

Indigenous Tool Development and Validation of Post-Partum Depression and Identity Crisis

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ABSTRACT:

Postpartum depression comprises persistent sadness, anxiety, and fatigue following childbirth, and identity crisis, marked by self-concept and role confusion, often co-occur during the transition to motherhood. Current research study focuses on the construction and validation of an indigenous tool on postpartum depression and identity crisis (PPDAIC) among mothers in Sialkot an area where the intersection of these constructs has been underexplored. Present study provides a reliable and instrument for the measurement of interconnected constructs. It illustrates a theoretical link between identity challenges and aggravated symptoms of depression during postpartum period. A mixed method approach was utilized to construct 25-item questionnaire developed and refined through item analysis. A sample of 200 mothers was considered for the implementation of the items constructed as final version of the scale. Sample was recruited through purposive sampling technique from diverse backgrounds (Periurban, Semi urban and Urban) of Sialkot. Exploratory factor analysis extracted 9 imminent factors represents both post-partum and identity crisis. Findings of the current research suggests that early identification targeted interventions are crucial to consider for maternal mental health. In sum, study provides a culturally sensitive tool for the assessment of the issues advocates for future research on longitudinal trends and cross-

cultural variations to enhance the support for mothers facing postpartum depression and identity crises across diverse contexts.

Keywords: postpartum depression, identity crisis, scale development, validation, Sialkot, young women.

Introduction

In current era a new emerging issues is post-partum depression. It is a severe Clinical issue which predominantly comprises symptoms like depression, anxiety, loss of appetite, sleep disturbances and irritability. Post-partum depression significantly impacts the personality structure, cognitive development and emotional well being of mothers, partners, families and obviously infants. (Sun et al., 2021; Walker et al., 2021). Present study illustrates a relationship between post partum depression and identity crisis aimed to identify the vulnerable population (at-risk individuals) by considering factors such as history of mental health, societal pressure and junction of issues among individuals with health disparities. The research illumines the need for pre-emptive strategies that provide early interventions and support to individuals during the peri-partum period. In addition, examining identity crises during postpartum illustrates the social motherhood image construction and its effect on mental health, informing interventions and at reducing the post-partum risk and promoting maternal well-being. PPD is explained as a depressive episode which occurs within four weeks after the birth of the child and lasts may up to six months (American Psychiatric Association, 2013). Literature indicates that depression rate triples during the months of child birth. (Ursavas, 2011). While many mothers experience mild mood swings and emotional changes following the birth phenomenon known as baby blues—PPD can stick at for longer period and significantly influence a woman's aptitude to care for both herself and her child (Hara & McCabe, 2013). PPD symptoms can emerge at any time after childbirth, even months or a year later, making it more than just a transient phase. An identity crisis, as defined by Marcia (1966), refers to a period of uncertainty and confusion about one's sense of self, often accompanied by questioning of values, roles, and one's place in the

world. For new mothers, this crisis can manifest as a result of the profound and often overwhelming changes that come with pregnancy and childbirth. Process of motherhood adjustment leads to the feelings of restlessness and doubtful self-etc. as women traverse their new roles and responsibilities. Motherhood can be a roller coaster of emotions which instigates a woman to present their role as a mother. While many women anticipate this phase eagerly, the reality can be different from expectations of being a mother which results many challenges in adjusting with both identity crisis and post-partum depression. Unrealistic expectations of becoming a mother and pressure of the society collectively contributes the struggles facing those challenges. Women may encounter predetermined concepts concerning to their ability of becoming a mother which may not perfectly aligned with the reality of caring for a new born. When this self-idealized image doesn't match with the demands of motherhood, it give rise to feelings of inadequacy and identity crisis (Rosenblum & Macdonough, 2019). From self-care to baby care is a shift of priorities which is disrupting for a woman's sense of identity. Loss of independence and responsibility of caring a newborn can leads a women for questioning her place in this world. The emotional misperception of an identity crisis strengthens a woman's struggles her recognitions when she sees mirror, she no longer identifies ther person before becoming a mother. PPD is more often an isolated experience which is experienced by a mother specifically. Demands of caring the newborn often leads to short time for social interactions and making connections to maintain relationships which is challenging for a woman as she was a social beast before. Lack of social support and feelings of loneliness often amplifies the damage of self-sense of a woman and her belongings (Stewart & Vigod, 2019). PPD can hinder a woman's self-esteem by associating with negative self-talk. Women often feels guilty about their depressive symptoms and

blame their own self for not adequately meeting the social expectations to handle motherhood smoothly. (Cohen et al., 2017). Such thoughts can erode a woman's self confidence in her abilities for baby care and automatically increases the emotional turmoil. Moreover, the increment of motherhood can complicate her already multidimensional life. Need of creating equilibrium in her roles as a partner, employee, caregiver and individual often increases her internal conflicts and role strains as well. This struggles aggravates her identity crisis results in deepen sense of confusion and loss (Lachance et al., 2017). Post partum depression often leads to worse relationship with the partner and other loved ones. Emotional distance which results from a woman's struggles with mental health issues can increase misunderstandings and feelings of disconnection. Such stressful relationships often contribute to enhancing the woman's self-identity and emotional burden (Beck, 2002). Despite of all these challenges, there is a ray of hope for recovery. Therapeutic interventions, support groups, self-exploration, self-care practices etc. can play a crucial role in helping the women experiencing PPD to regain their sense of self and complexities of postpartum period (Dennis & Chung-Lee, 2006). Women can begin their journey of recovery, healing, self-discovery and fostering self-care practices through coping mechanisms. Although, this is a longitudinal process requires ongoing support but with the procession of time women can rebuild their identities and emerges as a stronger and more resilient mothers. Ultimately, recognition of challenges associated with mental health and help seeking behavior leads to stability and ability to thrive during this transitive period of motherhood.

