International Journal of
Psychology
(IJP)

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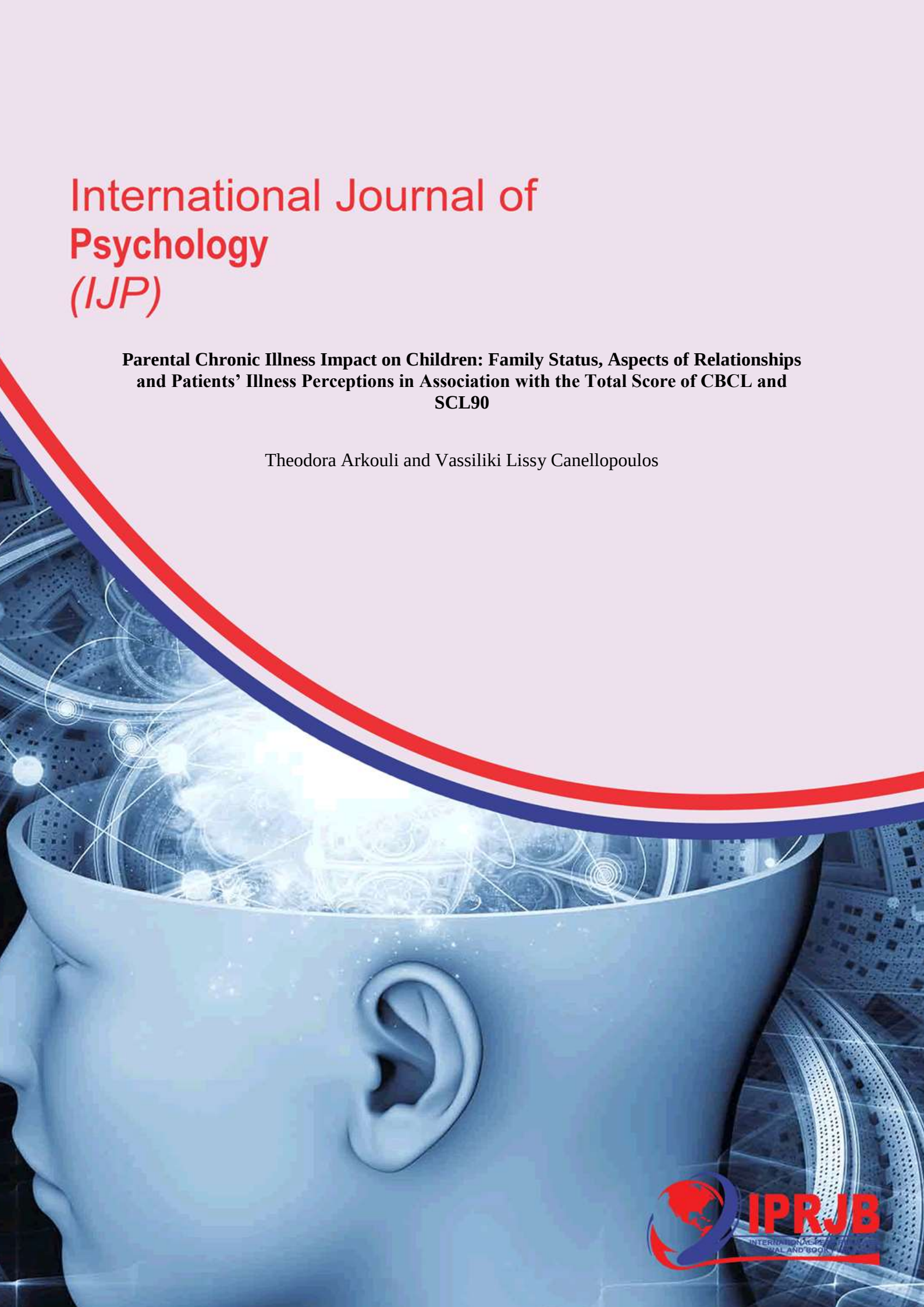

International Journal of Psychology
ISSN 2957-6881 (Online)
Vol 10, Issue 2, No. 5, pp 61 - 89, 2025

www.iprjb.org

Parental Chronic Illness Impact on Children: Family Status, Aspects of Relationships and Patients' Illness Perceptions in Association with the Total Score of CBCL and SCL90

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Article History

Received 7th July 2025

Received in Revised Form 11th August 2025

Accepted 5h September 2025

How to cite in APA format:

Arkouli, T., & Canellopoulos, V. (2025). Parental Chronic Illness Impact on Children: Family Status, Aspects of Relationships and Patients' Illness Perceptions in Association with the Total Score of CBCL and SCL90. *International Journal of Psychology*, *10*(2), 61–89. https://doi.org/10.47604/ijp.3494

Abstract

Purpose: The goal of this study is to define in which ways certain conditions of parental chronic illness affect children's mental health. Precisely, we expect to find answers in a series of research questions about the relation between demographic characteristics of chronic patients, family status, family relationships, role of illness as perceived subjectively by parents and the Scores in the Child Behavior Checklist (CBCL) and Symptom Checklist 90 Revised (SCL-90-R). Current study's aim is to define whether and how family conditions mediate children's psychological impact due to parental chronic illness.

Methodology: The study adopted a qualitative descriptive research design. To collect data, we administered questionnaires to a Greek non-probability purposeful sample of chronically ill parents (N = 182) having children up to 18-years-old. The participants were recruited via on line communities. All the scales have good or excellent reliability (Cronbach's alpha values greater than 0.8). All ethical requirements and General Data Protection Regulations (GDPR) were followed. Ethics committee of National and Kapodistrian University of Athens approval number is: 674/22/05/2025. The IBM SPSS Statistics 24 software was used for the analysis and the significance level of the tests was set at 0.05. Tables were also used to present the data.

Findings: Main findings of the study as revealed from the analysis are the following: patients' relationship status (married / in relationship vs divorced or single) and support received by their partner are significantly related with the total CBCL scores. Among married patients, 6.2% of their children are in borderline or clinical range, whereas the corresponding percentage for those that are divorced, or single parents is 18.9% (p=0.023). The percentage of the children who are in borderline or clinical range for emotional or behavioral problems is significantly higher among the patients who receive a little or none support by their partner (20.5%) compared with children of patients that receive a lot or moderate support (6.1%, p=0.007). Patients that declare that the role of illness in their life is heavy score on average significantly higher in the total scale of SCL90 than those that declare that the role of illness is moderate or minimum (1.05 ± 0.75 vs. 0.66 ± 0.48, p=0.001). Patients who declare that the illness has affected their child also score on average significantly higher in the total scale of SCL90 than those that don't believe or are not sure that illness has affected their child (1.07 ± 0.70 vs. 0.78 ± 0.69, p=0.001). Patients whose child's reaction about the illness is acceptance score significantly lower in the total scale of SCL90 than those that their child's reaction was fear / anxiety / sadness (0.74 ± 0.61 vs. 1.01 ± 0.62, p=0.005).

Unique Contribution to Theory, Practice and Policy: The present study suggests that regardless of the kind of chronic illness or severity spectrum, the patient's subjective positivity towards the illness, the strong bond between partners and the patient's feeling of support, seem to be fundamental mediators of parent/patient feeling of coping and children's wellbeing. The family's climate, the couple's positive relationship and the availability of the healthy parent or even the ill one to relate to, seem to reduce negative outcomes of illness and children's psychological burden. Given the strong association between children's wellbeing and family relationships, we can assume the importance to include the entire family in chronic illness care policies and measures. Identifying protective factors in the context of interaction between parental chronic illness and mental distress in children could guide mental health promotion strategics to enhance all family members well-being.

Keywords: *Parental Chronic Illness, Children's Mental Health, Family Relationships*

JEL Codes of Classification: *I12, D13, J13*

International Journal of Psychology
ISSN 2957-6881 (Online)
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www.iprjb.org

INTRODUCTION

Chronic illnesses appear to become increasingly prevalent in a worldwide spectrum, presenting one of the foremost healthcare challenges in the last decades (Hajat & Stein, 2018). These enduring conditions have long-lasting consequences, extending over one's entire lifespan and need treatment by both patients and medical practitioners (Schachner et al., 2020).

