropsychological functions, when they stopped taking medication, ordered situation, substance misuse/dependence and hepatitis C. Evidence for the prevalence and gender differences in these factors are lacking or inconsistent; therefore, we analysed these variables exploratory.

Methods

Population

The individuals included in this study were convicted of arson (all degrees) and had undergone an FPI. Data for all adults (18 years or older) who were convicted of arson during the years 2000–2010 were collected by the National Council for Crime Prevention in Sweden (1120 individuals in total). Information about individuals that had undergone FPI were retrieved from Swedish courts. There may be data limitations due to non-binding procedures. We manually collected the data from Swedish courts to secure the information as much as possible. A list with 354 social security numbers linked to verdicts was sent to the National Board of Forensic Medicine. Of these 354 social security numbers, seven were duplicates ($n = 7$); therefore, the list contained 347 unique social security numbers. Matching these numbers against the FPI database identified 320 cases for 254 individuals (individuals can be listed several times). For each social security number, the FPI that was closest to the time before the verdict was chosen. Seven social security numbers were excluded because the FPI case was outside the time interval 2000–2010 ($n = 3$), arson was not registered among the charges ($n = 1$), the verdict was handed down before the FPI ($n = 1$) or due to the fact that there were 3 years or more between the FPI and verdict ($n = 2$). Thus, 247 individuals (128 women, 119 men) were eligible to be included in this study. From these, we randomly selected 100 women and 100 men using a randomisation programme (Research Randomiser), resulting in a final sample of 200 participants.

Formal approval for the study was obtained from the Ethical Review Board of Uppsala (Dnr: 2018/463, 2019–02410, 2020–03486).

Materials

In this study, all information about the 200 individuals included were retrieved from FPI and, in some cases, from minor forensic psychiatric assessments (MFPA). Furthermore, if the FPIs lacked information about the time of

their crime, these details were obtained from the verdicts. A verdict is a written document containing information about which crime(s) have been committed and information about the crime situation(s). A FPI is a written statement based on a social-, a medical-psychiatric-, and a psychological investigation. For detainees, also a nursing assessment was carried out. The FPI also includes information from other sources, such as documents regarding care contacts, social services, the Swedish Prison and Probation Service, the Swedish Migration Board, as well as interviews with relatives. The FPI statement includes a recommendation to the court whether the individuals have committed a crime under the influence of a SMD and thus should be sentenced to care or imprisonment.

Before conducting an FPI, Swedish courts usually request a MFPA, which is a certificate from a medical examination performed by a (forensic) psychiatrist regarding the condition of the criminal suspect to assess the need for an FPI. As the FPI, the MFPA also includes information from other sources. There were MFPAs for 173 of the 200 individuals included in the study. For 10 of these MFPAs, it did not apply to the same case and were therefore excluded. Taken together, there were 163 MFPAs included in this study.

Table 1 shows the variables retrieved from the FPIs and MFPAs. In the case of several arsons by the same person, the index arson was chosen. The time of the crime is defined as within 1 year before their crime if it is not otherwise mentioned.

Table 1. Variables investigated in the study.

Backgrounds variables	Psychosocial factors	Psychiatric problems	Somatic diseases
Gender	Employment	*AXIS I principal diagnosis*:	Hepatitis C
Age	Marital status	Psychosis	Metabolic syndrome
Country of birth	Stable living	Cognitive	Epilepsy
Level of education	Children	Depression/ mood	
	Negative life experiences	Alcohol /Drug use	
		Anxiety/adjustment	
		Autism/Asperger's	
		ADHD	
		Impulse control	
		AXIS II principal diagnosis:	
		Cluster A, B, C, personality disorder not otherwise specified	
		Mental retardation	
		Substance misuse/dependence	
		Self-destructive behaviour	
		Intelligence	
		Neuropsychology function	
		Serious mental disorder in case of crime	
		Ratings of best functional level the past year	
		Contact with psychiatry or other health or social services	
		Stopped taking medication	

The coding protocol was based on that used by Yourstone et al. (2008). In addition, we included several other variables in the present work based on previous research and identified knowledge gaps.