Literature Review

PPD is a severe medical condition which manifests the symptoms of depression, anxiety, irritability and loss of identity. PPD significantly affects a woman's sense of identity and her emotional and personality development which affects her family and infants (Sun et al., 2021; Walker et al., 2021). The pathophysiology of post-partum depression is complex enough, hormonal changes, estrogen withdrawal and prolactin regulation contributes in its complexity (Li et al., 2018; Wang et al., 2020;

Cheng et al., 2022). Global statistics indicates that around 15% women experiences PPD globally (Figueiredo et al., 2021), while women develops depression twice and men develops depression (Martini et al., 2009). Hormonal changes during puberty, pregnancy and menopause crucially increases the risk of depression among women (Martini et al., 2009). A study conducted by Abbas, et.al. (2021) reveals a strong and positive connection between malnutrition and obstetric outcomes. After the birth of the child maternal physical health, quality of life and other risk factors increases risk of developing post-partum depression (Julian et al., 2021; Walker et al., 2021). Studies revealed that approximately 20% of females with PPD may develop bipolar disorder (Wisner et al., 2013). Gollan et al. (2021) illustrates that due to bipolar disorder women also develops anhedonia as compared to those with unipolar depression and he emphasizes the need for proper screening. The Edinburgh Postnatal Depression Scale (EPDS) is a famous widely used scales for screening of postpartum depression, it helps to create a distinction between PPD and bipolar disorder to prevent treatment delays (Clark et al., 2022). Williams and Jones (2020) examined underlying psychological mechanisms that links PPD and identity crisis, moreover, it was suggested that women with PPD often struggles with self-esteem and self-concept which leads to the feelings of identity confusion. Intersection between PPD and IC intensifies the emotional challenges faced by those women. In 2019 Lee argued that both conditions are essential to be addressed for the effectivity of intervention, suggested therapy and counseling focusing on coping strategies and self-identity which alleviate the PPD symptoms and assists the women in reconstructing their identities. Manifestation of PPD and identity crisis is associated with cultural factors. Women with postpartum depression may face similar challenges regarding their identities while their cultural support systems may vary in European countries/ Cultures. In some European countries individualism and enforcement on personal fulfillment can affects the perception of women about the context of motherhood and depression. In American cultures, societal pressures related to the success,

motherhood and independence can increase stress, feelings of instability and also increases the impact of PPD (APA, 2018). While in Pakistan gender roles, societal expectations and stigmas related to mental health prevents women seeking for psychological help results in complications in treatment for both PPD and identity crisis. The American Psychological Association (2018) presented that PPD affects almost 1 in 7 women in US exhibiting the symptoms of sadness, loss of interest apatite, sleep disturbances and suicidal thoughts. Without treatment these symptoms worsen with time that is an alarming situation for both mother and the new born child. Erikson's psychosocial development theory illustrates that identity crisis is natural part of

personal development (Cherry, 2021). A study by Smith et al. (2020) concluded that women suffering from PPD experiences more identity confusion and low self-worth than the women without PPD. A vicious circle can be developed by the concordance of both challenges by impairing a woman's ability to properly function and fully enjoying the period of motherhood. Collectively post-partum depression and identity crisis are amalgamated issues which affects the woman's mental health and self-identity during the postpartum period. It is extremely important to provide substantial support and interventions to help affected woman to navigate this pathetic vulnerable phase.

Theoretical foundations

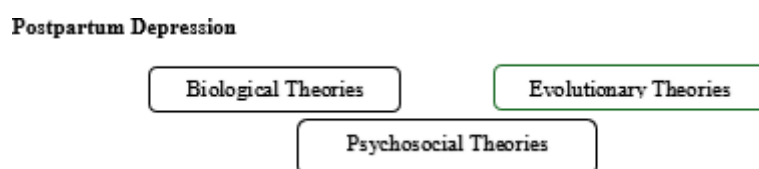


Figure 2.1 Theoretical Frame Work

Biological Theories

Hormonal Fluctuations: Gestation and childbirth comprise hormonal fluctuations. Withdrawal of estrogen and progesterone is conjectured to contribute mood swings and also increases the risk of depression (Boca et al., 2019; Li et al., 2018). Hormonal transitions impacts the brain chemistry and mood regulation among vulnerable population of women.

Neural Imbalances: Serotonin and norepinephrine are brain chemicals involved in mood regulation. Theories of PPD suggests that these neurotransmitters may depletes following childbirth and contributes to depressive symptoms (Meyer et al., 2016; Stewart et al., 2017). Imbalance in these neural chemicals plays a significant roles in the onset of PPD. Imbalances in these brain chemicals are thought to play a role in the onset of PPD.

Hereditary Predisposition: Family history of depression increases the risk of PPD. It suggests a potential hereditary ingredient that alleviates the risk

of PPD vulnerability. Studies suggests that women with hereditary predisposition to depression may be more likely to develop PPD specifically when combined with hormonal fluctuation and environmental stressors. (Bauer et al., 2021; Gavin et al., 2011).

Psychosocial Theories

Stress and Social Support: The challenges of new parenthood can be highly stressful. During the phase of postpartum lack of social support can increase the chances of Post-partum depression and identity crisis. Emotional practical and informational resources plays an important role decreasing the symptoms of PPD along with social support. (Dennis & Falah- Hassani, 2016; Leach et al., 2016).

Negative Emotions and Coping Mechanisms: Disturbance in emotional regulation and low coping strategies can enhance depression, anxiety and persistent sadness it can increase the vulnerability among women following post-partum phase. (Bennett et al., 2019; Field, 2018). Women

struggling with emotional regulation are more prone to experiencing intense feelings of post partum depression.

Unrealistic Expectations: idealized perceptions and societal pressures can create fantasy based expectations for new mothers. The inability to live with the ideal situations often leads to inadequacy and blame to self contributes increases the risk in the development of PPD. (Miller et al., 2020; Stuart-Parrigon et al., 2017).

Evolutionary Theories

Resource Allocation: This theory processes the evolutionary adaptation. Feelings of depression and down after the birth of the child a woman can serve to conserve energy and resources, it helps the woman to focus on infant's survival rather than other activities. (Brockington, 2004; Lee & Hsu, 2018).

Attachment Disruption: Attachment theory Explored that depression interferes with the bond between mother and infant. Troubles in maternal-infant association due to depression can have long-term belongings on both the mother and child's well-being (Besser et al., 2017; O'Hara & McCabe, 2013).

Theories of Identity Crisis

Erikson's Stages: Erick Erikson's psychosocial theory of development suggests that identity formation is central to both adolescence and early adulthood (Erikson, 1968). New mothers faces similar challenges arises as preexisting self and future aspirations. Role of Motherhood requires redefining personal identity, leading to potential identity, confusion and crises (Lifton, 1985; McMahon & McMahon, 2015).

Social Interactions: Societal communication regarding motherhood can be controversial often leading to confusion and feelings of inadequacy as women strives to meet these expectations (Rosenblum & Lewis, 2004). Pressure to conform

idealized self potrays of motherhood can increases stress, contributing feelings of failure or dissatisfaction (Huffman, 2017).

Feminist Approach: This theory suggests that idealization of motherhood in society creates unrealistic societal expectations, which leads negative self-perception and identity crisis. Such gap between societal ideals and the lived experience of motherhood often leaves feelings of inadequacy of women (Arendell, 2000; Douglas & Michaels, 2004).

Role Strain: Theory of role strain illustrates that women experience conflicts when juggling multiple competing roles (e.g., caregiver, partner, employee), leading to redefining their selves within the context of motherhood. This strain can contribute to stress, mental health challenges, and struggles with identity formation (Baruch et al., 1987; Marks & MacDermid, 1996).