Chronic illnesses were among the top five leading causes of death among American women population in the year 2021. As noted by Batulan et al., (2024), women, compared to men, experience a higher prevalence of many chronic illnesses, including Alzheimer's disease, depression, and osteoporosis. A significant lack of research data regarding the factors that influence these conditions contribute to poorer prevention, treatment and coping strategics designs.

Anderson & Bury (2024) noted that patients with chronic illnesses share a general need for ongoing support not only from healthcare specialists but also from those that provide a more informal care such as family members.

In a worldwide spectrum, the number of patients with a serious illness that are also parents is estimated to range between 4 and 12 % (Barkmann et al., 2007). Growing body of research reveal that the consequences of parental illnesses on children conclude in great vulnerability in mental health problems development, nevertheless there is a restricted research investigation of parental chronic illness and children's psychological outcomes association (Pakenham & Cox, 2014).

Scope of the Study:

- Population: Parents with chronic illness: Adults diagnosed with a long-term physical health condition (mental, metabolic, autoimmune).
- Research Aim: The current study examines how a) patients' mental condition as indicated by the SCL90, b) family conditions (family members relationship quality, family functioning and support by partner) and c) illness perceptions from the patients' aspect shape psychological outcomes in children. More specifically, the study seeks to determine whether family dynamics as pointed out by patients mediate (lessens or worsens) children's emotional and behavioral well-being (e.g., anxiety, depression, fear, stress, peer relationships, social withdrawal, coping mechanisms) as illustrated by the CBCL and parents; perceptions.
- Focus / Exclusions: The study focuses on family-level mediators, not external ones.
- Outcomes: To clarify which family conditions, act as protective or risk factors for children's well-being, and to generate insights for designing family-centered psychological interventions that reduce the negative impact of parental chronic illness on children.

Research shows that children of chronically ill parents are at higher risk of anxiety, depression, social withdrawal, and academic difficulties. Without family inclusive approaches that include assessment, planning, treatment and support, these problems may persist into adulthood, affecting mental health in all aspects of life.

Nevertheless, children of chronically ill parents seem to be a rather 'invisible' population. Although the number of children living with at least one chronically ill parent is heavily increasing, in a worldwide spectrum, predisposing children to heightened risk of psychological distress and mental health disorders, yet, research in this area remains limited. Existing scholar

work focuses more on patients' outcomes rather than the impact on children. This study intends to define family conditions that contribute to stronger relationships and cohesion, thereby preventing the development of psychopathology in children.

Parental Chronic Illness Impact on Children

Worldwide prevalence rate of children who live with at least one parent with chronic illness have been estimated to be up to 10% and is expected to increase over time as stated by Becker (2017).

Literature review revealed significant early findings: In his theory of psychosexual development, Freud (1933, 1940) emphasized the importance of early parent–child relationships, concluding that children's early experiences exert enduring influences on later development. Bowlby (1958) proposed that attachment is an innate behavioral system through which children seek proximity to caregivers for protection, laying the foundation for later emotional and social development. Ainsworth (1978) emphasized the significance of parent-child secure attachment patterns that support exploration and competence, while insecure or ambivalent ones heighten children's vulnerability later in life. Contemporary research continues to emphasize the developmental significance of the parent–child relationship and parenting practices, a focus established early in the scholarly literature. As pointed out by Malloy et al. (2010), an early view of the development of adaptive and maladaptive behaviors during childhood and adolescence suggested that such outcomes stemmed largely from the quality of the child's relationship with his or her parents.

Developmental Stage

Parental chronic illness affects children differently across developmental periods. Research shows that adolescents are particularly vulnerable, displaying higher rates of internalizing problems such as anxiety, depression, withdrawal, and somatic complaints compared to younger children (Landi et al., 2020; Sieh et al., 2010). Children's need of availability of at least one parent to relate to and be supported by, in order to compensate emotionally from the impact of a chronic illness's outcomes is shown by several studies. From early to late adolescence, most teenagers keep turning to their parents for solutions and coping strategies in their daily problems as stressed by Malonda et al., (2019).

Gender-Specific Effects

The influence of parental illness appears to vary by both the child's and the parent's gender. Maternal illness is especially associated with developmental vulnerabilities in children, including physical and socioemotional skills, with daughters being disproportionately affected (Bell et al., 2019; Kaasbøll et al., 2018). These findings suggest a gendered transmission of vulnerability, though evidence regarding paternal illness remains scarce and inconclusive.

Attachment

Attachment emerges as a critical moderating factor in the relationship between parental illness and child outcomes. Kaasbøll et al., (2021) in a cohort study on the mediating role of adolescent attachment to parents and internalizing problems later in young adulthood concluded that parental chronic illness serves as a unique and important risk factor for internalizing symptoms in young adults. The authors mentioned that attachment to parents, and particularly to fathers, lessens the likelihood of internalizing symptoms to appear in young adulthood. This demonstrates the protective role of parental emotional availability and highlights the need for

at least one accessible caregiver to buffer children against the psychological risks posed by parental illness.

Protective factors

Across age and gender, however, protective factors such as open family communication, cohesion, and adaptive coping strategies mitigate negative outcomes and promote resilience. As proposed by Sell et at al. (2021), psychoeducation has become a popular component of interventions for children and their parents aiming to reduce guilt and shame related to parental illness and to improve the children's mental health. Furthermore, research has shown that the appraisal of a stressor is important for the selection of the coping strategy. Lazarus & Folkman (1985) proposed that when people believe they can handle or change a situation, they are more likely to choose problem-oriented coping strategies.

Statement of the Problem

Despite worldwide growing prevalence rates of children who live with at least one parent with chronic illness, a risk factor that has been associated with both internalizing and externalizing problem development in children, not sufficient comparative or longitudinal research work has been conducted in this field.

Although substantial evidence highlights that parental chronic illness influences children's psychological outcomes, few studies explicitly examine how parents' illness perceptions and marital/relationship dynamics interact to structure children's adjustment. The present study employs the Child Behavior Checklist (CBCL) and the Symptom Checklist-90 (SCL-90) to investigate the interplay between parental illness perceptions, relational dynamics, and psychological outcomes. The choice of these instruments is methodologically justified by their established psychometric properties, clinical relevance, and complementarity.

The CBCL is one of the most extensively validated tools for assessing children's emotional and behavioral functioning across multiple domains, including internalizing and externalizing problems. Its standardized scoring system facilitates comparisons across populations and studies, ensuring that findings are situated within a broader evidence base. Importantly, the CBCL captures both clinical and subclinical symptomatology, enabling the detection of subtle psychological difficulties in children that may arise in the context of parental chronic illness. This makes it particularly suitable for exploring how family-level factors, such as illness perceptions and relationship quality, translate into measurable child outcomes.

The SCL90 provides a multidimensional assessment of parental psychological distress, encompassing symptom clusters such as depression, anxiety, somatization, and interpersonal sensitivity. Given that parental psychological well-being directly affects parenting practices, emotional availability, and family climate, the SCL90 serves as a rigorous measure for quantifying parents' subjective burden of illness and associated emotional difficulties. Its use ensures that parental psychological functioning is not treated as a background variable but as an integral mechanism shaping family dynamics and child adjustment.

Taken together, the CBCL and SCL-90 offer a comprehensive methodological framework that links parental illness perceptions and relational processes with validated indicators of both parental and child psychological outcomes. Their joint application strengthens the validity and comparability of findings, enhances the capacity to detect nuanced patterns of risk and resilience, and directly addresses the current gap in family-centered research on chronic illness.

Research Gaps

Most existing studies regarding chronic illness in the family focus on having a child with a chronic illness in the family (children as patients) and not the other way around. (Faugli et al., 2021; Chen, 2017; Donalek, 2009).

Systematic review also revealed a lack of studies in the field of identifying factors that mediate parental illness and children's psychological burden or defying protective factors that reduce the likelihood of children' s developing or worsening mental health problems. Although research findings suggest that family member's perspectives regarding family cohesion, devotion and attachment mediate subjective wellbeing, there is only limited amount of research investigating such associations (Xiang et al., 2022).

