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The Mediating Role of Psychological Capital and Sense of Coherence in the Relationship Between Perceived Social Support and Postpartum Depression

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Abstract

Background: The relation between postpartum depression and social support is highly supported in research. However, few studies investigated the factors that could intervene with this relationship. This research aims to investigate how psychological capital (PsyCap) and sense of coherence (SOC) can mediate the relation between perceived social support (SS/PSS) and symptoms of postpartum depression (PPD).

Methods: This study analysed data from 217 postpartum women with age range between 25-41(M= 30.12, *SD*= 3.65). The sample was recruited from public and private hospitals and obstetrics/gynaecology and paediatric clinics in Cairo, Egypt. Data was collected with Arabic versions of, the Multidimensional Scale of Perceived Social Support, the Edinburgh Postnatal Depression Scale, the Sense of Coherence Scale, and the Psychological Capital Questionnaire. Mediation analysis was performed using multiple linear regression, Hayes' Process Macro via bootstrapping on SPSS-26 and mediation analysis by structural equation modelling (SEM).

Results: The total effect of PSS on PPD was significant (β= -.333, 95% CI [-0.438, -0.229], z= -6.247, p< .001). The direct effect was also significant (β= -0.120, 95% CI [-0.210, -0.029], z= -2.596, p= .009). In addition, the total indirect effect of the two mediators

was significant (β= -0.214, 95% CI -0.287, -0.140], z= -5.670, p< .001), indicating partial mediation by both variables, with PsyCap accounting for 10.5% of the effect of PSS on PPD explained variance and SOC accounting for 14.2%.

Conclusions: PSS influences PPD through positive PsyCap traits and SOC. These findings are crucial to designing interventions for minimizing risk for postpartum depression.

Keywords: Postpartum depression, social support, psychological capital, sense of coherence

Background

Women's mental health has become of high interest to the research and practical fields in psychology. Pregnancy and childbirth are among the most influential factors in women's mental health. Around 10% of pregnant women worldwide experience depressive symptoms during this period, making them eligible for a PPD diagnosis (Woody et al., 2017). Postpartum depression (PPD) is a psychiatric disorder that affects women after child-birth and includes symptoms of depressed mood, crying episodes, changes in appetite and sleep, anhedonia, loss of energy, irritability, hopelessness, recurrent thoughts of suicide, and less commonly homicidal thoughts toward the baby (American Psychiatric Association [APA], 2022). The highest reported global prevalence of postpartum depression is 63.3% with variation in prevalence attributed mainly to income status (Wang et al., 2021). Around 75% of women who report symptoms of postpartum depression in less developed countries do not receive professional diagnosis or assistance (Evans-Lacko et al., 2018).

Among the negative consequences of untreated PPD are the financial burden on the healthcare system, poor family functioning, maternal bonding, and development (Gelaye et al., 2016; Letourneau et al., 2012) as well as death by suicide (Kamperman et al., 2017; Weng et al., 2016). Discovering the risk factors of PPD is a major research enterprise since the disorder was first introduced in the late 80s, one of which is the lack of social support.

Social support, the perceived and actual care received from others, is among the most identified correlates with postpartum depression. However, a lack of consensus on the most influential type of support radiates in the existing literature (Zhou, 2014). In addition, the underlying mechanism through which social support influences postpartum depression remains unclear and seldom investigated. Understanding how social support impacts postpartum depression can highlight principles for early intervention that alleviate the effects of the lack of social support either by targeting it directly or by working on the mechanisms through which it is influential.

Especially important to this research area are state-like internal resources, like psychological capital and sense of coherence, that are subject to change under stress or other circumstances and are closely related to coping with difficulties. Psychological capital is the combination of hope, efficacy, optimism, and resilience into a single construct or internal resource that dictates individuals' coping with difficulties and is open to development (Luthans, Youssef, & Avolio, 2006).

Sense of coherence is a disposition that increases individuals' resilience to stressful circumstances by perceiving life events as comprehensible or understandable, manageable by resources, and holds meaning to the individual, therefore improving well-being (Antonovsky, 1996). Investigation of the mechanisms through which psychological capital and sense of coherence influence the relationship between postpartum depression and social support is not far from the psychological research enterprise.

The investigation of the aforementioned factors in childbearing women is promised to have potential benefits on the existing literature and to serve interventions that minimize the incidence of postpartum depression and its debilitating effects. Therefore, this study aims at examining the impact of perceived social support on postpartum depression and the psychological capital and sense of coherence as mediators in a sample of Egyptian childbearing women; therefore, attempting to answer the question: what are the mediating roles of psychological capital and sense of coherence in

the relationship between perceived social support and postpartum depression?

Postpartum Depression

Postpartum depression, also referred to as postnatal depression or peripartum depression, is a psychiatric condition that affects women during, after, or around the period of pregnancy. It is characterized by symptoms of major depressive symptoms that are uniquely tied to this specific life event. Primary risk factors are psychological (history of psychiatric disorder, negative attitude toward the baby or their gender, and history of sexual abuse), obstetric (emergency delivery, umbilical cord prolapse, and low birth weight), social (low social support, physical, sexual, and verbal domestic violence, and smoking), and lifestyle related (diet, sleep, physical activity level, and vitamin deficiency) (Ghaedrahmati et al., 2017). The pathogenesis of postpartum depression is not exclusively established; however, it is believed to be due to an interplay of genetics, hormones, and psychological and social stressors (Coutu et al., 2015). The most supported hypothesis is a neuroendocrine pathogenesis due to the alteration of reproductive hormones as well as other endocrine systems including the hypothalamic pituitary adrenal axis (HPA). According to the *Diagnostic and Statistical Manual of Mental Disorders (DSM–5),* postpartum depression is diagnosed with at least five symptoms of depression persisting for two weeks with a postpartum onset, during pregnancy or four weeks after delivery. These include depressed mood (subjective or observed) present most of the day, loss of interest or pleasure present most of the day, insomnia or hypersomnia, psychomotor retardation or agitation, worthlessness or guilt, loss of energy or fatigue, suicidal ideation or attempt and recurrent thoughts of death, impaired concentration or indecisiveness, change in weight or appetite (weight change 5% over 1 month) that lead to distress and significant impairment in functioning (APA, 2022).