Conceptual Frame work

Conceptual framework of current study is based on postpartum depression (PPD) and identity crisis which is an integration of biological psychosocial and identity related theories. It is hypothesized that PPD may arises through the combination of hormonal disturbances, neural imbalances and hereditary predispositions while psychosocial domain comprises stress, lack of social support and unrealistic expectations which increases emotional distress. According to evolutionary theories PPD might serves as an adaptive mechanism, which focuses on energy on infant care while attachment theory suggest that disruption in attachment may leads to hindrance in mother-infant bond. Moreover, identity crisis navigates societal pressure, role strain and redefined sense of self among new mothers. Current framework provides a guidelines for the development of an indigenou tool to assess PPD among new mothers so, that treatment can be provided to them timely for their and newborn's wellbeing.

Comparative model with existing scales

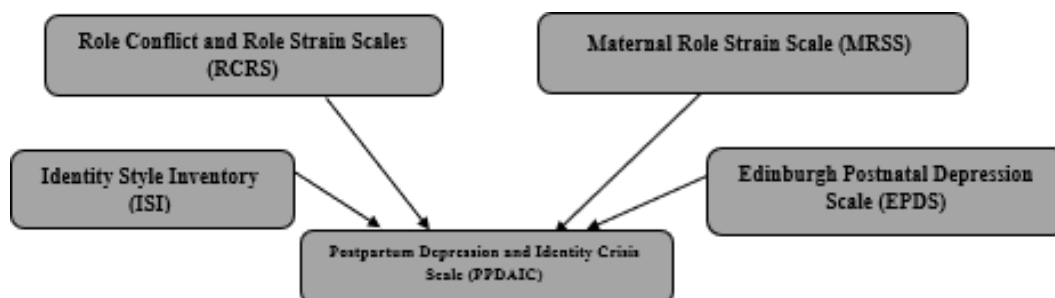


Figure 2.2 Comparative Model

For the establishment of construct validity of PPDIAC (Postpartum Depression and Identity Crisis) scale, it is mandatory to explore its correlations with available measurement Psychological tools. This process helps to approve that the new scale precisely measures the desired dimensions and aligns with existing validated tools in the field.

1: Edinburgh Postnatal Depression Scale (EPDS)

It is a widely used scale for the identification of postpartum symptoms it can serves as a benchmark. A strong positive correlation between PPDIAC scale and EPDS will provide and evidence that newly develop scale reliably captures depressive symptoms during postpartum phase of motherhood. (Cox, Holden, & Sagovsky, 1987).

2: Maternal Role Strain Scale (MRSS)

This scale evaluates stress and challenges faced by a woman in adapting to maternal role. It is relevant measure for assessment of identity related dimensions of motherhood. Moderate to strong positive relationship between the PPDIAC and MRSS would support the concept that identity crisis in the postpartum phase is connected to complications in assuming the maternal identity (Teti & Gelfand, 1991).

4: Instruments measuring role conflict and role strain

Thesis assessments measures the psychological tension arising from gratifying numerous social roles instantaneously (e.g., as a mother, spouse, or

employee)—can further authenticate the identity crisis constituent of the scale. A positive correlation with these scales would suggest that the PPDIAC scale is sensitive to the relational and social pressures experienced by women during the postpartum adjustment period (Goode, 1960).

Study Objective

Current research aims to develop and validate scale for the measurement of postpartum depression and identity crisis among new mothers.

Methodology and Results

Current research aimed to develop and validate culturally and contextually adequate scale for the assessment fo Postpartum depression and identity crisis in a single measure among educated adult women living in various urban regions of Pakistan. Cross-sectional research design was utilized with mixed method approach to ensure comprehensive scale development and validation.

Scale Development Procedure

The rigorous process of scale development and validation is followed by established psychometric protocols. The process of Development and validation is divided into two procedures. Initially, qualitative data were collected through semi-structured interviews to generate a comprehensive item pool. Relevant themes reflecting the lived experiences of postpartum women, which formed the basis for initial item construction were extracted through thematic analysis.

Qualitative Validation (Study-I)

To improve the precision and relevance of the items, the Delphi technique was cast-off for item refinement and reduction. Panel of 9 subject experts including clinicians and psychologists employed in public sector sanatoria in Sialkot, assessed each item for cultural suitability, conceptual alignment, and clinical usefulness. Content validity was measured by CVI (content validity index) for ensuring that all items were contextually subtle and theoretically grounded.

Quantitative Validation (Study-II)

Following expert validation, Exploratory factor analysis was employed on the scale items. EFA identified underlying factor structure, followed by CFA by using SEM via AMOS to verify factor structure and model fit. Analyses were carried out through SPSS and AMOS.

Validity and Reliability Assessments

Convergent and discriminant validity were examined for the establishment of Robustness of the scale. Results indicated that tool affectively measures the constructs of postpartum depression and identity crisis.

Target population Sample and Sampling Size

The sample of current research is based on 200 women facing postpartum depression from educated urban background. The study sample aligns with the psychometric recommendations, suggesting that there must be 5-10 participants per item for the factor analysis (Worthington & Whittaker, 2006). Moreover, the sample size is in accordance with previous national studies. Such as Husain et al. (2014) employed testers ranging from 150 to 300 partakers in similar urban Pakistani contexts. Internationally, Cox et al. (1987) authenticated the original Edinburgh Postnatal Depression Scale (EPDS) with 84 partakers, while more recent validation studies, such as Gibson et al. (2009) utilized larger sample from 200-400 participants. These comparisons provides enough support for the validation of current research study's sample size. Conclusively, the arduous methodological processes employed in this study, including qualitative item generation, expert review,

and advanced statistical validation supports the development of a psychometrically comprehensive, culturally apposite instrument for assessing postpartum depression and identity crisis among Pakistani women.

Ethical Considerations

All ethical considerations were strictly followed throughout the research process by ensuring proper permissions obtained from relevant authorities. Both written and verbal form of informed consent was secured from all participants, ensuring that participants are fully aware of the research objectives, procedures and their rights. Moreover, confidentiality was maintained. Murphy's (1991) guidelines were followed for the ethical considerations through the research process to ensure the ethical protocols.

