# **A Systematic Review Exploring the Relationship Between Family Factors and Symptom Severity, Relapse and Social or Occupational Functioning in First Episode Psychosis**

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**Abstract**

**Aims:**Research on family functioning in psychosis has typically focused on specific family-related factors and their impact on symptomatology, finding strong associations between high expressed emotion and poor outcomes, especially in those with long-term illness. The objective of this review is to examine the impact of a broad range of family-related factors and their relationship with clinical, social, occupational, and relational outcomes in first-episode psychosis (FEP).

**Method:**A systematic search of databases PsycInfo, Pubmed, Embase and CINHAL between 1990 and August 2023 was completed. In total, 1408 articles were screened, and study quality was assessed using the JBI Critical Appraisal Checklists for Analytical Cross-Sectional Studies and Cohort Studies. A narrative synthesis approach was used to analyse the data.

**Results:**Of the 1408 identified articles, 80 full-text articles were screened. Fifteen studies were included for data extraction. The objectives and scope of the selected studies varied considerably. Studies consisted of cross-sectional and prospective cohort designs. Participants consisted of FEP patients and family members, with the patient age range varying from 15.9 to 30.8 (MD=24.5). Significant associations were identified between family factors (high EE, family environment and carer burden) and symptom and social outcomes.

**Discussion**: While findings emphasised the significant impact of family factors on symptomatic and social outcomes, the literature had significant limitations due to the absence of underlying theoretical models and understanding of the dynamics of distress in families within FEP. Future research should seek to develop a model accounting for such processes.

**Key Words**: Family Functioning, Psychosis, First Episode, Social Functioning Occupational Functioning

**1.Introduction**

**1.1. Psychosis**

Psychosis is a major psychiatric disorder which has a significant impact on those affected (Heinze et al., 2018) and their support network (Koutra et al., 2014). Approximately 85% of patients experience a relapse following a FEP (Camacho-Gomez & Castellvi, 2020). Increased relapses lead to an increased risk of chronic illness, suicidal behaviours, or compromised functional abilities (Fusar-Poli et al., 2017). There are several reasons why family factors are important in the context of improving outcomes in psychosis: (i) the onset of FEP often occurs while the patient is still residing at home with their parents (Jansen et al., 2015); (ii) some people with psychosis struggle with transitioning to independence and long-term romantic relationships; the family of origin can be their life-long domestic milieu (Roy et al., 2013); (iii) relapse is strongly related to factors within the family environment (da Silva et al., 2021); (iv) family interventions are effective in reducing relapse and yet have a low level of service provision (Camacho-Gomez & Castellvi, 2020).

**1.2. Family Functioning**

Family functioning pertains to the overall social and structural characteristics of the family environment, which encompass the dynamics and connections within the family, focusing on elements such as conflict and cohesion, adaptability, organisation, and the quality of communication (Lewandowski et al., 2010). Various models have been developed to explain the complex interactions necessary for effective functioning within families in general, such as The McMaster Model of Family Functioning (Epstein et al., 1980) and The Circumplex Model of family functioning (Olson, 2000; Olson, Waldvogel & Schlieff, 2019).

Across models, optimal family functioning is often observed in an environment characterised by transparent communication, well-defined roles, cohesion, and effective emotional regulation. Conversely, poor family functioning is commonly marked by elevated conflict, lack of organisation, and challenges in emotional and behavioural control (Lewandowski et al., 2010). The current review will focus on three areas of family functioning that are most examined in psychosis research: Expressed Emotion, Family Environment, and Family Burden.

Expressed emotion refers to the emotional atmosphere or tone in a family or caregiving environment, particularly concerning how family members communicate and express their emotions towards a person with a mental health disorder (Zanetti et al., 2018). Components of expressed emotion include critical comments, emotional over-involvement, and hostility. High levels of expressed emotion among family members are a known risk factor for relapse in psychosis (Ng et al., 2020), as well as a significant family stressor (Amaresha et al., 2012). A wide range of factors have been identified as predictors of high expressed emotion, including caregivers’ personality factors, avoidant coping strategies, long duration of untreated illness and increased family burden (Koutra et al., 2014).