According to a taxonomy of postpartum mood disorders, the different types additional to postpartum depression are postpartum blues, postpartum anxiety, postpartum obsessive-compulsive disorder (OCD), postpartum panic disorder, postpartum post-

traumatic stress disorder (PTSD), and postpartum psychosis (Schimelpfening, 2018). Postpartum blues are prevalent among 50-80 percent of postpartum women and are characterized by a short duration, less severe symptoms, and little to no effect of functioning compared to PPD.

Among the theories that explain PPD are theories that took a biological stance including Beck's (2002) medical model that assumes that postpartum depression is an illness/medical condition and not resulting from societal and environmental factors. It views women as passive beings suggested to biological influences occurring at specific points in the lifespan. Another theoretical perspective is psychosocial theories which include psychodynamic theory, cognitive theory, social interpersonal theory, behavioral theory and evolutionary theory. They build on the perspective that biological changes are triggered by psychosocial and interpersonal stressors (Nemade et al., 2011; Beck, 1967; Egeline, 2008).

The current study adapts the psychosocial theoretical stance in defining and understanding PPD, its symptoms, and its risk and protective factors as this perspective is more inclusive and collective. It also aligns with the purpose of the study to examine the relationship between PSS and PPD and the mediating effect of PsyCap and SOC.

Perceived Social Support

The concept of social support has not lost its popularity since the beginning of time. It was defined by several professionals and theorized by several more. Early definitions conceptualized social support as functional to health. The epidemiologist Sidney Cobb (1976) defines social support as three types of information with different functions; the first being information about being loved and cared for (emotional support), the second about being valued (esteem support), and the third about belonging to a network with shared obligations. According to Cobb (1976), social support is a mediator between stress and health rather than a direct cause of illness. Likewise, Cassel (1974) identifies social support as part of the protective factors against physical and mental health problems

resulting from stress. Similarly, Cohen (2004, p. 676) defines social support as "a social network's provision of psychological and material resources intended to benefit an individual's ability to cope with stress". Additionally, the psychiatrist Gerard Caplan (1974, p. 4-6) refers to support systems as stable or dynamic ties that help in maintaining physiological and psychological health over an individual's lifetime.

The different sources of support are support from the family, spouse, friends, community, co-workers/peers, managers, as well as pets (Li et al., 2021). Different sources of support can co-exist but a different combination may have different effects of individuals. Complementary to the source of support is the subjective experience of the recipient, the perceived vs actual support. Perceived social support is the individual's perception of the actual reception of support and of the helpfulness of the support provided. It is the individual's judgement on his/her social networks as supportive or not and on his/her ability to establish reliable networks (Aksüllü, 2004; Yamaç, 2009). Perceived social support does not depend on the number of networks available to the individual but on the individual's subjective experience of the support provided. Provided support is, on the other hand, the actual behaviour displayed by others, regardless of the individual's construal of it (Yamaç, 2009).

Social support is considered among the most valuable constructs introduced to the empirical and practical fields of social sciences. Social support has been portrayed in the research as a salutogenic factor that improves mental and physical health. It protects individuals from psychological distress during times of crisis or stress, thereby reducing the risk for depression, anxiety, and PTSD (Fleming, et al., 1982; Lin, Ye, & Ensel, 1999; Sarason, Sarason, & Gurung, 1997; Boscarino, 1995). In addition, social support promotes psychological adjustment in response to chronic stress like chronic illness for example (Turner-Cobb et al., 2002; Holahan et al., 1997; Penninx et al., 1998).

The current study defines social support as the perceived acts of support provided from family, friends, and spouses. The operational

definition is adapted from the Multidimensional Scale of Perceived Social Support by Merhi and Kazarian (2012).

Psychological Capital

Positive psychology, the newly emerging field introduced by Seligman (2002), shifts the historical perspective of identifying and solving problems and treating illnesses to highlighting and building on strengths and promoting well-being. Closely linked to Seligman's work is the psychological capital also referred to as PsyCap. Psychological capital refers to personal resources and motivators that develop through positive psychological capacities, hope, self-efficacy, resilience, and optimism. Positive psychologist Csikszentmihalyi noted that such psychological capital "is developed through a pattern of investment of psychic resources that results in obtaining experiential rewards from the present moment while also increasing the likelihood of future benefit...It's about the state of the components of your inner life. When you add up the components, experiences, and capital, it makes up the value" (Kersting, 2003, p. 26) Thus, psychological capital can be defined wholly but cannot be separated from its components.

Psychological capital is defined as internal positive resources possessed by an individual that are capable of being developed and sustained to foster development, well-being, and performance (Luthans & Youssef, 2004). It is internalised and agentic, but it still has social mechanisms. In order to develop resilience (Masten et al., 2009) and efficacy (Bandura, 1997), for instance, social support is a crucial mechanism. Moreover, routes to optimism and hope can be facilitated by depending on others when one's resources are limited or inadequate (Luthans et al. 2015, Youssef-Morgan & Ahrens 2016). Relationships are linked to general optimism as well as overall PsyCap, satisfaction, and well-being (Luthans et al., 2013).

Psychological capital may have been present in the history of psychology; however, important empirical advancements in this field are relatively novel and influential in the recent era. In addition, empirical research on PsyCap in relation to mental health outcomes was recently introduced to the literature. Psychological

capital was examined in relation to depression, anxiety, postpartum depression, burnout, spiritual well-being, and life satisfaction, (Huang et al., 2023; Bakker et al., 2017; Xu et al., 2022; Meseguer de Pedro et al., 2021; Parviniannasab et al., 2022; Zeng, Li, & Yang, 2022; Turliuc & Candel, 2022).

