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Research Article

The Effect of Digital Problem Solving Therapy on Quality of Life in Pregnant Women Who Are Victims of Domestic Violence

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Abstract

Aims: This study aims to determine the effect of digital problem-solving therapy (DPST) on the quality of life (QOL) of pregnant women who are victims of domestic violence.
Methods: The research was conducted using a quasi-experimental design with two groups: an intervention group receiving digital problem-solving therapy and a control group receiving standard care. The study took place over three months at the National Commission on Violence Against Women service centers and referral hospitals in Bekasi City, West Java. The intervention involved four sessions per month focusing on psychological well-being and QOL. A total of 100 pregnant women participated, meeting the criteria of being over three months pregnant, having experienced domestic violence, owning a smartphone, and living with their husbands.
Results: The results showed a statistically significant increase in QOL scores within the intervention group after the therapy, with a t-score of 13.76 and a p-value of 0.001. Additionally, the intervention group exhibited a larger improvement in QOL at post-test compared to the control group (ß = 8.20, $p < 0.001$).
Conclusion: Digital problem-solving therapy significantly improves the quality of life of pregnant women experiencing domestic violence. Future studies should explore the effectiveness of this intervention among more diverse research groups, focusing on participants with varied mental health and psychological characteristics.

Keywords:
Digital, domestic violence, pregnant, problem solving therapy, quality of life

INTRODUCTION

Domestic violence (DV) is described as physical, emotional, and sexual violence, as well as controlling conduct, perpetrated by a current or former spouse (1). DV is a worldwide health issue that violates human rights. DV disproportionately affects women worldwide, with approximately one-third of reproductive-age women experiencing it (2). Domestic violence profoundly affects women across multiple facets of their lives, severely impacting their physical and sexual health, including an increased risk of traumatic brain injuries and HIV infections (3,4). Additionally, it takes a toll on their mental health, leading to conditions such as depression and post-traumatic stress disorder (5), while also adversely affecting the mental, behavioral, and social well-being of their children (6,7). This impact is particularly pronounced during pregnancy and the postpartum period, times that can be especially

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challenging for women. The negative consequences of domestic violence during these critical phases are significantly amplified, exemplified by a threefold increase in the risk of perinatal mortality for women who experience violence during pregnancy compared to those who do not (8). This underscores the urgent need for targeted interventions to support affected women and mitigate these severe health risks.

Domestic violence is particularly widespread among women in low- and middle-income countries, with global prevalence rates ranging from 24.6% to 37.0%. In Indonesia, approximately 10% to 12.3% of women of reproductive age who have ever been married report having experienced physical, mental, or sexual abuse by their spouses at some point in their lives (10). These statistics highlight the significant issue of domestic violence in Indonesia and reflect a broader pattern observed in similar socio-economic contexts, underscoring the urgent need for effective interventions and support systems to address this critical public health concern (11). The confluence of patriarchy and poverty has persistently increased women's susceptibility to domestic violence, particularly in Indonesia (12,13). Economic disparity has a detrimental effect on women, with those with fewer financial resources facing more severe domestic abuse than males (14). In addition, women rely on males for resources and are prone to domestic abuse. Meanwhile, domestic violence against pregnant women in Indonesia has reached 50% (15). Domestic abuse, particularly during pregnancy, might increase the likelihood of pregnancy and delivery difficulties. Furthermore, repeated trauma may occur because it affects mothers and fetuses (1,2). Violence against pregnant women may lead to depression (16,17) and an increase in maternal death rates (18, 19).

Indonesia's response to domestic violence has been confined to counselling services, aid, the passage of legislation criminalizing violence against women, and policies and training to increase the efficacy of the court and police. Individualized interventions, on the other hand, increase psychological well-being, interpersonal relationships, and quality of life in pregnant women who have been victims of domestic abuse. Specifically, concentrating on a behavioural strategy that fosters individual change and developing this method to shape individual behaviour in pregnant women who have experienced domestic abuse in order to enhance their psychological well-being, interpersonal relationships, and quality of life. The strategy aims to develop problem-solving skills via digital media. Recent research indicates that using therapies to address problem-solving abilities for women who have experienced violence improves their capacity to manage with everyday stress following the violence (20). Furthermore, a systematic review found that interventions that focus on multiple strategies, such as problem solving, can reduce the number of victims while also providing opportunities to facilitate and maintain positive physical and mental health, as well as changes in quality of life for women who have experienced violence (21,22). Therefore, this study aimed to determine the effect of digital problem solving therapy on quality of life in pregnant women who are victims of domestic violence.

