

# The Impact of Cardio Karate Training on Psychological Stress Reduction and Enhancement of Psychological Security among Widowed Women: An Experimental Research Study

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**Abstract Background:** Widowed women often experience psychological pressures, and their psychological security can be influenced by various factors such as employment, housing situations, and age. In post-conflict and post-disaster scenarios, widowed women are particularly vulnerable to psychological distress due to exposure to traumatic events and ongoing stressors. **Aims:** This study aimed to examine the impact of cardio-karate training on reducing psychological pressures and enhancing the psychological security of widowed women. **Methodology:** The study utilized an experimental approach, involving a sample of 30 widowed women who were affiliated with the Bena Association for the Care of Widows and Divorced Women in the Eastern Province of the Kingdom of Saudi Arabia. The participants were divided equally into two groups: an experimental group and a control group. The experimental group underwent the cardio-karate training program, while the control group did not receive any specific intervention. Psychological stress

was measured using a scale, and another measure was used to assess psychological security. **Results:** The results indicated that the experimental group showed significant improvements compared to the control group in terms of psychological stress levels and enhancing psychological security among widowed women ( $p < 0.05$ ). The cardio-karate training program had a positive impact on reducing psychological pressures and increasing stability and psychological security among widowed women. **Recommendations:** Based on these findings, several recommendations can be made for future research and practice. Firstly, it is important to replicate this study with a larger sample size to further validate the results. Additionally, conducting long-term follow-up assessments would provide insights into the sustainability of the effects of cardio karate training on psychological well-being among widowed women. Furthermore, it would be beneficial to explore the specific mechanisms through which cardio-karate training influences psychological

stress reduction and psychological security. This could involve examining physiological markers, such as cortisol levels, as well as exploring the psychological processes involved in building self-confidence and resilience. In terms of practical implications, integrating cardio karate training programs into support services for widowed women could be beneficial. These programs can provide a holistic approach to addressing psychological pressures and enhancing psychological security. Additionally, raising awareness among widowed women about the potential benefits of such training programs may encourage their participation and engagement.

**Keywords** Cardio Karate Training, Psychological Stress, Psychological Security, Widowed Women, Satisfaction with Life, Psychological Tranquility

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## 1. Introduction

The family unit serves as a fundamental structure in individuals' lives, offering stability and fulfilling their various needs. This is achieved through the institution of legal marriage, which provides individuals with a sense of security and psychological stability. Within this context, the role of the husband is crucial in meeting his wife's needs and ensuring her sense of security and stability [1]. The loss of a spouse can have a profound impact on the mental health of widowed women, leading to significant psychological distress. This distress may manifest as severe distress, helplessness, intense pain, mourning, and anxiety. Widowhood has become a prevalent global phenomenon due to the increasing number of spousal deaths [2]. Extensive research consistently indicates that widowhood is associated with various negative mental health outcomes, including severe pain, disability, deep pain, mourning, anxiety, and psychological distress [3]. In post-conflict and post-disaster contexts, widowed women may experience even greater psychological burdens due to exposure to traumatic events and ongoing stress. The grieving process following the loss of a husband can involve a range of emotions, such as guilt, confusion, and fear. These emotional challenges can have a profound impact on both mental and physical well-being [4].

The loss of a husband brings sorrow, troubles, and challenges to widows' lives. It is a huge challenge because the husband not only provides support but also symbolizes family, security, and stability. After the deaths of their husbands, widows become outcasts and lose status in society, as well as pride and the privilege of independence [5]. Widows suffer the adaptation to loss and have symptoms of complicated grief and post-traumatic stress disorders, especially if their deaths are unexpected. These challenges may interfere with the grieving process and lead to mental health problems for widows. The adjustment problems of widows are affected by locality and age,

whereby rural widows have a harder time compared to urban ones, with younger widows having more problems than older ones [6]. The process of psychological and social adaptation for widowed women is more complicated, which can be explained by several reasons. First, marriage means more to women than to men. This situation makes the loss of a husband for widows even harder [7]. Further, social norms and expectations can restrain widows, robbing them of their social identity and family support and making them feel alienated [8]. Lastly, the costs of being a widow can influence earnings and result in a change in the standard of living [9]. Losing a husband can disrupt the social and emotional support structures that widows rely on, leaving them to contend with grieving and adjustment in isolation. Social stigma and the limitations placed on widows may worsen their alienation and hinder their attempts to restore themselves [5]. Further, the economic consequences of widowhood can lead to more pressure and troubles since they may have to adapt to a new lifestyle and even experience financial instability [10].

