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The effect of family resilience intervention program for caregivers of schizophrenia patient

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ABSTRACT

Caregivers with schizophrenia face physical, psychological, and financial burdens. Although existing research supports the efficacy of interventions to improve the mental health and wellbeing of caregivers living with schizophrenia patients, there are a number of limitations to the existing evidence. This study aims to assess the effectiveness of a family resilience intervention program for caregivers with schizophrenia using a randomized controlled trial in Central Java, Indonesia. This is a non-blinded study with two parallel arms and an active control group. The intervention group received a combination of face-to-face and interactive online delivery strategies for six weeks. The Conner–Davidson resilience scale and McMasters family assessment device (FAD) were used to measure study outcomes. The study uses repeated measures analysis of variance, Cohen' d test, and general estimate equations to analyze the data. The study involved over 230 caregivers and found that the family resilience intervention program significantly improved resilience and family functioning scores after the intervention. The study also revealed a moderate effect size on resilience and family functioning. The study suggests that primary healthcare centers should be involved in early detection and monitoring of psychosocial issues within families to maintain and improve their mental health.

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1. INTRODUCTION

Schizophrenia is a persistent condition characterized by cognitive decline, false beliefs, sensory perceptions without stimuli, social avoidance, and reduced vitality, which can significantly impact an individual's quality of life [1]. The global prevalence of schizophrenia is 0.32%, meaning that it affects about 1 in every 222 individuals. It is seen as less common in comparison to other mental disorders [2]. In Indonesia, schizophrenia prevalence is 4.0%, with a range of 3.7-4.4%, and 6.2-10.0% of individuals do not seek treatment from healthcare or non-healthcare facilities [3]. The financial impact of schizophrenia on healthcare providers and payers is substantial. In Indonesia, annual direct expenditures for schizophrenia, bipolar illness, depression, and anxiety disorders are estimated to be $150 million, $62.9 million, $18.9 million, and $4.2 million respectively [3].

The increase in the process of deinstitutionalization of individuals with mental illness has led to family members taking on the responsibility of providing care [4], [5]. Providing care for a patient with schizophrenia is a demanding task. The social and emotional consequences of living with someone diagnosed

with schizophrenia extend beyond the affected individuals themselves and also affect other members of their household [6]. Family caregivers have heightened levels of stress due to the demands of their caregiving responsibilities, financial burdens, and the stress on their relationships with family members [7]–[12]. Adapting to the job of caretaker may be challenging for many people because of the strain on family connections brought on by the disease's behavior and the associated cultural and societal stigmas [13], [14].

While the experience of living with schizophrenia patients can increase vulnerability to mental ill-health, there is growing evidence that shows some families can effectively handle the effects of schizophrenia on their life, even though living with a person who has the disorder increases the risk of mental illness [15], [16]. Such families use their disease management experience to strengthen connections, coping skills, refocus priorities, identify opportunities, and adapt to the circumstance to operate as effectively as 'healthy' families [16], [17]. A resilient family may sustain good family functioning, adjust to harsh life events, and build strengths and talents [18], [19].

A framework for family resilience may provide guidance for initiatives aimed at promoting mental health. Strategies aimed at increasing wellbeing may specifically address the mechanisms and elements related to managing, adapting, and developing resilience [19]. Theoretical models of family resilience outline a dynamic process by which families may effectively adapt to change, manage stresses, use their strengths, utilize protective factors, and alter their functioning to promote optimum adaptation in the face of challenging events [20]–[22]. Interventions focused on promoting mental health through resilience can help families identify their strengths, acknowledge the factors that protect them, and utilize available resources within their family and environment. These interventions also offer opportunities to practice specific strategies that enhance coping skills and improve family functioning [23].