METHODS

Study design

This study used a quasi-experimental design with pre-post-testing in two groups (intervention and control). This research was carried out in the National Commission on Violence Against Women service and referral hospitals in Bekasi City, West Java.

Sample

The participants in this research were pregnant women with a gestational age of more than 3 months who reported vocally experiencing KDR both physically and

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mentally (as determined by a questionnaire), owned a smartphone, and presently lived at home with their spouse. Meanwhile, the following exclusion criteria apply: pregnant women who have pregnancy difficulties, are reluctant to respond, or have cognitive and mental issues. The sample size is calculated using G-power version 3.1 with a power level of 0.8, resulting in 100 participants for two groups. The convenience sampling approach was utilized to select study participants.

Insturment

The quality of life in this study was assessed using the short-form health questionnaire (SF36v2), which is available in Bahasa. This questionnaire serves as a comprehensive tool for measuring health perception and evaluates eight distinct health dimensions: physical functioning (PF), role participation with physical health difficulties (role-physical, RP), bodily pain (BP), general health (GH), vitality (VT), social role functioning (SF), emotional role functioning (RE), and mental health. Scores on the SF36v2 range from 0 to 100, where 0 indicates poor health and 100 signifies outstanding health. A higher score reflects positive emotional states, minimal psychological distress, and the absence of emotional barriers to participating in social or role-related activities, highlighting an individual's overall well-being and functional capacity in daily life.

Procedure

This research was last three months, with four sessions each month (4 times in one month) focusing on the study's outcomes, which include psychological well-being, improved intimate relationships, and quality of life (Table 1).

Table 1. Problem-solving skills training session process

Sesion	Content	Duration
1	- Establish reciprocal relationships between group leaders (researchers) and members (women) - Develop frameworks and rules for group participation and training - Emphasize the importance of problem-solving skills in dealing with life's challenges and failures - Conduct group conversations on common topics, such as violence against partners. - Use a smartphone app to record and prioritize partner abuse complaints.	40–50 min
2	- The first 10 minutes of the session are spent reviewing the previously provided work and having a group conversation about it. - Introduce brainstorming and invite participants to jot down all of the options they believe they can take when tackling their situation. - Group discussion of proposed solutions to the situation. - Use digital media (smartphone app) to live positively and be happy.	40–50 min
3	- Use brainstorming to discuss the benefits and drawbacks of each potential option. - Use of digital media (smartphone app): game-based problem-solving ability	40–50 min
4	- Scoring ideas given by people based on benefits and drawbacks, and choosing the best option.	40–50

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Sesion	Content	Duration
	- Delivering and explaining how to use problem-solving tables after the couple has been released from the hospital. - Using digital media (smartphone app): Meditation and relaxation for stress management.	min

Pre-test measures took place one week before the intervention, followed by post-tests one week later. While the control group received a handbook on self-management of domestic violence (Figure 1).