This study emphasizes the importance of psychological capital as an internal positive resource that is open to development and changes over time. Therefore, it is relevant to the study of postpartum depression and perceived social support.

Sense of Coherence

Sense of coherence is an overall dispositional orientation derived from the salutogenesis concept. It conveys that the situations one faces are predictable, making sense or comprehensible, that one has the internal and external resources necessary to deal with those situations or that they are manageable, and that these situations and life in general are meaningful to him/her and that problems are challenges that do not stop his/her life. Therefore, it is a concept that constitutes three dimensions: comprehensibility, manageability, and meaningfulness (Antonovsky, 1993). Despite its multidimensionality, sense of coherence is an indivisible construct that should be defined, assessed, and measured wholly (Antonovsky, 1983). It is an enduring yet dynamic belief or feeling. SOC relates to an individual's ability to determine and reuse the internal (like cognitive abilities, emotions, and behaviours) and external (like social support, relationships, culture, and the environment) resources available to cope with stressful situations, sustain health and well-being, and strengthen resilience (Lindström & Eriksson, 2005; Antonovsky, 1987). Sense of coherence is also referred to as orientation to life or the way an individual describes life in terms of what it is and what it is going to be; it is a worldview that guides assumptions about the current world and future possibilities including goals (Koltko-Rivera. 2004). This orientation, according to Antonovsky (1979, 1989), is what moves an individual across the continuum of health/ease and disease continuum proposed by Antonovsky (1979, 1989) in his salutogenesis model. It came to explain why some individuals maintain good health

regardless of stressors and painful experiences and to describe how people adapt to life's chaos (Antonovsky, 1987). SOC is a way of thinking, being, and acting as a human being, which gives direction in life.

Sense of coherence provides a simple and easy framework to understand answers to salutogenic questions; it implies that all salutogenic processes are filtered through a life orientation that is measurable. It is also a sensible and easy to grasp concept that has high face validity among researchers and professionals. In addition, it is holistic and non-culturally specific, making it more generalizable. The domination of sense of coherence is also largely attributed to the measurability of its three dimensions (Mittelmark & Bauer, 2022). A very small and insignificant percentage of individuals' sense of coherence is genetically determined; the remaining larger percentage is developed by unique environmental influences. Thus, it is a crucial target for research and interventions because it might have promising capacity of change based on environmental influences (Mittelmark & Bauer, 2022).

Social Support and Postpartum Depression

Social support has prevailed in research on maternal well-being and postpartum depression. It is among the most significantly correlated factors identified by researchers. Theoretically explained, social support buffers against stress and strengthens self-esteem, and functioning (see the Buffering Hypothesis; Ugarriza et al. (2007) and the Social Identity theory; Cruwys (2014). High levels of spousal and familial support reduce the incidence of depression after childbirth. Contrarily, inadequate social support inflates postpartum depressive symptoms (Bánovčinová & Klabnikova, 2022; Cho et al., 2022; Jamshaid et al., 2023). This influence persists up to one year from childbirth and is common among all ethnic, sociodemographic, and cultural diversities (Cho et al., 2022; Terada et al., 2021; Pao et al., 2019; Taylor et al., 2022; Khalajinia et al., 2020).

Moderate perceived social support is protective from PPD while low perceived social support increases the occurence of PPD (Inekwe et al., 2022; Gan et al., 2019). Similar correlations between PSS and PPD were identified in Egyptian samples (Saleh et al., 2012; Abdelwahid et al., 2012; Mohammed et al., 2014; El Saied et al., 2021; Elkashif, 2022; Wassif et al., 2019; Abd Elaziz & Abdel Halim, 2021). Despite the evident role of the lack of social support in the emergence of postpartum depression, most research utilized small samples that compromise the possibility of generalizability and practicality.

Psychological Capital and Postpartum Depression

The relatively novel construct of psychological capital is leading few advancements in postpartum mental health research; it is not examined in relation to social support and postpartum depression. While PsyCap is defined as an internalized mechanism, it is not detached from social constructs; for instance, social support is necessary for enhancing self-efficacy and resilience and backs up hope and optimism during hardships (Bandura, 1997; Masten & Reed, 2002; Masten et al. 2009; Luthans et al., 2015; Youssef-Morgan & Ahrens, 2017).

Psychological capital and resilience are full mediators in the relationship between interpersonal relationships and postnatal depression (Zeng et al., 2022). Hope is closely associated with maternal psychological health, postpartum depression specifically. Women with high levels of hope are more likely to have positive labor experiences, set several goals postpartum, and have better quality of life (Delale et al., 2021).

As mothers are faced with new postpartum, self-efficacy plays a major role in how they perceive their capabilities to perform, their mental health, and performance. Low general, maternal, and breastfeeding self-efficacy are significantly correlated with PPD in women of different cultural backgrounds and health conditions (Iwanowicz-Palus et al., 2019; Ginja et al., 2018; Hartati, Raden, & Kartini, 2020; Haga et al., 2012; Chrzan-Dętkoś et al., 2021; Law et al., 2021; Hartati, Raden, & Kartini, 2020; Minamida et al., 2020;

Vieira et al., 2018). Low parental self-efficacy not only predicts postpartum depression but is also influenced by depression severity (Palancı Ay & Aktaş, 2021).

Maternal resilience protects against depression in mothers with traumatic birth experiences, neonatal intensive care admission, covid-19 pandemic births, stress, history of trauma, and childhood trauma (Mautner et al., 2013; Mautner et al., 2020; Studniczek & Kossakowska, 2022; Julian et al., 2023; Zhang et al., 2020; Howell et al., 2020; Sexton et al., 2015).

Optimism is another significant buffer against stress for postnatal depression (Robakis et al., 2015; Gila- Díaz et al., 2020) and mediates the relation between PPD and social support (Kestler-Peleg & Lavenda, 2021). Psychological capital as a construct has not yet been proven to predict or correlate to PPD.

