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IDENTIFYING CORE SOCIAL RELATIONSHIP FACTORS IN THE PSYCHOLOGICAL RECOVERY OF SUBCLINICAL DEPRESSION: AN EXPERT CONSENSUS STUDY USING THE FUZZY DELPHI METHOD

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Abstract: *Social relationships are a key determinant of psychological well-being, influencing emotional regulation, stress management, coping capacity, and overall life satisfaction across the lifespan. Supportive connections with family, friends, peers, and the community provide emotional comfort and play an important role in fostering hope, meaning, and adaptive functioning during psychological recovery. Recovery-oriented mental health perspectives emphasise that recovery is inherently relational, relying on supportive social environments rather than solely on internal psychological processes. In this context, subclinical depression defined by depressive symptoms that do not meet criteria for Major Depressive Disorder remains clinically significant, as it is linked to impaired functioning, reduced quality of life, emotional distress, and social withdrawal. These symptoms can progressively weaken interpersonal relationships, further limiting social support and hindering psychological recovery. This study aims to identify and prioritize the core social relationship factors in the psychological recovery of subclinical depression, based on the consensus of counseling psychology practitioners using the Fuzzy Delphi method. Study concludes that psychological recovery in individuals with subclinical depression is predominantly shaped by the quality of social relationships rather than their structural characteristics. Through iterative expert consensus and defuzzification, the availability of emotional support emerged as the highest-priority factor, reflecting strong convergence among experts regarding its central role in recovery.*

Keywords: *Social Relationship, Subclinical Depression, Psychological Recovery*

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Introduction

Social relationships are widely recognised as a fundamental determinant of psychological well-being and mental health across the lifespan. Interpersonal connections such as family bonds, friendships, peer support, and community engagement play a critical role in shaping emotional regulation, stress appraisal, coping capacity, and overall life satisfaction (Holt-Lunstad et al., 2010; Umberson & Karas Montez, 2010). From a psychological recovery perspective, social relationships function not only as sources of emotional comfort but also as mechanisms that foster meaning-making, hope, and adaptive functioning following psychological distress. Contemporary recovery-oriented mental health models emphasise that recovery is a relational process rather than a purely intrapsychic outcome, highlighting the importance of supportive social environments in facilitating sustained psychological improvement.

Subclinical depression, also referred to as subthreshold or minor depression, is characterised by the presence of depressive symptoms that do not meet the full diagnostic criteria for Major Depressive Disorder (MDD) (Cuijpers & Smit, 2004). Despite its classification as "subclinical," accumulating evidence indicates that this condition is associated with significant impairments in daily functioning, reduced quality of life, emotional distress, and diminished social participation (Nordin et al., 2018; Rodríguez et al., 2012). Individuals with subclinical depression frequently experience persistent low mood, anhedonia, fatigue, and social withdrawal, which may gradually erode their interpersonal relationships and social support systems.

Importantly, subclinical depression is not a benign or transient state. Longitudinal studies consistently demonstrate that individuals with subclinical depressive symptoms are at a two- to three-fold increased risk of developing MDD compared to the general population (Cuijpers et al., 2007; Lee et al., 2019). This progression risk underscores the necessity of early identification and intervention strategies that address modifiable psychosocial factors before symptom severity escalates. Among these factors, social relationships represent a particularly salient yet underutilised domain for preventive mental health efforts.

Despite growing recognition of social relationships as protective factors, existing intervention frameworks for subclinical depression tend to prioritise individual-level strategies such as cognitive restructuring, behavioral activation, or lifestyle modification, often overlooking relational dimensions of recovery. Many psychosocial interventions conceptualise social support as a secondary or indirect outcome rather than as a core recovery mechanism. Furthermore, empirical findings on which specific social relationship factors most effectively facilitate psychological recovery remain fragmented and inconsistent across studies, limiting their translation into structured counseling practices.

Another critical gap lies in the lack of expert consensus regarding the prioritisation of social relationship components in recovery-oriented care for subclinical depression. While some studies emphasise emotional support, others highlight social connectedness, perceived belonging, or interpersonal communication skills, resulting in conceptual ambiguity and practical inconsistency. This lack of agreement complicates the development of standardised guidelines for counseling psychologists and mental health practitioners working with individuals experiencing subclinical depressive symptoms.