Psychological security refers to an individual's sense of comfort, satisfaction, self-assurance, and ability to cope with crises. It encompasses a state of balance, harmony, and stability that enables adaptation, self-fulfillment, and overall well-being in various aspects of life. This includes meeting both physical and psychological needs, feeling calm in the face of challenges, and experiencing emotional, intellectual, and social well-being. Psychological security is multifaceted and complex, incorporating elements such as personal and emotional safety, perceived control over life events, self-confidence, and life satisfaction. Interpersonal relationships, environmental factors, and individual characteristics influence it. Psychological security is crucial in different contexts, such as educational environments and decision-making processes [11,12]. Psychological security refers to an individual's satisfaction with their basic needs and feelings of warmth, appreciation, trust, care, and protection from threats. It also encompasses a sense of psychological calm and freedom from anxiety. This sense of security is a fundamental need for individuals to thrive and succeed in their personal and professional lives. Psychological security provides a solid foundation for emotional well-being, resilience, and the ability to navigate and adapt to life's challenges. When individuals feel psychologically secure, they are more likely to have a positive outlook, engage in healthy coping strategies, and maintain a strong sense of self-worth and confidence. This, in turn, contributes to their overall satisfaction and fulfillment in life [11,13,14].

One cause of widespread insecurity that widows' attitudes can lead to the development of psychological disorders and abnormal behavior is their pursuit of security, which they often find from different sources. Psychological security and subjective loneliness should be considered in the process of analyzing the well-being of widows or divorced women [15]. Studies have shown that widows in India suffer various societal menace such as physical abuse,

prejudice, and lack of economic liberation; some of which can affect their mental wellbeing [16]. The problem is most profound among the widows residing in isolated rural areas where psychological disturbances and disorders such as loneliness, depression, and anxiety find their way as common conditions [5]. The social deprivation that widows in India is a huge issue, owing to diverse cultural and economic practices that limit their social activities and opportunities for interaction [17]. Based on the researcher's experience in voluntary work with widowed women, it was observed that they face various challenges in terms of psychological, social, material, and family pressures. These challenges can result in maladjustment, a loss of psychological security, apathy, and a diminished desire to live. To address these issues, the researcher became interested in utilizing cardio-karate exercises as a potential intervention for these women. Cardio-karate training is a fitness program that combines aerobic exercise with strength and flexibility exercises performed in the form of basic karate skills, including defensive and offensive techniques, accompanied by high-energy music [18]. Cardio-karate training is a technique of exercise that focuses on aspects of self-defense techniques while enhancing cardiovascular fitness. It is known to produce positive results on executive performance, reaction times, neural physiology, and self-control [19]. Karate training may regularly enhance cardiocirculatory functioning and muscle tone and help build stress resistance as well as fast recovery rates [20]. If we can see self-organization and self-development as the two factors of karate training, then it would be a successful approach for reducing impulsivity while increasing self-control, which is closely associated with overall life satisfaction and well-being [21]. Moreover, practice and training in karate can help in the development of an individual's personality life voluntarily, personally, and psychologically, which improves their liveliness [22]. It is a relevant type of exercise for every individual since the intensity can be adjusted to suit all individuals depending on their abilities [23].

### 1.1. Research Problem

A woman's lifestyle and daily routine drastically alter when she becomes a widow, and this can have a long-term effect on her mental health. It can be terrifying and emotionally taxing for a woman to suddenly realize that she is no longer a wife and must face life's obstacles alone. Being a widowed woman is considered a unique and complicated circumstance since it is one of the biggest sources of stress for a woman, impacting her general health as well as her role as a wife. The intensity and complexity of this transition are often determined by the woman's level of dependency on her deceased spouse. It will be tougher for her to adapt as total reliance on this new situation occurs. It is normal for a woman to feel helpless and incapable of handling the seriousness of her new situation in such circumstances. She changes, assuming new roles and

responsibilities as she steps out of her former role and learns new ways to live and operate. Psychological stress and a loss of internal psychological security can arise from this process, which can elicit feelings of rejection, melancholy, and negativity. According to the researcher, widowed women have two options for coping with their situation. The first choice is to live as though they were in their former time, before being widowed, and to deal with situations as though their spouse was still alive. Strongness and psychological fortitude are needed to handle the difficulties and demands that come with this new reality. Alternatively, they could fight the painful reality of their loss and try to acclimatize to their new circumstances. Their psychological and physical health may suffer as a result, and they may experience greater levels of melancholy, loneliness, and depression. Thus, the purpose of this study is to clarify how cardio-karate training might affect the psychological strains and sense of psychological security widowed women feel. The study looks at the effects of this exercise to determine whether it can improve general well-being and assist widowed women in overcoming psychological obstacles.