Sense of Coherence and Postpartum Depression

Sense of Coherence is protective against PPD, anxiety, and stress and fosters positive attitudes toward children and birth satisfaction (Ferguson & Davis, 2019; Aune et al., 2016; Ferguson et al., 2016). It predicts PPD in fathers and mothers (Kerstis et al., 2013). It significantly predicts PPD along with its components (Weidner et al., 2013; Yamakawa et al., 2023; Iwanowicz-Palus, Marcewicz, & Bień, 2021; Phoosuwan, Eriksson, & Lundberg, 2018) and helps in screening for postpartum mental health problems early during pregnancy, identifying women at risk (Vivilaki, et al., 2016).

Possible Mediation Effect of Psychological Capital

Psychological capital was not clearly seen in the literature covering social support and PPD. However, self-efficacy and optimism are correlated with social support in postpartum women.

Efficacy and perceived social support were investigated together in integrated models of postpartum depression where parenting-stress, social support, conflicts, and self-efficacy significantly predicted postpartum depression; self-efficacy was a partial mediator for other predictors and PPD (Mohammad et al., 2021; Zhang & Jin, 2016). Self-efficacy prior to pregnancy training and

breastfeeding training increases, improving maternal functioning (Mohammadi et al., 2021; Link, et al., 2019).

Increase in social support leads to increase in optimism among mothers whose infants are in neonatal ICU and others with healthy births and results in reduced risk for PPD (Kestler- Peleg & Lavenda, 2021). In addition, the mediated relationship of SS and PPD was moderated by optimism (Yan & Xu, 2023). Since self-efficacy and optimism, factors of PsyCap, have shown promising effects on postpartum mental health, this study considers them as mediators of the hypothesized relation between PSS and PPD.

Possible Mediation Effect of Sense of Coherence

SOC and postnatal depression (Feligreras-Alcalá et al., 2020; Pasricha et al., 2021). In a study that aimed to identify factors affecting postpartum women's SOC, social support from the family and spouse where among the strongest predictors (Przestrzelska et al., 2018). In addition, SOC was examined for mediation between postpartum depression and related variables like being a first-time mother, having illness, and child-related stress; in the presence of high sense of coherence, participants' mental health was not influenced by these variables (TSUNETA ARAI, & TAMASHIRO, 2020). Despite the evident correlations between SOC, social support, and postpartum depression, few of the identified literature studied the mediating abilities of SOC.

Study Hypotheses

After reviewing the literature available on the relationship between perceived social support and postpartum depression, PsyCap and PPD, SOC and PPD, and the limited literature available on the mediating roles of PsyCap and SOC, the researcher hypothesizes that:

H1: Perceived social support and postpartum depression are significantly correlated.

H2: Psychological capital significantly predicts postpartum depression.

H3: Sense of coherence significantly predicts postpartum depression.

H4: Psychological capital and social support are significantly correlated.

H5: Psychological capital mediates the relation between perceived social support and PPD.

H6: SOC and perceived social support are significantly correlated.

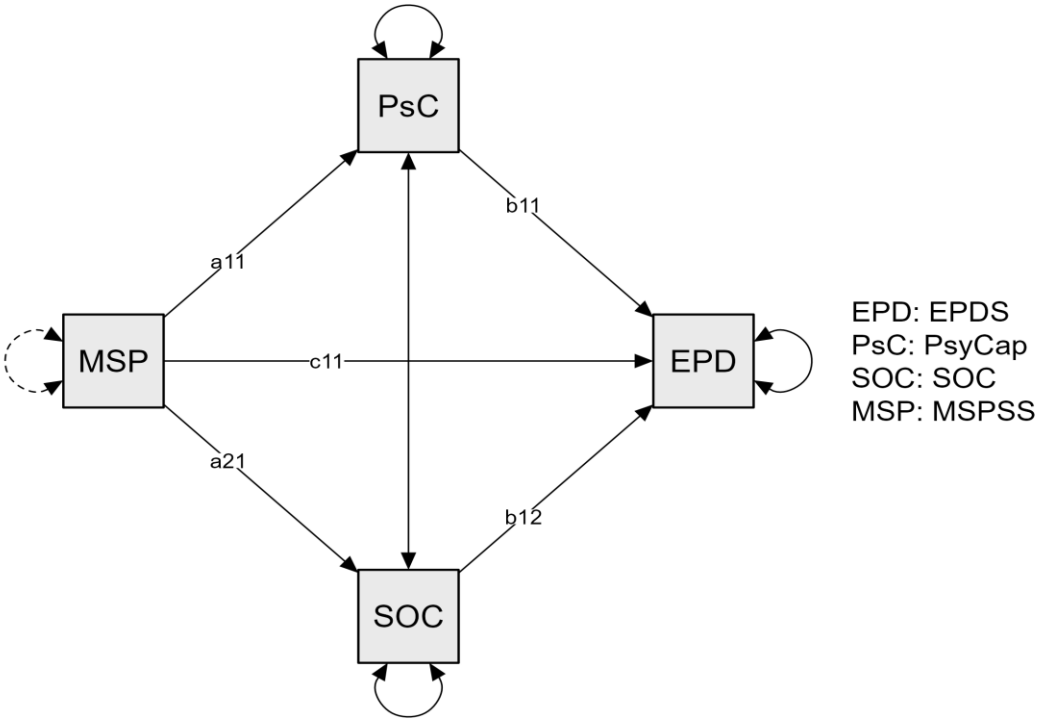
H7: Sense of coherence mediates the relationship between perceived social support and PPD.

Conceptual Model

Postnatal depression is an important mental health concern across all cultures. It received respectable attention from researchers attempting to identify risk and resilience factors and develop interventions to reduce its risk. The significance of social support, PsyCap, and SOC in predicting PPD is prevalent across the literature. However, not all these factors received equal attention. PsyCap remains an understudied construct in the literature on postpartum depression despite its components having made significant advancements in early research and interventions; it was seldom examined in the Egyptian population. In addition, the three variables influence one another and interact in several ways that are worthy of being examined in women during postpartum. Therefore,

the purpose of the current study is to examine the influence of perceived social support on PPD and the mediating effect of psychological capital and sense of coherence on this relationship (*figure 1*).