LITERATURE REVIEW

Empirical Review of Prevalent Sample's Chronic Illnesses and Their Impact on Children's Wellbeing

Mental Chronic Parental Illness

Symptom Transmission

Children of parents with chronic mental illness are at elevated risk for developing mental disorders themselves due to both genetic and environmental factors. Globally, an estimated 15–23% of children live with a parent who has at least one mental disorder, and these children have up to a 50% chance of developing a disorder. Transmission may be disorder-specific -for example, parental anxiety disorder is associated with an increased risk of anxiety in children- whereas other parental illnesses predict a broader range of child outcomes (Leijdesdorff et al., 2017). Depression is especially concerning, given its high prevalence (Patel et al., 2016; Herrman et al., 2018) and projected global burden as a leading cause of illness by 2030 (Mathers et al., 2008). Parental depression is linked to intergenerational risks such as anxiety, depression, substance dependence, social problems, and poor physical health in offspring (Weissman et al., 2006). While some studies highlight disorder-specific risks (e.g., anxiety → anxiety), others emphasize broad vulnerability across diagnostic categories. This inconsistency complicates prevention strategies, as it remains unclear whether interventions should target specific pathways or transdiagnostic risk mechanisms.

Parenting Impact

Parenting stress plays a mediating role in risk transmission. Parents with a mental illness report significantly higher parenting stress compared to those without a mental illness, and this stress is associated with children's psychopathology and shaped by parental relational schemas (Seipp et al., 2024). These findings suggest that beyond symptoms, parents' self-perceptions and interaction patterns contribute to child outcomes. However, causality remains unresolved, as child difficulties may both exacerbate and result from parental stress. Although associations between parental stress and child psychopathology are well established, most evidence is cross-sectional. Thus, the direction of influence -parent to child or child to parent- remains uncertain.

Treatment Implications

Preventive interventions targeting children of parents with mental illness show strong implications for positive outcomes. They may reduce the risk of disorder development by as much as 40% (Leijdesdorff et al., 2017). Despite this evidence, such children are rarely systematically identified or referred for help, as mentioned by the authors. Parents themselves express the need for psychiatric services, particularly for guidance in explaining their illness to

children. Moreover, children generally comply when asked by parents to participate in interventions, suggesting the feasibility of family-centered approaches (Afzelius et al., 2018). Yet, although preventive programs have demonstrated efficacy, their implementation in routine practice remains limited. This gap between research evidence and clinical uptake raises questions about systemic barriers to identification and service provision.

Parental Autoimmune Illness

In their study He et al., (2022) evaluated risks of the full spectrum of mental disorders in offspring born to mothers with autoimmune diseases. They found that prenatal exposure to maternal autoimmune diseases was associated with modestly elevated risks of neurodevelopmental disorders in childhood. Their study provides further evidence that maternal history of autoimmune illness before childbirth may be associated with increased risks of many other mental outcomes, such as organic disorders, mood disorders, and obsessive-compulsive disorder. Several potential mechanisms have been proposed to explain these findings such as genetic risk factors especially in cases of mothers being diagnosed with autoimmune diseases before childbirth who had a higher risk of mental disorders. However, the authors suggest that the associations cannot be explained entirely by these factors. Further studies are needed to gain a better understanding of the underlying mechanisms.

Several studies have suggested that a great amount (up to 80%) of patients with an autoimmune illness reported uncommon emotional stress before illness onset. However, the disease itself is also found to cause significant stress in patients (Stojanovich, 2010) indicating a rather reciprocal relationship. Carlsson et al., (2014) found that children's psychological stress (due to serious life events, parenting stress, lack of social support, parental worries) may contribute to an imbalance in the immune response but also to a pathological effect on the insulin-producing β cells.

Parental suffering from autoimmune illness and the associated stress response exerts a significant influence on family dynamics, particularly shaping parenting behavior, emotional availability, and children's stress regulation. The chronic fatigue, pain, and unpredictability of autoimmune symptoms often compromise parents' consistency and sensitivity, leading to less effective monitoring, increased irritability, emotional withdrawal or overprotectiveness (Compas et al., 2012). The emotional strain linked to illness, described as both a trigger and consequence of autoimmune processes (Stojanovich, 2010), further undermines parents' capacity for attunement and warmth, reducing opportunities for secure attachment. Consequently, children exposed to this environment frequently display heightened stress reactivity and vulnerability to internalizing and externalizing symptoms, as parental stress and emotional unavailability disrupt their sense of security and adaptive coping (Chen & Miller, 2012). These findings emphasize a transactional stress process, in which parental illness and affective dysregulation compromise caregiving and heighten children's vulnerability to maladaptive stress regulation and psychopathology.

Parental Metabolic Syndrome

The global diabetes prevalence in 20 - 70-year-olds in 2021 was estimated to be 10.5% (536.6 million people), rising up to 12.2% (783.2 million) in 2045. That means that over half a billion people are currently living with diabetes in a worldwide spectrum (a proportion of 10.5% of adult population) as stressed by Sun et al., (2022).

Most guidelines on diabetes coping focus on the medical aspects of management without identifying or supporting the psychological needs of the patients (Kalra et al., 2013).

International Journal of Psychology
ISSN 2957-6881 (Online)
Vol 10, Issue 2, No. 5, pp 61 - 89, 2025
www.iprjb.org

Depression and generalized anxiety disorder seem the most common psychiatric conditions in people with diabetes (Golden et al., 2008; Huang et al., 2011). The association between metabolic syndrome and depression seems to be bidirectional. Pan et al., (2012) in their meta-analysis demonstrated that metabolic syndrome was associated with depression, also that baseline metabolic syndrome could predict the risk of developing depression and that the reverse is also true. Moreover, higher levels of depression, anger expression, hostility and pessimism were significantly corelated with increased prevalence of metabolic syndrome conditions as indicated by Cohen et al., (2010). There is also a significant lack of data regarding the number of diabetic patients that are also parents whose parenting needs must be identified and supported.

Wiebe et al. (2016), focused on the interventions that may promote the effective use of the social context to improve diabetes self-efficacy. They indicated that involvement and support from one's social partners, particularly family members, is consistently associated with good diabetes outcomes when characterized by warmth, collaboration, and acceptance. Under involvement and interactions characterized by conflict and criticism are consistently associated with poor diabetes outcomes.

Theoretical and Empirical Review Regarding Aspects of Family Status and Relationships as Mediators of Parental Chronic Illness affect on Children

Strong amount of research suggest that intimate relationships and bonds are probably among the most significant indicators for one's wellbeing in life (Wilson & Gottman, 2002). Many researchers identify marriage or partnership as a strong factor regarding health promotion and wellbeing (Hughes & Waite 2009; Williams & Umberson 2004). The quality of family environment and how parents' function with one another influence children's physical and mental health. A lot of studies have shown that the most positive the quality of the parental relationship the better the child development in all aspects (Garriga et al., 2019; Masarik & Conger, 2017; Goldberg & Carlson, 2014;).

The parental chronic illness may change the family's functionality due to the new responsibilities and daily strains initiated by the nature of the illness. New problems between spouses or partners may provoke an even more stressful and sad environment for all members (Amato 2010; Daniel et al., 2009; Yorgason et al., 2008; Wolff & Kasper, 2006) or even increase the risk of divorce as found by Karraker & Latham (2015) who examined the role of physical illness on the risk of marital dissolution. Poor quality relationship among parents may conclude to detrimental parenting behaviors, which in turn provoke a negative effect on children's socio-emotional development, as pointed out by Tang et al., (2016) and Baxter et al., (2011). Parental conflicts or the sense of not being supported by the partner seem to significantly influence children's externalizing (e.g. aggression) and internalizing (e.g. anxiety) behavior problems (Westrupp et al., 2018; Buehler & Gerard 2002; Zemp et al., 2016).

On the other hand, research indicates that a functional and positive relationship between parents is found to be significantly related to lower scores on the CBCL (Child Behavior Checklist), and thus to less frequent behavior and emotional problems in children (significant at the 1 %-level) (Fischer et al., 2021).

Dysfunctional parenting behaviors practiced by stressed parents when one of them encounters a chronic illness may threaten the children's sense of emotional security and their grasp of support by their parents, which may increase their vulnerability to social and emotional problems (Garriga et al., 2019; Davies & Woitach, 2008).

As pointed out by Conger et al., (2013) parents who suffer from a lot of stress due to relationship worries may not be as responsive to their children's needs or even behave in a more hostile manner towards them.

