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Review article

Current evidence of childhood traumatic experiences in psychosis – focus on gender differences

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ABSTRACT

Childhood abuse is common among people with psychosis and it is associated with poor illness outcomes. Some forms of childhood abuse are more common in women, but the impact of gender and childhood abuse in psychosis has been little investigated and evidence has never been put into a congruent frame. Herein, we conducted a narrative review to assess the impact of gender and childhood abuse in psychosis. Research articles were identified (n = 44) using a comprehensive electronic search of PubMed, Web-of-Science, Scopus and Cochrane databases. Women appeared to be at greater risk of sexual abuse than men. Women with childhood abuse report more positive and mood symptoms, and more suicide attempts compared to men. In addition, women exposed to childhood abuse display an earlier age of onset compared to not exposed, but this association is not present in men. Conversely, men with childhood abuse show more negative symptoms, substance use and a poorer cognitive performance compared to women. It seems therefore confirmed that gender and childhood abuse may impact on the outcome of psychosis, since not all gender differences found in patients who had been abused in their childhood are accounted by the overall differences between men and women with psychosis.

1. Introduction

Childhood abuse is associated with a number of negative sequelae, such as depression (Li et al., 2016), Post-Traumatic Stress Disorder (Carey et al., 2008), suicidality (Devries et al., 2014), eating disorders (Monteleone et al., 2019) and drug abuse (Meshesha et al., 2019). Childhood abuse is frequent among people with psychosis (Morgan and Fisher, 2007), affecting 28%–73% of them (Bendall et al., 2008). Exposure to trauma during childhood is associated with a 2.8-fold increased risk of developing psychosis in adulthood (Varese et al., 2012) and the odds of developing the disorder is higher in people exposed to multiple and more severe experiences of abuse compared to not exposed (Shevlin et al., 2008). Childhood abuse is associated with a less favorable course of illness, with higher rates of psychotic symptoms (Gallagher and Jones, 2013), substance abuse (Bendall et al., 2012), comorbid physical disorders (Sweeney et al., 2015), cognitive deficits (Lysaker et al., 2001), earlier and more frequent hospitalizations (Newmann and Sallmann, 2004) and poorer rehabilitation outcomes (Lysaker et al., 2004) in people exposed compared to non-exposed.

However, not every person exposed to childhood abuse goes on to develop psychosis in adulthood and gender has been claimed to impact on the strength and features of this association for a number of reasons. First, women with psychosis are more likely to have been exposed to sexual abuse (Fisher et al., 2009; Heins et al., 2011) and physical abuse (Alvarez et al., 2011) during their childhood compared to men. Second, women tend to report greater perceived threat (Olff et al., 2007) and subjective distress (O'Hare and Sherrer, 2013) after a traumatic event and a greater negative appraisal of trauma than men (Sherrer, 2011). Third, it has been suggested that females appear more prone than males to internalizing difficulties and this could explain their likeliness of becoming suspicious of other people's intentions and developing paranoid delusions, whereas males seem to respond to difficulties by exhibiting externalizing behaviors, which are linked to aggression and conduct disorders (Fisher et al., 2009). Fourth, there is evidence that childhood abuse selectively affects neuroendocrine transmission in females, with women exposed to childhood abuse showing hypothalamic-pituitary-adrenal axis and autonomic nervous system hyperreactivity, presumably due to CRF hypersecretion, compared to non-exposed. (de Bellis et al., 1994; Heim et al., 2000). Despite this, most studies on childhood abuse in people with psychosis have not stratified results for gender and have simply provided cumulated data for males and females.

Given the difficulty to find information on the impact of gender and childhood abuse in people with psychosis, the present paper aims to: (1) review research conducted in this field; and (2) compare gender differences in people with psychosis with and without childhood abuse

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and with the general population.