Interventions targeting the mental health and well-being of caregivers who live with patients diagnosed with schizophrenia have shown that assisting families in recognizing effective coping strategies, improving family dynamics, and accessing resources such as social support led to positive outcomes for both the patients and their families [5], [24]–[27]. Previous studies show that psychoeducational therapies, including family-led supportive interventions, family-focused interventions, and online "mi-spot" interventions, can improve the mental health and wellbeing of caregivers living with schizophrenia patients, but current data has limitations [28]. Research in Indonesia has shown limited efforts to directly target family resilience through interventions, particularly in the care of individuals with schizophrenia. A family resilience intervention program, based on family resilience theory, aims to improve mental well-being and support caregivers by recognizing strengths and implementing protective characteristics, such as family dynamics, coping abilities, and social support. Therefore, the aim of this study is to assess the efficacy of family resilience intervention program for caregivers with schizophrenia patients using a randomized controlled trial.

2. METHOD

2.1. Study design and setting

This is was conducted using a randomized controlled trial with a non-blind trial that includes two parallel arms and an active control group. The study followed the CONSORT extension guideline proposed by Eysenbach [29]. The location is a Public Health Communities in Central Java, Indonesia, which offers healthcare services to over 26,842 individuals diagnosed with schizophrenia annually, all of whom are residents of Central Java, Indonesia.

2.2. Intervention

The intervention applied theory-based family resilience intervention program developed by Ren *et al.* [30], where caregivers living with schizophrenia patients get escalating degrees of assistance depending on the severity of their suffering. The program consists of three stages, namely socialization routinely through social media, targeted socialization, and active socialization as shown in Table 1. In the stage one, a family resilience and wellness fact sheet were distributed as part of a regular procedure. Then, in stage two, a booklet with information and activities focusing on caregivers' family resilience and wellbeing was sent to specific individuals. This stage utilized a research methodology that involves measuring the same variables before and after the intervention. In stage three, caregivers actively participated in a social support group. The method for spreading information and the plan for conducting research at each stage of the intervention are described in Figure 1.

The intervention group received a six-week program combining face-to-face and interactive internet delivery. The first week involved a four-hour session for caregivers to connect, discuss experiences, and interact with facilitators. The program accommodated up to 15 participants and was led by two nursing-experienced facilitators. Weeks two to five saw an online forum moderator uploading content about family resilience techniques. The final session was in-person for caregivers to discuss their experiences and assess

their involvement. A facilitator handbook provided comprehensive information on session structure and content. The program was delivered with the help of existing service providers, including nurses at public health centers and caregiver support services.

Table 1. The content of a theory-based family resilience intervention program [30]

Stage	Content	Media
Socialization routinely through social media	a. Every caregiver is released from the mental health institution and provided with a family resilience and wellbeing fact sheet. b. The fact sheet offers concise psycho-educational information and practical techniques to enhance resilience in families.	Fact sheet, two-sided, A4 document
Targeted socialization	a. The booklet uses a cognitive behavioral approach to enhance family resilience by promoting parents to recognize their strengths, learn about resilient family attributes, set goals, and implement measures. b. It includes an introduction, guidance on establishing a strong family, advice on developing a resilient family, and future planning.	Booklet
Active socialization	a. The parent information support group is an educational, supportive, and skill-building program designed for parents experiencing psychological distress. b. It includes information from a booklet and allows participants to engage in discussions and practice tactics with peer support.	Group discussion