Parents may react in dysfunctional behaviors such as inconsistent parenting unsupportive co-parenting (Wilson & Gottman, 2002). They may not be able to express sufficient love and acceptance to their children whose self-esteem may in turn be affected (Craigie et al., 2010; Paczkowski & Baker, 2007). The conflict hypothesis suggests that discord between parents is a crucial source of stress for their children (Krishnakumar & Buehler, 2000). Subjected to sadness and uncertainty children may exhibit increasing levels of psychopathology.

Objectives

This study aims to define whether specific conditions such as

a) demographic characteristics of the patients for the total sample and

b) family characteristics

both mediate CBCL (Children Behavioral Checklist as scored by parents – patients) and SCL90 (Symptom Checklist-90 as scored by parents – patients).

Demographic characteristics of the parent – patients sample concern gender, work, educational level, age and number of children.

Family characteristics regard type of relationship between parents (marital or co – parenting partnership), quality of partners' relationship, kind of support by partners as perceived by patients, illness severity perceptions, illness future role in family's life as predicted by patients, illness impact on children as assumed by patients, future quality of parent – children relationship as predicted by patients themselves.

This study is precisely examining in what ways certain family qualities and illnesses' aspects as perceived by patients themselves a) correlate to behavioral and emotional problems in children .and adolescents as signified by CBCL scores and b) associate with patients' psychological problems and symptoms of psychopathology as assessed by SCL90.

Findings aim to contribute to a deeper understanding of the links between family dynamics and children's well-being in a parental chronic illness environment that could in turn provide valuable information for corresponding families' mental health promotion project designs by public services and health professionals.

METHODOLOGY

Methods

Questionnaires were administered to a Greek non-probability purposeful sample of chronically ill parents (N = 182) having children up to 18-years-old. Parental subjective role of illness in their life, their family functioning and impact on their children's wellbeing were assessed. Various statistical tests were used to determine the extent to which the examined variables were related to each other. (This study is a part of a mixed methods research framework design, integrating quantitative and qualitative data collection, of a healthy parent control group and patients interviews results as well, for a dissertation thesis' purposes conducted in National and Kapodistrian University of Athens, department of Psychology).

Participants

The final sample consisted of 182 parents who are patients of chronic diseases. Subjects were of Greek population, aged between 24 and 59 years (mean age 41). Most of the participants are females (92.9%). More than half of the sample (56,6%) is currently working. Regarding the educational level, 65 (35,7%) participants have completed the secondary (up to high school) educational level, while 117 (64.3%) have completed the tertiary (university) educational level. Out of the 182 participants, 145 were married or in a registered partnership, 21 divorced and 16 single-parents. Of these subjects, 85 (47%) have only one child and 96 (53%) more than 1 child. The illnesses of the patients who responded to research recruitment are classified into three main categories: 74.2% were diagnosed with an inflammatory disease, 14.8% with a metabolic disease and 11.0% with mental illness. Terminal illnesses as well as psychosis were excluded from the sample in advance. For demographic characteristics of the participants see Table 1 and Table 2.

Procedures

The participants were recruited via on line communities. Chronically ill patients' groups and forums were reached out in social networking site Facebook. Social network Facebook is one of most used globally platform considered from Kosinski et al., (2015) to be a very effective tool in selecting, recruiting and engaging participants. Due to its active and broad worldwide coverage (Bhutta, 2012), the platform gives researchers the opportunity to collect rich data from diverse populations (Franz et al., 2019). Custom demographic filters were used to ensure targeting representative participants. Non-probability purposing sampling criteria were used to define participants who possessed the parameters under examination, such as being a chronically ill parent of at least one child up to 18 years of age and suffer from a non-terminal chronic illness or psychosis. In order to gain access to the populations' network group, a letter of researcher's introduction and identification of the study was sent to the moderators. Participants were politely asked to read the purposes of the study and ask questions about anything in case they needed further explanations. Subjects who did not meet the inclusion criteria were excluded from the study. Ethical guidelines for human subject research were fulfilled (Schmidt et al., 2014).

After agreeing to the consent forms regarding GDPR, the participants completed a basic demographic and illness related information questionnaire. Demographic questions concerned the patient's gender, work, education level, number of children and age figures. Questions relative to the patients' perceptions about their illness impact included the family status, the subjective relation quality perception with partner, the subjective feeling of support from partner and the subjective future prediction of patient's - children relation quality. Afterwards, the participants completed the Symptom Checklist 90-Revised (SCL-90-R) and the Child Behavior Checklist (CBCL).

Reliability analysis of the questionnaires was examined through Cronbach's alpha, which are shown in Table 1. All the scales have good or excellent reliability, as values of Cronbach's alpha greater than 0.8 indicate good reliability and values greater than 0.9 indicate excellent reliability.

International Journal of Psychology
ISSN 2957-6881 (Online)
Vol 10, Issue 2, No. 5, pp 61 - 89, 2025
www.iprjb.org

Table 1: Cronbach's Alpha for SCL90 and CBCL Scales

Scale	No. of items	Cronbach's alpha	Scale	No. of items	Cronbach's alpha
SCL90			**CBCL (6-18 years old)**		
Somatization	12	0.905	Total score	112	0.949
Obsessive-compulsive	10	0.885	Externalizing problems	35	0.878
Interpersonal sensibility	9	0.862	Internalizing problems	26	0.868
Depression	13	0.917	**CBCL (1,5-5 years old)**		
Anxiety	10	0.907	Total score	100	0.956
Anger-hostility	6	0.867	Externalizing problems	24	0.901
Phobic-anxiety	7	0.869	Internalizing problems	36	0.896
Paranoid ideation	6	0.803			
Psychoticism	10	0.828			
Total score	90	0.980			

All ethical requirements and General Data Protection Regulations (GDPR) were followed. Consent forms were obtained from all participants, who were informed about the aims of this study. Subjects were aware and agreed that their participation to the study was voluntary and had the right to withdraw from the study at any point. All research data was kept anonymous in a secure location and were used for the scientific purposes of this study only. Ethical approval was approved from the authors institution. Ethics committee of National and Kapodistrian University of Athens ensured that the research adheres to ethical guidelines. Approval number: 674/22/05/2025.

Measures

Instruments

Child Behavior Checklist

The Child Behavior Checklist CBCL is an assessment tool for parents rating adolescents' behavioral, emotional, and social problems and competencies. It is a widely used questionnaire addressing children's and adolescents' behavioral and emotional problems from 4–18 years, yielding a useable sum score. The CBCL is a component of the Achenbach's System of Empirically Based Assessment (ASEBA). CBCL assesses competencies, adaptive and maladaptive functioning, behavioral, social and emotional problems in children and adolescents. The CBCL can be completed by parents (or surrogates) and teachers, as they are considered a major source of information in a multi-informant system. In the case of the current study, the ill parent was asked to complete the CBCL. The measurement includes statements about the child's behavior to choose of a three-point Likert scale, ranging from "not true", to "somewhat or sometimes true", and to "very true or often true".

In order to assess the occurrence of behavioral and/or emotional problems in the current study, the Greek version of the ASEBA manual was used. For the ages 1½ to 5, the manual for the ASEBA preschool forms and profiles was used (Roussou, 2019) and for the ages 6 to 18 the manual for the ASEBA school-age forms and profiles was administered (Roussou, 2018). This

version of the CBCL includes two subscales, internalizing and externalizing scales and a total scale. The items are divided according to the Achenbach's Empirically based syndrome scales into: Withdrawn, Somatic complaints, Anxious/Depressed, Social problems, Thought problems, Attention problems, Delinquency, and Aggressive behavior. In this study, the total scale was used.

The CBCL is scored by converting raw scores to T scores and percentiles. For the pre-school age, T scores of above 64 are considered clinically significant for all scales while T-Scores from 60 to 64 are considered borderline clinical for the Externalizing scale and the Total Problems scale and T scores from 59 to 64 are borderline clinical for the Internalizing scale. For the school age, T scores of above 63 are considered clinically significant for all scales and T-scores from 60 to 63 are considered borderline clinical for all scales.

The content validity, criterion-related validity and the construct validity of the preschool and school age CBCL were all supported for their accuracy and ability to predict. The quality of the reporting is considered high, based on STARD rating and the validity and reliability of the data is also considered high based on the findings of the variety and strength of the validity and reliability in many cultural contexts. Because of this and the rich information that it provides, CBCL is commonly used and accepted in the scientific community.