2. Methods

PubMed, Web-of-Science, Scopus and Cochrane databases were searched for poentially relevant articles. The search employed a combination of the following terms: “gender”, “sex”, “psychosis”, “first episode psychosis”, “schizophrenia”, “childhood trauma”, “childhood abuse”, “sexual abuse”, “physical abuse”. We accepted only original papers published in English in peer-reviewd journals. Articles were screened through title and abstract and we considered for inclusion articles on childhood abuse in psychotic or schizophrenic patients. After full text reading, only papers that provided information for both sexes separately or for either male or female-only patients were included. We excluded papers on children and adolescents and ultra high-risk patients because our focus was psychosis or first episode psychosis. We also excluded papers providing commentary or proposed guidelines. Further resources were identified through manual searches of the reference section of the articles selected for inclusion.

3. Results

The search was conducted on July 12th 2018. Based on the inclusion and the exclusion criteria a total of 127 articles have been selected for inclusion. After full text reading, 44 papers have been included in the present review. All articles included have been published between 2001 and 2018. The screening process is presented in Fig. 1. For clarity, results have been grouped into 14 sections according to the outcome targeted by papers. A summary of the main findings of the articles included is presented in Table 1.

3.1. Epidemiology

Three systematic reviews conducted so far reported data on the prevalence of childhood abuse in men and women with psychosis. The

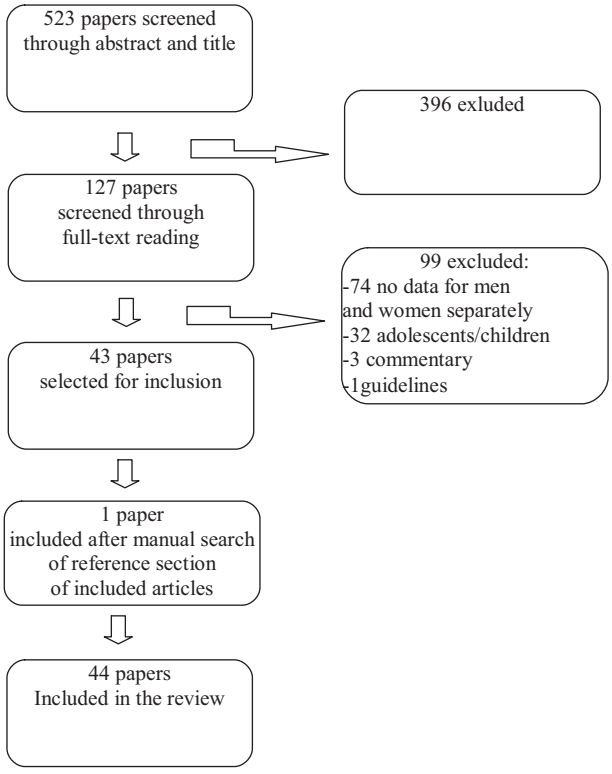

Fig. 1. Screening process.

first systematic review on childhood abuse and psychosis was carried out by Read and colleagues (2005). The review considered 51 articles and estimated the weighted average prevalence of either physical or sexual abuse by 59% in males and 69% in females, and the prevalence of both types of abuse by 19% in males and 36% in females. Specifically, the weighted average prevalence of reported childhood physical abuse was 50% for males and 48% for females, whereas for childhood sexual abuse the weighted average prevalence was 28% for males and 48% for females. Morgan and Fisher (2007) re-examined the literature addressed by Read et al. (2005) by applying more stringent inclusion criteria (i.e. exclusion of articles on children, adolescents and mixed-diagnosis samples and inclusion of only 20 studies which specifically addressed subjects with formal diagnosis of psychosis) and found lower prevalence rates: specifically, 50% of either physical or sexual abuse in both gender and 18% in males and 26% in females for both types of abuse; moreover, the prevalence of physical abuse resulted at 35% in males and 35% in females, whereas the prevalence of childhood sexual abuse was 28% in males and 42% in females. More recently, Bonoldi et al. (2013) conducted a systematic review on the prevalence of self-reported childhood abuse on people with psychosis and found an overall prevalence of physical abuse at 38.8% and a prevalence of sexual abuse at 26.3%. They also found that gender is associated with childhood sexual abuse in psychosis (ie, female patients appeared to be at greater risk of sexual abuse than male patients), whereas gender did not seem to influence prevalence of childhood physical abuse.