Figure 1



Conceptual Model

Research Methodology

Research Design

The study followed a descriptive, quantitative, cross-sectional design. The cross-sectional approach was chosen because this study required data collection from postpartum women at one point in time and an analysis of associations between the variables (Wang & Cheng, 2020). This design was chosen as it aligns with the purpose of the research to identify the relations between the identified variables in the Egyptian population. It is

time and cost-efficient and suits the research methodology which requires data collection and analysis using standardized tools (Aggarwal & Ranganathan, 2019; Coghlan & Brydon-Miller, 2014; Setia, 2016).

Sample

The sample of this study was 217 postpartum women with births within one year (6 weeks to 12 months postpartum) from January to March 2024. The sample was recruited from public and private hospitals and pediatric and obstetrics/gynecology clinics in Cairo, Egypt through purposive, homogenous sampling as the researcher intended to recruit women with specific characteristics (Etikan et al., 2016). The inclusion criteria was: (1) delivery within 1-month to a year at the time of data collection and (2) age 25-41. Confounding variables including age, employment status, marital status, educational level, socioeconomic level, number of pregnancies, parity, and type of delivery were controlled for.

The sample size was calculated using G*Power 3.1.9.7 software for power analysis as a sample of 182. The researcher targeted 217 participants to ensure reliable results and match the samples of other studies reviewed (In et al., 2020; Zeng et al., 2022; Delale et al., 2021).

Participants' ages ranged from 25-41 (M= 30.12, SD= 3.665), 74.2% had college education and 25.8 % had a postgraduate degree, 56.2% are employed, 98.6% are married, and 90.8 % were from middle-high socioeconomic class. Of the 217 participants, 27.6% had a natural delivery of their last child. They had between 1-4 children (M= 1.37, SD= 0.640) and experienced pregnancy 1-4 times in their lives (M= 1.49, SD= 0.782). The descriptive analysis of demographic data indicates that the sample is homogenous (*Table 1*).

Note. N=217

Table 1

Demographic characteristics of participants

Sample Characteristics	***n***	***%***	***Mean***	***Std. Deviation***
Age			30.12	3.665
Parity			1.37	.640
Number of Pregnancies			1.49	.782
Educational level				
College	161	74.2		
Postgraduate	56	25.8		
Employment Status				
Employed	122	56.2		
Unemployed	95	43.8		
Marital Status				
Married	214	98.6		
Divorced	3	1.4		
Socioeconomic Status				
Middle-High	197	90.8		
Low	20	9.2		
Delivery Mode				
Natural Birth	60	27.6		
C-section	157	72.4		

Measures

Edinburgh Postnatal Depression Scale (EPDS). Symptoms of PPD were screened using the EPDS as the best practice for screening for PPD (Cox et al., 1987). It is a 10-item scale with responses ranging from 0-3 and a total score of 0-30; 0-6 reveals no

depression, 9-11 mild depression, 12-13 moderate depression, and 14-30 signifies severe depression. Scores of EPDS in this research indicate the severity of symptoms rather than a PPD diagnosis. The scale has a cut-off score of 9/10 (BC, 2014). The Arabic EPDS has high reliability, validity, specificity, and sensitivity (Ghubash et al., 1997; Khattab, 2024). The scale has high internal consistency (ω= 0.824; α= 0.81) and composite reliability (ω= 0.796, α= 0.818) in the present sample.

Multidimensional Scale of Perceived Social Support (MSPSS). The multidimensional scale of perceived social support (MSPSS), a self-report of 12 items, reduced from an originally 24-item version, assesses support on three dimensions, (1) family, (2) friends, and (3) significant other (SO). Items are measured using a 7-point Likert scale (1= very strongly disagree-7= very strongly agree) with a total score of 7; scores from 1-2.9 signify low support, 3-5 signify moderate support, and 5.1-7 signify high support (Zimet et al., 1988). The Arabic MSPSS has high internal consistency and discriminant validity (Merhi & Kazarian, 2012). MSPSS has high internal consistency (ω= 0.894; α= 0.90) and composite reliability (overall: ω= 0.931, α= 0.90; SO: ω= 0.873, α= 0.864; family: ω= 0.851, α= 0.858; friends: ω= 0.884, α= 0.887) in the present sample.

***Psychological Capital Questionnaire*.** Psychological Capital Questionnaire (PCQ) is a self-report of 24 items measured on a 6-point Likert scale (1= strongly disagree and 6= strongly agree) developed by Luthans et al. (2007) that measures efficacy, hope, optimism, and resilience as components of PsyCap. Scores range from 24-144 with higher scores denoting better psychological capital. The Arabic version of PCQ-24 has high reliability (Ebeid, 2022). For the present sample, PCQ has high internal consistency (ω= 0.940, α= 0.940) and composite reliability (total: ω= 0.880, α= 0.940; hope: ω= 0.723, α= 0.815; efficacy: ω= 0.636, α= 0.872; resilience: ω= 0.857, α= 0.854; optimism: ω= 0.879 and α= 0.880).

Global Sense of Coherence Scale. Sense of Coherence Scale introduced by Antonovsky (1979) measures orientation to life on three factors (manageability, comprehensibility, and meaningfulness). The scale was reduced to 13-items measured with

a 7-point Likert scale from a 29-item version with scores ranging from 13 to 91. The Arabic SOC-13 has high reliability, internal consistency, and construct validity (Hadda, 2018). Items 9, 10, 11, and 12 were removed in the present study as they compromised reliability. The scale has high internal consistency (ω= 0.666, α= 0.656) and composite reliability (total: ω= 0.638, α= 0.656; meaningfulness: ω= 0.442, α= 0.507; Manageability: ω= 0.439, α= 0.464; comprehensibility: ω= 0.388, α= 0.349) in the present sample.