The Child Behavior Checklist (CBCL), is considered to have demonstrated validity, widely suitable to identify child and adolescent emotional and behavioral problems (Carlén et al, 2022; Nøvik, 1999; Katzenschläger et al., 2018). For the CBCL scales, the T-scores, according to the manual, were computed and used in analyses. The scores on the Total, Internalizing, and Externalizing scale of the CBCL were compared to the demographic questions.

Symptom Checklist 90-Revised

In order to assess the mental health of the parent suffering with a chronic illness the Symptom Checklist 90-Revised (SCL-90-R) was administered.

The Symptom Checklist-90-R is a 90-item self-reported questionnaire developed by Derogatis & Cleary (1977); Derogatis & Savitz (1999) to assess psychological symptoms and psychological distress. The inventory was evolved from the Hopkins Symptom Checklist (Derogatis et al, 1974). It has been widely used in clinical practice as a descriptive and a psychiatric case-finding measurement in various populations.

The measurement includes a list of 90 problems and complains and the participants are asked to choose the answer that best describes how much they were bothered by that problem during the past week. They choose of a five-point Likert scale, ranging from "not at all", to "a little bit", to "moderately", to "quite a bit" and to "extremely". It usually takes about 15 minutes to administer. The SCL-90-R is normed on individuals above 12, in both adults and adolescents and in non-patients, outpatients and inpatients.

The symptoms-items are categorized in 9 primary scales/dimensions: Somatization (SOM), Obsessive-Compulsive (O-C), Interpersonal Sensitivity (I-S), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic Anxiety (PHOB), Paranoid Ideation (PAR), Psychoticism (PSY). It also has three global indices: the Global Severity Index (GSI) that measures overall psychological distress (this index is often used as an overview of the patient's mental health), the Positive Symptom Distress Index (PSDI) that measures the intensity of symptoms and the Positive Symptom Total (PST) that reports the number of self-reported symptoms. All of the above scales and indices are calculated by adding some specific items different for each category and calculating the mean value.

International Journal of Psychology
ISSN 2957-6881 (Online)
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For the measurement of the subject's mental health and symptoms intensity, the Greek version of the SCL-90-R was used (Donias, Karastergiou & Manos, 1991). The validity of the Greek version was supported and found satisfactory.

Statistical Analysis

The IBM SPSS Statistics 24 software was used for the analysis and the significance level of the tests was set at 0.05.

Descriptive statistics were performed to calculate the mean and standard deviations of the continuous variables and frequencies and relative frequencies for the categorical variables. Kolmogorov-Smirnov test performed to determine whether the SCL90 scales followed the normal distribution. The null hypothesis of the test was rejected and therefore Mann-Whitney test was used to examine the association of the SCL90 scales and the categorical variables. Spearman correlation coefficients were used to assess the relation of the SCL90 scales with the continuous variables. Chi-squared test was used to examine the association between the categorical variables.

RESULTS

Table 1 shows the percentage of children that are in normal and in borderline or clinical range in the total score of CBCL and the mean values and the standard deviations of the total score of SCL90 across the categories of the demographic characteristics of the patients. It turns out that there is no statistically significant relation among the patients' demographic characteristics and the total score of CBCL and SCL90 (all p>0.05).

Table 2: Demographic Characteristics of the Patients for the Total Sample and in Relation with CBCL and SCL90

			CBCL			SCL90	
			Total score			Total score	
		Total sample n (%)	Normal range n (%)	Bordeline/ clinical range n (%)	P	mean (s.d.)	P
Gender	Female	169 (92.9%)	153 (90.5%)	16 (9.5%)	0.609	0.96 (0.71)	0.308
	Male	13 (7.1%)	13 (100.0%)	0		0.79 (0.67)	
Work	Yes	103 (56.6%)	93 (90.3%)	10 (9.7%)	0.618	0.91 (0.72)	0.320
	No	79 (43.4%)	73 (92.4%)	6 (7.6%)		0.99 (0.70)	
Education level	Up to high school	65 (35.7%)	60 (92.3%)	5 (7.7%)	0.696	0.95 (0.69)	0.938
	University studies	117 (64.3%)	106 (90.6%)	11 (9.4%)		0.95 (0.72)	
Number of children	1	85 (47.0%)	77 (90.6%)	8 (9.4%)	0.799	0.90 (0.67)	0.476
	>=2	96 (53.0%)	88 (91.7%)	8 (8.3%)		1.00 (0.74)	
Age		mean (s.d.)	mean (s.d.)	mean (s.d.)	P	Spearman cor. Coef	P
		41.19 (6.43)	41.18 (6.40)	41.31 (7.00)	0.921	0.125	0.092

Mean: mean value, s.d.: standard deviation, p: p-value

International Journal of Psychology
ISSN 2957-6881 (Online)
Vol 10, Issue 2, No. 5, pp 61 - 89, 2025
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As shown in Table 2, most of the patients are married (79.7%), 17.1% have bad relationship with their partner, 22.9% declare they have a little or none support by their partner or husband, 73.6% declare that the illness has heavy role on their life, 59.6% believe that the illness has affected their child, 82.4% predict that the relation with their child will be positive and 54.2% their child reaction about the illness was acceptance, while the 45.8% declare negative child reactions as fear, anxiety, sadness or try to process and provide help. The family status, family relations regarding the disease and role of illness in their lives in relation with the total score of CBCL and SCL90 are also given in Table 2.

The family status and the support received by their partner or husband are significantly related with the total CBCL score (Table 2). Among married patients, 6.2% of their children are in borderline or clinical range, whereas the corresponding percentage for those that are divorced, or single parents is 18.9% (p=0.023). The percentage of the children who are in borderline or clinical range for emotional or behavioral problems is significantly higher among the patients who receive a little or none support by their partner or husband (20.5%) compared with children's patients that receive a lot or moderate support (6.1%, p=0.007). Concerning the relation with their partners or husbands, the worse the relation of the patients with their partners or husband, the higher the percentage of children who are in borderline or clinical range for problems, however, the differences were not found to be significant at the level of 5%. The associations of the family status, the family relations, and the role of illness in their lives with the CBCL scores that measure the presence of internalizing or externalizing problems have also been tested (Table 1 in Appendix). The family status, the relationship with partner or husband and the support provided by partner or husband are significantly associated with internalizing problems. Divorced or single parents - patients with worse relations with their partners or husband and patients with little or no support by their partners or husbands have more frequently internalizing problems in borderline or clinical range. No significant associations were found among the family status, family relations and role of illness with the externalizing problems.

Divorced or single parents score on average higher in the SCL90 scale than married participants (1.08 ± 0.83 vs. 0.91 ± 0.67, p=0.248), and patients who believe they have a little or none support by their partner or husband score higher than those with a lot or moderate support (1.13 ± 0.73 vs. 0.90 ± 0.72, p=0.075), however the differences are not statistically significant (Table 2). Patients that declare that the role of illness in their life is heavy score on average significantly higher in the total scale of SCL90 than those that declare that the role of illness is moderate or minimum (1.05 ± 0.75 vs. 0.66 ± 0.48, p=0.001). Patients who declare that the illness has affected their child score on average significantly higher than those that don't believe or are not sure that illness has affected their child (1.07 ± 0.70 vs. 0.78 ± 0.69, p=0.001). Patients that predict that their relationship with child is difficult or unpredicted score higher in the total score SCL90 than those that predict that their relation will be positive (0.89 ± 0.68 vs. 1.21 ± 0.81, p=0.044). Patients whose child's reaction about the illness is acceptance score significantly lower in the total scale of SCL90 than those that their child's reaction was help, process, fear, anxiety, sadness (0.74 ± 0.61 vs. 1.01 ± 0.62, p=0.005).