3.2. Psychopathology, age of onset and childhood trauma

In men, childhood traumatic experiences have been correlated with negative symptoms ($\rho = 0.18$; $p = 0.034$) (Pruessner et al., 2018), and male patients with childhood traumatic experiences have shown more anhedonia ($\chi2 = 8.44$, $df = 1$, $p = 0.004$), subjective thought disorder ($\chi2 = 3.87$, $df = 1$, $p = 0.049$) (Sweeney et al., 2015) and anxiety (OR 1.8 95% CI 1.3–2.5) (Shah et al., 2014) compared to females. Childhood trauma has found to predict more frequent hospitalizations only in men ($R^2 = 0.55$) (Kocsis-Bogár et al., 2018). In women, childhood traumatic experiences have been linked to depressive mood symptoms ($\rho = 0.28$; $p = 0.024$ Pruessner et al., 2018; $\chi2 = 5.59$, $df = 1$, $p = 0.018$ Sweeney et al., 2015), elevated mood symptoms ($\chi2 = 4.30$, $df = 1$, $p = 0.038$ Sweeney et al., 2015) and higher rates of premorbid personality disorder (OR 1.8 95% CI 1.03–3.1 Shah et al., 2014) compared to men. However, two studies found no gender difference in positive symptoms in people exposed to childhood traumatic experiences (Heins et al., 2011; Kocsi-Bogar et al., 2017). Childhood physical abuse has found to predict earlier age at onset ($R^2 = 0.23$ Kocsi-Bogar et al., 2017; $p < 0.001$ Comacchio et al., 2019a) in women only.

3.3. Psychopathology and childhood physical abuse

Childhood physical abuse has been associated with higher levels of psychotic symptoms ($F = 4.03$, df $= 1.76$, $p = 0.048$) (Kelly et al., 2016), negative symptoms ($p < 0.001$ Comacchio et al., 2019a) and depressive symptoms ($F = 4.23$ df $= 1.76$ $p = 0.04$ Kelly et al., 2016; $\beta = 0.308$ $p = 0.014$ Pruesner et al., 2018) in women but not in men.

3.4. Psychopathology and childhood sexual abuse

Childhood sexual abuse has been associated with auditory-verbal hallucinations in females but not in males ($B = 0.394$, $t = 2.501$, $p = 0.017$ *vs* $B = 0.123$, $t = 0.880$, $p = 0.383$) in FEP patients (Misiak et al., 2015). However, in a small case control study involving schizophrenic male patients those with a history of childhood sexual abuse had significantly higher levels of dissociation (mean 12.67, SD 5.50, $p < 0.001$), intrusive experiences (mean 13.29, SD 6.60, $p < 0.001$), and state (mean 47.14, SD 14.14, $p < 0.001$) and trait (mean 54.14, SD 9.16, $p < 0.01$) anxiety than non-abused

Table 1
Summary of the main findings.

Area	Authors	Conclusions
Epidemiology	Read et al., 2005 Morgan and Fisher, 2007 Bonoldi et al., 2013	Prevalence of childhood abuse ranges 18–59% in males and 26–69% in females
Psychopathology	Lysaker et al., 2005 Schafer et al., 2006 Heins et al., 2011 Braehler et al., 2013 Shah et al., 2014 Haug et al., 2015 Sweeney et al., 2015 Aas et al, 2016 Garcia et al, 2016 Kelly et al., 2016 Misiak et al., 2015; Kocsis-Bogár et al., 2018 Pruessner et al., 2018 Comacchio et al, 2019	Childhood abuse appears to be linked to higher levels of negative symptoms in men and to higher levels of depressive symptoms in women. Male patients with childhood traumatic experiences tend to show more anxiety symptoms compared to women
Social functioning	Gayer-Anderson et al., 2015 Andrianarisoa et al., 2017	Childhood abuse and male gender appear to predict low levels of social support and poor quality of life
Cognitive functioning	Lysaker et al., 2004 Aas et al., 2011 Ruby et al., 2015	Inconclusive results, with some studies showing an association between childhood adversities and better cognitive performance, others showing an association between childhood adversities and poorer cognitive performance and other papers showing no association
Suicide risk	Lejoyeux et al., 2013 Fuller-Thomson et al. 2016 Amr et al., 2016	Childhood abuse is linked to higher levels of suicide attempts in women and higher levels of impulsive behaviours in men
Substance abuse	Aakre et al., 2014 Rey et al., 2017	Early traumatic experiences appear to be more common in women with psychosis and co-morbid substance abuse
Physical health	Shah et al, 2014 Sweeney et al., 2015	Men with a history of childhood abuse appear to report more chronic pain, cardiovascular disease/stroke, headaches/migraines, arthritis and epilepsy than those without. By contrast more women with childhood abuse than without appear to report chronic pain and headaches/migraines than not exposed
Other	Haarmans et al., 2018	Childhood sexual abuse was associated with gender-role strain in the non-clinical sample only