Research exploring the influence of family environment on outcomes in FEP has indicated that factors such as cohesion, positive remarks, and warmth have been identified as protective factors (Lee et al., 2014).

Family burden refers to the challenges and obstacles experienced by families in response to a family member’s illness (Ennis & Bunting, 2013), which can be categorised into financial, physical, emotional, social and leisure burdens and has both objective and subjective aspects (Zanetti et al., 2018). Increased levels of family burden are associated with increased isolation, along with emotional and physical depletion in those caring for children with FEP (McCann et al., 2011), along with reduced time to relapse in those experiencing FEP (Koutra et al., 2015).

**1.3. Current Study**

   In psychosis, much of the research surrounding family function has focused on individual factors in isolation and their impact on symptomatology. It has also often focused on patients with long-term illness trajectories. This perspective has often failed to explore the potential interaction of family factors and their relationship with a range of social outcomes, especially early in the course of illness while familial roles may be persevered. In this current review, we aim to explore family functioning as a whole, including expressed emotion, positive relationships, family environment and family burden, and explore the interaction between such factors and clinical and social outcomes.

1. **Method**

**2.1. Design**

           The current study is a systematic review and narrative synthesis examining the association between family functioning and clinical and social outcomes, specifically symptom severity, general functioning, and relapse. The current review used the PRISMA guidelines (Moher et al., 2009). The methods were predetermined and specified in a protocol submitted to the PROSPERO database of systematic reviews in May 2023 [CRD42023450229].

**2.2. Search Strategy**

           Studies were identified through electronic searches conducted using four databases: PsycInfo, Pubmed, Embase and Cumulative Index to Nursing and Allied Health Literature (CINHAL). With support from the social sciences librarian, a PICO framework was used to identify relevant search terms. Initial search terms included “first episode psychosis”, “early psychosis”, “early schizophrenia”, “psychotic disorder”, “recent onset”, “family functioning”, “family conflict”, “family cohesion”, “family communication”, “family problem solving”, “family adaptability”, “expressed emotion”, “social”, “relational”, “occupational”, “psychosocial”, “functioning”, “quality of life”, “social adjustment”, which were used alone or as a combination of terms. Searches were completed up until July 21st, 2023.  The complete list of search terms utilised in this study across databases is provided in Supplemental Material 1.

           Following the removal of duplicates, all papers were screened by title and abstracts by the first author for relevance based on the inclusion criteria below. A second independent reviewer screened 25% of the papers, and a third independent review resolved conflicting decisions. Following completion of the initial screening, all papers were reviewed in full by both the author and the second reviewer. There was substantial agreement (89.47%: Cohen’s K = 0.69) for full-text review. Per PRISMA guidelines, the flow of papers during each phase of the search process is depicted in Figure 1.

**2.3. Inclusion and Exclusion Criteria**

  Requirements for inclusion were:

1. Patients diagnosed with an FEP and their parents or carers.
2. Family functioning, symptom severity and/or social/occupational/relational functioning are measured using clearly defined measures.
3. Exploring the relationship between family functioning, symptom severity and social or occupational functioning.
4. Observational peer-reviewed studies published in English after 1990.

           Studies were excluded if: (1) the population of the study did not meet inclusion criteria, namely those described as “chronic presentations” or “at risk of psychosis”; (2) the study design were intervention studies, systematic reviews, dissertations, case studies, editorials or articles not published in peer-review journals.

**2.4. Data Extraction**

           For each included study, the author extracted the following variables: the name and year of the study, the location of the study, demographic details of the participants, the study design, the main measures used, and the principal findings (see Table 1). A second author extracted variables for 30% of the included studies, and any disagreements in the extracted data were resolved. A narrative synthesis approach was employed to analyse the findings (Popay et al., 2006).

**2.5. Study Quality Assessment**

           The author examined the quality of all studies with a second independent reviewer examining 30% of the studies using the JBI Critical Appraisal Checklists for Analytical Cross-Sectional Studies and Cohort Studies. A third independent review resolved conflicting ratings. Studies with a JBI score higher than 70% were classified as having high quality, those with a score between 50-70% as having medium quality and those with less than 50% as having low quality. Tables 2 and 3 describe the quality appraisal results.