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ISSN 2957-6881 (Online)
Vol 10, Issue 2, No. 5, pp 61 - 89, 2025
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Table 1: Scores CBCL in Relation with Family Status, Family Relationships and Role of Illness

		Internalizing problems			Externalizing problems		
		Normal range n(%)	**Bordeline/clinical range n(%)**	**P**	**Normal range n(%)**	**Bordeline/ clinical range n(%)**	**p**
Family status	Married	136 (93.8%)	9 (6.2%)	0.009	137 (94.5%)	8 (5.5%)	0.698
	Divorced or single parent	29 (78.4%)	8 (21.6%)		34 (91.9%)	3 (8.1%)	
Relation with partner/husband	Very good	70 (94.6%)	4 (5.40%)	0.024	70 (94.6%)	4 (5.4%)	0.699
	Satisfactory	60 (89.6%)	7 (10.4%)		62 (92.5%)	5 (7.5%)	
	Bad	23 (79.3%)	6 (20.7%)		27 (93.1%)	2 (6.9%)	
Support by partner/husband	A lot/Moderate	123 (93.9%)	8 (6.1%)	0.002	124 (94.7%)	7 (5.3%)	0.274
	A little/None	30 (76.9%)	9 (23.1%)		35 (89.7%)	4 (10.3%)	
Role of illness in their lives	Heavy	119 (88.8%)	15 (11.2%)	0.246	127 (94.8%)	7 (5.2%)	0.484
	Moderate/Minimum	46 (95.8%)	2 (4.2%)		44 (91.7%)	4 (8.3%)	
Illness has affected the child	Yes	94 (88.7%)	12 (11.3%)	0.187	98 (92.5%)	8 (7.5%)	0.358
	No/ Not sure	68 (94.4%)	4 (5.6%)		69 (95.8%)	3 (4.2%)	
Prediction of illness	Positive / steady	79 (88.8%)	10 (11.2%)	0.390	82 (92.1%)	7 (7.9%)	0.313
	Negative/ unpredicted	86 (92.5%)	7 (7.5%)		89 (95.7%)	4 (4.3%)	
Prediction of relation with child	Positive	137 (91.3%)	13 (8.7%)	0.506	141 (94.0%)	9 (6.0%)	1,000
	Difficult/unpredicted	28 (87.5%)	4 (12.5%)		30 (93.8%)	2 (6.3%)	
Child's reaction (based on those that know about the illness)	Acceptance	60 (92.3%)	5 (7.7%)	0.782	63 (96.9%)	2 (3.1%)	0.865
	fear, anxiety, sadness	50 (90.9%)	5 (9.1%)		53 (96.4%)	2 (3.6%)	

* Based on those having a relation

International Journal of Psychology
ISSN 2957-6881 (Online)
Vol 10, Issue 2, No. 5, pp 61 - 89, 2025
www.iprjb.org

Table 3: Family Status, Family Relations and Role of Illness in Relation with CBCL and SCL90

			CBCL			SCL90	
			Total score			Total score	
		Total sample n (%)	Normal range n (%)	Bordeline/ clinical range n (%)	P	mean (s.d.)	p
Family status	Married/ in relationship	145 (79.7%)	136 (93.8%)	9 (6.2%)	0.023	0.91 (0.67)	0.248
	Divorced or single parent	37 (20.3%)	30 (81.8%)	7 (18.9%)		1.08 (0.83)	
Relation with partner/husband*	Very good	74 (43.5%)	70 (94.6%)	4 (5.4%)	0.061	0.88 (0.76)	0.242
	Satisfactory	67 (39.4%)	60 (89.6%)	7 (10.4%)		1.04 (0.72)	
	Bad	29 (17.1%)	24 (82.8%)	5 (17.2%)		0.97 (0.62)	
Support by partner/husband*	A lot/Moderate	131 (77.1%)	123 (93.9%)	8 (6.1%)	0.007	0.90 (0.72)	0.075
	A little/None	39 (22.9%)	31 (79.5%)	8 (20.5%)		1.13 (0.73)	
Role of illness in their lives	Heavy	134 (73.6%)	122 (91.0%)	12 (9.0%)	1,000	1.05 (0.75)	0.001
	Moderate/Minimum	48 (26.4%)	44 (91.7%)	4 (8.3%		0.66 (0.48)	
Illness has affected the child	Yes	106 (59.6%)	97 (91.5%)	9 (8.5%)	0.970	1.07 (0.70)	0.001
	No/ Not sure	72 (40.4%)	66 (91.7%)	6 (8.3%)		0.78 (0.69)	
Prediction of relation with child	Positive	150 (82.4%)	136 (90.7%)	14 (9.3%)	0.742	0.89 (0.68)	0.044
	Difficult/unpredicted	32 (17.6%)	30 (93.8%)	2 (6.3%)		1.21 (0.81)	
Child's reaction (based on those that know about the illness)	Acceptance	65 (54.2%)	61 (93.8%)	4 (6.2%)	0.871	0.74 (0.61)	0.005
	fear, anxiety, sadness	55 (45.8%)	52 (94.5%)	3 (5.5%)		1.01 (0.62)	

* Based on those having a relation

Mean: mean value, s.d.: standard deviation, p: p-value

The association of the family status, the family relations, and the role of illness in the patients' life with all the scales of SCL90 are given in Table 3. Divorced and single parents score significantly higher in the scale of psychoticism than married (0.78±0.73 vs. 0.48±0.58, p=0.001). Patients that receive a lot or moderate support by their partners or husbands score on average significantly lower than those that receive a little or none support on the scales of interpersonal sensibility (0.79±0.76 vs. 1.06±0.81, p=0.024), depression (1.05±0.85 vs. 1.42±0.93, p=0.015), anxiety (0.86±0.87 vs. 1.21±0.99, p=0.040), paranoid ideation (0.75±0.78 vs. 1.05±0.78, p=0.016) and psychoticism (0.47±0.59 vs. 0,75±0.66, p=0.004). Patients who declare that their illness has a heavy role in their lives score significantly higher

on the scales of somatization (1.39±0.94 vs. 0.89±0.66, p=0.002), obsessive-compulsive (1.29±0.92 vs. 0.80±0.60, p=0.002), interpersonal sensibility (0.92±0.83 vs. 0.60±0.51, p=0.033), depression (1.26±0.92 vs. 0.74±0.56, p<0.001), anxiety (1.03±0.94 vs. 0.63±0.65, p=0.006), phobic anxiety (0.70±0.86 vs. 0.37±0.51, p=0.013), and paranoid ideation (0.90±0.82 vs. 0.60±0.60, p=0.035) than those that declare that the illness has a moderate or minimum role in their lives. Patients who believe that their illness has affected their child score significantly higher on all the SCL90 scales (somatization: 1.45±0.90 vs. 1.01±0.86, p<0.001, obsessive-compulsive 1.31±0.88 vs. 0.97±0.84, p=0.007, interpersonal sensibility: 0.94±0.78 vs. 0.69±0.74, p=0.016, depression: 1.26±0.90 vs. 0.94±0.83, p=0.009, anxiety: 1.06±0.92 vs. 0.74±0.81, p=0.006, anger-hostility: 0.93±0.81 vs. 0.71±0.89, p=0.006, phobic-anxiety: 0.76±0.83 vs. 0.39±0.70, p<0.001, paranoid ideation: 0.90±0.78 vs. 0.70±0.77, p=0.033, and psychoticism: 0.58±0.56 vs. 0.49±0.67, p=0.026). Patients that predict that their relationship with their child will be difficult or unpredicted in the future score significantly higher in the scale of somatization compared with those that predict that the relation will be positive (1.60±1.01 vs. 1.18±0.87, p=0.024). Patients that their children's reaction on the illness was acceptance score significantly lower on the scales of somatization (1.08±0.84 vs. 1.40±0.87, p=0.031), obsessive-compulsive (0.94±0.76 vs. 1.21±0.79, p=0.023), interpersonal sensibility (0.64±0.68 vs. 0.88±0.68, p=0.021), depression (0.87±0.68 vs. 1.20±0.77, p=0.013), anxiety (0.69±0.75 vs. 1.02±0.89, p=0.017), anger-hostility (0.54±0.63 vs. 0.89±0.87, p=0.007), paranoid ideation (0.58±0.56 vs. 0.92±0.78, p=0.009), and psychoticism (0.39±0.51 vs. 0.54±0.44, p=0.008) than those that their child's reaction was help, process, fear, anxiety, sadness.