To address these gaps, the present study employs the Fuzzy Delphi Method (FDM) to systematically identify and prioritise core social relationship factors that contribute to

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psychological recovery in subclinical depression. By synthesising expert judgment through a structured consensus-building approach, this study aims to produce empirically grounded and practice-relevant insights that can inform counseling interventions, preventive mental health strategies, and recovery-oriented psychological services.

Literature Review

consistently demonstrates that social support and interpersonal relationships are inversely associated with depressive symptoms. Meta-analytic findings reveal that individuals with stronger perceived social support exhibit lower levels of depressive symptomatology and better psychological adjustment (Santini et al., 2015; Taylor, 2011). Emotional support, in particular, has been linked to reduced stress reactivity and enhanced coping efficacy, while instrumental and informational support contribute to practical problem-solving and help-seeking behaviors (Thoits, 2011). However, most studies examine social support as a general construct, offering limited insight into which relational dimensions are most critical during recovery from subclinical depression.

Research focusing specifically on subclinical depression indicates that social relationship deficits—such as loneliness, interpersonal sensitivity, and social withdrawal—are prevalent even at early stages of depressive symptom development (Cacioppo et al., 2010; Teo et al., 2013). Individuals with subclinical depression often report diminished perceived support despite having access to social networks, suggesting that the subjective quality of relationships may be more influential than their objective quantity. This distinction highlights the need to move beyond structural indicators of social ties toward more nuanced relational processes.
From a psychological recovery perspective, recovery is increasingly conceptualised as a multidimensional and non-linear process involving reconnection with others, restoration of social roles, and rebuilding of relational identity (Slade, 2009; Leamy et al., 2011). Models such as the CHIME framework (Connectedness, Hope, Identity, Meaning, Empowerment) explicitly position connectedness as a foundational recovery domain. Nevertheless, empirical applications of recovery frameworks in subclinical depression remain limited, with most recovery research focusing on severe mental illness populations.

A notable methodological gap in the literature is the absence of structured expert consensus studies that integrate clinical, counseling, and psychosocial perspectives on social relationships in subclinical depression recovery. Quantitative studies often rely on self-report measures, while qualitative research provides rich but context-specific insights that are difficult to generalise. The Fuzzy Delphi Method offers a methodological advantage by accommodating uncertainty in expert judgments and enabling systematic prioritisation of complex psychosocial constructs (Ishikawa et al., 1993; Habibi et al., 2014). Thus, applying FDM in this context addresses both conceptual fragmentation and methodological limitations in existing research.

Table 1: Social Relationship Factors In The Psychological Recovery Of Subclinical Depression

Construct	Explanation
The availability of emotional support	Family members, friends, or significant others.
Perceived social connectedness	Feelings of not being alone and of being included in social relationships.
Nonjudgmental acceptance	From significant others helps individuals with subclinical depression feel emotionally safe and supports.

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The quality of interpersonal communication	Open, empathic, and mutually respectful
Trust in others	Within social relationships
The reliability of social support	Consistency and availability when needed.
Reciprocal support within social relationships	a balanced exchange of giving and receiving support.
A sense of belonging	to a social group or community.
Social relationships that foster hope and motivation	a positive impact on the psychological recovery process.
The capacity of social relationships	to reduce feelings of isolation or loneliness.

Research Aim

This study aims to identify and prioritize the core social relationship factors in the psychological recovery of subclinical depression, based on the consensus of counseling psychology practitioners using the Fuzzy Delphi method. The findings of this study are expected to support the development of focused, professionally grounded health behavior interventions to prevent progression to major depressive disorder.

Methodology

This study employed the Fuzzy Delphi technique to identify and prioritize the primary health behavior elements for individuals with subclinical depression. This method proves particularly efficacious when research necessitates validation from a panel of experts. Responses can be elicited expeditiously through parallel survey administration, incurring lower costs; moreover, it enables experts to articulate their authentic opinions without misinterpretation, thereby ensuring the precision and consensus of the resultant viewpoints.

Sampling

Purposive sampling was employed in this analysis. This approach is ideally suited, as the researcher seeks to achieve consensus on an established matter. According to Hasson, Keeney, and McKenna (2000), purposive sampling represents the most appropriate method within the Fuzzy Delphi Method (FDM). Meanwhile, eight experts participated in this study, with details of those who consented to participate presented in Table 2. These experts were selected based on their specialized knowledge and qualifications. When participants in the analysis exhibit homogeneity, the requisite number of experts ranges from 5 to 10.