(Lysaker et al., 2005). Childhood sexual abuse has found to be a predictor of higher levels of negative symptoms in both men and women ($p = 0.001$; Comacchio et al., 2019a) and of depression only in women ($\beta = -0.44$; $p = 0.002$; Pruessner et al., 2018).

3.5. Psychopathology and childhood emotional abuse

Childhood emotional abuse has found to be a predictor of positive symptoms ($\beta = 0.29$; $R^2 = 0.09$; F (1,93) = 8.99; $p = 0.003$), depression ($\beta = 0.25$; $R^2 = 0.062$; F (1,93) = 6.15; $p = 0.015$) and global functioning ($\beta = -0.33$; $R^2 = 0.11$; F (1,93) = 10.98; $p = 0.001$) in men and of depression in women ($\beta = 0.56$; $p = 0.001$) (Pruessner et al., 2018).

3.6. Psychopathology and childhood emotional neglect

Garcia and colleagues (2016) found a correlation between childhood emotional neglect and a greater severity in positive ($\rho = 0.498$; $p < 0.01$), negative ($\rho = 0.378$; $p < 0.05$), general psychopathology ($\rho = 0.403$; $p < 0.05$) and depressive symptoms ($\rho = 0.481$; $p < 0.01$) only in women. The same study revealed a correlation between emotional neglect and impaired functioning in woman ($\rho = -0.497$; $p < 0.05$), but this finding was not replicated in a case control study on FEP patients (Aas et al., 2016). Nevertheless, emotional neglect has found to predicted negative symptoms only in men ($\beta = 0.28$; $R^2 = 0.078$; F (1,93) = 7.89; $p = 0.006$) (Pruesner et al., 2018).

3.7. Psychopathology and childhood physical neglect

A small cohort study found a link between childhood physical neglect and PANSS total scores at admission ($\tilde{n} = 0.35$; $p = 0.039$), but not at discharge, only in women (Schafer et al., 2006).

3.8. Dissociation

Childhood physical neglect has found to be associated with high levels of dissociation in male patients with either FEP and chronic psychosis, but not in females ($r = 0.345$, $p < 0.001$) (Braehler et al., 2013). However, Schafer and colleagues (2006) in a small sample of female schizophrenic inpatients found that childhood physical neglect was significantly correlated with dissociative symptoms at admission ($\rho = 0.58$; $p = 0.023$), but not at discharge. In the same sample, emotional abuse was significantly correlated with high levels of dissociation both at admission ($\rho = 0.55$; $p = 0.034$) and at discharge ($\rho = 0.34$; $p = 0.032$). Severe forms of dissociation may involve Anomalous Self-Experiences (ASEs) (Sass et al., 2013), that are described as subtle forms of depersonalization, anomalous experiences of cognition and stream of consciousness, self-alienation, pervasive difficulties in grasping familiar and taken-for-granted meanings, unusual bodily feelings, permeability or complete loss of the self-world boundary, in addition to existential reorientation (Parnas et al., 2005). In a sample of FEP patients emotional neglect was linked to higher levels of ASEs in women ($\rho = 0.551$ $p = 0.004$) but not in men. In the same sample, emotional abuse ($\rho = 0.586$ $p = 0.001$), emotional neglect ($\rho = 0.693$ $p = 0.001$) and physical neglect ($\rho = 0.525$ $p = 0.005$) were linked to higher levels of depression in women but not in men (Haug et al., 2015).