### 1.2. Research Importance

The problem of understanding how widowed women's psychological security and pressures are affected by cardio-karate exercise needs a lot of attention. From a scientific standpoint, carrying out research in this field can advance our understanding of how widowed women's psychological stability and mental health are impacted by cardio-karate exercise. The results of a study like this can offer strong proof of how beneficial these activities are for lowering psychological stress and improving bereaved women's psychological security. Furthermore, the research can aid in determining the fundamental processes and variables that impact the achievement of these advantages. Practically speaking, the study can guide the creation of specialized training curricula that focus on the psychological stability and mental health of bereaved women. It can provide helpful advice on how to plan and carry out these initiatives efficiently while keeping in mind the requirements of widowed women. Additionally, the study has the potential to increase knowledge about the benefits of cardio-karate exercise for bereaved women's psychological stability and well-being among the public and medical experts. All things considered, this study is very important for expanding our knowledge about the benefits of cardio-karate exercise for widowed women's psychological stability and pressures. It can be a useful tool for shaping laws and initiatives in the future that will try to improve the quality of life for this group of people.

### 1.3. Purpose of the Study

This study aims to investigate how psychological stress and psychological security are affected by cardio karate training for widowed women in the Kingdom of Saudi

Arabia. The purpose of the research is to ascertain whether these training sessions can significantly lessen the psychological strain that widowed women endure and improve their general psychological health.

#### 1.4. Research Hypotheses

- There are statistically significant differences between the pre-and post-measurements of the experimental group and the control group in the psychological pressures and level of psychological security of widowed women in favor of the post-measurement.
- There are statistically significant differences between the two post-measurements of the experimental and control groups in psychological stress and the level of psychological security of widowed women in favor of the experimental group.

#### 1.5. Literature Review

In a study conducted by Akinyi, M.P. [2], the relationship between widowhood and the mental health of widows in Kisumu East Sub County, Kisumu District, Kenya, was evaluated. The researcher selected a sample of 50 widows from Kisumu East Sub-County. The study employed a mixed-methods research design, incorporating both quantitative and qualitative methods. The findings of the study indicated that widowhood is associated with poor mental health among widows. In a study conducted by You, H. et al. [16] in Hunan Province, China, the researchers aimed to examine the prevalence and risk factors associated with negative psychological symptoms among remote elderly widows living alone. The study utilized the UCLA Loneliness Scale (ULS-8), Geriatric Depression Scale-15 (GDS-15), and Generalized Anxiety Disorder Scale (GAD-7) to assess loneliness, depression, and anxiety, respectively. The findings revealed that the prevalence of loneliness, depression, and anxiety among the participants was 8.1%, 44.0%, and 16.7%, respectively. The study also identified several factors associated with negative psychological symptoms, including acute or chronic medical conditions, marital happiness, being the primary caregiver before widowhood, and anticipating the death of a spouse. In a study conducted by Pai, M., & Carr, D. [24], the objective was to investigate the association between pre-loss marital quality and changes in psychological distress and physical health among older individuals who experienced widowhood. The study included 546 respondents who had transitioned into widowhood. The findings revealed that the supportive and ambivalent groups exhibited a higher increase in depressive symptoms compared to the aversive group following widowhood. Additionally, the disliked group demonstrated a greater increase in chronic conditions compared to the supportive

group. These results suggest that the loss of a spouse may result in heightened psychological distress for individuals with supportive or ambivalent marital relationships.

In a study conducted by Khraisat, S. et al. [25], the objective was to examine the relationship between psychological security and psychological loneliness among widows and divorced individuals, considering variables such as housing and work patterns, as well as age. A scale was developed to measure psychological security and psychological loneliness, and a sample of 300 widows and 200 divorced individuals was selected using the available method. The findings of the study indicated that there were differences in psychological security based on the work variable, with working women scoring higher than non-working women. Additionally, there were differences in psychological security based on housing patterns, with widows who had independent housing scoring higher. The study was conducted by Vesković, A. et al. [26], the main reason for the study being to check out whether the training program helped in developing the psychological skills among athletes, in decreasing anxiety in them and increasing their self-confidence. The study included twenty-four athletes from the Serbian national karate team, who were divided into experimental (EXP) and control (CON) groups. Both groups underwent an eight-week karate training and competition program, while the EXP group also received a psychological skills training program that involved self-training and guided imagery. The Competing State Anxiety Inventory-2 was used to measure state anxiety, and the Action Imagery Questionnaire-3 assessed the ability to imagine movements. The results indicated a significant difference in anxiety levels between the EXP and CON groups after the training period. Further analysis revealed a decrease in cognitive anxiety and an increase in self-confidence among participants in the EXP group.