**3. Results**

**3.1. Search and Screening Results**

           The initial search identified 1408 records. Following deduplication, 910 went through to the title/abstract screening. A total of 80 papers were screened at the full text, of which 64 papers were excluded. Studies were frequently excluded due to the population (n = 27), the focus of the research (n = 15), design (n = 15) and published language (n=3). In total, 15 studies were included, with data extracted from all papers.

**Please INSERT Figure 1 HERE**

**3.2. Included Studies**

Overall, 15 studies were included in this review and a summary of the main findings can be found in Table 1. It was noticeable that included studies varied widely in their objectives and scope. The majority 88% (n=14) of studies took place in Western countries. Cross-sectional (40%, n=6) and prospective cohort designs (60%, n=9) were used.

Eighty percent (n=12) of studies included family members in the research, the remaining 20% (n=3) of studies did not include family members, instead focused on the patient's experience of family functioning. There was a wide range of sample sizes ranging from 30 – 340 (M=122.75, MD = 65), with 69% (n=11) of the included studies having less than 70 subjects. Such sample sizes may indicate reduced power to detect small or subtle effects or relationships and may limit the generalizability of findings overall. With the exception of one study which did not provide a mean age of FEP subjects, the overall mean age of subjects was 23.09, with the mean age of participants ranging from 15.9-30.8 (MD=24.5).

**Please INSERT Table 1 HERE**

**3.3. Measures**

***3.3.1. Family Factors***

Over half of the studies explored Expressed Emotion (60%, n= 9), and the remaining studies explored family environment (27%, n = 4) and family burden (13%, n=2). Two papers further explored the experience of caregiving, in addition to the above-mentioned. A wide range of measures were utilized to explore these areas of family functioning, with the most frequently used including the family function questionnaire (FQ) (25%, n=4), and The Camberwell Family Interview (CFI) (13%, n=2).

***3.3.2. Symptom Severity***

Most studies (87%, n=13) reported symptom severity, which was rated utilizing a wide range of measures. The most used measures were the Positive and Negative Syndrome Scale (PANSS) (40%, n=6) and the Brief Psychiatric Rating Scale (BPRS) (40%, n=6).

***3.3.3. Social/Occupational Functioning***

The majority of studies (73%, n=11) reported functional outcomes; several measures were utilized to do so including the Quality of Life Scales (25%, n=3), the Global Assessment Scale - (GAS) (25%, n=3), the Premorbid Adjustment Scale (PAS) (25%, n=3).

**3.4. Narrative Synthesis**

High Expressed Emotion was found to be significantly associated with both psychopathology and functioning. Specifically, criticism was found to be significantly associated with symptoms severity (Domínguez-Martínez et al., 2014; Tomlinson et al., 2014), social functioning (Domínguez-Martínez et al., 2014), poorer quality of life (Von Polier et al., 2014) and relapse (Lee et al. 2014).Emotional Over-Involvement was significantly associated with symptom severity (Domínguez-Martínez et al., 2014), reduced quality of life, social relationships (Cotton et al., 2010), social functioning (Domínguez-Martínez et al., 2014), and relapse (da Silva et al., 2021). In contrast, warmth was associated with reduced incidences of relapse, with a one-point increase in the warmth scale associated with a 58% decrease in the likelihood of relapse (Lee et al., 2014). Communication style was found to have a significant relationship with patient outcome, with open communication found to be positively associated with general psychopathology scores (Halford, 1999). Communication problems were significantly associated with a higher psychopathology at follow-up (Otero et al., 2011).Factors such as affect regulation, emotional expressiveness, and control were related to functioning (Verdolini et al., 2021; Halford et al., 1999). Higher levels of family burden were found to be associated with increased levels of positive symptoms (Nuttall et al., 2019). Similarly, family burden, specifically economic difficulties, were found to be associated with worse outcomes in an adolescent sample, with increased economic difficulties significantly associated with lower psychological well-being scores (Ropi et al., 2021).