3.9. Social functioning

In a recent case-control study (Gayer-Anderson et al., 2015) women with childhood physical abuse were four times more likely to be diagnosed as psychotic if they had not received emotional (OR 4.04, 95 % CI 1.47–11.09) or practical (OR 4.90, 95 % CI 1.65–14.57) support in adulthood and six times more likely to be diagnosed as psychotic if they had a small number of significant relationships in adulthood (OR 6.14, 95 % CI 1.80–21.00) compared to women without childhood physical

abuse. Similar associations were found for childhood sexual abuse (OR 4.41, 95 % CI 1.60–12.16) for emotional support; OR 3.31, 95 % CI 1.11–9.87 for a small number of significant relationships), whereas no clear association was identified for men exposed and non-exposed to childhood abuse. Women with psychosis and a history of childhood trauma have found to be more likely to be married or in a *de facto* relationship than males (OR 4.89 95% CI 1.2–19.2 $p = 0.02$) (Sweeney et al., 2015). However, a large population-based study run in Australia (Shah et al., 2014) showed that female patients with a history of childhood abuse were less likely to have someone to rely on in times of need compared to males (OR 0.5 95% CI0.3–0.8). Lastly, poor quality of life, which is related to levels of social support, was predicted by childhood abuse ($\beta = -0.21$, $p < 0.0001$) and male gender ($\beta = -0.16$, $p < 0.0001$) in a cohort study of schizophrenic patients (Andrianarisoa et al., 2017).

3.10. Cognitive functioning

The impact of gender and childhood adversities on cognition in psychotic patients has yielded to mixed results: two studies failed to identify an impact of gender on neurocognition in people exposed to childhood adversities (Lysaker et al., 2004; Garcia et al., 2016), whereas female gender and a history of childhood trauma have found to be associated with better performance on verbal fluency ($r = 0.852$; $N = 7$; $p = 0.015$), verbal memory ($r = 0.766$; $N = 7$; $p = 0.045$), attention ($r = 0.880$; $N = 7$; $p = 0.009$), delayed memory ($r = 0.779$; $N = 7$; $p = 0.039$), general memory ($r = 0.806$; $N = 7$; $p = 0.029$) and full-scale ($r = 0.822$; $N = 7$; $p = 0.023$) and verbal IQ scores ($r = 0.837$; $N = 7$; $p = 0.019$) in a small cohort study of schizophrenic patients (Ruby et al., 2015). Consistently, a case control study on FEP patients revealed that a history of childhood abuse was associated with poor verbal intelligence (mean = 0.10; SD = 0.8; $p = 0.002$), language (mean = 0.04; SD = 0.7; $p = 0.031$), attention, concentration and mental speed (mean = 0.09; SD = 0.8; $p = 0.011$), executive function and working memory (mean = 0.07; SD = 0.8; $p = 0.028$) only in male patients (Aas et al., 2011).

3.11. Suicide risk

The impact of gender and childhood abuse on suicidality and related behaviours has been tested in samples of schizophrenic patients. Fuller-Thomson and colleagues (2016) in a community-based study found that women with schizophrenia and childhood abuse had four times the odds of suicide attempts than men (OR = 4.59; 95% CI = 1.21, 17.35) and 24% of the variability in suicide attempts was explained by a history of childhood traumatic experiences ($R^2 = 0.24$). Concerning related behaviours, male gender and a history of childhood sexual and physical abuse have found to predict impulsive ($\beta = 14.930$; SE = 3.696 $p < 0.001$) (Amr et al., 2016) and aggressive behaviours (OR = 3.6; 95% CI = 1.1–11.7; $p = 0.03$) (Lejoyeux et al., 2013).