## 2. Materials and Methods

### 2.1. Research Sample

The research sample comprised 30 widows aged between 30 and 46 years affiliated with the Bena Association for the Care of Widows and Divorced Women in Dammam, located in the Eastern Province of the Kingdom of Saudi Arabia. The study sample was divided into two equal groups: the experimental group, comprising 15 widows who participated in the cardio-karate training program conducted at the Al-Rayyan Preparatory Year Sports Hall, and the control group, which did not receive any training. A detailed description of the study sample can be found in Table 1.

**Table 1.** Description of the research sample

| Variables          |                  | Total Sample<br>n=30 |             | Experimental Group<br>n=15 |             | Control group<br>n=15 |             |
|--------------------|------------------|----------------------|-------------|----------------------------|-------------|-----------------------|-------------|
|                    |                  | Number               | Percentage  | Number                     | Percentage  | Number                | Percentage  |
| Age                | 30 - 35 years    | 10                   | 33.34%      | 6                          | 40.09%      | 4                     | 26.67%      |
|                    | 36 - 40 years    | 15                   | 50.00%      | 7                          | 46.67%      | 8                     | 53.33%      |
|                    | 41 - 46 years    | 5                    | 16.67%      | 2                          | 13.33%      | 3                     | 20.00%      |
| Educational level  | Pre-Intermediate | 5                    | 16.67%      | 3                          | 20.00%      | 2                     | 13.33%      |
|                    | Secondary        | 18                   | 60.00%      | 9                          | 60.00%      | 9                     | 60.00%      |
|                    | academic         | 7                    | 23.33%      | 3                          | 20.00%      | 4                     | 26.67%      |
| years of widowhood | 1 - 3 Years      | 10                   | 33.33%      | 5                          | 33.33%      | 5                     | 33.33%      |
|                    | 4 - 6 years      | 9                    | 30.00%      | 6                          | 40.00%      | 3                     | 20.00%      |
|                    | 7 - 9 Years      | 5                    | 16.67%      | 1                          | 6.67%       | 4                     | 26.67%      |
|                    | 10 - 12 years    | 3                    | 10.00%      | 2                          | 13.33%      | 1                     | 6.67%       |
|                    | 13 - 15 years    | 2                    | 6.67%       | 0                          | 0.00%       | 2                     | 13.33%      |
|                    | 15 - 18 years    | 1                    | 3.33%       | 1                          | 6.67%       | 0                     | 0.00%       |
| <b>Total</b>       |                  | <b>30</b>            | <b>100%</b> | <b>15</b>                  | <b>100%</b> | <b>15</b>             | <b>100%</b> |

## 2.2. Research Instruments

### 2.2.1. Psychological Stress Scale

The researcher utilized a modified psychological stress scale for widowed women [27,28], which aimed to assess the psychological pressures experienced by women who have lost their husbands. The initial version of the scale consisted of 23 statements, which were reviewed by a group of specialists in psychological guidance, measurement, and psychological and educational evaluation. The purpose of this review was to ensure the appropriateness of the scale for its intended purpose, the suitability of its vocabulary for the sample, the clarity of the statements, and the linguistic formulation. Based on the feedback from the specialists, the scale underwent several revisions, including the removal of three statements. Consequently, the final version of the scale comprised 20 statements, which were categorized into three dimensions: family pressures, personal pressures, and social pressures. A tripartite Likert scale was employed, with response options of "yes" (3 points), "to some extent" (2 points), and "no" (1 point) (see Appendix A). To establish the validity of the scale, correlation coefficients were calculated between the score of each statement and its corresponding dimension. The correlation coefficients ranged from 0.731 to 0.918 for all dimensions, and for the overall scale, the correlation coefficient reached 0.931. The reliability of the scale was assessed using Cronbach's alpha, resulting in a reliability coefficient of 0.793 for the scale's dimensions. These reliability coefficients are considered acceptable.