Table 2: List of experts

Expert	Post Title	Experience (Years)	Setting
1	Psychology Officer	5	Healthcare
2		5	
3		12	
4		13	
5		10	
6		12	
7		5	
8		5	

Expert Criteria

Experts recruited for this Fuzzy Delphi study were counselling psychology practitioners working in healthcare settings, with a minimum of five years' experience in conducting

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interventions with individuals presenting psychological disorders. Experts, as delineated by Booker and McNamara (2004), are individuals who have attained their qualifications, training, experience, professional affiliations, and peer recognition through diligence and commitment (Nikolopoulos, 2004; Perera, Drew, & Johnson, 2012). In Fuzzy Delphi research, the selection of experts represents a critical consideration. As Kaynak and Macauley (1984) assert, the experts involved in such studies must embody relevant expertise or familiarity with the subject matter under investigation. Accordingly, the researcher selects experts adhering to rigorous criteria, including a minimum of five years' experience, domain-specific proficiency, and pertinence to the research objectives.

Instrumentation

The researcher constructed the Fuzzy Delphi research instrument drawing from extant literature. Skulmowski, Hartman, and Krahn (2007) posit that researchers may formulate questionnaire items based on literature, pilot studies, and experiential knowledge. Moreover, Okoli and Pawlowski (2004) assert that the development of items and content domains for research instruments ought to commence with a literature review pertinent to the study area. The selection of a 7-point scale was motivated by the principle that higher scale granularities yield more accurate and precise data (Ridhuan, Saedah, Zaharah, Nurulrabihah, and Ahmad Arifin, 2014). To facilitate experts' completion of the questionnaire, the researcher assigned numerical values from 1 to 7 in place of fuzzy values.

The whole methodology is done by dividing the processes into seven stages.

1. **Expert Selection:** In this study, a total of eight experts were involved. The number of experts was determined by considering the importance of fulfilling eligibility criteria to ensure that the selected panel possessed relevant experience and expertise. Experts were selected based on their professional background, and each expert was asked to evaluate the study items according to their experience and area of specialization.

2. **Determining Linguistic Scale:** This stage involved the conversion of all linguistic variables into fuzzy numerical values. The Triangular Fuzzy Number (TFN) approach was applied to transform linguistic scales into fuzzy numbers. The purpose of this process was to convert linguistic judgments into fuzzy scales. The fuzzy scale employed in this study was based on a seven-point linguistic scale, as presented in Table 3.

Table 3: Seven-point linguistic scale

Seven-Point Linguistic Scale				
	Linguistic Variable	Triangular Fuzzy Number (TFNs)		
1	Very Strongly disagree	0.0	0.0	0.1
2	Strongly disagree	0.0	0.1	0.3
3	Disagree	0.1	0.3	0.5
4	Not ure	0.3	0.5	0.7
5	Agree	0.5	0.7	0.9
6	Strongly agree	0.7	0.9	1.0
7	Very Strongly agree	0.9	1.0	1.0

3. **Defuzzification and Average Fuzzy Value:** After responses were obtained from the selected experts, the linguistic responses were converted into fuzzy numbers. This

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process is also referred to as the calculation of average fuzzy responses (Benítez, Martín, & Román, 2007). The procedure was conducted using the following formula:

$$M = \frac{\sum_{i}^{n} = 1mi}{n}$$

where M represents the mean fuzzy value, m_i denotes the fuzzy score provided by each expert, and n refers to the total number of experts involved.

4. **Threshold Value and Consensus Level**. The determination of the threshold value (d) was conducted to assess the level of consensus among experts. At this stage, the percentage of agreement for each item and the overall consensus were calculated. A consensus level of 75% or higher indicates that agreement has been achieved among the expert panel. This procedure was applied to ensure that only items meeting the minimum consensus requirement were retained for further analysis.

$$d\left(\tilde{m}, \tilde{n}\right) = \sqrt{\frac{1}{3}\left[(m_1 - n_1)^2 + (m_2 - n_2)^2 + (m_3 - n_3)^2\right]}.$$

5. **Defuzzification Process:**
This process applied the defuzzification formula Amax =(1)⁄4 (a1+2am + a3).When the researcher employed average fuzzy numbers or average expert responses, the resulting score fell within the range of 0 to 1 (Ridhuan et al., 2014). In this stage, three commonly used defuzzification formulas were applied, as follows:
i. A = 1/3 * (m1 + m2 + m3) , atau ;
ii. A = 1/4* (m1 + 2m2 + m3) , atau ;
iii. A = 1/6 * (m1 + 4m2 + m3).