The first author of this study coded all variables for all cases. Inter-rater reliability was assessed with a second person coding 10% of the cases, and a kappa coefficient was calculated as a measure of strength of agreement for each variable. The percent of agreement was between 64% and 100%, with a mean kappa value of .79 for all the variables, indicating satisfactory agreement between the two raters.

Statistical analyses

In our statistical analyses, we used SPSS software (version 28.0). The frequency distributions of categorical variables were analysed with chi-squared tests or Fisher's exact test. The differences in mean values for continuous variables (i.e. GAF, age, and intelligence) were examined using *t*-tests. The selected level of statistical significance was $p < 0.05$. Familywise Holm Bonferroni corrections were used to control for type 1 errors.

Results

Age, country of birth and level of education

The offenders' age, country of birth and level of education are presented in Table 2. Female offenders ($M = 43$ years, range 18–74 years, $SD = 13{,}65$), were significantly older than male offenders ($M = 38$ years, range 17–72 years, $SD = 13{,}34$). Regarding country of birth, nearly 75% of the individuals were born in Sweden, with no gender difference. The female and male arsonists had similar levels of education.

Table 2. Age, country of birth and level of education among female and male offenders at the time of their crime.

Variables	Women (n = 100)	Men (n = 100)	All (n = 200)	(df)	t-value/χ2	*p*-value[a]
Mean age	43.05	38.34	40.70	198	2.47	0.014*
Country of birth				1	0.66	0.42
Sweden	72%	77%	149 (74.5%)			
Foreign	28%	23%	51 (25.5%)			
Highest education level[b]				196	−.34	.73
Not completed elementary school	10%	14%	24 (12%)			
Elementary school	46%	32%	78 (39%)			
Upper secondary school	36%	45%	81 (40.5%)			
University education	8%	7%	15 (7.5%)			

[a]With familywise Holm Bonferroni correction. [b]Data for educational levels were missing for two men. *p < 0.05.

Psychosocial situation

The results for our exploratory analysis regarding the psychosocial situation for the studied sample are presented in Table 3.

The large majority of offenders were unemployed or single, with no differences between men and women. While the majority had a stable place to live, twice as many men than women lacked a home, although this difference was not significant. Almost 50% had children, women significantly more often than men. Slightly half of the sample had negative life experiences, with no difference between genders.

Psychiatric characteristics

The sample's psychiatric diagnoses are presented in Table 4. Considering their principal diagnosis, a substantial proportion suffered from psychosis, and psychosis was by far the most frequent diagnosis for both men and women. The second most prevalent diagnosis, mood disorder, was also fairly common. Other disorders occurred less frequently, although 8% suffered from anxiety/adjustment disorders. Furthermore, almost 41% of the group had ongoing problems with substance abuse/dependence.

The most prevalent principal diagnosis for Axis II was Cluster B personality disorder followed by mental retardation. No significant gender differences emerged for these variables. The prevalence was zero for Clusters A, B and Deferred; therefore, no analyses were made.

Table 3. Psychosocial situation among female and male offenders at the time of their crime.

Variable	Female (n = 100)	Male (n = 100)	All (n = 200)	(df)	χ^2	*p*-value[a]
Employment				1	0.80	1.43
Yes	17%	22%	39 (19.5%)			
No	83%	78%	161 (80.5%)			
Married/in relationship				1	0.25	0.74
Yes	25%	22%	47 (23.5%)			
No	75%	78%	153 (76.5%)			
Stable place to live				1	5.94	0.1
Yes	94%	83%	177 (88.5%)			
No	6%	17%	23 (11.5%)			
Children				1	8.83	0.03*
Yes	59%	38%	97 (48.5%)			
No	41%	62%	103 (51.5%)			
Negative life experiences[b]				1	0.33	1.34
Yes	41%	45%	86 (43%)			
No	59%	55%	114 (57%)			

[a]With familywise Holm Bonferroni correction. [b]We defined negative experiences as dramatic and sudden experiences with the potential to be life-changing (e.g. death, divorce, losing custody, unemployment) (Wheaton, 1994). *$p < 0.05$.

Table 4. Psychiatric diagnosis among female and male offenders at the time of their crime.