International Journal of Psychology
ISSN 2957-6881 (Online)
Vol 10, Issue 2, No. 5, pp 61 - 89, 2025
www.iprjb.org

Table 4: Mean Values and Standard Deviations of the Scales of SCL90 by the Categories of the Family Status, Family Relations and Role of Illness

		Somatization	**Obsessive-compulsive**	**Interpersonal sensibility**	**Depression**	**Anxiety**	**Anger-hostility**	**Phobic-anxiety**	**Paranoid ideation**	**Psychoticism**
		mean (s.d.)	mean (s.d.)	mean (s.d.)	mean (s.d.)	mean (s.d.)	mean (s.d.)	mean (s.d.)	mean (s.d.)	mean (s.d.)
Family status	Married	1.24 (0.91)	1.14 (0.85)	0.80 (0.73)	1.07 (0.84)	0.89 (0.86)	0.82 (0.84)	0.57 (0.73)	0.77 (0.73)	0.48 (0.56)
	Divorced or single parent	1.31 (0.89)	1.23 (0.97)	0.95 (0.90)	1.33 (0.99)	1.08 (0.97)	0.91 (0.88)	0.74 (1.02)	1.01 (0.90	0.78 (0.73)
	P	0.491	0.736	0.324	0.159	0.145	0.376	0.643	0.149	0.001
Relation with partner/husband *	Very good	1.21 (0.92)	1.12 (0.91)	0.80 (0.81)	1.02 (0.89)	0.82 (0.91)	0.72 (0.83)	0.58 (0.81)	0.76 (0.80)	0.46 (0.61)
	Satisfactory	1.36 (0.96)	1.28 (0.92)	0.92 (0.81)	1.21 (0.89)	1.05 (0.92)	1.02 (0.92)	0.64 (0.82)	0.88 (0.82)	0.58 (0.63)
	Bad	1.22 (0.85)	1.08 (0.72)	0.82 (0.61)	1.24 (0.83)	0.98 (0.88)	0.78 (0.74)	0.69 (0.81)	0.80 (0.68)	0.63 (0.57)
	P	0.638	0.461	0.51	0.157	0.159	0.072	0.817	0.713	0.164
Support by partner/husband *	A lot/Moderate	1.25 (0.94)	1.15 (0.87)	0.79 (0.76)	1.05 (0.85)	0.86 (0.87)	0.80 (0.81)	0.62 (0.80)	0.75 (0.78)	0.47 (0.59)
	A little/None	1.32 (0.85)	1.27 (0.94)	1.06 (0.81)	1.42 (0.93)	1.21 (0.99)	1.00 (1.02)	0.64 (0.84)	1.05 (0.78)	0.75 (0.66)
	P	0.490	0.520	0.024	0.015	0.040	0.411	0.790	0.016	0.004
Role of illness in their lives	Heavy	1.39 (0.94)	1.29 (0.92)	0.92 (0.83)	1.26 (0.92)	1.03 (0.94)	0.89 (0.89)	0.70 (0.86)	0.90 (0.82)	0.59 (0.65)
	Moderate/Minimum	0.89 (0.66)	0.80 (0.60)	0.60 (0.51)	0.74 (0.56)	0.63 (0.65)	0.68 (0.70)	0.37 (0.51)	0.60 (0.60)	0.40 (0.44)
	P	0.002	0.002	0.033	<0.001	0.006	0.180	0.013	0.035	0.080
Illness has affected the child	Yes	1.45 (0.90)	1.31 (0.88)	0.94 (0.78)	1.26 (0.90)	1.06 (0.92)	0.93 (0.81)	0.76 (0.83)	0.90 (0.78)	0.58 (0.56)
	No/ Not sure	1.01 (0.86)	0.97 (0.84)	0.69 (0.74)	0.94 (0.83)	0.74 (0.81)	0.71 (0.89)	0.39 (0.70)	0.70 (0.77)	0.49 (0.67)
	P	<0.001	0.007	0.016	0.009	0.006	0.006	<0.001	0.033	0.026
Prediction of relation with child	Positive	1.18 (0.87)	1.09 (0.82)	0.78 (0.74)	1.06 (0.81)	0.87 (0.87)	0.78 (0.79)	0.56 (0.75)	0.75 (0.72)	0.50 (0.59)
	Difficult/unpredicted	1.60 (1.01)	1.48 (1.06)	1.07 (0.88)	1.42 (1.08)	1.18 (0.96)	1.10 (1.05)	0.86 (0.97)	1.12 (0.94)	0.72 (0.67)
	P	0.024	0.082	0.077	0.121	0.058	0.204	0.127	0.057	0.063
Child's reaction (based on those that know about the illness)	Acceptance	1.08 (0.84)	0.94 (0.76)	0.64 (0.68)	0.87 (0.68)	0.69 (0.75)	0.54 (0.63)	0.50 (0.70)	0.58 (0.56)	0.39 (0.51)
	fear, anxiety, sadness	1.40 (0.87)	1.21 (0.79)	0.88 (0.68)	1.20 (0.77)	1.02 (0.89)	0.89 (0.87)	0.62 (0.74)	0.92 (0.78)	0.54 (0.44)
	P	0.031	0.023	0.021	0.013	0.017	0.007	0.375	0.009	0.008

* Based on those having a relation / Mean: mean value, s.d.: standard deviation, p: p-value

Discussion

Parental chronic illness is considered to be a very stressful factor in a family context that may affect children's development and provoke stress, anxiety, depression, social isolation, avoidance, somatic disorders, excessive worry about getting sick or even feelings of guilt (Koen et al., 2023). Parental illness is significantly associated with psychopathology since several data suggest comorbidity between physical conditions and mental disorders

(Merikangas et al., 2015) with mood and anxiety disorders as the most prevalent features (Isvoranu et al., 2021; Scott et al., 2007). Parent psychopathology in turn is strongly associated with offspring psychiatric disorders development, a risk transmitted through both genetic and environmental mechanisms (Kendler et al., 2003).

The aim of the present study was to examine how certain aspects of parents and parental illness such as demographic characteristics, family status, subjective relations, subjective illness severity and role of illness in their own and children's life associate with their children's functioning and wellbeing as reported and scored in CBCL and SCL90.

Main Findings

Most of the chronically ill participants are mothers in a relationship (mostly married) who declare to have a good relationship with their partners and to perceive sufficient support from them. The majority believes their illness to play a heavy role in their life, and almost half of them think their children feel fear, sadness or anxiety about the parental illness. Most of them also predict their future relationship with their children to be strong and positive.

Concerning the CBCL scores regarding the emotional or behavioral problems of the patients' children it turns out that 9.3% of the children are in borderline or clinical range of internalizing problems, 6,0% of the children are in borderline or clinical range of externalizing problems and 8.8% of the children are in borderline or clinical range of the total problems. As indicated by Carlén et al (2022), mental health disorders in children and especially in adolescence seem to be increasing significantly in a worldwide spectrum. Over half of all mental disorders in children have an onset in 14 years of age and remain mostly untreated until adulthood. Anxiety and depressive disorders are the most common ones (World Health Organization, 2021). Early detection seems crucial especially in children with a high risk to develop psychopathology.

It is worth noting that findings suggest that the worse the relationship of the patients with their partners the higher the percentage of children who are in borderline or clinical range of internalizing problems of their children. These results indicate a rather important tendency.

It should be stressed that parental vulnerability to psychopathology development, regardless of the illness itself, seems to be correlated with negative perceptions about the illness, children's coping as reported by parents themselves, conflicted/bad relationship with partner, single parenting status and subjective lack of support by partner. Patients who perceive enough support from their partners appear significantly lower scores in interpersonal sensibility, depression, anxiety and psychoticism. Supportive partner behaviors have been proposed from several earlier studies as one of major importance factor that could have a positive effect on patient psychological outcomes, on self-management efficacy and engagement (George-Levi et al., 2023; Rapelli et al, 2022; Kar et al., 2023; Rapelli et al., 2024).

The family status, the relation with partner and the support provided are found to be significantly associated with children's internalizing problems. Children of divorced or single parents or parents in a bad relationship with not enough support by their partner are seeming to be at high risk of developing anxiety, depression, withdrawal and somatic complaints. In accordance with these results, previous studies have indicated that positive mother/father relationship can act as a protective factor that promotes family sense of coherence, marital function (Ngai & Ngu, 2016), children's wellbeing and even reduce the risk of psychopathology development.

Divorced and single parents suffered from significantly higher symptoms of psychoticism (SCL-90 subscale) than married ones. Patients who thought their illness to be playing an

important role in their life appear to suffer a lot more in the total scale of SCL-90, especially in subscales of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety and paranoid ideation than patients who regard it to play a moderate or even a minimum role.