6. **Alpha-Cut Value (α-cut):** The α-cut value represents the median value between "0" and "1", where α-cut is calculated as $(0 + 1)/2 = 0.5$. If the resulting defuzzified value (A) is less than the α-cut value of 0.5, the corresponding item is rejected, as it does not indicate sufficient expert consensus. According to Bojdanova (2006), the α-cut value should exceed 0.5. This criterion is further supported by Tang and Wu (2010), who emphasized that an α-cut value greater than 0.5 is necessary to confirm expert agreement.

7. **Ranking Procedure: The final stage involved the ranking process by selecting and** ordering elements based on their defuzzified values, reflecting the level of expert consensus. Elements with higher defuzzification values were assigned higher priority rankings, indicating greater importance as determined by the expert panel (Fortemps & Roubens, 1996).

Findings

The analysis outputs that based on the consensus from the participating experts indicated that there were seven major elements of health behaviour experienced by the subclinical depression patienst. Table 4 summarizes the early ranking of seven health behaviour constructs for subclinical depression based on expert consensus.

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Table 4: Early Item Rank for Ten Social Relationship Factors In The Psychological Recovery Of Subclinical Depression

Early Item Rank	Construct
1	The availability of emotional support
2	Perceived social connectedness
3	Nonjudgmental acceptance
4	The quality of interpersonal communication
5	Trust in others
6	The reliability of social support
7	Reciprocal support within social relationships
8	A sense of belonging
9	Social relationships that foster hope and motivation
10	The capacity of social relationships