Study I

Item Generation

This is the initial stage of the scale development. This stage comprises item pool generation. The primary sample for the development of PPDIAC is based on women from diverse socio-demographic background across Periurban, semi urban and urban areas of Sialkot Pakistan. This diverse medley was intended to ensure that scale would capture multidimensional nature of postpartum experiences in diverse Pakistani background. Further to strengthen the validity of the scale, a panel of 9 subject experts were carefully selected. All panel members holds MBBS degrees with specialization in gynecology and had several years of professional experience in maternal care. The experts were from multiple private and public hospitals of Sialkot. Each expert holds a combination of knowledge and hand on experience in the treatment of women facing postpartum challenges. Their consistent engagement with patients, dealing with postpartum depression, role transition and identity disturbances make them able to provide, contextually grounded, clinically relevant insights. In addition to their medical credentials, many of them had exposure to research and other academic activities, it allows them to bridge the gap between literature and clinical observations. This unique combo of skills

made their invaluable input in assessment of content, relevance, clarity and cultural relevance of each item in the initial pool. Deville's 1991 framework was utilized to construct this scale. The frame work emphasizes systematic item generation, expert validation and iterative refinement for the enhancement of psychometrically sound development of newly developed scale. Experts critically evaluated each item for conceptual alignment with the underlying constructs of postpartum depression and identity crisis. It ensured that the scale captured both emotional distress and psychological disorientation that woman may face following childbirth. Their feedback was instrumental in the identification of ambiguous or culturally inappropriate wording. Revision was conducted by them for the clarity of item content, mandatory for the construct validity of the scale. The integration between research team and panel of experts significantly contributes the theoretical soundness and cultural appropriateness of the current tool.

Qualitative Constituent

Qualitative data was collected through in-depth, face to face, semi-structured interviews from 35 mothers following postpartum period of motherhood. These females were selected based on their knowledge and experience of maternal outcome. Semi-structured interviews were conducted for an extensive period of time of 50-55 minutes that is an ample time for the exploration of participant's perspectives. Thematic analysis was conducted to analyze the qualitative data interpreted in narrative style. Researcher subjectively examined the verbatim transcripts of audio recordings. At this stage no coding and sorting of data was conducted. The second step was concerning to the re-evaluation of all interview transcripts for the refinement of the data. In third step open line by line coding by following Strauss model was performed by the researcher. In proceeding step themes and categories were extracted from the available codes.

Themes and Items pool

To increase the credibility and rigor if the current research, comprehensive methodological approach

was adopted by the researcher which emphasized ethical adherence, detailed planning, and methodological triangulation. It comprises comparison of subjective interpretation of the researcher and insights gained through collaborative dialogue during in depth interviews of 35 participants thereby ensuring the validation of emerging findings. By this systematic thematic analysis following key themes were extracted: (1) Assertive Identity / Personal Stability, (2) Cognitive Adaptation / Self-Adjustment, (3) Interpersonal Regulation, (4) Self-Awareness and Insight, (5) Emotional Control / Stress Response, (6) Behavioral Adjustment / Self-Regulation, and (7) Future Orientation or Planning. These themes aided in the development of 25 items by ensuring that the scale comprehensively captured the complex and multidimensional experiences of postpartum depression and identity crisis in adult females. The combination of rich qualitative data into the item production process reinforced the scale's content validity and contextual consequence.

Item reduction and Refinement analysis:

MDA (Modified Delphi Approach)

The MDA was performed to refine the 60 initial items by several round of feedback and discussion by incorporating consensus from selected women. For instrument's robustness and efficiency, a reformed version of the Delphi model, introduced by Brady in 2015, was employed.

Initial round

The initial round of Delphi's technique was based on the presentation of 60 items to the participants. Each item was evaluated by the participants on five point Likert scale ranging from "strongly agree" to "strongly disagree." The usage of a Likert-type scale in this framework is reinforced by prior research, which stresses the reliability, clarity, and stability of 5-point assessment structures in modified Delphi studies (Vogel et al., 2019). Participants were instructed to provide both quantitative ratings and qualitative feedback on the clarity, relevance and wording of every item. Researcher thoroughly analyzed the responses. Researcher incorporated every feedback to refine the wording and

conceptual alignment of the items for targeted constructs. Ambiguous, redundant and lacked constructive items were identified for the removal. Based on the findings of these feedbacks 30 items were excluded from the pool of items. Inter-rater agreement of 80% was achieved which reflects a strong level of consensus among expert reviews. The remaining items were prepared to face the 2nd round of evaluation to ensure that only reliable content must be added. **2nd round:**

In second round 30 items faced this refinement phase. Participants were asked to present their judgement for the reassessment of the items on same Likert scale. Participants were encouraged to respond to offer open ended comments along with

quantitative responses on Likert scale. The researcher carefully reviewed and incorporated this qualitative feedback for enhancing precision and contextual appropriateness of each item. This assures the scales continued alignment with constructs of PPDIAC.

3rd round:

The arduous process of evaluation and expert consensus resulting finalization of 25-items. These items demonstrated agreement participants and ensures an inter rater consensus level of 80% which indicates substantial alignment regarding relevance and clarity of each item in assessment of postpartum depression and identity crisis.

Table 1.1 Delphi Approach for Item reduction Rating

Categor ies	Item #	Items	1	2	3	4	5	%	M
IF	PPDAIC1 1	I have felt disconnected from my social life since having a baby.	0	0	10	12	9	62%	3.0200
	PPDAIC1 4	I feel increasingly isolated despite being around people.	4	12	10	0	0	52%	3.3000
	PPDAIC2 1	Motherhood can be an enriching experience that adds a new dimension to my identity.	2	4	18	0	0	48%	3.5600
	PPDAIC2 2	Talking to other mothers who have experienced similar identity struggles would be helpful.	0	0	7	19	13	78%	3.5600
	PPDAIC2 4	I feel lost and unsure of my purpose in life.	11	10	12	0	0	66%	2.8000
	PPDAIC2 5	I frequently doubt my self-worth.	0	0	13	10	5	56%	2.8400
CFA	PPDAIC1	I have trouble sleeping even when my baby is sleeping	3	8	4	0	0	30%	3.7800
	PPDAIC6	I have difficulty taking care of myself since having my baby.	0	0	7	23	12	84%	3.6400

	PPDAIC1 5	I feel less interested in physical intimacy with my partner.	0	0	11	12	8	62%	3.0000
	PPDAIC1 9	I question my self-worth and feel like I'm not good enough as a mother or a person.	3	17	15	0	0	70%	2.9200
	PPDAIC2 0	This identity crisis is making it difficult for me to enjoy motherhood and connect with my baby.	0	0	10	20	3	66%	3.1400
	PPDAIC2 3	It's important to communicate openly with my partner about my feelings of confusion and identity loss.	0	0	10	11	16	74%	3.5000
SIS	PPDAIC5	My partner (or spouse) doesn't seem to understand how I'm feeling.	5	6	8	0	0	38%	3.3800
	PPDAIC7	I find it challenging to bond with my baby.	0	0	13	20	2	70%	3.0800
	PPDAIC9	This is not my first pregnancy and I experienced PPD before.	0	0	8	15	3	52%	2.8200
SA	PPDAIC1 3	I have difficulty concentrating on tasks for long periods.	0	0	11	11	6	56%	2.9200
ECR	PPDAIC1 2	I find myself neglecting basic tasks like hygiene or housework.	3	10	14	0	0	54%	3.3400
	PPDAIC1 7	Trying to live up to societal expectations of motherhood makes me feel like a failure in other areas	6	14	9	0	0	58%	3.0200
	PPDAIC1 8	Societal pressures about motherhood are making me feel like a failure for not feeling happy and fulfilled all the time.	6	15	13	0	0	68%	2.8800