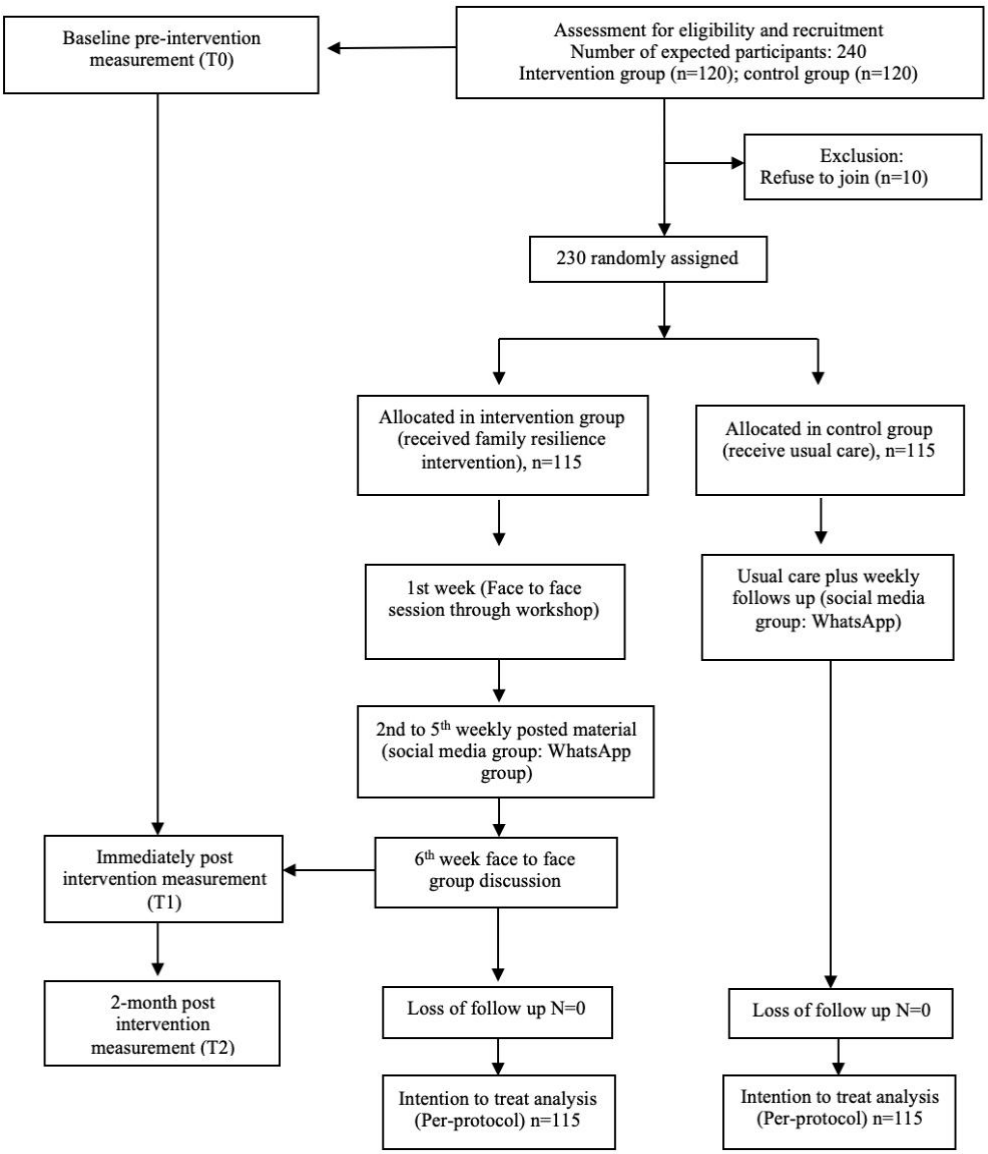

Figure 1. Study flow chart

2.3. Sample

This research involved 230 caregivers aged 18 and above. The study excluded caregivers who were pregnant, had vision or hearing impairments, or had mental or cognitive disorders. The sample size was determined using G-power analysis software version 3.1. The calculations were based on a confidence interval of 95%, an explanatory power of 80%, and a threshold of d=0.33 [31] to determine the statistical significance for the intervention. As a result, it was projected that a sample size of 230 with 115 participants in each in order to accommodate a projected attrition rate of 10%.

Eligible caregivers were chosen using a convenience sample technique and randomly allocated to each group using the block randomization method. Each group was labeled A or B, with a block size of 4. The randomization list was created using a web-based application (https://www.sealedenvelope.com/simple-randomiser/v1/lists) [32], with the third author creating the random allocation sequence. The first author recruited individuals and allocated them to their respective groups.