3.12. Substance abuse

In psychotic patients, childhood abuse and male gender have found to be associated with increased alcohol intake ($\rho = 0.331$; $p < 0.05$) (Garcia et al., 2016) and severe nicotine dependence (OR = 4.5; 95% CI 1.5–13.7; $p = 0.009$) (Rey et al., 2017). In a cohort study on psychiatric women, early traumatic experiences were reported to be more common in women with psychosis and comorbid substance abuse than in women with depression and comorbid substance abuse or women with substance abuse alone ($\chi^2 = 13.64$; $p = 0.001$) (Aakre et al., 2014).

3.13. Physical health

Sweeney et al (2015) in a cohort study found that more males with a history of childhood abuse reported chronic pain ($\chi^2 = 5.2$, $df = 1$, $p = 0.022$), cardiovascular disease/stroke ($\chi^2 = 7.9$, $df = 1$, $p = 0.005$), headaches/migraines ($\chi^2 = 10.0$, $df = 1$, $p = 0.001$), arthritis ($\chi^2 = 4.7$, $df = 1$, $p = 0.031$) and epilepsy ($\chi^2 = 5.3$, $df = 1$, $p = 0.021$) than males without childhood abuse. By contrast more females with childhood abuse than without reported chronic pain ($\chi^2 = 9.8$, $df = 1$, $p = 0.002$) and headaches/migraines ($\chi^2 = 6.2$, $df = 1$, $p = 0.012$). However, this result was not replicated by Shah and colleagues (2014), who did not find an impact of gender and childhood abuse on Body Mass Index (BMI) and metabolic syndrome in a cross-sectional survey.

3.14. Needs for care

Childhood abuse had little impact on needs for care other than unmet functioning (basic education, money, childcare, self-care, looking after home) and service (information, telephone use, transport and benefits), which showed higher levels in both men and women exposed to childhood traumatic experiences in a cohort of FEP patients ($p = 0.02$ for service needs and $p = 0.005$ for functioning needs; Comacchio et al., 2019a).

3.15. Other

In a small case control study childhood sexual abuse has found to be was associated with gender- role strain in the non-clinical sample only (Pearson $r = 0.35$, $p < 0.05$) (Haarmans et al., 2018). Gender-role strain is defined as the negative psychological consequences, such as low self-esteem and depression (Zamarripa, 2003), experienced when individuals try to live up to internalized gender-role stereotypes and norms (Pleck, 1981) and it has been found that non-psychiatric women with childhood sexual abuse experienced greater feminine self-discrepancy than non-abused women (Krause and Roth, 2011). Haarmans et al. (2018) hypothesized a stronger association between childhood sexual abuse and gender-role strain in the clinical group compared to controls, as a consequence of the higher rates of childhood sexual abuse in psychotic women and suggested that their unexpected result could be due to the low within-group variance or to the effect of revictimization in adulthood and psychosis-related vulnerability in women.

4. Discussion

The present paper provides a comprehensive overview on the impact of childhood traumatic experiences in men and women with psychosis. As far as we know, this is the first review ever published to fully address this specific issue.

We found that the prevalence of childhood sexual abuse is higher in women with psychosis compared to men, whereas there seem to be no, or little, gender difference for childhood physical abuse. Childhood abuse rates in non-clinical samples are 2–3 time higher in women compared to men (Stoltenborgh et al., 2011; Afifi et al., 2014). In the last few years the number of studies investigating the role of traumatic experiences, especially those which occurred in the early years of life, in the development of psychiatric disorders has rapidly grown (Carr et al., 2013). The definition of childhood trauma comprises eight main dimensions: physical abuse, sexual abuse, psychological abuse, witnessing interpersonal violence, physical neglect, emotional neglect, significant separations from caregivers and loss of caregiver (Roy and Perry, 2004). This broad definition of childhood trauma, has implied a large variety in the conceptualization that researchers have used based in their studies, making it difficult to understand the real extent of trauma presence in their samples (Vergano et al., 2015). Even measurement tools used to detect childhood trauma vary massively across studies, making it difficult to compare results of the existing literature (Sahin et al., 2013). However, recent literature shows adequate consistency on childhood physical and sexual abuse rates.