BA/SR	PPDAIC3	Society expects mothers to be happy and perfect, which makes me feel worse.	0	0	12	12	16	80%	3.6600
	PPDAIC4	I feel guilty for not feeling happy about motherhood	14	13	10	0	0	74%	3.5600
	PPDAIC16	Balancing all my roles (mother, partner, individual) feels overwhelming and impossible.	4	14	14	0	0	64%	114.1600
AF	PPDAIC2	I am worried that I will neglect or harm my baby.	7	6	7	0	0	40%	3.4200
	PPDAIC8	My relationship with my partner (or spouse) has become strained.	0	0	12	10	4	52%	2.8000
FOP	PPDAIC10	I had a difficult or traumatic childbirth experience.	0	0	7	17	6	60%	3.0600

Table 1.1 illustrates the item level analysis of PPDAIC scale revealed important insights into the emotional and psychological involvements of postpartum women across various thematic groups. Within the Interpersonal Functioning (**IF**) category, the item “Talking to other mothers who have experienced similar identity struggles would be helpful” (PPDAIC22) showed the uppermost agreement, with 78% of defendants validating its relevance ($M = 3.56$). This suggests a significant benefit of peer support in handling postpartum identity challenges. Conversely, feelings of discontinuation (PPDAIC11) and uncertainty (PPDAIC25) were also generally reported, with agreement levels of 62% and 56%, respectively. It indicates notable concerns related to social withdrawal and self-esteem.

In the Cognitive and Functional Adjustment (CFA) domain, “I have difficulty taking care of myself since having my baby” (PPDAIC6) had the maximum level of agreement at 84% ($M = 3.64$), imitating substantial self-care encounters postpartum. Similarly, “It’s important to communicate openly with my partner about my

feelings of confusion and identity loss” (PPDAIC23) acknowledged 74% agreement, highlighting the recognized value of open communication during periods of maternal identity transition. However, some items, such as “*I have trouble sleeping even when my baby is sleeping*” (PPDAIC1), showed lower endorsement (30%), possibly reflecting variability in individual coping patterns. Within the Support and Intimate Strain (SIS) category, “*I find it challenging to bond with my baby*” (PPDAIC7) received 70% agreement ($M = 3.08$), indicating that emotional detachment or delayed bonding may be a salient issue. Similarly, the item on prior PPD experiences (PPDAIC9) was acknowledged by 52% of participants, suggesting a recurring psychological burden among some mothers. In the self-awareness domain, difficulty concentrating (PPDAIC13) was affirmed by 56% of respondents ($M = 2.92$), aligning with symptoms commonly associated with depressive states. In the Emotional Control and Role Expectations (ECR) category, items addressing societal expectations (e.g., PPDAIC17 and PPDAIC18) received moderate to high endorsement (58% and 68%, respectively), indicating that external pressures

significantly contribute to maternal distress and identity conflict. Notably, Behavioral Adjustment and Self-Regulation (BA/SR) emerged as a prominent theme, with “*Society expects mothers to be happy and perfect, which makes me feel worse*” (PPDAIC3) receiving 80% agreement—the highest across all items—suggesting that unrealistic social ideals are a major source of psychological strain ($M = 3.66$). Similarly, guilt related to motherhood (PPDAIC4) was endorsed by 74% of respondents ($M = 3.56$). Items reflecting Awareness and Flexibility (AF) and Future Orientation or Planning (FOP), such as concerns about harming the baby (PPDAIC2) or experiencing traumatic childbirth (PPDAIC10), showed varying levels of agreement (40% and 60%, respectively), indicating the diverse emotional responses tied to postpartum adjustment. Collectively, these findings emphasize that postpartum depression and identity crisis manifest across multiple psychological dimensions, including interpersonal, emotional, cognitive, and societal domains. The data further support the multidimensional structure of the PPDAIC scale and reinforce the importance of context-sensitive assessment tools in addressing maternal mental health concerns. Table presents that 25 items adequately strengthen the construct postpartum depression and identity crisis. 200 participants presented their consensus on the mention items. Percentage and Mean values were extracted from SPSS (descriptive). Following Sub scales are extracted as per the analysis of the EFA

1. Assertive Identity / Personal Stability
2. Cognitive Flexibility and Adaptation
3. Self-Adjustment
4. Interpersonal regulation
5. Self-Awareness
6. Emotional Control
7. Behavioral Adjustment
8. Goal Orientation
9. Planning

Content Validity of PPDAIC:

For content validity, the researcher selected a panel of 6 experts from different hospitals in Sialkot. These experts, were qualified with the degree of MBBS. Panel of 3 subject experts was developed from lingual background based on PhD in English and Psychology. They were asked to evaluate the relevance of the 25 items. The content validity was quantified using the Content Validity Index (CVI), with the formula $CVR = (N2 - N/2) / (N/2)$, which measures the extent to which the items of the scale were considered relevant and representative of the construct being assessed. The study produced a content validity index of 0.89, reflecting a high level of agreement among the experts on the items' relevance and their ability to effectively capture the multifaceted nature of postpartum depression and identity crisis (PPDAIC).

Pilot Study:

An exploratory pilot study was conducted to assess the feasibility and reliability of the PPDAIC scale among 50 experienced educated participants from diverse backgrounds. The Cronbach's alpha coefficient was calculated to be 0.920, indicating excellent internal consistency. The primary aim of the pilot study was to evaluate the preliminary validity and reliability of the scale. The administration of the 25-item scale confirmed strong reliability, as reflected by the Cronbach's alpha. These conclusions provide preliminary provision for the PPDAIC scale, affirming its viability and auspicious psychometric properties.

Study 2

Participants:

To define a suitable sample for the development of PPDIAC scale it is essential to align methodology with national and international standards of psychometric research. The procedure involves the Factor analyses (EFA & CFA) demanding careful sample size planning to ensure statistical reliability and generalizability. Global literature provides various strategies. According to Comrey and Lee (1992), a sample size of 300 is considered good, 500 is very good, and 1000 or more is excellent for factor analysis. Similarly, MacCallum et al. (1999)

emphasize that the necessary sample size for factor analysis depends on the communalities and number of items in the scale, but generally recommend at least 300 participants for stable factor solutions. Moreover, DeVellis (2016) recommends a minimum of 5 to 10 respondents per item when developing a new scale, especially in psychological assessments, to ensure robust item-total statistics and valid factor structures. For example, if your scale has 25 items, a sample size ranging from 125 to 250 would be the minimum acceptable, though larger sizes are preferred for better psychometric strength. Nationally, several scale development studies from Pakistan adhere to similar guidelines.