**PLEASE INSERT Table 2 and 3 HERE**

**4. Discussion**

The present review identified 15 papers that conducted primary research to investigate the relationship between family factors and outcomes in patients experiencing first-episode psychosis (FEP). In line with previous reviews, the review emphasised the significant impact of family factors on outcomes such as symptom severity, relapse social, occupational, and relational functioning (Koutra et al., 2014). The experience of critical comments and overinvolvement, as identified across the current review is extensive, and has detrimental implications on outcomes, such as increased symptom severity (Domínguez-Martínez et al., 2014; Tomlinson et al., 2014), reduced functioning (von Polier et al., 2014; Cotton, 2010), and increased risk of relapse (Lee et al., 2014; Da Silva et al., 2021). Difficulties relating to communication style, similarly, are associated with increased symptom severity and reduced clinical improvement (Otero et al., 2011).

Perhaps most important, there was a “silence” in the reviewed research papers on key contextual variables of family functioning (O’Cathain et al. 2010). This silence was surprising, and points to a range of potential research targets for a better understanding of family dynamics and potential interventions.

***4.2.1 Developmental Context***

Across the papers explored, the mean age of those experiencing FEP in the included studies were early adulthood (mean=23.09 years). Yet, typically the research reviewed did not take a developmental perspective. Developmentally, this is a time when young people strive for autonomy, and due to their experience of FEP, their opportunities to gain independence are often hindered, placing parents and families in the role of enforcing boundaries, which has consequences for family dynamics (Kagitcibasi, 2013). It is likely that conflict between autonomy and need-for-support is the context for much of the high EE reported in the literature.

***4.2.2 Families in Distress***

### The outcomes of this review paint a picture of families in significant distress in response to a family member experiencing FEP. As Van Os et al. memorably said “*High expressed emotion: marker for a caring family*?” (Van Os et al., 2001). It was noticeable that the literature on family factors in psychosis was not grounded in the broader field of systemic thinking, in particular how families react when under stress. This was an area of significant research in the early family and psychosis research (e.g., Birchwood & Cochrane, 1990) but was not as evident in later papers. Understanding normal family dynamics, especially when distressed would allow researchers to contextualise, normalise and validate behaviours like criticism, or over-involvement. There are models of family distress in other disorders (e.g., Waals et al. (2018) Family Distress Cascade Theory in self-injury). Yet, the current literature frequently failed to address the dynamics of distressed families in psychosis.

***4.2.3 Family as a Protective Factor***

Just three studies reported results that indicated protective factors associated with outcomes in FEP, which included the positive association between warmth and relapse (Lee et al., 2014), open communication and outcomes (Otero et al., 2011) and supportive emotional expressiveness with symptom severity (Halford et al., 1991). While research frequently highlights family factors and negative outcomes, the protective nature of family factors was largely underexplored in the research.

**4.1. Clinical Implications**

The findings of the current review outline the necessity of considering the relationship between family factors and outcomes in terms of clinical practice. However, while research indicates the effectiveness of family interventions in FEP (Camacho-Gomez & Castellvi, 2020), barriers to the implementation of such interventions often exist within services. These barriers relate to factors such as culture within services surrounding the involvement of family members in interventions (Eassom et al., 2014) and the prioritization of biological models of mental illness (Bucci et al., 2016). To effectively support those experiencing FEP and their families, a necessary shift in understanding and values surrounding systemic work is essential; failing to do such ultimately ignores evidence which suggests that mental health care should target populations, relationships, and other determinants, rather than the individual and their brains (UN Human Rights Council, 2020).

While research supports family interventions in FEP, understanding family dynamics and processes (Marriott et al., 2023) is crucial. Given the link between attachment difficulties and the development of psychosis (Grady et al., 2024), emphasizing interventions focusing on attachment and relationships, promoting trust, safety, and transparency, could enhance positive family functioning and individual recovery (Boden-Stuart et al., 2021).

**4.2. Research Implications**

Future research should explore inherent family strengths to support effective functioning and positive outcomes. Additionally, family functioning measures often focus only on the present and rarely consider functioning before the onset of FEP. This overlooks potential strengths within the family. There is a need for the development of family functioning measures which include questions relating to differing life stages of family functioning would allow for more enriched data to be gathered (Ramaswami et al., 2022).