Variables	Female (n = 100)	Male (n = 100)	All (n = 200)	(df)	χ^2/Fisher's exact test	*p*-value[a]
AXIS I principal diagnosis:						
Psychosis	34%	33%	67 (33.5%)	1	0.02	8
Cognitive disorders	3%	0%	3 (1.5%)	1	3.05	3.20
Depression or other mood disorders	11%	14%	25 (12.5%)	1	0.41	6.03
Alcohol use disorder	7%	7%	14 (7%)	1	0.00	7
Drug use disorder	5%	5%	10 (5%)	1	0.00	8
Anxiety/adjustment disorders	6%	9%	15 (7.5%)	1	0.65	5.93
Autism/Asperger's	2%	6%	8 (4%)	1	2.08	3.35
ADHD	1%	4%	5 (2.5%)	1	1.85	4.10
Impulse control disorder	4%	5%	9 (4.5%)	1	0.12	5
Others	3%	2%	5 (2.5%)	1	0.21	4
No diagnosis	2%	1%	3 (1.5%)	1	0.34	3
AXIS II principal diagnosis:						
Cluster B personality disorder	12%	5%	17 (8.5%)	1	3.15	1.76
Personality disorder not otherwise specified	4%	4%	8 (4%)	1	0.00	2
Mental retardation	6%	5%	11 (5.5%)	1	0.10	1
Any diagnosis of substance abuse/ dependence	37%	44%	81 (40.5%)	1	1.02	5.85

[a]With familywise Holm Bonferroni correction.

Behaviour related to mental illness was identified among the individuals (Table 5). Significantly more women than men manifested self-destructive behaviour. About 20% of the individuals stopped taking their prescribed psychiatric medication shortly before the committed crime. However, no statistically significant differences between genders emerged.

Other psychiatric evaluations are presented in Table 6. An average or below average intelligence was most common. For about 30% of the total sample, intelligence was not investigated (37% women, 26% men). A considerable proportion of the sample had neuropsychological impairments. Neuropsychological dysfunction could not be ruled out for nine of the individuals. For about a third, this was not investigated (36% women, 28% men). No gender differences were found regarding intelligence or neuropsychological dysfunction.

Table 5. Behaviour related to mental illness among female and male offenders at the time of their crime.

Variable	Female (n = 100)	Male (n = 100)	All (n = 200)	(df)	χ^2	*p*-value[a]
Self-destructive behaviour				1	7.42	0.02*
Yes	35%	18%	53 (26.5%)			
No	65%	82%	147 (73.5%)			
Stopped taking medication				1	0.14	0.85
Yes	16%	18%	34 (17%)			
No	84%	82%	166 (83%)			

[a]With familywise Holm Bonferroni correction. *$p < 0.05$.

Table 6. Other psychiatric evaluations of female and male offenders at the time of their crime.

Variable	Female (n = 100)	Male (n = 100)	All (n = 200)	(df)	t-value/χ^2	*p*-value[a]
Intelligence:[b]				135	−1.95	0.16
IQ < 85	27 (42.9%)	22 (29.7%)	49 (35.8%)			
IQ 85–115	35 (55.6%)	47 (63.5%)	82 (59.9%)			
IQ > 115	1 (1.6%)	5 (6.8%)	6 (4.4%)			
Neuropsychology dysfunction:[c]				1	0.82	0.43
Yes	46%	45%	91 (45.5%)			
No	15%	21%	36 (18%)			
SMD				1	1.55	0.55
Yes	75%	67%	142 (71%)			
No	25%	33%	58 (29%)			
Mean GAF	40.04	45.35	42.69		−2.77	0.02*

[a]With familywise Holm Bonferroni correction. [b]We planned to investigate intelligence on a scale of 0–6. Based on the disposition of the data, this was changed to the scale of 0–2. Intelligence was measured using the Wechsler Adult Intelligence Scale. [c]We planned to investigate neuropsychology dysfunction on a scale of 0–4. Based on the disposition of the data, this was changed to Yes/No. *$p < 0.05$.

Most of the individuals were judged to suffer from a SMD at the time of the arson, with no gender differences. Female offenders had a significantly lower GAF score.

Contact with health and social services

Two significant differences emerged. First, more than 30% of the women compared to 15% of the men had been in contact with psychiatric health services within a week before committing the crime (of which more specifically 11% of the total had contact with psychiatric health services within a day before the arson, 16% were women, and 6% men). Second, about three out of four women had contact with psychiatric health services within a year before committing the arson, while the corresponding number for the men were one in two, which is a strongly significant result.