For instance, Aslam and Kamal (2017) developed a Postnatal Depression Risk Scale and used a sample size of 540 postpartum women, reflecting adherence to international recommendations. Likewise, Batool and Khalid (2012), in developing a scale to measure identity conflict among women, used a sample of over 500 respondents, indicating a standard practice of using mid to large samples in the Pakistani context to enhance validity and generalizability. Taking into account both international and national literature, 200 female participants were recruited to participate in filling 25- item scale.

Table 3.1 Demographic characteristics:

Variable	N	M	SD	Minimum	Maximum
Age	200	1.90	0.76	1.00	3.00
Education	200	2.52	0.84	1.00	4.00
Habitat (urban)	200	1.80	0.86	1.00	3.00

Table 3.1 illustrates descriptive statistic computed to summarize the demographic characteristics of the sample (N = 200). The participants' age had a mean of 1.90 (SD = 0.76), with values ranging from 1.00 to 3.00, indicating a distribution across different age brackets. For education, the mean score was 2.52 (SD = 0.84), suggesting that the participants had varying levels of educational attainment, ranging from primary to postgraduate

levels (Min = 1.00, Max = 4.00). The habitat variable, reflecting whether the participant resided in urban areas had a mean of 1.80 (SD = 0.86), with responses spanning from 1.00 to 3.00. These results highlight the demographic diversity of the study sample in terms of age, education, and residential setting.

Exploratory Factor Analysis

Table 1.4. Bartlett Test of Sphericity of PPDIAC

KMO	Bartlett's Test of Sphericity		
	Chi Square	Df	Sig.
IBBA	414.676	300	.000

Note: *** $p < 0.001$

An Exploratory Factor Analysis (EFA) was performed using the principal component method for factor extraction with varimax rotation to explore the underlying structure of the PPDAIC scale. Prior to conducting EFA, the adequacy of the sample was assessed. With a sample size of N = 200, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was found to be 0.346, suggesting that the data may be only marginally

appropriate for factor analysis. However, Bartlett's Test of Sphericity produced a statistically significant result, $\chi^2(300) = 414.676$, $p < .001$, indicating that the correlation matrix was not an identity matrix and that sufficient correlations existed among the items to proceed with factor analysis. These results collectively support the application of EFA to identify the latent factor structure within the PPDAIC scale for the given sample.

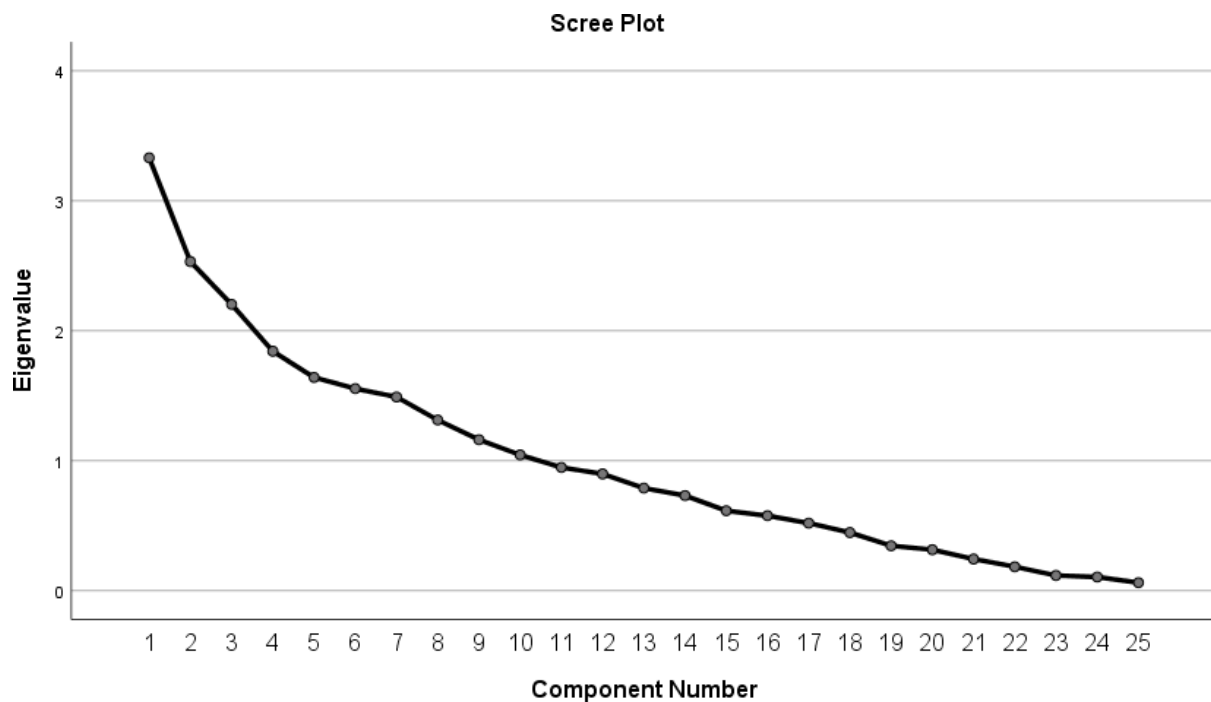


Figure 3.1 Scree plot of EFA

From EFA, Screen Plot for PPDAIC

The scree plot visually represents the eigenvalues derived from the exploratory factor analysis (EFA), with the y-axis depicting the eigenvalues and the x-axis indicating the corresponding number of factors. This plot is instrumental in identifying the appropriate number of factors to retain by

highlighting the point where the eigenvalues begin to level off, commonly refer to as the "elbow." This inflection point suggests the threshold beyond which additional factors contribute minimally to explaining variance. Therefore, the scree plot facilitates the selection of a parsimonious and interpretable factor structure for the dataset.