Most of the reviewed papers in the current review were from Western industrialized countries with mainly white samples. It's important to consider the ethnicity of samples due to cultural differences in family systems. Family functioning measures are often based on nuclear families with high socioeconomic status, which may not reflect the values, ethnic identity, and family structure of other families (Burkhard et al., 2021). This may lead to an idealized view of family functioning rather than an accurate representation across different contexts.

Research has indicated significant variance across cultures in relation to family factors and outcomes, with Black individuals with schizophrenia experiencing improved outcomes, when exposed to higher levels of EE and lower levels of social support (Rosenfarb et al., 2006; Gurak & Weisman de Mamani, 2017), a significant contrast to much of the research involving white samples. This highlights the difficulty in drawing conclusions within family functioning research and a need for the consideration of additional factors such as those mentioned above in the development of measures.

**4.3. Limitations**

Several limitations in the current review exist. The existing literature on the relationship between family factors and outcomes is limited. Firstly, this review identified 15 suitable research papers, however, the selected papers varied widely in terms of their focus, follow-up, samples, and psychometric measures utilized, posing challenges in drawing definitive conclusions. Secondly, the sample size of the selected papers varied significantly, with the majority of papers having below seventy participants, posing some challenges in terms of the generalizability of findings and reduced statistical power to detect small or subtle effects or relationships. The present review also had a number of limitations. Only English-published research papers were included in the study, studies published in other languages were excluded. Similarly, unpublished research such as dissertations were excluded. The outcomes reported could therefore be vulnerable to language and publication bias.

**4.4. Conclusion**

In conclusion, significant associations between family factors and outcomes in FEP were identified. Moreover, the findings emphasised the significant impact of family factors on outcomes such as symptom severity, and relapse social and occupational functioning. In addition, gaps in the literature was identified, highlighting the need for a model reflecting family distress experienced as a result of FEP and the impact of this on family dynamics and processes.

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**Figure 1** *PRISMA flowchart of studies included in this review.*