Demographic Variables Questionnaire. In addition to the study variables, a demographic data questionnaire designed by the researcher was used to collect data on sample characteristics which included age, employment status, marital status, educational level, socioeconomic level, number of pregnancies, parity, and type of delivery.

Data Collection Procedures

The data analyzed in the present study was obtained from postpartum women visiting public and private hospitals and obstetrics/gynecology and pediatric clinics in Cairo, Egypt for post-delivery follow ups and neonatal care. The researcher received approvals from managers and physicians to ask clients to participate in the research and then sent an online link and a printed version of the informed consent, questionnaires (demographic data, MMSP, EPDS, SOC-Scale, and PCQ), and researcher's contact information along with a short message calling for participation for the physicians to disseminate to potential participants.

The researcher followed the code of ethics dictated by the APA which necessitates that (1) an informed consent that is obtained at the beginning of the questionnaire by signing of the participants; it explains the purpose of the research, everything that is expected from the participants, participants' right to withdraw from the research, benefits from participating in the research, and their rights for confidentiality; (2) possibility of results communication to the participants; and (3) institutional approval from the Research and

Ethics Committee at the Faculty of Arts and Humanities at the British University in Egypt (APA, 2016).

Data Analysis

Descriptive and inferential statistics were implicated to analyze the data of the 217 participants and test the research hypotheses. Descriptive analyses were presented in frequencies, means, standard deviations, ranges, and skewness for participants' demographic information, depression level, social support, sense of coherence scores, and psychological capital.

Bivariate correlations between all variables were performed and reported as a preliminary analysis for mediation analysis. Afterwards, a multiple linear regression analysis using Hayes' process macro via bootstrapping was performed to test the hypothesis that SOC and psychological capital mediate the relation between perceived social support and postpartum depression. mediation analysis with structural equation modelling was also performed for additional confirmation of the results.

Results

Descriptive Analysis

Descriptive statistics present participants' data on social support, PPD, PsyCap, and SOC; mean, standard deviation, ranges and skewness are presented in *Table 2*. The 217 participants' mean score on MSPSS was 5.08 (SD= 1.171). The MSPSS mean scores range from 1 to 7; therefore, most of the sample had low to moderate support. Support from significant others had a mean score of 5.73 (SD= 1.259), support from family 5.21 (SD= 1.44), and support from friends 4.267 (SD= 1.613). For postpartum depression scores on EPDS the average score for participants was 16.83 (SD=5.551). Scores of EPDS range from 0-30 with 0-8 indicating no depression, 9-11 indicating mild depression, 12-13 indicating moderate depression, 14-30 indicating severe depression; the majority had high scores on depression. The mean score of participants on PCQ was 91.75 (SD=20.227). Scores on PCQ range from 24-144 with higher scores signifying better psychological capital. The mean

score for hope was 24.2 (SD=5.757), for efficacy was 21.143 (SD= 6.158), for resilience was 24.323 (SD= 5.889), and for optimism was 22.083 (SD= 5.903). The mean score of participants on SOC was 36.76 (SD=9.23). SOC scale scores range from 13 to 91 and 9-63 in the reduced version; most participants had moderate sense of coherence. The mean score for meaningfulness was 12.41 (SD= 3.71), for manageability was 11.91 (SD= 4.18), and for comprehensibility was 12.43 (SD= 4.60) (*See Table 2*).

Table 2

Descriptive Statistics

Variable	*M*	*SD*	*Range*	*Minimum*	*Maximum*	*Skewness*
1. MSPSS	5.08	1.17	5.2	1.8	7	0.165
2. SO	5.73	1.25	5.5	1.5	7	0.165
3. Family	5.21	1.44	6	1	7	0.165
4. Friends	4.26	1.61	6	1	7	0.165
5. EPDS	16.83	5.55	28	1	29	0.165
6. PsyCap	91.75	20.27	119	25	144	0.165
7. Hope	24.20	5.75	29	7	36	0.165
8. Efficacy	21.14	6.15	30	6	36	0.165
9. Resilience	24.32	5.88	30	6	36	0.165
10. Optimism	22.08	5.90	30	6	36	0.165
11. SOC	36.76	9.23	47	14	61	0.165
12. Meaning	12.41	3.71	18	3	21	0.165
13. Manageability	11.91	4.18	18	3	21	0.165
14.Comprehensibility	12.43	4.60	22	4	26	0.165

N= 217

Correlations and Mediation Analysis

A correlation matrix presented in *Table 2* displays correlations between all the variables and the dimensions on all variables. Social support, support from SO, and support from friends

were significantly correlated with all study variables and so was family support except with resilience. Depression, psychological capital, hope, efficacy, and optimism also displayed significant correlations. The correlations displayed confirm hypotheses 1, 2, 3, 4, and 6 concerning correlations between PPD, PSS, PsyCap and SOC.

After assessing correlations among variables, a multiple linear regression analysis using Hayes' Process Macro via bootstrapping and a mediation analysis using the structural equation model were employed to test hypotheses 5 and 7 and yielded similar results (*Table 3*). Results of the mediation analysis are presented here, and the conceptual model is presented in *figure 2.* Mediation by psychological capital alone was run to test the fifth hypothesis. Perceived social support had a significant total effect on postpartum depression (β= -.333, 95% CI [-0.438, -0.229], z= -6.247, p< .001). In addition, perceived social support significantly and negatively predict postpartum depression, indicated by the direct effect (β= -0.203, 95% CI [-0.300, -0.106], z= -4.113, p< .001). The indirect effect was significant (β= -0.130, 95% CI [-0.189, -0.071], z= -4.289, p< .001), yielding a conclusion that PsyCap was a partial mediator for the relation between PSS and PPD and accounts for 10.5% of the effect of PSS on PPD explained variance. These results confirm the fifth hypothesis that psychological capital mediates the relationship between PSS and PPD.