Somatic characteristics

Nearly 10% of the individuals had a diagnosis of epilepsy, and metabolic syndrome was found in approximately one-fifth. Hepatitis C was analysed exploratively and shown to be prevalent in almost 14% of the offenders. No differences were found between gender in somatic diseases.

Discussion

The results from this study have provided clinically relevant information regarding the psychosocial situation, the psychiatric and somatic

characteristics of arsonists undergoing FPI. In addition, the results reveal important gender differences with respect to these factors in the target population.

The psychosocial situation of the studied individuals stands out as highly problematic. While the majority were of working age, a strikingly high number (about 80%) of individuals were unemployed. While most had a stable place to live, only about 25% were in a relationship. Moreover, as many as about 50% had children. In relation to the complex and extensive problems for the individuals emerging in the study, the results provide a strong impetus to support the well-being, development, and security of arsonists' children. This is especially important for women because they more often had children compared to the men in this population.

The studied group also manifested complex psychiatric problems. By far the most common principal diagnosis among both genders was psychosis, which was prevalent in over a third of the sample. This confirms previous findings of a strong association between arson and psychotic disorders (Anwar et al., 2011; Nanayakkara et al., 2020). We found no gender differences regarding intelligence, neuropsychological functioning, substance misuse/dependence or psychiatric diagnosis. We expected a higher occurrence of Cluster B and PD-NOS, psychosis, and depression within the female participants; however, in line with Enayati et al. (2008), we found no gender differences in this respect. As our analyses were primarily based on principal diagnoses, the prevalence of some diagnoses may still differ between gender.

In line with prior research, we found that many individuals had been in contact with psychiatric health services before their arson. Interestingly, and important for preventive work, this study revealed a clear gender difference in such contacts. More than twice as many women than men had such contacts within a day or a week before their crime. Previous research has shown poor treatment compliance among arsonists (Leong et al. (2018). Corroborating this finding, our study showed that 17% of the individuals terminated their prescribed psychiatric medication before their crime. Psychosis was the most common main diagnosis and often included a lack of insight into the disease and a lack of treatment compliance. Contacts with psychiatric health services shortly before their crime and stopping their prescribed medication are two central clinical aspects to consider when developing preventive strategies for arson. These results highlight that psychiatric health services could play a significant role in detecting individuals (especially women) who are at risk of committing arson. Furthermore, regarding the complexity of problems, health promoting work needs to be done, targeting the group who had no psychiatric contact (26% women, 48% men). Contact with other health and social services were common, suggesting that many of the individuals were not unknown by critical social agencies.

We did not find any gender differences regarding negative life experiences, although only a limited number of stressors were analysed. Women did show self-harming behaviour before the arson to a greater extent than did men. Previous research found a relationship between self-harm and arson (Coid et al., 1999; Knight et al., 2017; Miller & Fritzon, 2007), suggesting that for some individuals, women in particular, setting fires can have a similar function to self-harming behaviour.

Our results supported the hypothesis that the functional level, GAF scores, were significantly lower for female offenders. For the men, their GAF scores corresponded with severe symptoms (e.g. suicidal ideation) or severe functional difficulties regarding social contacts, school, or work. For the women, their GAF scores showed certain disturbances in their ability to communicate or in reality tests (e.g. sometimes expresses unclear, illogical, or irrelevant), or pronounced functional difficulties in several aspects (e.g. work, family relationships, thinking ability).

The general proportion of female perpetrators who are judged to suffer from a SMD is larger than that for men. In line with this result, Yourstone et al. (2008) found that for similar or even identical crimes, there is a higher probability for women to be declared legally insane. This could indicate that male offenders must exhibit more extensive psychiatric symptoms to be declared legally insane and receive forensic care (Yourstone et al., 2008). However, after controlling for several potential confounders, such as offense category, the increased likelihood for women to be declared legally insane could not be explained by arson (Yourstone et al., 2009). Others have argued that there may be gender differences in modus operandi, rather than gender bias or diagnostic or sociodemographic factors, that resulted in differences in judgements about SMD related to crimes, such as arson (Sturup et al. (2012).