|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 1** *Summary of main findings from relevant studies* | | | | | | | | | |
| Author (date) Country | Sample | Diagnosis | Sex | Mean Age  (SD) | Family Measures | | Symptom Severity Measures | Functioning Measures | Main Findings |
| Cotton et al. (2010)  Australia | 81 patients with  63 family members | SZ (33%)  PD NOS  (30%)  Other (37%) | M (63.0%)  F (37%) | 20.1 ( 3.1) | | FQ  ECI | SANS MADRS  BPRS | WHOQoL-Bref  PAS  SOFAS | * EOI and Social Relationships QoL (r = -.25) \* * ECI Difficult Behaviours and Psychological QoL (r = -.27) \* * ECI Difficult Behaviours and Environment QoL (r = -.25) \* |
| Da Silva (2021)  Brazil | 65 Patient-family dyads | SZ (60%)  Psy Dep (12%)  BAD (17%)  Sub ind (11%) | Overall breakdown not reported | Overall breakdown not reported | | FQ-BPV | BPRS |  | * EOI associated with ↑ relapses (OR = 1.20, 95% confidence interval [CI]: 1.05–1.36, p = 0.007). |
| DeTore et al., (2017)  USA | 41 Patient-family caregiver dyads | FEP  (100%) | M (63%)  F (27%) | 24.6 (4.4) | | QRS | BPRS | Mod-SAS | * At baseline, FB was not significantly associated with work status or hours worked at baseline. * At 6 months, FB was associated with work status (r = −.32)\* & with ↓ hours worked (r = −.39)\* * At 1 year, FB was associated with work status (r= −.47)\* with ↓ hours worked (r = −.49)\* * LFO subscale was associated with work status at baseline (r = −.42)\* , 6 months (r = −.49)\* & 1 year (r = −.51)\* * LFO subscale was associated with ↓ hours worked at baseline (r = −.48)8, 6 months (r = −.52)\* & 1 year (r = −.50). |
| Domínguez-Martínez et al.(2014)  Spain | 44 Patient-family caregiver dyads | ARMS  (45%)  FEP  (55%) | M (66%)  F (34%) | 23.7 (5.6) | | FQ | PANNS  CDSS | GFS  SFS | * Criticism was significantly associated with all clinical and functioning measures with the exception of GF-S; * PANNS - Positive symptoms (r =.42)\*\*\* * PANNS - Negative symptoms (r =.35\* * PANNS - General symptoms (r =.43)\*\*\* * CDSS (r =.3)\* * SFS (r = -.43)\*\*\* * GF-R (r = -.43)\*\*\* * EOI was significantly associated with; * PANNS-negative symptoms (r =.35)\* * PANNS-general symptoms ( r=.45)\*\*\* * GF-S (r = -.49)\*\*\* * GF-R (r = -.43)\*\*\* |
| Halford et al., (1991)  Australia | 57 patient relative dyads | SZ (33%) MDD (39% BAD (16%) Other (12%) | M (60%)  F (40%) | 23.7 (5.6) | | FES | BPRS  SANS | QLS | * No association between family measures and outcome measures (QoL & BPRS) at 6 months. * No association between patient & relative FES ratings with BPRS scores at 6 months. * High relative-rated emotional expressiveness was associated with ↓ symptom severity at 6 months (r= -.42)\* * Relatives' rating of emotional expressiveness at 1 month after discharge predicted ↓ scores on; * SANNS (r = -.46)\*\* * QoL measure (r = -.34)\* * Relative-rated conflict at admission was significantly correlated with: * ↑ severity of psychopathology (r=.29)\* & negative symptoms (r = .32)\*\* at follow-up. * However, when premorbid functioning was controlled for, conflict did not predict patient outcome. |
| Halford et al., (1999)  Australia | 52 patient-relative dyads | SZ (31%) MDD (40%)  BAD (19%)  Other (10%) | M (60%)  F (40%) | 30.8(12) | | OFI | BPRS  SANS | GAS  QLS  PAS | * Living with an affect-regulated family associated   + ↓ relapse compared to living with an unregulated family (Χ2 = 6.50)\*   + ↓ BPRS score compared to living with an unregulated family (F= 13.94)\*   + ↓ negative symptoms compared to living with an unregulated family (F== 6.35)\*   + ↑ GAS scores compared to living with unregulated (F= 14.71)\*\*   + ↑ QLS score compared to living with an unregulated family (F = 9.07)\*\* |
| He et al., (2021)  China | 160 patients | FEP (25%) UHR (25%) FDR (25%)  HC (25%) | M(60%)  F(40%) | 26.4 (6.5) | | FACES II-CV | MADRS PANSS  SIPS | GAF | * No association between family measures and symptom severity/functioning identified. |
| Lee et al., (2014)  England | 65 patient-relative dyads | FEP (84% AF PSY (6%)  Sub in (5%)  SZ (5%) | M (74%)  F (26%) | 24.5(5.5) | | CFI  PBI  PCM | PANSS |  | * Overall EE status (r=.027)\*, critical comments (r=.30)\* and warmth (r(58)= -.38)\* associated with relapse at 6 months. * Warmth was associated with ↓relapse (r= -.29)\* at 1 year. * When covariates were controlled for, EE warmth significantly predicted relapse at 6 months (Χ2= 21.27)\*\* Overall EE status and criticism no longer predicted relapse at 6 months. |
| Nuttall et al., (2019)  USA | 282 Patient relative dyad | SZ (53%)  SZ AD (17%)  SZPID(18%)  Psy NOS (12%) | M (75 %)  F (25%) | 22.5(4.8) | | BAS | CDSS PANSS | QLS | * At baseline ↑ levels of initial FB were significantly associated with ↑ levels of positive symptoms (F= 7.32)\* * Over-time, ↑ QoL associated with ↓ FB (F=−64.08)\* |
| Otero et al., (2011)  Spain | 110 patient-parent dyads | BPD (5%)  SCZ (34%) PD NOS (25%)  SZAD (6%) SZPID (9%  BAD (17%)  DD (4%) | Not reported | 15.5(1.8) | | PACI | K-SADS-PL CGI  PANSS | CGAS | * At baseline, open communication was significantly associated with ↑ PANNS (r =.209)\* * ↑ Problems in communication were associated with ↑scores on the PANNS (r = -.30)\*\* at 6 months, and with ↓ scores on the CGI (r=-.20)\* at 12 months. |
| Ropi et al., 2021  Greece | 40 patient-parent dyad | SZ (68%) SZ AD(7%) BPD (5%) BPD NOS(2%) MDD (15%) BAD 3%). | M (68%)  F (32%) | 15.9 (1.2) | | FAD FQ | K-SADS-PL  PANSS | CGAS  PAS-GR  KIDSCREEN 27 | * Scores on the SES (KISDCREEN-27) associated with ↓ roles (r=.64)\*\*\* and ↓ general family functioning (r=-.39)\* * ↑ Economic difficulties associated with ↓ psychological well-being (F=13.71)\*\* |
| Stirling et al., (1993)  England | 30 patient-relative dyads | SZ 80%  BSAD (20%) | M (47%) F (53%) | 25.2 (no SD) | | CFI | SANS  KGV scale,  PSE change |  | * No association between EE & relapse at baseline. * EE measured at follow-up associated with ↑relapse compared to low EE households (x2=6.24)\*\* |
| Tomlinson et al, (2014)  England | 33 patients 24 first-degree relatives | SSD (100%) | M (67%)  F (33%) | 23.7(3.6) | | FAS ECI | HADS BPRS |  | * Patients’ perceived carer criticisms, were strongly correlated with; * ↑ Symptoms of psychosis on the BPRS (r= .53)\*\* * ↑ Anxiety (r=.57)\*\* * ↑Depression (r = .51)\*\* |
| Verdolini et al., (2021)  Spain | 283 Patients | FEP (100%) | M (66 %)) F (34%) | 25.4(5.3) | | FES |  | FAST | * ↓ functioning in non-affective patients was associated with; * ↓ rates of active-recreational (F=- 0.303)\*, * ↓achievement-orientated family environment (F=- 0.304)\* * ↑ Moral-religious emphasis (F= 0.200,)\* * ↑ Control ( F = 0.268)\* * In the affective patients, ↓functioning was associated with: * Conflict (F= 0.718)\* |
| von Polier et al., (2014)  Switzerland & Germany | 31 patient parent dyads | SZ (58%)  SZPID (22.3%)  SZ AD (10%)  DD (67)  PD NOS (3%) | M (74)  F (26) | 15.8(1) | | FMSS | PANSS  CGI-SIS | PAS  ILK | * Patient level of perceived criticism was significantly associated with; * Poorer quality of life (r= −.43)\* * Poorer interactions with family (r= −.47)\* and peers (r= −.48)\* |