2.4. Instruments

The first survey focused on the caregivers' demographic information. The socio-demographic characteristics of the caregiver encompassed factors such as age, gender, educational attainment, relationship to the patient, length of time providing care, occupational status, economic situation, insurance coverage, housing situation, the number of family members (including siblings, children, and spouse), and the presence of another family member with a mental health condition.

The Conner-Davidson Resilience Scale (CD-RISC) is a tool used to quantify the degree of resilience [33]. This survey consists of 25 questions, each rated on a five-point Likert scale ranging from 0 to 4. The overall scores go from zero to 100. The threshold for this questionnaire is set at 50, where a higher score indicates a greater level of resilience. The internal consistency, as measured by Cronbach's α, for the complete scale was 0.89. The test-retest reliability was evaluated in a sample of 24 participants from the clinical trials of the generalized anxiety disorder and posttraumatic stress disorder groups. Furthermore, the Cronbach's alpha coefficient of this scale in the present investigation (before to intervention) was 0.90.

The McMasters family assessment device (FAD) was used to quantify family functioning [34]. The FAD evaluates both the positive aspects and the drawbacks of family functioning across seven dimensions. It consists of 50 questions that cover areas such as problem resolution, communication, roles, emotional response, emotional engagement, behavior control, and overall functioning [28]. Statements are used to define different characteristics of family functioning. Respondents indicate their level of agreement on a four-point scale ranging from 0 to 4. Lower scores on the scale imply better family functioning. The FAD has sufficient internal and test-retest reliability [35]. Furthermore, the Cronbach's alpha coefficient of this scale in the present investigation (before to intervention) was 0.92.

2.5. Data collection

The sampling began after the requisite authorizations were acquired from the authorities of the public health center in Semarang, Central Java, Indonesia. The primary focus was to assess and document the specific characteristics of individuals diagnosed with schizophrenia. Subsequently, the family member entrusted with the duties of maintaining cleanliness, administering therapy, providing care, and offering support to the patient was sent an invitation to participate in the research. The signed informed consent form was acquired subsequent to the explanation of the research methodology. Participants who missed more than two training sessions were eliminated. The control group participants were given the standard care. The families were provided with the option to seek assistance from psychologist offices and institutes in the event of any issues. The intervention group samples were stratified into subgroups of five to six individuals, taking into account factors such as distance and working circumstances. The intervention was conducted using a combination of lecturing, Socratic questioning, and the distribution of booklets. The outcome measures were evaluated online at the beginning, immediately after the intervention, and during a follow-up two months later.

2.6. Data analysis

Data analysis was conducted using SPSS software version 23 (SPSS Inc., Chicago, IL, USA). A p-value below 0.05 was deemed to be statistically significant. The independent T-test, Fisher's exact test, and Chi-square test were used to compare the individual characteristics of the groups. After analyzing the data from the FAD questionnaire, it was found that the functional score followed a normal distribution. Consequently, the repeated measures analysis of variance and Cohen's d test were used to assess the impact of the intervention on the functioning of the families at three different phases of the research. The study applied general estimation equation (GEE) to control confounding factors and detect main effect of different time periods within each group for two dependent variables (resilience and family functioning).

2.7. Ethical consideration

The Ethics Committee of Universitas Ngudi Waluyo University granted clearance for this research on June 16, 2023, with the assigned approval number 145/KEP/EC/UNW/2023. All participants were given an explanation of the research aims, methods, benefits, confidentiality, and hazards, and their informed permission was acquired. The participants were also notified of their entitlement to refuse participation or withdraw voluntarily before to or during the research without incurring any repercussions. Before collecting data, the researchers provided a comprehensive explanation to potential volunteers about the significance of their participation in relation to the existing circumstances, in order to avoid the Hawthorne effect. Participant confidentiality was maintained and data security measures were used.