We also found that psychotic women who had been abused during their childhood show more positive and mood symptoms both at illness onset and during the illness course compared to men. Specifically, all types of abuse appear to be associated with positive and depressive symptoms in women, except emotional abuse that has found to be associated with psychotic symptoms only in men. Conversely, psychotic men who had been abused during their childhood present with more negative, anxiety and dissociative symptoms compared to women. Particularly, in men childhood sexual abuse showed an association with anxiety and emotional neglect with negative symptoms. Impaired global functioning was linked to emotional abuse in men and to emotional neglect in women. However, recent population-based studies reported that men with psychosis tend to show more negative symptoms compared to women and that women tend to display more positive and mood symptoms than men (Comacchio et al., 2019b; Quattrone et al., 2019). Unfortunately, none of these studies have controlled results for childhood abuse, so we do not know whether these gender differences are due to childhood trauma or are simple gender differences in psychosis manifestation. To our knowledge, no study has found an association with anxiety symptoms and male gender in people with psychosis, so we can speculate that the higher levels of anxiety in male patients exposed to childhood sexual abuse compared to females may be a true effect of childhood trauma. This may be explained by cultural factors related to rape, that have been proposed to have a stronger impact on men compared to women (Shevlin et al., 2008).

Concerning age at onset, we found that childhood physical abuse was a predictor of an earlier age at onset only in women. In psychosis, mean age at onset is significantly and consistently higher in women compared to men (Riecher-Rossler et al., 2018). Two studies have found a positive association between earlier age of psychosis onset and childhood psychological abuse (Li et al., 2015; Alvarez et al., 2011), but neither examined the effect of gender. Hacioglu and colleagues (2014), in a sample of female patients with schizophrenia, found that patients with a history of childhood sexual abuse were significantly younger than those without. Two studies have focused on how childhood trauma interacts with gender on age of psychosis onset (Kocsis-Bogár et al., 2018; Comacchio et al., 2019a) and found that childhood physical and sexual abuse predicted an earlier age at psychosis onset only for female patients. As a possible explanation, we can speculate that gender-specific protective factors in women, but not in men, such as better premorbid adjustment (Addington et al., 2003), higher levels of insight (Parellada et al., 2011) and shorter duration of untreated psychosis (Cascio et al., 2012), may be outweighed by the consequences of childhood abuse, but further research is needed to clarify this aspect.

Our findings seem to indicate that women with psychosis and childhood abuse are less likely to receive social support despite being more likely to be married or in a relationship than men. Social support, defined as the combination of social networks, perceived social support and enacted support (Barrera, 1986), has been claimed to act as a moderating factor between early adversities and later development of psychosis (Gayer-Anderson et al., 2015). Nevertheless, childhood trauma can disrupt the acquisition of interpersonal relatedness skills, including the desire for affiliation, and lead to difficulty with social functioning in adulthood (Stain et al., 2014), thus the relationship between childhood adversities and social functioning is controversial. In non-clinical samples, childhood traumatic experiences have found to affect the capacity to form positive relationships (Van der Kolk and Courtois, 2005) and to predict lower levels of social support in adulthood (Joa et al., 2008), with no acknowledge gender differences. Being married or having a partner does not necessarily imply living in a supportive environment, as 21% of women with chronic mental illnesses report being victims of recent intimate partner violence (Khalifeh et al., 2015). Childhood abuse is positively correlated with adulthood intimate partner violence, as childhood abused women show a significant tendency to choose potentially abusive partners in adulthood (Herrero et al., 2018). In childhood abused victims, secure attachment is disrupted and, for some women, this may drive the selection of partners to the rapid satisfaction of psychological and social needs (Banducci et al., 2017), which may explain the increased likeliness of women with psychosis and childhood abuse to be in a relationship. This in no way implies any responsibility on the part of the potential victim of abuse, though stresses the importance of investigating intimate partner violence in women with psychosis and childhood abuse by their clinicians (Khalifeh et al., 2015).