*SZ=Schizophrenia, PD NOS=Psychotic disorder not otherwise specified, Psy Dep=Psychotic Depression, BAD=Bipolar Affective Disorder, Sub Ind=Substance Induced Psychosis, FEP=First Episode Psychosis, ARMS=At Risk Mental State, MDD=Major Depressive Disorder, UHR= ultra-high risk for psychosis, FDR= first- degree relatives, HC=Healthy Controls, AF PSY=Affective Psychosis, SZ AD= Schizoaffective disorder, SZPID= Schizophreniform disorder, DD=Depressive Disorder, BPD=Brief Psychotic Disorder, BPD NOS=Brief Psychotic Disorder Not otherwise specified, BSAD=Brief Schizoaffective disorder, SSD= Schizophrenia spectrum disorder.*

*FQ=Family Questionnaire, ECI=Experience of Caregiving Inventory, FQ-BPV= Brazilian Portuguese version of the Family Questionnaire, QRS= Questionnaire of Resources and Stress for Families with Chronically ill or Handicapped Members, FES=Family Environment Scale, OFI= Observed family interaction, FACES II-CV= Family Adaptability and Cohesion Scales Second Edition Chinese version, CFI=Camberwell Family Inventory, PBI=Parental Bonding Instrument, PCI=Perceived Criticism Measure, BAS=Burden assessment scale, PACI= Parent Adolescent Communication Inventory, FAD=Family Assessment Device, FAS=Family Attitudes Scale, FMSS=Five Minutes Speech Sample.*