### 2.2.2. Psychological Security Scale

The researcher utilized a revised psychological security

scale for widowed women, incorporating various dimensions of psychological security [29-31]. The purpose of this scale was to assess the level of psychological security experienced by women after the loss of their husbands. Initially, the scale consisted of 50 statements, reviewed by a panel of experts in psychological counseling and educational evaluation. This review aimed to ensure the appropriateness of the scale for its intended purpose, the suitability of its language and vocabulary for the target population, and the clarity of the data and formulation. Based on the feedback from the experts, the scale underwent several revisions, resulting in the final version consisting of 48 statements. These statements were categorized into four dimensions: satisfaction with life, psychological tranquility, social stability, and social acceptance. The Likert scale was employed, with response options including "completely applies" (scored as one point), "somewhat applies" (scored as two points), and "does not apply" (scored as three points) (See Appendix A). To establish the scale's validity, correlation coefficients were calculated between each statement and its corresponding dimension. The correlation coefficients ranged from 0.772 to 0.924 for all dimensions, and for the overall scale, the correlation coefficient reached 0.946. The reliability of the scale was assessed using Cronbach's alpha, resulting in a reliability coefficient of 0.813 for the scale dimensions. These reliability coefficients are considered acceptable.

## 2.3. Cardio Karate Training Program

The cardio-karate training program spanned six weeks, with a total of 18 training sessions conducted at a frequency

of three sessions per week. Each session lasted between 45 and 60 minutes and was structured as follows:

1) Warm-up: This segment focused on preparing the entire body for the training session. It included exercises aimed at enhancing flexibility and preventing muscle and joint injuries. The warm-up duration was approximately 15 minutes.

2) Main or basic part: This was the core component of the program, lasting between 25 and 40 minutes. It combined cardio exercises with fundamental karate skills, such as defense methods: Blocks, Down Defense (Gedan - Barai), Defending in front of the chest from the outside (Seiken Soto - Uke), defending with a hand sword (Shuto - Uke), defending upwards (Seiken Ago - Uke). Foot movements (front - back - side), and positions of the feet are as follows:

Front stance (Zenkutsu Dachi), Back stance (Kokutsu Dachi), and Straddle-leg stance (Kiba Dachi). Attack methods: A) Punches, including the short punch (Kizami - Zuki), the lunge Punch (Oi - Zuki), and Reverse Punch (Gyaku - Zuki). B) Kicks: Front Kick (Mae-Geri), Round House Kick (Mawashi-Geri), Side Kick (Yoko-Geri).

3) The final part: This concluding part aims to facilitate the body's return to a normal state. It involved relaxation exercises and lasted for approximately 5 minutes. The duration of the cool-down remained consistent throughout the program. Table 2 provides a breakdown of the time allocation for each segment within a training session, while Table 3 outlines the specific cardio karate exercises conducted during the program.

**Table 2.** Time for each segment within a training session

| Weeks | Warm-up | basic part | final part | Total time |
|-------|---------|------------|------------|------------|
| 1 – 2 | 15 min  | 25 min     | 5 min      | 45 min     |
| 3 – 4 | 15 min  | 30 min     | 5 min      | 50 min     |
| 5 - 6 | 15 min  | 40 min     | 5 min      | 60 min     |

**Table 3.** Cardio-karate exercises conducted during the program

| Weeks | Unit | Exercises                                       | Sec × Repeats | Intensity of exercises | Rest Sec |
|-------|------|-------------------------------------------------|---------------|------------------------|----------|
| 1     | 1    | Zenkutsu Dachi + Foot movements                 | 40×3          | High                   | 75 s     |
|       | 2    | Zenkutsu Dachi + Gedan – Barai                  | 40×3          | Maximum                | 70 s     |
|       | 3    | Kiba Dachi + Oi – Zuki                          | 40×3          | Middle                 | 70 s     |
|       | 4    | Kiba Dachi + Mae-Geri                           | 40×3          | High                   | 75 s     |
| 2     | 5    | Kokutsu Dachi + Mawashi-Geri                    | 40×3          | Maximum                | 70 s     |
|       | 6    | Kiba Dachi + Yoko-Geri                          | 40×3          | Middle                 | 65 s     |
|       | 7    | Zenkutsu Dachi + Seiken Ago– Uke                | 40×3          | High                   | 70 s     |
| 3     | 8    | Kokutsu Dachi + Shuto - Uke                     | 40×3          | High                   | 75 s     |
|       | 9    | Zenkutsu Dachi + Gedan – Barai + Foot movements | 40×3          | Middle                 | 60 s     |
|       | 10   | Zenkutsu Dachi + Gyaku – Zuki                   | 40×3          | Maximum                | 75 s     |
| 4     | 11   | Kiba Dachi + Kizami – Zuki                      | 40×3          | High                   | 60 s     |
|       | 12   | Kiba Dachi + Yoko-Geri                          | 40×3          | Middle                 | 65 s     |
|       | 13   | Gyaku – Zuki + Mawashi-Geri                     | 45×3          | Maximum                | 70 s     |
| 5     | 14   | Oi – Zuki + Mae-Geri                            | 45×4          | Maximum                | 75 s     |
|       | 15   | Yoko-Geri + Shuto - Uke                         | 45×4          | Middle                 | 70 s     |
|       | 16   | Gyaku – Zuki + Mawashi-Geri + Foot movements    | 45×4          | High                   | 75 s     |
| 6     | 17   | Oi – Zuki + Shuto – Uke + Mawashi-Geri          | 40×4          | High                   | 65 s     |
|       | 18   | Kizami – Zuki + Mae-Geri + Yoko-Geri            | 45×3          | Middle                 | 65 s     |