3. RESULTS AND DISCUSSION

3.1. Results

A total of 240 caregivers were eligible at baseline. A total of 230 caregivers engaged in this research throughout the registration procedure, resulting in a response rate of 95.8%. Approximately ten persons refused to participate. Every participant successfully finished the session and the following follow-up evaluation as shown in Figure 1.

Demographic comparison between intervention and control group. The intervention group had a mean age of 33.7 (SD=2.55) and a duration of care of 9.56 (SD=3.98) years. The 41.7% of the group had completed junior to senior high school, 76% were mothers, 54% had national insurance, 70% were part of a household, 68% had more than 2 family members, and 42% had another family member with a mental health condition. The participants in control group had a mean age of 34.6 (SD=3.27) and had received care for an average of 8.49 (SD=4.11) years. The 45.8% of the participants had completed junior to senior high school education. The 81% of the participants were mothers. The 59% had national insurance coverage. A 74% of the participants were part of a household. The 71% had more than 2 family members. Additionally, 40% of the participants had a family member with a mental health condition. There were no significant differences in demographic characteristics between the intervention and control groups.

There was no significant difference between the intervention and control groups at the start of the trial as presented in Table 2. The repeated ANOVA test shown a significant improvement in resilience ratings in the intervention group after the intervention (p-value=0.001). The impact size was calculated to be 0.352, suggesting a modest effect size. However, the control group did not exhibit a statistically significant improvement. There was no significant difference between the intervention and control groups at the start of the study as shown in Table 3. The repeated ANOVA test demonstrated a statistically significant improvement in family functioning ratings in the intervention group after the intervention (p-value=0.001). The effect size was calculated to be 0.391, suggesting a modest effect size. Nevertheless, the control group did not exhibit a substantial improvement.

The study using GEE demonstrated a statistically significant impact of time on both resilience and family functioning ($p<0.05$). Additionally, the findings indicated substantial impacts on resilience and family functioning when comparing different groups ($p<0.05$). Table 4 showed substantial impacts in the interaction between time and group for resilience and family functioning, as shown by the findings.

Table 2. Comparison of resilience scores in control and intervention group at different time points by ANOVA test

Variable	T0 Mean±SD	T1 Mean±SD	T2 Mean±SD	F	ANOVA Test p-value	Cohen's d test
Control group	2.40±1.13	2.47±1.42	2.51±1.21	0.33	0.321	0.132
Intervention group	2.26±1.21	3.47±1.33	3.51±1.56	3.11	0.001	0.352

Note: $p<0.05$ are considered significant; baseline (T0), immediately after intervention (T1), and at 2-month follow up (T2)

Table 3. Comparison of family functioning in control and intervention group at different time points by ANOVA test

Variable	T0 Mean±SD	T1 Mean±SD	T2 Mean ± SD	F	ANOVA test p-value	Cohen's d test
Control group	2.11±1.15	2.24±1.06	2.17±1.23	0.118	0.423	0.07
Intervention group	2.22±1.03	3.21±1.34	3.46±1.57	7.089	0.001	0.391

Note: $p<0.05$ are considered significant; baseline (T0), immediately after intervention (T1), and at 2-month follow up (T2)

Table 4. Intention-to-treat (ITT) analysis of self-care abilities using GEE

Variables	Source	Type III		
		Wald Chi-square	df	p-value
Resilience	Time	16.452	2	0.001
	Group	17.321	2	0.003
	Time*Group	17.571	2	0.001
Family functioning	Time	32.541	5	0.002
	Group	35.231	5	0.001
	Time*Group	34.196	5	0.001

3.2. Discussion

This research demonstrates that the implementation of a family resilience intervention program has the potential to enhance both resilience and family functioning in caregivers of individuals with schizophrenia. A study conducted by Lim *et al.* [36] in Korea found statistically significant differences in family hardiness, family sense of coherence, family problem-solving communication, family crisis-oriented personal evaluation, social resources, and family adaptation between the experimental group and the control group. This was observed as a result of the Family Resilience Enhancement Program (FREP) [37]. Furthermore, another research found that implementing the Calgary family intervention model, a family support and psychoeducation program, for caregivers of persons with persistent mental disorders had a beneficial impact on the overall health status of the caregivers [38]. However, future treatments targeting the enhancement of family caregivers' wellbeing should address the influence of personality traits, specific situations, and cultural and personal values.