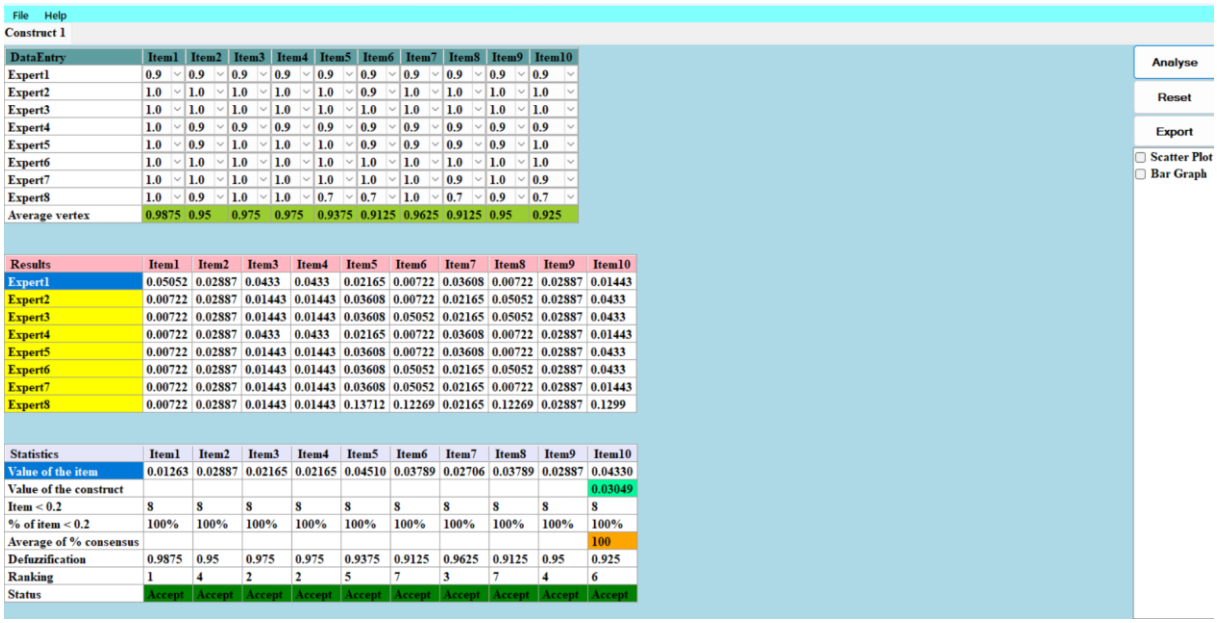

Figure 1: Data entry using FUDELO

Table 5: Fuzzy Delphi Result

Defuzzification Report										
Results	**Item1**	**Item2**	**Item3**	**Item4**	**Item5**	**Item6**	**Item7**	**Item8**	**Item9**	**Item10**
Expert1	0.05052	0.02887	0.0433	0.0433	0.02165	0.00722	0.03608	0.00722	0.02887	0.01443
Expert2	0.00722	0.02887	0.01443	0.01443	0.03608	0.00722	0.02165	0.05052	0.02887	0.0433
Expert3	0.00722	0.02887	0.01443	0.01443	0.03608	0.05052	0.02165	0.05052	0.02887	0.0433
Expert4	0.00722	0.02887	0.0433	0.0433	0.02165	0.00722	0.03608	0.00722	0.02887	0.01443
Expert5	0.00722	0.02887	0.01443	0.01443	0.03608	0.00722	0.03608	0.00722	0.02887	0.0433
Expert6	0.00722	0.02887	0.01443	0.01443	0.03608	0.05052	0.02165	0.05052	0.02887	0.0433
Expert7	0.00722	0.02887	0.01443	0.01443	0.03608	0.05052	0.02165	0.00722	0.02887	0.01443
Expert8	0.00722	0.02887	0.01443	0.01443	0.13712	0.12269	0.02165	0.12269	0.02887	0.1299

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Statistics	Item1	Item2	Item3	Item4	Item5	Item6	Item7	Item8	Item9	Item10
Value of the item	0.01263	0.02887	0.02165	0.02165	0.0451	0.03789	0.02706	0.03789	0.02887	0.0433
Value of the construct										0.03049
Item < 0.2	8	8	8	8	8	8	8	8	8	8
% of item < 0.2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Average of % consensus										100
Defuzzification	0.9875	0.95	0.975	0.975	0.9375	0.9125	0.9625	0.9125	0.95	0.925
Ranking	1	4	2	2	5	7	3	7	4	6
Status	Accept	Accept	Accept	Accept	Accept	Accept	Accept	Accept	Accept	Accept

This Fuzzy Delphi analysis demonstrates strong expert consensus across all ten items, with each item achieving 100% agreement (all items below the 0.2 threshold) and an overall 100% average consensus (Adler & Ziglio, 1996). The defuzzification values range from 0.9125 to 0.9875, with Item 1 ranking highest (0.9875) followed by Item 3 and 4 (0.975), Items 7 third (0.9625), Items 2 and 9 tied at fourth (0.95), and Item 5 ranking fifth (0.9375), Item 10 ranking sixth (0.925) and Item 6 and 8 tied ranking seventh. indicating varying degrees of expert certainty (Cheng & Lin, 2002). All items meet the acceptance criteria with threshold values well below the conventional 0.2 cut-off point (Bodjanova, 2006; Murray et al., 1985), indicating robust expert agreement and validation of all elements within the construct being measured. The consensus threshold of $d \leq 0.2$ and expert agreement percentage of $\geq 75\%$ confirm that all items have achieved the required level of consensus for acceptance in the Fuzzy Delphi Method (Chu & Hwang, 2008; Tang & Wu, 2010).

Table 3: Final Result Rank for Ten Core Social Relationship Factors In The Psychological Recovery Of Subclinical Depression

Early item rank	New item rank	construct
1	1	The availability of emotional support
2	4	Perceived social connectedness
3	2	Nonjudgmental acceptance
4	2	The quality of interpersonal communication
5	5	Trust in others
6	7	The reliability of social support
7	3	Reciprocal support within social relationships
8	7	A sense of belonging
9	4	Social relationships that foster hope and motivation
10	6	The capacity of social relationships

Table 3 presents the final consensus ranking of ten social relationship factors influencing the psychological recovery of individuals with subclinical depression as determined through the Fuzzy Delphi Method (FDM). Following iterative expert evaluation and defuzzification, the availability of emotional support retained the highest priority, indicating strong convergence of expert opinions on its central role in recovery. Nonjudgmental acceptance and the quality of interpersonal communication increased in priority, reflecting reduced variability and stronger consensus regarding the importance of emotionally safe and empathic interactions. Reciprocal support within social relationships demonstrated a notable upward shift, suggesting that mutual exchange of support was increasingly recognized as a critical recovery mechanism. Factors

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such as perceived social connectedness and social relationships that foster hope and motivation achieved moderate rankings, indicating acceptable consensus but comparatively lower priority. In contrast, the reliability of social support and a sense of belonging were ranked lower in the final results, implying weaker consensus or lower perceived impact relative to relational quality factors. Overall, the FDM results indicate that experts converged on prioritizing qualitative, emotionally responsive, and reciprocal social processes over structural or contextual aspects of social relationships in facilitating psychological recovery from subclinical depression.