Maximum; High; Middle.

**2.4. Research Timeline**

The initial measurements were conducted to assess the sample from November 4 to 6, 2023. Following this, a six-week training program was implemented for widowed women from November 11 to December 20, 2023. Finally, the final measurements were taken from December 23 to 25, 2023, to evaluate the impact of the training program on their psychological state.

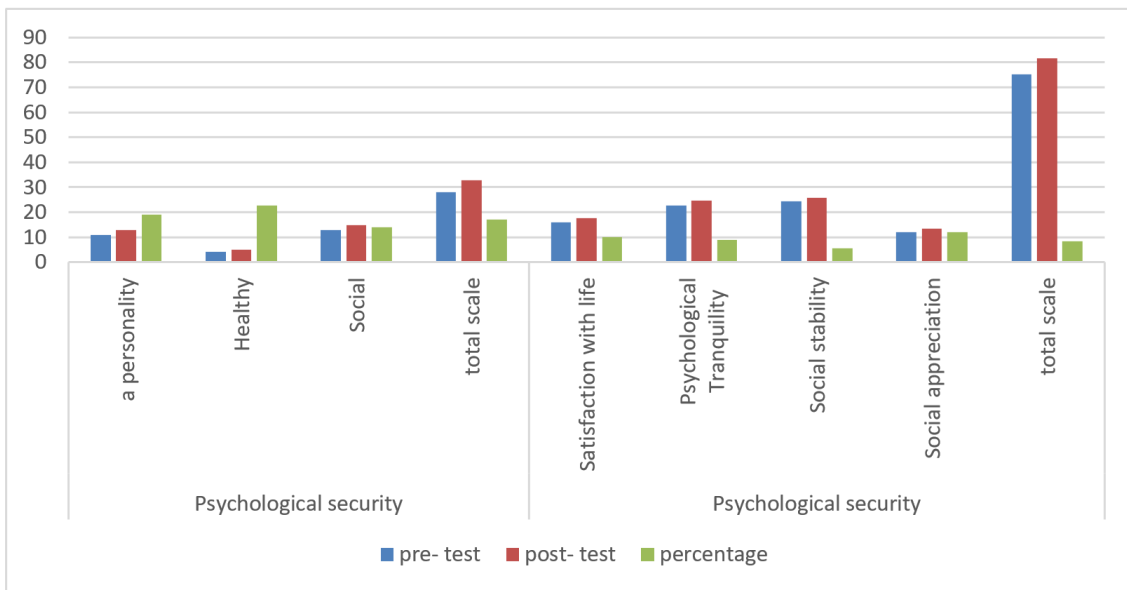
**2.5. Statistical Analysis**

The statistical analysis was performed using IBM SPSS Statistics version 26 (IBM Corporation, USA, Armonk, New York). To assess the normality of the data, the