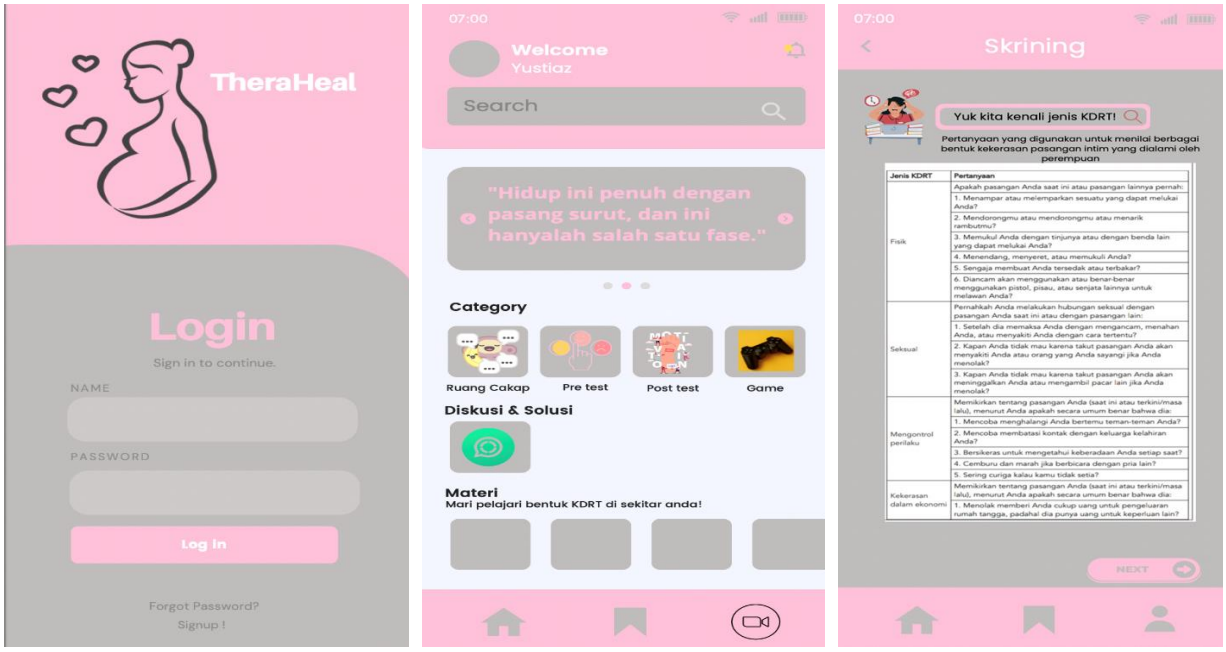

Figure 1. User interface of digital problem-solving therapy

Data analysis

Data analysis was conducted to assess the mean differences between the changes observed before and after the intervention. Each variable was analyzed by calculating the mean and standard deviation (SD) to summarize the data's central tendency and dispersion. To compare the mean change from the pre-test to the post-test, a paired t-test was employed, allowing for a comprehensive evaluation of the differences across all participants and specific applications used during the study. This statistical approach provided insights into the effectiveness of the intervention by determining whether the observed changes were statistically significant.

RESULTS

The average participant age was 27.13 years with a 3.25 standard deviation. Additionally, 52.5% had graduated senior high school. The average gestational age was 35.3 ± 3.55 weeks. The average number of children reported by participants was 2.1 ± 0.23. The mean BMI was 28.21 ± 4.56. In addition, 46.7% of participants lived with their family. About 12.5% of individuals had experienced abortion. Conversely, the control group had a mean age of 26.67 ± 4.65, with 53.3% of individuals completing senior high school. The study found that participants had an average gestational age of 35.9 ± 2.11, 2.5 ± 0.41 children, 29.01 ± 5.01 BMI, and 41.7% lived with their families. Abortion was reported by 9.2% of individuals. No significant

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differences were seen between the intervention and control groups in age, education, gestational age, number of children, BMI, family living arrangement, and abortion history (p>0.05).

The results of indicated a statistically significant increase in the severity of quality of life (QOL) scores within the intervention group after intervention. The t score was 13.76 with p-vallue 0.001 (Table 2).

Table 2. Comparison of QOL scores in control and intervention group

Variable	T0	T1	t	p-value
	Mean ± SD	Mean ± SD		
Intervention group	82.51 ± 12.8	86.11 ± 17.4	13.76	0.001
Control group	83.32 ± 15.5	84.76 ± 13.2	5.32	0.037

The results of the analysis showed a significant interaction between group for quality of life (QOL). Specifically, the intervention group had a larger improvement in QOL at postest compared to the control group (ß = 8.20, p < 0.001) (Table 3).