Further, mediation was tested for sense of coherence independently to test the seventh hypothesis. The results display a significant total effect (β= -.333, 95% CI [-0.438, -0.229], z= -6.247, p< .001), direct effect of perceived social support on PPD (β= -0.156, 95% CI [-0.250, -0.062], z= -3.252, p< .001) and indirect effect (β= -0.178, 95% CI [-0.246, -0.110], z= -5.117, p< .001). These results indicate that SOC partially mediate the relationship and accounts for 14.2% of the effect of PSS on PPD explained variance. The findings conclude that the seventh hypothesis which postulates that SOC mediates the relationship between PSS and PPD.

Mediation was tested for PsyCap and SOC collectively to further confirm the mediation hypotheses. The analysis revealed a significant total effect (β= -.333, 95% CI [-0.438, -0.229], z= -6.247, p< .001), direct effect (β= -0.120, 95% CI [-0.210, -0.029], z= -2.596, p= .009), and total indirect effect (β= -0.214, 95% CI -0.287, -0.140], z= -5.670, p< .001). These findings indicate that both PsyCap and SOC partially mediate the relationship between PSS and PPD, confirming the fifth and seventh hypotheses.

Table 2

Correlations Matrix

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. MSPSS	.90													
2. SO	.82***	.864												
3. Family	.84***	.68***	.858											
4. Friends	.78***	.40***	.42**	.887										
5. EPDS	-.39***	-.30***	-.30***	-.33***	.818									
6. PsyCap	.32***	.28***	.25**	.26**	-.54***	.94								
7. Hope	.28***	.23***	.21*	.25	-.41***	.84***	.851							
8. Efficacy	.32***	.28***	.29**	.23**	-.50***	.86***	.65***	.872						
9. Resilience	.17*	.17**	.11	.13*	-.36***	.85***	.64***	0.66***	.854					
10. Optimism	.32***	.27***	.24**	.27**	-.57***	.83***	.60***	0.62***	0.62***	.867				
11. SOC	.37***	.38***	.34**	.21**	-.62***	.52***	.41***	0.56***	0.28***	0.50***	.656			
12. Meaning	.25***	.26***	.22**	.17*	-.42***	.38***	.30***	0.46***	0.20***	0.32***	0.66***	.517		

13. Manageability	.32***	.34***	.29**	.16*	-.43***	.39***	.34***	0.39***	0.24***	0.37***	0.74***	0.24***	.5			
14.Comprehensibility	.25***	.25***	.24**	.13*	-.50***	.37***	.28***	0.40***	0.19***	0.40***	0.79***	0.30***	0.38***	.41		

*Note. * p < .05, ** p < .01, *** p < .001*

N= 217

The diagonal line of the table includes Cronbach's alpha for each variable and dimensions of the variables.

Table 3

Mediation effects of PsyCap and Soc on the Relationship

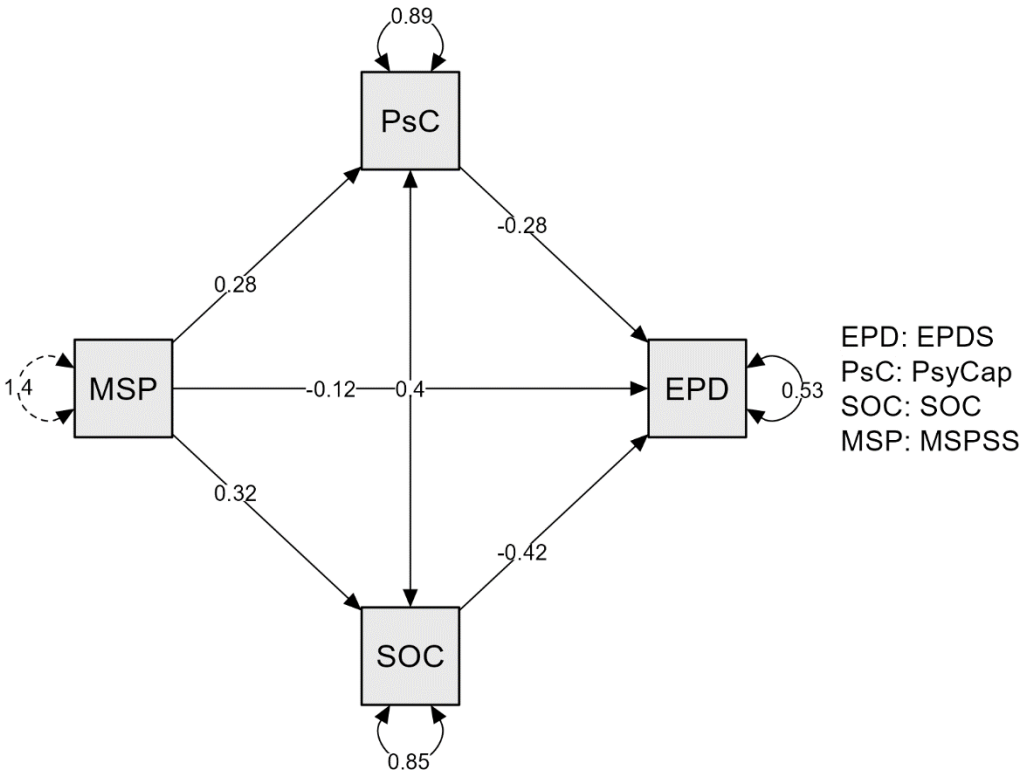
Model	Estimate	R^2	95% CI	
			LL	*UL*
Model 1 (Mediation by PsyCap)				
Total Effect	-0.333***	0.105	-0.438	-0.229
Direct Effect	-0.203***	-	-0.300	-0.106
Indirect Effect	-0.130***	-	-0.189	-0.071
Model 2 (Mediation by SOC)				
Total Effect	-0.333***	0.142	-0.438	-0.229
Direct Effect	-0.156***	-	-0.250	-0.062
Indirect Effect	-0.178***	-	-0.246	-0.110
Model 3 (Multiple Mediation)				
Total Effect	-0.333***	-	-0.438	-0.229
Direct Effect	-0.120*	-	-0.210	-0.029
Total Indirect Effect	-0.214***	-	-0.287	-0.140

Note. N= 217

* p < .05, ** p < .01, *** p < .001

Figure 2

Mediation Model with Parameter Estimates



Discussion

This study investigates the mediating effect of PsyCap and SOC on the relation between perceived social support and PPD in Egyptian women. As hypothesized, the direct, negative relationship between PSS and PPD can be maintained partially through sense of coherence and PsyCap. The main findings of the study are described below.