Table 3.2 Factor loadings/ Perceived Postpartum Depression and Identity Crisis

Factor Loadings

	1	2	3	4	5	6	7	8	9
PPDAIC11	.802								
PPDAIC14	.603								
PPDAIC21	.469								
PPDAIC22	.579								
PPDAIC24	.516								
PPDAIC25	.572								
PPDAIC1		.501							
PPDAIC6		.421							
PPDAIC15		.544							
PPDAIC19		.449							
PPDAIC20		.573							

PPDAIC23	.551	
PPDAIC5	.448	
PPDAIC7	.457	
PPDAIC9	.396	
PPDAIC13	.649	
PPDAIC12	.660	
PPDAIC17	.493	
PPDAIC18	.431	
PPDAIC3	.503	
PPDAIC4	.531	
PPDAIC16	.497	
PPDAIC2	.439	
PPDAIC8	.547	
PPDAIC10		.541

Note. N=200

Table 3.2 presents the factor loadings for the Perceived Postpartum Depression and Identity Crisis (PPDAIC) Scale based on exploratory factor analysis (EFA) conducted on a sample of 300 participants. A total of nine distinct factors emerged from the analysis, reflecting the multidimensional structure of postpartum psychological experiences, including symptoms of depression, emotional instability, self-perception, and identity concerns. Items with loadings equal to or greater than .40 were considered significant (Stevens, 2002). Factor 1 accounted for strong loadings from six items (PPDAIC11, PPDAIC14, PPDAIC21, PPDAIC22, PPDAIC24, and PPDAIC25), with PPDAIC11 (.802) showing the highest loading, indicating this factor may represent core depressive symptoms associated with the postpartum period. Factor 2 included six items (PPDAIC1, PPDAIC6, PPDAIC15, PPDAIC19, PPDAIC20, and PPDAIC23), with loadings ranging from .421 to .573, likely reflecting emotional detachment or lack of bonding. Factor 3 comprised three items (PPDAIC5, PPDAIC7, and PPDAIC9), suggesting a focus on interpersonal strain or social withdrawal. Factor 4 loaded strongly on two items (PPDAIC13 and PPDAIC12), indicating a potential identity confusion construct. Factor 5 (PPDAIC17 and PPDAIC18) and Factor 6 (PPDAIC3, PPDAIC4,

PPDAIC16) also reflect dimensions related to self-concept and psychological adjustment. Factor 7 and 8, represented by PPDAIC2 (.439) and PPDAIC8 (.547) respectively, may pertain to emotional dysregulation or uncertainty, while Factor 9 loaded on PPDAIC10 (.541), possibly reflecting individual distress or isolation. The distribution of factor loadings supports the conceptual framework that postpartum psychological distress is a multidimensional construct encompassing both affective symptoms and identity-related disruptions. The clean structure with minimal cross-loadings suggests that the items are well-aligned with their underlying constructs.

Confirmatory Factor Analysis

Factors retained from EFA were exposed to Confirmatory Factor analysis on data of 200 participants by using AMOS. The CFA was utilized to find the model, factor structure and determination of dimensionality of PPDAIC. 200 educated females from urban background of Sialkot community were recruited through purposive sampling technique. Criteria of inclusion and exclusion was same as utilized for EFA. A self-developed demographic sheet along with items of the PPDIAC were exposed for the collection of data same as used in EFA.

Table 3.3 Model fit summary of CFA (N=200)

Indexes	Chi Square	Df	CFI	RMSEA	GFI	TLI
Study Model	1141.830	693	.898	.058	.776	.887

Table 3.3 illustrates the model fit indices for Model-I provide evidence of an acceptable model fit in the context of confirmatory factor analysis (CFA). The chi-square value is 1141.830 with 693 degrees of freedom. While the chi-square test is statistically significant. The Comparative fit index (CFI) is reported as .898, which approaches the conventional cutoff of .90, indicating an adequate fit between the hypothesized model and the observed data. The Tucker-Lewis Index (TLI) is .887, slightly below the recommended threshold of .90, suggesting a marginally acceptable fit. The Root Mean Square Error of Approximation (RMSEA) is .058, which falls within the range of good model fit (i.e., $\leq .06$), suggesting that the model has a

reasonable approximation error in the population. However, the Goodness-of-Fit Index (GFI) is .776, which is below the commonly accepted cutoff of .90, indicating a weaker overall model fit. Despite this, the combination of CFI and RMSEA values suggests that the model fits the data reasonably well, though further refinement might enhance its overall fit.

In summary, the CFA results support the proposed factor structure of the PPDAIC scale with acceptable to moderate fit indices, especially considering the complexity of the model.

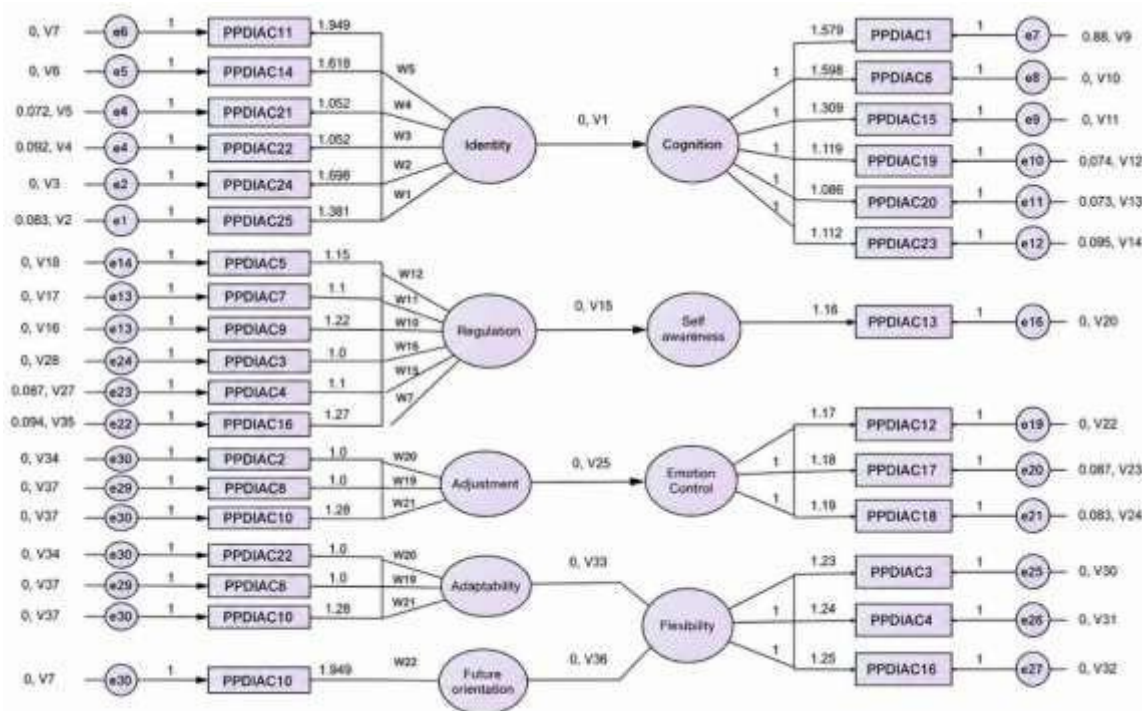


Figure 3.2 CFA model

The figure illustrates a Confirmatory Factor Analysis (CFA) model assessing the structural validity of the Postpartum Depression and Identity Crisis (PPDAIC) scale, comprising eight latent constructs: Identity, Cognition, Self-awareness, Regulation, Emotion Control, Adjustment, Adaptability, and Future Orientation. Each latent variable is measured by a set of observed items (e.g., PPDAIC1 to PPDAIC25), represented by rectangles, while ovals represent latent constructs. All observed variables loaded significantly on their respective latent constructs, with standardized

reasonable approximation error in the population. However, the Goodness-of-Fit Index (GFI) is .776, which is below the commonly accepted cutoff of .90, indicating a weaker overall model fit. Despite this, the combination of CFI and RMSEA values suggests that the model fits the data reasonably well, though further refinement might enhance its overall fit.