Resilient family education has several components such as support, coping strategies, profound communication, gratitude, dedication, and spiritual well-being [39]. Out of these six characteristics, the respondents mostly highlighted that they received the greatest amount of support from their families, which had a significant role in enhancing the mental well-being of their family members. During periods of psychological vulnerability, the presence of social support from family members plays a crucial role in assisting individuals in preserving their physical and mental well-being [40]. The family is an essential and indispensable source of support, providing assistance in several aspects such as physical, emotional, financial, and social support. This support is superior than other types of social and emotional ties [41]. In addition, effective communication is another essential component of resilient family education that may impact the family's capacity to improve mental well-being [42].

Efficient communication within the family may enhance understanding and thus impact an individual's conduct in preserving their mental well-being. Effective communication requires people to have both emotional and spiritual intelligence [43]. One's communication is influenced by emotional and spiritual intelligence, affecting both the manner and substance of their interactions [44]. The higher one's emotional and spiritual intelligence, the more proficient, impactful, and productive their communication will be. In contrast, inadequate communication abilities are indicative of diminished emotional and spiritual intelligence. This statement demonstrates the strong connection between communication and an individual's psychological well-being. Ultimately, the effectiveness of communication is determined by the stability and health of one's mental and emotional state [45]. One of the components covered in the Resilient Family Education program is coping methods [46]. Certain families use coping strategies rooted on acceptance and faith to improve their mental well-being. Families rely on religious assistance as their only means of finding comfort and inspiration [47]. Families assert that engaging in religious rituals provides them with tranquility and fortitude to get through challenging circumstances. Engaging in prayer has the effect of alleviating the distress experienced by family members [48]. Therefore, it is important to enhance religious practices and strengthen faith in order to effectively support and attend to their relatives, irrespective of the patient's harmful conduct [49].

A resilient family is characterized by its ability to cope with stress, efficiently navigate through crises, and retain a positive outlook in the face of all adversities in family life [50]. Family resilience can be enhanced by several positive factors, such as demonstrating appreciation for each other's actions, engaging in meaningful communication, spending quality time together as a family, maintaining commitment, establishing the family's foundation on religious and cultural values, and effectively managing stress and crises [51]. Regularly practicing these positive behaviors enhances the strength and resilience of a family, enabling them to better cope with challenges during times of crisis [52]. To maximize the advantages that families may get from becoming resilient families, it is crucial to undertake the resilient family education program to strengthen families' ability to cope with psychosocial challenges [53]. The objective of this intervention model is to expand families' understanding of the effects of psychological issues, as well as the methods and stages to strengthen family resilience, and the many types of assistance available to aid in the

recovery of family members. Researchers have been unable to manipulate or regulate other variables that might potentially impact the family's capacity to maintain their mental well-being, such as educational attainment, emotional intimacy among family members, economic standing, and other related issues.

The strengths of our study include proper randomization, a bigger sample size using standardized measures, and the incorporation of a control group for comparative analysis. There are several limitations. This study was conducted only inside a designated province, while Indonesia has 38 provinces, which is limited to its generalizability. Therefore, the applicability of our results to the whole community and their capacity to be applied to other contexts are restricted. It is recommended to do further investigation using a larger sample size, obtained from a more varied population.

4. CONCLUSION

This study demonstrates that a family resilience intervention program could improve resilience and family functioning among caregivers with schizophrenia patients. It is essential to engage primary healthcare facilities in the early identification and monitoring of psychosocial problems within families and to apply the resilient family education model for the purpose of preserving and enhancing the mental well-being of all families. Future studies should include control groups and investigate the many aspects that influence family mental health, such as education level, emotional intimacy among family members, and socioeconomic position.

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