Table 3. Between group comparision of QOL using ANCOVA

	ß	95% CI	p
QOL, total score	8.20	3.56 to 12.87	0.001

Note: Ref: control group

DISCUSSION

Findings of this study showed that digital problem-solving therapy has improve quality of life in pregnant women who are victims of domestic violence. This study differs in that it focuses on increasing the capacity of women or victims of domestic violence to solve problems, thereby reducing the negative effects of domestic violence, improving psychological well-being, intimate relationships, and the quality of life of victims. In Indonesia, there has been no study on improving problem-solving abilities via the use of digital technology. Domestic violence in developing and emerging nations is still uncommon. A recent major review summarizes the known data on preventing different types of violence against women (24). The authors categorize interventions aimed at assisting women victims of violence into various strategies, including economic and livelihood interventions, as well as response interventions. They identify four approaches that show promising evidence: (1) participatory or community-based development, (2) empowerment training to strengthen women's institutions, (3) workshops focused on discussing gender and behavioral norms between men and women, and (4) economic empowerment or additional income initiatives. This synthesis underscores key characteristics of effective interventions, such as engaging multiple stakeholders in diverse ways, addressing socio-ecological risk factors and inequitable gender norms, and promoting nonviolent behaviors within communities. However, it also highlights a significant gap in the existing evidence base, calling for broader assessments of prevention interventions and a wider range of strategies to effectively

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address the issue of domestic violence against women. The synthesis emphasizes the importance of these characteristics in developing successful programs (24).

The concept of structural interventions offers a theory-based framework for organizing and evaluating existing research, thereby enhancing the evidence base and broadening the scope of treatments explored. These interventions aim to change structural elements—economic, political-legal, physical, and social factors that create and perpetuate risk—associated with domestic violence. By aligning with a socio-ecological perspective, structural interventions address the systems, structures, and processes at the higher levels of social ecology. This approach not only targets the immediate risk factors but also seeks to modify the broader contexts that contribute to the prevalence of domestic violence, ultimately influencing risk at multiple levels. Such a comprehensive framework can facilitate the development of more effective and sustainable strategies to combat domestic violence (27).

To tackle domestic violence in less developed countries, the socio-ecological framework serves as a foundational approach. According to Ellsberg and colleagues, first-generation interventions encompass a range of initiatives, including programs designed to assist victims of domestic abuse, the enactment of laws prohibiting violence against women, and the implementation of policies and training aimed at enhancing the effectiveness of judicial and police systems. Building on this, second-generation interventions focus on instrumental strategies that address individual risk factors affecting vulnerable women. These strategies aim to enhance women's knowledge, attitudes, and behaviors through targeted interventions, thereby empowering them and fostering resilience against domestic [23-25]. Within this second generation of interventions, efforts are currently underway to influence societal and community gender norms to prevent domestic violence. These interventions aim to challenge and transform the deeply ingrained attitudes and beliefs surrounding gender roles, which often perpetuate violence against women. By engaging communities in discussions about equitable gender norms and promoting nonviolent behaviors, these initiatives seek to foster a cultural shift that prioritizes respect, equality, and safety for all individuals. Ultimately, the goal is to create an environment where domestic violence is not tolerated and where both men and women can thrive in a supportive and safe community (24–26). Community mobilization interventions and microfinance initiatives are two noteworthy examples of programs designed to tackle gender inequities at various socio-ecological levels in an effort to reduce domestic violence victimization. Community mobilization interventions focus on reshaping community norms and expectations regarding gender roles, aiming to foster equitable behavior among men and women. By engaging community members in discussions and activities that challenge traditional stereotypes, these interventions promote a culture of respect and nonviolence. On the other hand, microfinance interventions address the economic subordination of women by providing them with access to financial resources and entrepreneurial opportunities. This financial empowerment allows women to gain greater independence and decision-making power within their households and communities, which can significantly reduce their vulnerability to domestic violence. Together, these interventions represent a comprehensive approach to mitigating domestic violence by addressing both social and economic factors that contribute to gender inequities.

CONCLUSION

In conclusion, the findings of this study indicate that digital problem-solving therapy significantly enhances the quality of life for pregnant women who are victims of

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domestic violence. This therapy not only addresses the immediate challenges faced by these women but also contributes to their overall well-being during a critical period in their lives. Given the positive outcomes observed, it is essential for future research to expand on this area by incorporating diverse groups with varying mental health and psychological characteristics. This broader approach will help to better understand the therapy's effectiveness across different populations and potentially lead to more tailored interventions for those affected by domestic violence.

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