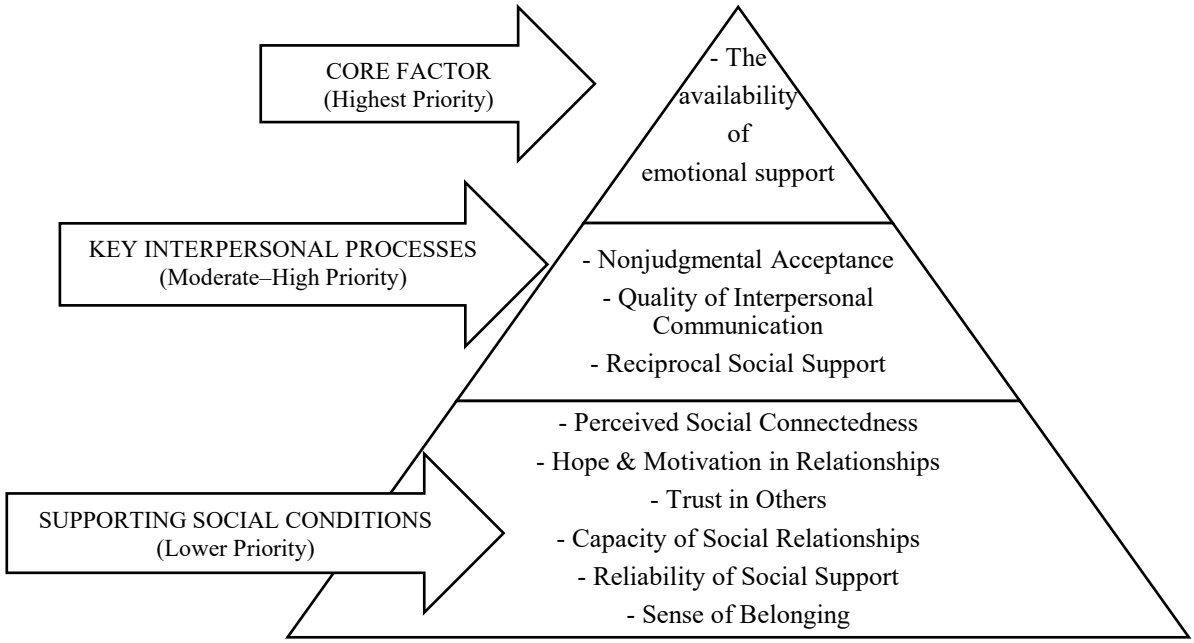

Figure 2: Core Social Relationship Factors In The Psychological Recovery Of Subclinical Depression

Conclusion and future research

Based on the hierarchical framework derived from the Fuzzy Delphi Method (FDM) and illustrated in Figure 2, this study concludes that psychological recovery in individuals with subclinical depression is predominantly shaped by the quality of social relationships rather than their structural characteristics. Through iterative expert consensus and defuzzification, the availability of emotional support emerged as the highest priority factor, reflecting strong convergence among experts regarding its central role in recovery. This core factor is supported by key interpersonal processes nonjudgmental acceptance, high-quality interpersonal communication, and reciprocal social support - which were consistently prioritized as critical mechanisms facilitating emotional safety, validation, and sustained engagement in recovery. In contrast, factors such as perceived social connectedness, hope and motivation, trust in others, reliability of support, capacity of social relationships, and sense of belonging were ranked lower, suggesting that experts viewed these elements as contextual or enabling conditions rather than direct drivers of psychological recovery. Overall, the FDM findings reveal a clear expert validated priority structure that emphasizes emotionally responsive and reciprocal interpersonal interactions as central to the recovery process in subclinical depression.

Future research should empirically test and validate this FDM derived hierarchical model using longitudinal, experimental, or mixed-methods designs to examine causal pathways and

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temporal sequencing among the identified social relationship factors. Further studies are also warranted to explore the applicability and stability of this expert-derived priority structure across diverse cultural, demographic, and clinical populations, as well as across different stages of subclinical depression. Additionally, intervention focused research targeting high priority factors identified through FDM particularly emotional support, nonjudgmental acceptance, and interpersonal communication may provide valuable evidence for developing recovery oriented psychosocial interventions and for preventing the progression from subclinical depression to major depressive disorder.

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