Over 70% of the group in the current study were judged to suffer from SMD. Sturup and Kristiansson (2007) found that the proportion of individuals judged to suffer from SMD were significantly higher among arsonists compared to other offenders. However, our study didn´t find any significant gender differences regarding SMD, despite some clinically and medicolegally relevant differences (e.g. GAF scores, self-destructive behaviour). Further, this result shows that there may be gender-specific clinical needs to consider in interventions targeted these women (Table 7).

Knowledge about the general somatic health and needs of arsonists is generally lacking. One of our urgent results is the high incidence of hepatitis C (14%) in comparison to the estimated prevalence in the Swedish general population (≤0.5%), suggesting that the disease is at least 28 times more common in arsonists. The great incidence of hepatitis C found in the current study calls for clinical efforts to detect and treat hepatitis C in the target group. Earlier studies found high frequencies of epilepsy in this group, which was also seen in this study. Considering the prevalence of psychosis found in

Table 7. Contact with health and social services among female and male offenders before their crime.

Variable	Female (n = 100)	Male (n = 100)	All (n = 200)	(df)	χ^2	*p*-value
Contact with psychiatry within:[b]						
A week				1	7.23	0.04*
Yes	31%	15%	46 (23%)			
No	69%	85%	154 (77%)			
Sex months				1	3.92	0.20
Yes	38%	25%	63 (31.5%)			
No	62%	75%	137 (68.5%)			
One year				1	3.15	0.25
Yes	5%	12%	17 (8.5%)			
No	95%	88%	183 (91.5%)			
Contact up to a year before				1	10.38	0.01**
Yes	74%	52%	126 (63%)			
No	26%	48%	74 (37%)			
Contact with other health or social services:				1	0.02	1.00
Yes	54%	53%	107 (54%)			
No	46%	47%	93 (47%)			

[a]With familywise Holm Bonferroni correction. [b]We planned to investigate intelligence on a scale of 0–6. Based on the disposition of the data, this was changed to the scale of 0–2. Intelligence was measured using the Wechsler Adult Intelligence Scale. [c]We planned to investigate neuropsychology dysfunction on a scale of 0–4. Based on the disposition of the data, this was changed to Yes/No. *p < 0.05.

this study and given that individuals with psychosis are at an increased risk of developing metabolic syndrome, the frequency of metabolic syndrome was fairly low. One explanation for this result may be due to under-reported data, because FPIs are primarily focused on psychiatric problems. This must be addressed in future research, as metabolic syndrome increases the risk of somatic illness.

Limitations

The data used in this study were taken from documents, which include information from several different sources. This can be seen as both a weakness and a strength because there may be elements of subjectivity in the documents, while more sources simultaneously tend to corroborate and broaden the overall picture.

According to information from the courts, fewer individuals than expected had undergone FPI. Regarding the number of arson convictions and that individuals committing some types of crimes (such as arson) are referred to FPI more often than other offenders (Grann, 1996), we had expected to find a larger sample. Further, we had expected to find more men than women in the full sample. To secure the data as far as possible, the data from the National Council for Crime Prevention in Sweden about FPI´s was double checked manually against the data from the courts; however, there may still be limitations due to the human factor. Regardless, all individuals included in

the study were convicted of arson and had undergone FPI during the current period.

There could be over- or under-reporting in the data, which would affect the results. However, this study was based on the available data from the chosen sources and the target group was investigated on this basis.

Conclusions

Both female and male arsonists exhibited complex psychosocial, psychiatric, and somatic characteristics. However, this complexity was particularly evident among the women, as they displayed more self-destructive behaviour and had lower GAF scores. On the other hand, women were more prone to be in contact with psychiatric health services before their crime, which means that the possibility to prevent their crimes should in principle be higher than for men. More women than men had children, therefore, reaching out to this group as they approach mental health services is particularly important.

The complex patterns of problems among these individuals calls for inter-professional interventions. Furthermore, their gender differences suggest that specific actions may be needed for preventing and treating women vs men who (may) commit arson.

Acknowledgements

We would like to show appreciation to research assistant Tony Wiklund, for administrative help with the data set.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Region Vastmanland.

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Data availability statement

The data set can be made available upon request, if interested please contact corresponding author.

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