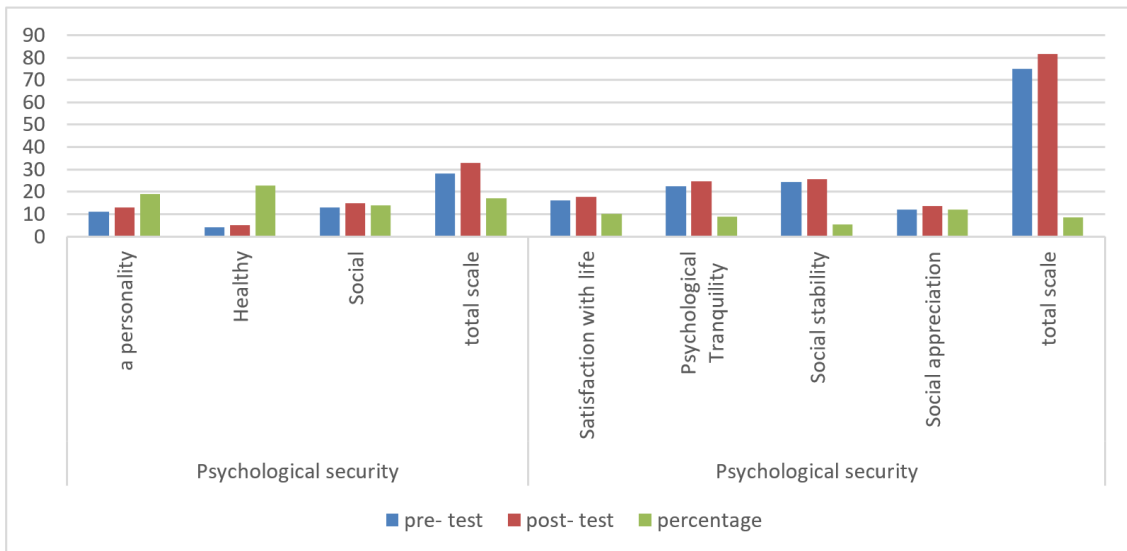
Kolmogorov-Smirnov test was employed, p-value of 0.001, indicating a normal distribution of the data. The t-test was used to analyze the data. Pearson's correlation coefficient and Cronbach's alpha coefficient were utilized for data evaluation. The significance level was set at  $p < 0.05$ .

**3. Results**

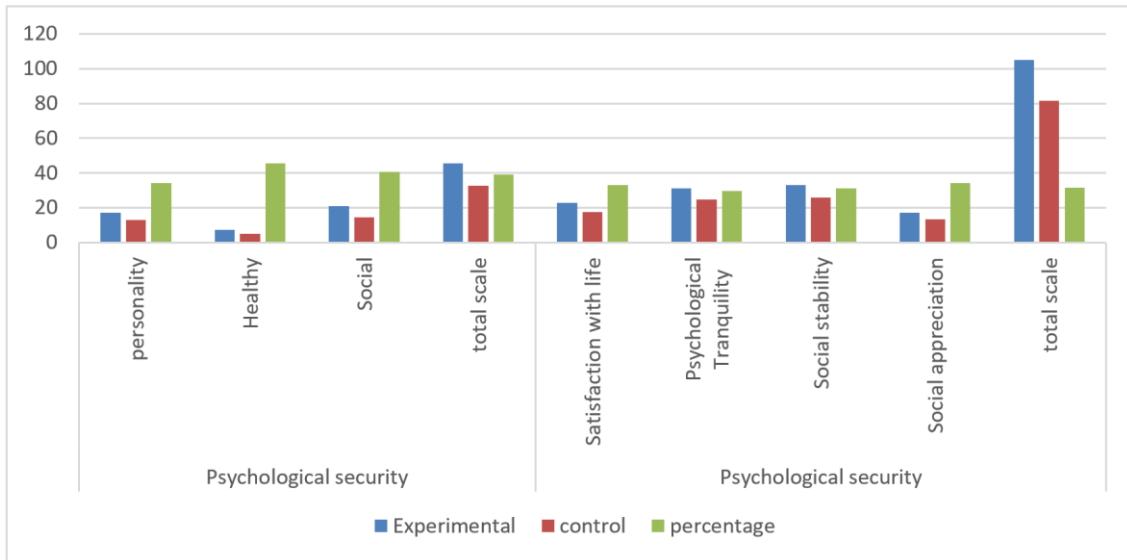
Figures 1, 2, and 3 illustrate the mean and standard deviation of psychological stress and psychological security, along with the percentage of improvement for the pre- and post-measurements in both the experimental and control groups. The figures also display the differences between the two groups.