Perceived social support significantly and negatively correlates with and predicts postpartum depression; low perceived social support increases the likelihood of postpartum depression, supporting the first hypothesis. The first finding is aligned with previous findings supporting the protective role of social support against depression (Bánovčinová & Klabnikova, 2022; Cho et al., 2022; Jamshaid et al., 2023). The buffering hypothesis (Ugarriza et al., 2007) and the social identity theory (Cruwys, 2014) further explain this relationship where social support buffers against maternal stress and improves self-esteem, leading to better

coping and reduced likelihood of postpartum depression. PSS appears as a pivotal resilience factor against postpartum depression.

Correlational analyses further revealed that postpartum depression is significantly and negatively correlated with psychological capital and sense of coherence, supporting the second and third hypotheses of the research. The present findings are supported in the literature by research that proved that women high on resilience, self-efficacy, optimism, and hope are less likely to develop postpartum depression, even when faced with additional challenges (Zeng et al., 2022; Delale et al., 2021; Chrzan-Dętkoś et al., 2021; Studniczek & Kossakowska, 2022; Gila- Díaz et al., 2020) as well as the positive-psychology framework (Luthans et al., 2006). Additionally, a positive outlook to life fosters positive attitudes about motherhood and protects against postpartum depression (Ferguson & Davis, 2019; Yamakawa et al., 2023; Vivilaki, et al., 2016). Antonovsky's (1993) Salutogenic model implies that a positive orientation to life leads to better outcomes like reduced depression. Therefore, promoting sense of coherence and increasing psychological capital in pre- and postpartum women can significantly lower the risk of depression.

Further testing of the fourth hypothesis revealed that psychological capital is positively correlated with perceived social support and reduced likelihood of depression. Previous research supports this relationship whereby social support was linked to improved self-efficacy and resilience in new mothers (Mohammad et al., 2021; Link, et al., 2019; Kestler- Peleg & Lavenda, 2021). Moreover, PsyCap partially mediates the relation between PSS and PPD, supporting the fifth hypothesis. This finding is considered novel to the literature as few studies focused on integrating the three variables together (Mohammad et al., 2021; Zhang & Jin, 2016; Yan & Xu, 2023), and none was considering PsyCap as a mediator in this relationship. The novelty and significance of this finding implies that strengthening the psychological capital of pregnant women, namely resilience, hope, optimism, and self-efficacy through evidence-based approaches can protect against postpartum depression even in the absence of social support.

Likewise, the sixth hypothesis was supported as SOC and perceived social support are positively correlated. This finding was evident in the present study and previous work (Pasricha et al., 2021; Przestrzelska et al., 2018). Additionally, the seventh hypothesis that SOC partially mediates the relationship between PSS and PPD was supported. This result is also a new addition to the literature on PPD as few studies incorporated sense of coherence with social support and PPD; only one study examined SOC as a mediator between PPD and sources of stress (TSUNETA ARAI, & TAMASHIRO, 2020). This finding along with the mediating effect of PsyCap provide a solid ground for PPD preventive interventions that target a positive psychological capital and orientation to life.

Limitations

The present study has several limitations that deserve to be stated and considered in future research. Primarily, it adapts a cross-sectional design that served the researcher's purpose best however minimizing the possibility to establish causal relationships. A longitudinal design is advised in future research to allow for causality between the variables. In addition, the researcher adopted a concise approach, focusing on two mediators. Future research that incorporates more potential mediators might achieve a more statistically robust model that better simulates reality. Moreover, due to the complex nature of the sample, the researcher was unable to meet participants in person. Face-to-face interviews might have guaranteed participants' understanding of the survey questions and minimized possible fatigue effect. The method of participants recruitment might impact generalizability of the results. Had the researcher utilized a probability sampling method, the acquired sample would have been more representative of a larger population and less prone to bias. The researcher focused on a more homogenous sample. Additionally, several characteristics of the population of postpartum women could be considered and controlled in future research, including the health status and conditions of mothers and children. Moreover, the impact of the different types of the social support scale were not integrated in the regression analysis.

Practical Implications and Future Directions

The new findings will motivate practitioners and researchers in several ways. Clinicians working with pregnant/postdelivery women, whether they are mental health professionals or physicians, need to be aware of the early signs of depression and be able to detect and assess them. Early detection and intervention of postpartum depression is the key to better prognosis and fewer complications. Furthermore, mental health professionals need to develop and utilize tailored interventions targeting risk and protective factors of PPD**.** Postpartum psychological support should also be prioritized by clinicians. To facilitate the implementation of these interventions, there needs to be new policies that guide health professionals on specific protocols to follow with pregnant women from conception to delivery. Moreover, new research needs to uncover unlikely resilience and risk factors of PPD and work to overcome limitations, including the ones mentioned in the current study.

Conclusion

This study aims to examine mediation by psychological capital and sense of coherence on the relation between PSS and PPD. Even though the study has some limitations, it managed to uncover substantial evidence on the importance of PsyCap and SOC in postpartum mental health. Through its findings, it can be inferred that PSS impacts postpartum depression both directly and indirectly through SOC and PsyCap. These findings add to the knowledge on postpartum depression and provide a strong theoretical and empirical basis for effective preventive measures.

List of Abbreviations

EPDS: Edinburgh postnatal depression scale

PCQ: Psychological Capital Questionnaire

PPD: Postpartum depression

PSS/SS: Perceived Social Support

PsyCap: Psychological capital

SEM: Structural equation model

SO: Significant other

SOC: Sense of Coherence

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