Patients who believe their illness has affected strongly their children appear significantly higher symptoms of somatization and score significantly higher in the total SCL-90 than those who perceive this impact as minimum. Patients whose children reacted in fear, anxiety and sadness, according to parents' perception and reports, showed significantly higher obsessive-compulsive symptoms, somatization, interpersonal sensitivity, depression, anxiety, hostility, paranoid ideation and psychoticism (subscales of SCL-90) than those that reported acceptance and processing behavior of their children. These findings are in consistence with many research data about parent and family factors implicated in children's developmental processes, including parental depression (Gross et al., 2008), parenting practices (Brody & Ge, 2001), and parent–child relationships (Fanti et al., 2008).

Confounders

The relationship between parental chronic illness and children's psychological outcomes are influenced by a range of family and contextual confounders that filter and modify the impact of illness. Partner support and marital relationship quality influence the emotional climate of the household: supportive partnerships buffer parental stress and maintain emotional availability, whereas marital discord may heighten stress transmission to children (Compas et al., 2012; Repetti et al., 2002). Parents' subjective perceptions of illness severity are equally significant, as heightened perceptions of threat can intensify parental distress and increase the likelihood of exposing children to anxiety, while minimization may limit children's coping efficiency (Helgeson & Zajdel, 2017). Relatedly, parents' beliefs about children's coping capacities can determine caregiving approaches - whether fostering autonomy and resilience or leading to overprotection and restricted development, (Pakenham & Cox, 2014). Moreover, children's own coping capacity functions as a confounder in this process: children who employ adaptive coping strategies (e.g., problem-solving, seeking support) may experience less psychological distress, while those who rely on avoidance or emotion-focused strategies may be more vulnerable to adverse outcomes (Compas et al., 2001). Also, broader social support networks provide external resources that alleviate parental and child stress (Thoits, 2011), and the extent of illness-related needs (medical, financial, or caregiving) adds another layer of strain that may compromise parental availability and family stability (Chen & Miller, 2012). These interrelated factors highlight that children's adjustment and well-being is not merely a direct consequence of parental illness, but rather develops within a systemic context shaped by relational dynamics, subjective perceptions, and coping processes in the family context.

Future research suggestions

Future research should further clarify the complex role of family and contextual confounders in mediating the relationship between parental chronic illness and children's psychological outcomes. Longitudinal studies are needed to define how partner support and marital relationship quality buffer or exacerbate stress transmission over time. Research should also examine how parents' subjective perceptions of illness severity interact with children's actual adjustment, as misalignments between parental appraisals and children's experiences may have implications for both parenting behavior and child resilience. Another important root lies in exploring both parents' beliefs about children's coping capacity and children's own coping strategies as interactive processes, rather than as separate variables, to understand how family

narratives of coping affect children's psychological trajectories. Moreover, future work should address how social support systems can be leveraged to mitigate illness-related strain, and whether access to support moderates the effects of illness burden on parenting and child outcomes. Finally, studies that integrate illness-related needs (including financial, caregiving, and medical demands) into systemic models will provide a more ecologically valid account of family functioning. By adopting multilevel and family-systems frameworks, future research can move beyond direct illness effects to a more nuanced understanding of the interrelated pathways that influence children's adjustment.

Conclusions

Summarizing most significant findings of current study we can suggest the following assumptions:

- Partner relationship and support: Supportive partner relationships are strongly linked to lower parental distress and fewer child internalizing problems, while conflict, single parenting, or lack of support increase risk.
- Child outcomes: Around 9–10% of children fall in the borderline/clinical range for emotional and behavioral problems, with internalizing symptoms (e.g., anxiety, depression) being most common.
- Parental perceptions: Parents who view their illness as highly disruptive, or perceive their children as fearful/sad because of the illness, show significantly higher psychopathology across multiple domains.
- Protective factors: Positive partner relationships function as a buffer, promoting family cohesion, parental adjustment, and children's well-being.

The present study suggests that regardless of the kind of chronic illness or severity spectrum, the patient's subjective positivity towards the illness, the strong bond between partners and the patient's feeling of support, seem to be fundamental mediators of parent/patient feeling of coping and children's wellbeing. The family's climate, the couple's bond, the availability of the healthy parent or even the ill one to relate to, seem to reduce negative outcomes of illness and children's psychological burden.

Given the strong association between children's wellbeing and family relations, we can assume the importance to include the entire family in chronic illness care policies and measures. Identifying protective factors in the context of interaction between parental chronic illness and mental distress in children could guide mental health promotion strategics to enhance all family members well-being.

In consistence with the above statement, Giannakopoulos et al., (2021) examined the effectiveness of specific preventive interventions, the Let's Talk about Children (LTC) and the Family Talk Intervention (FTI) and found afterwards significant improvements in parent's depression, anxiety, subjectively perceived social support as well as parenting and family functioning. Healthcare providers are encouraged to adopt a family-centered framework when addressing the psychosocial impact of parental chronic illness, as illness-related stress extends beyond the patient to affect marital dynamics, parenting practices, and children's adjustment. Providing psychoeducation to both partners and children reduces uncertainty, corrects misconceptions, and normalizes emotional responses (Compas et al., 2012). Supporting co-parenting communication, clarifying caregiving roles, and maintaining consistent family routines promote stability and resilience for children. Equally, age-appropriate explanations

and coping support help children manage distress and prevent internalizing difficulties. Finally, connecting families to community resources and ensuring multidisciplinary collaboration broadens the scope of care and addresses psychosocial as well as medical needs. Involving the family as an active partner in interventions thus mitigates stress transmission and supports healthier long-term outcomes (Chen & Miller, 2012).

Limitations

Our cross-sectional design limits the ability to infer causality and only captures a snapshot in time, without accounting for developmental or contextual changes. The purposeful sampling method we used that included parents suffering from certain chronic illnesses restricts generalizability among wider population of chronically ill parents. Findings may also be influenced by unmeasured confounders and by reporting bias, since parents often score on behalf of their children, and their own illness-related perceptions or distress can distort the assessment of children's adjustment.

Recommendations

Apparently, it seems rather crucial to use appropriate screening and assessment tools for early detection of mental disorders, that will indicate treatment plans, among children of chronically ill parents. Moreover, strategic policies and interventions aiming to enhance chronically ill parents and their children's mental health promotion and community engagement should be designed by health professionals. Appropriate action plans implementation should reinforce the relationships between family and community members. Precisely, research shows that increased healthcare support, inclusive settings establishment as well as psychoeducational sessions addressed to family members, community and friends regarding living, supporting and coping with parental chronic illness should also strengthen the parent – children's bond, facilitate the family's function and respond to special parental needs support. The development of family's resilience is a dynamic process involving the whole ecological environment of peers, school, community and friends of the family.

Several evidence-based interventions have been developed to support the parent-child relationship when a parent is ill. The Family Talk Intervention (FTI) uses structured psychoeducation and dialogue to enhance children's understanding of parental depression and reduce internalizing symptoms (Beardslee et al., 2003; Solantaus et al., 2009). The Let's Talk About Children (LTC) model fosters parents' awareness of children's needs and has been shown to improve family functioning and prevent intergenerational transmission of mental health risks (Solantaus & Toikka, 2006; Niemelä et al., 2012). Kids-Time Workshops provide creative, group-based sessions for families with parental mental illness, improving communication and reducing stigma (Cooklin et al., 2014). The Op Koers (On Track) programs, grounded in cognitive-behavioral principles, strengthen coping skills and resilience among children of parents with chronic illnesses (van der Geest et al., 2014). Finally, family-focused interventions such as CHAMP+, have demonstrated positive outcomes in child adjustment and family cohesion (McKay et al., 2004). Collectively, these interventions highlight the efficacy of systemic, resilience-based approaches that promote communication, psychoeducation, and coping within families facing parental illness.

Ethics Approval

Declarations

The authors have no relevant financial or non-financial interests to disclose.

No funds, grants, or other support was received.

The correspondent author Theodora Arkouli certifies to be authorized by co-author Vassiliki Lissy Canellopoulos to submit the manuscript in its presented form.

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The study was approved by the research ethics committee of the National and Kapodistrian University of Athens, School of Philosophy, Department of Psychology, and was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments. Approval number: 674/22/05/2025.

Informed consent to participate and to publish was obtained from all individual participants included in the study.

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