*SANS= Scale for Assessment of Negative Symptoms, MADRS= Montgomery–Asberg Depression Rating Scale, BPRS=Brief Psychotic Rating Scale, CDSS=Calgary Depression Scale for Schizophrenia, PANSS = The Positive and Negative Syndrome Scale, SIPS=Structured Interview for Prodromal Syndromes, K-SADS-PL =The Kiddie Schedule for Affective Disorders and Schizophrenia, KGV Scale= Modified Krawieka, Goldberg, and Vaughan Psychiatric Assessment Scale, PSE=The Present State Examination Change Rating Scale, HADS=Hospital Anxiety and Depression Scale, CGI-S= Clinical Global Impressions–Severity of Illness Scale, SWN-K=Subjective Wellbeing Under Neuroleptics-Short Form*

*WHOQoL-Bref= World Health Organization Quality of Life Scale-Brief, PAS= Premorbid Adjustment Scale, SOFAS= Social and Occupational Functioning Assessment Scale, Mod-SAS=The Modified Social Adjustment Scale, GFS= Global Functioning Scales, SFS=Social Functioning Scales, QLS= Quality of Life Scales, GAS= Global Assessment Scale, GAF=Global Assessment of Functioning, CGAS= The Children's Global Assessment Scale, PAS-GR= Premorbid Adjustment Scale Greek version, FAST= Functioning Assessment Short Test, ILK = Inventory of Children's Quality of Life.*

*EOI=Emotional Over-Involvement, QoL=Quality of Life, FB=Family Burden, LFO= Limits on Family Opportunity, SES=School Environment Scale.*

\*\*\*<0.001, \*\*<0.01., \*<0.05

**Quality assessment:**

**Table 2***JBI Critical Appraisal Checklist for Analytical Cross-Sectional Studies*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study | Inclusion Criteria | Subjects and setting described | Valid & reliable measure of exposure | Measurement of condition | Confounding factors | Strategies to deal with confounding factors | Valid & reliable measure of outcome | Statistical analysis | Total  (%) |
| Cotton et al.,(2010) | x | x | x | x | x |  | x | x | **87.5** |
| VonPolier et al., (2014) | x | x |  | x |  |  | x | x | **62.5** |
| Tomlinson et al., 2014) | x | x | x | x |  |  | x |  | **62.5** |
| He et al., (2021) | x | x | x | x | x | x | x | x | **100** |
| Domínguez-Martínez et al., (2014) | x |  | x | x |  |  | x | x | **62.5** |
| Ropi et al., (2021) |  | x | x | x |  |  | x | x | **62.5** |

**Table 3**

*JBI Critical Appraisal Checklist for Cohort Studies*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study | Groups same population | Exposures measured similarly | Valid & reliable measure of exposure | Confounding factors | Strategies to deal with confounding factors | Groups free from outcome at the start | Outcomes measured in valid & reliable way | Follow-up reported & sufficient time | Follow up complete | Incomplete follow-up addressed | Statistical Analysis | Total  (%) |
| DaSilva et al. (2021) | x |  | x |  |  |  | x | x | x |  | **x** | **54.5** |
| De Tore et al., (2018) | x | x | x | x | x |  | x | x | x |  | **x** | **81.8** |
| Halford et al., (1991) | x | x | x | x | x |  | x | x | x |  | **x** | **81.8** |
| Halford et al., (1999) | x | x | x |  |  |  | x | x | x |  | **x** | **63.6** |
| Lee et al., (2014) | x | x | x | x | x |  | x | x | x |  | **x** | **81.8** |
| Nuttall et al., (2019) | x | x | x | x | x |  | x | x | x |  | **x** | **81.8** |
| Otero et al., (2011) | x | x | x | x | x |  | x | x | x |  | **x** | **81.8** |
| Sterling et al., (1991) | x | x | x |  |  |  | x | x | **x** |  |  | **54.5** |
| Verdolini et al., (2021) | x | x | x |  |  |  | x | x | **x** |  | **x** | **63.6** |