Women with psychosis and childhood abuse seem to show a better cognitive performance than men on verbal intelligence, attention and general and working memory. Despite studies indicating a better cognitive performance in female healthy subjects undergoing psychosocial stress compared to males (Wolf, 2001), there is no clear evidence for gender differences in cognitive performance in non-clinical samples of people exposed to childhood abuse (Perez and Widom, 1994). However, similar gender differences in neurocognition have been found in non-clinical samples (Ittig et al., 2015) and in samples of psychotic patients (Bozikas et al., 2010) in studies that did not control for childhood abuse. It has been hypothesized that gender differences in neurocognition might not be disease-specific (Riechler-Rossler et al., 2018) and our findings make it unlikely that childhood abuse may impact in this area.

Women with psychosis and childhood abuse appear at higher risk of attempting suicide compared to men. Suicidality is frequently reported among victims of childhood abuse in the general population (Brodsky et al., 2001), with a stronger effect on women than on men (Liu et al., 2017). Suicidality is also very frequent among people with psychosis: it has been estimated that one in every twenty individuals affected with psychosis will commit suicide (Palmer et al., 2005) and women with psychosis seem to be at a greater risk compared to men (Canuso and Pandina, 2007).

Our review indicates that childhood trauma impacts on substance abuse more in men than in women with psychosis. People with psychosis show high levels of substance abuse, some of which are known to increase the risk for psychosis or at least to act as a trigger in vulnerable individuals (Riecher-Rossler et al., 2018). Men with psychosis tend to consume more cannabis (Koskinen et al., 2010), alcohol, cocaine and hallucinogens than women (Ochoa et al., 2012). It has been suggested that childhood abuse and cannabis use may have a cumulative effect in the risk of developing psychosis (Konings et al., 2012). In non-clinical samples men show higher rates of substance abuse compared to women (Khan et al., 2013), though women with childhood abuse have shown higher levels of substance abuse compared to men (Young-Wolff et al., 2012). Therefore, although it seems that childhood trauma does not influence substance abuse in people with psychosis, further research may help disentangle the impact of gender and childhood trauma on substance abuse in the general population.

Both men and women with psychosis and childhood abuse report more chronic pain and headache compared to non-abused. In addition, men with psychosis and childhood abuse present more cardiovascular disease/stroke, epilepsy and arthritis compared to non-abused. A positive association between childhood traumatic experiences and poor physical health outcomes has been found in non-clinical samples (Goodwin and Stein, 2004) without any significant gender difference (Springer, 2007). Cardiovascular disease, the leading cause of death in high and middle-income countries (Mozaffarian et al., 2016), is exceedingly prevalent in people with psychosis because of the high prevalence of risk factors (Galletly et al., 2012). One acknowledged and non-modifiable risk factor for cardiovascular disease, both in general and psychiatric samples, is male gender (Connolly, 2005), and childhood abuse does not seem to affect the association between gender and cardiovascular disease in either population. Conversely, chronic pain is more common in women than men in the general population (Tyrer et al., 1989) and in psychiatric settings (Chaturvedi and Michael, 1986), therefore we can speculate that childhood abuse may

be linked to some forms of somatization only in men. Reasons for that require further investigation.

5. Conclusions

A different pattern between women and men emerged from this literature search. Specifically, psychotic women who had been abused during childhood report more positive and mood symptoms at illness onset, more suicide attempts and earlier age of onset compared to men. Conversely, psychotic men who had been abused during childhood show more negative symptoms, substance use and a poorer cognitive performance compared to women. It seems therefore confirmed that gender and childhood abuse may impact on the outcome of psychosis, since not all gender differences found in people with psychosis who had been abused in their childhood are accounted by the overall differences between men and women with psychosis. The present review also highlights the lack of studies specifically investigating the impact of gender and childhood abuse on people with psychosis, since most information retrieved for the present paper were inferential.

Authors disclosures

None of the authors have anything to disclose.

Declaration of Competing Interest

The authors declare no conflicts of interest associated with this study.

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