factor loadings ranging from approximately 1.052 to 1.949, indicating strong associations. Measurement errors (denoted as e1 through e30) are represented as circles adjacent to each observed variable. The latent factor "Identity" is indicated by six items (PPDAIC11, 14, 21, 22, 24, and 25), with high loadings such as 1.949 for PPDAIC11, suggesting a robust relationship. Similarly, "Cognition" is represented by seven items (e.g., PPDAIC1, 6, 15, 19), with loadings ranging from 1.086 to 1.809. Constructs like "Emotion Control" (PPDAIC12, 17, 18) and "Adjustment" (PPDAIC3, 4, 16) also exhibit solid item loadings, reinforcing the structural coherence of the model. The intercorrelations among latent variables are indicated by curved double-headed arrows but do not display numerical values, implying that relational strength among constructs was modeled but not reported. Overall,

the CFA supports the multidimensional structure of the PPDAIC scale, with distinct yet interrelated constructs, strong item loadings, and minimal error variance, confirming the theoretical model of postpartum psychological functioning.

Reliability of PPDAIC

For the assessment of the internal consistency of the 25-item scale PPDAIC, scrutiny of homogeneity was implemented. Values of Cronbach's alpha coefficient for the assessment of internal consistency were computed for each factor. The findings revealed range from 0.92 to 0.97. This finding underscores the strong interrelatedness among the items within each subscale, affirming their reliability in capturing the distinct dimensions of PPDAIC.

3.3 Table Cronbach Alpha of PPDAIC (N=200)

Variable	Range				
	K	M(SD)	Actual	Potential	A
PPDAIC	25	66.33(15.90)	20-76	25-83	.920

Note: k= No of items, α = Cronbach Alpha, M=Mean, SD= Standard Deviation.

The internal reliability of the PPDAIC scale was evaluated by using Cronbach's alpha, which produced a value of 0.920 for the 25-item scale. It indicates a high level of reliability. This validates the scale's reliable measuring characteristics.

Convergent and Discriminant Validity

Convergent and discriminant validities are critical for confirming the accuracy and reliability of measurement tools. Convergent validity refers to the positive correlation between theoretically related measures, approving the collective variance between them. Discriminant validity measures the degree to which a scale is discreted from other scales. Both types of validity are essential for the establishment of construct validity (Hair et al., 2014). In the current study, a key focus was on assessing the association between postpartum depression and identity crisis. Discriminant validity was observed in the PPDAIC scale.

4. Discussions

Current research added a significant contribution to the psychometric assessment of the postpartum depression and identity crisis scale. A detailed assessment of inter reliability was conducted by utilizing Cronbach's alpha resulting from .92 to .97 across the 25 items. these alpha values indicates stron inter-item correlations which reflects a reliable measurement underlying construct of postpartum depression and identity crisis. Findings are consistent with psychometric norms developed by Nunnaly and Bernstein (1994), they recommended high consistency to ensure reliability of psychological tools. Despite of reliability the scales validity was also measured by evaluating convergent and discriminate validity. In line with Campbell and Fiske's (1959) multitrait-multimethod matrix, convergent validity was established by the degree of collective variance among items measuring theoretically connected concepts. Discriminant validity is essential for confirming conceptual distinction. It was confirmed by the

scale's ability to measure postpartum depression and identity crisis as distinct but related dimensions. This supports the argument by Anderson and Gerbing (1988), who highlighted the importance of representing discriminant validity to confirm that a scale does not intersect with unrelated constructs. The Exploratory Factor Analysis (EFA) produced a nine factored solution that accounted for approximately 92% of the total variance, demonstrating a well-structured fundamental factor model. This approach aligns with the guidelines of Fabrigar et al. (1999), who emphasized on identification of factor structure that reflects theoretical foundations for the constructs. Arduous criteria were functionalized during item selection; items with low communalities (below .30) and insufficient factor loadings (below .50) were excluded. This methodology parallels with the practices suggested by Costello and Osborne (2005), who supported for the retaining of only those items indicating strong factor loadings to support construct validity. All retained items in the final version of the PPDAIC scale showed high communalities (above .80), strengthening their relevance and contribution to the latent constructs. This result aligns with Brown (2015), who noted that the items with high loadings reflects a strong relationship with the fundamental factor, thus enhances the reliability and construct validity of the scale. By developing and validating the PPDAIC scale, current research addresses the critical gap in the literature and offers psychometrically sound tool tailored to cultural and contextual needs of the women facing postpartum depression and identity crisis (Beck, 2002; Kumar & Robson, 1984). Current research provides a comprehensive and reliable tool for the assessment of these issues contributing meaningfully to both contextual and cultural clinical and future research practices. Applications of current scale can provide support to health care professionals to identify and address psychological challenges of postpartum depression and identity crisis among women.

Conclusion

Conclusively current research provides a valid and reliable tool for the assessment fo postpartum

depression and identity crisis among women suffering from psychological challenges during their postpartum phase of motherhood. 25-items on 9 factors were validated by presenting high level of Cronbach alpha ranging .92 to .97. These results highlights the significance of need for addressing psychological well-being during the postpartum period, particularly in understanding how identity challenges may intensify depressive symptoms.

Study Implications

Theoretical Implications

Theoretically, PPDIAC Scale offers understanding about postpartum depression nd identity crisis by exploring the intricate relationship between postpartum depression and identity crisis. It provides a framework for conceptualizing how identity crisis increases depressive symptoms among new mothers enriching existing theories of maternal mental health. This scale emphasizes the significance of identity in the postpartum period, introducing a multidimensional perspective that improves the understanding of how shifts in identity can impact psychological well-being. It also strengthens psychosocial models by integrating role of identity development and promoting theoretical exploration of its aversive impacts on mental health during postpartum period of motherhood. Moreover, the experiential validation of the PPDAIC scale supports the conceptualization of postpartum depression and identity crisis as discrete yet interconnected constructs, strengthening their interconnectedness and providing a basis for future research in this field.

Practical Implications:

Practically the PPDAIC scale provides the support to the clinicians, gynacs, mental health professionals in identifying post maternal issues faced by new mothers. It enables them to make accurate diagnosis, tailored interventions and treatment. Furthermore, it provides a foundation for future research, including longitudinal and cross-cultural studies on mental health in postpartum period of motherhood..

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