**Figure 1.** Diagram of the pre-and post-measurements for the experimental group



**Figure 2.** Diagram of the pre-and post-measurements for the control group



**Figure 3.** Diagram of the post-measurements for the experimental and control groups

## 4. Discussion

The study's findings in tables 4,5,6 demonstrated that there were differences in psychological stress between the experimental and control groups' pre- and post-measurements, favoring the experimental group's post-measurements in terms of improving widowed women's psychological security. The experimental group outperformed the control group in all elements of psychological stress measurement (personality, health, and social stress), with considerably higher mean scores. The *t*-values demonstrated a significant difference between the two groups, with a *p*-value of less than 0.001. The DRI was between 34.3% to 45.7%. The experimental group outperformed the control group in terms of improvement rate, as evidenced by the 95% confidence interval of the difference. Comparably, in terms of psychological

security—which encompasses life happiness, mental peace, social stability, and social acceptance—When considering mean scores, the experimental group outperformed the control group by a large margin. There was a difference between the two groups since the *t*-values were very significant ( $p < 0.001$ ). 29.66% to 34.26% was the range of the DRI. The experimental group experienced a significantly higher rate of improvement than the control group, as evidenced by the 95% confidence interval of the difference. Taken together, these findings imply that, in contrast to the control group, the training program significantly improved psychological security and decreased anxiety. All measured aspects revealed a better rate of progress and higher mean scores for the experimental group. Comparing the training program to the control group, the results demonstrate how successful it was in enhancing psychological well-being.



**Table 4.** Mean, standard deviation, and t-value for the Experimental group

| Variables                     |                           | <i>pre- test</i> |      | <i>post- test</i> |      | <i>95% Confidence Interval of the Difference</i> |       | <i>t- value</i> | Sig.  | <i>percentage</i> |
|-------------------------------|---------------------------|------------------|------|-------------------|------|--------------------------------------------------|-------|-----------------|-------|-------------------|
|                               |                           | Mean             | Std. | Mean              | Std. | Lower                                            | Upper |                 |       |                   |
| <b>Psychological stress</b>   | personality               | 11.27            | 1.28 | 17.27             | 1.22 | 6.91                                             | 5.09  | 14.11           | 0.001 | 53.24%            |
|                               | Healthy                   | 4.47             | 0.92 | 7.53              | 0.74 | 3.68                                             | 2.46  | 10.80           | 0.001 | 68.46%            |
|                               | Social                    | 13.53            | 1.85 | 20.93             | 0.70 | 8.52                                             | 6.28  | 14.13           | 0.001 | 54.69%            |
|                               | total scale               | 29.27            | 2.96 | 45.73             | 1.67 | 18.19                                            | 14.74 | 20.48           | 0.001 | 56.24%            |
| <b>Psychological security</b> | Satisfaction with life    | 16.07            | 1.10 | 23.00             | 1.51 | 7.83                                             | 6.03  | 16.53           | 0.001 | 43.12%            |
|                               | Psychological Tranquility | 22.67            | 1.50 | 31.40             | 1.35 | 9.68                                             | 7.79  | 19.78           | 0.001 | 38.51%            |
|                               | Social stability          | 24.33            | 1.54 | 33.27             | 1.49 | 9.76                                             | 8.11  | 23.28           | 0.001 | 36.74%            |
|                               | Social appreciation       | 11.80            | 1.01 | 17.27             | 1.16 | 6.47                                             | 4.47  | 11.71           | 0.001 | 46.36%            |
|                               | total scale               | 74.87            | 2.13 | 104.93            | 2.84 | 31.76                                            | 28.37 | 38.08           | 0.001 | 40.15%            |

**Table 5.** Mean, standard deviation, and t-value for the control group

| Variables                     |                           | <i>pre- test</i> |      | <i>post- test</i> |      | <i>95% Confidence Interval of the Difference</i> |       | <i>t- value</i> | Sig.  | <i>percentage</i> |
|-------------------------------|---------------------------|------------------|------|-------------------|------|--------------------------------------------------|-------|-----------------|-------|-------------------|
|                               |                           | Mean             | Std. | Mean              | Std. | Lower                                            | Upper |                 |       |                   |
| <b>Psychological stress</b>   | personality               | 10.93            | 1.28 | 13.00             | 1.00 | -2.51                                            | -1.62 | 10.02           | 0.001 | 18.94%            |
|                               | Healthy                   | 4.13             | 0.83 | 5.07              | 0.59 | -1.26                                            | -0.60 | 6.09            | 0.001 | 22.76%            |
|                               | Social                    | 12.93            | 1.83 | 14.73             | 1.62 | -2.43                                            | -1.17 | 6.08            | 0.001 | 13.92%            |
|                               | total scale               | 28.00            | 2.54 | 32.80             | 2.04 | -5.85                                            | -3.75 | 9.80            | 0.001 | 17.14%            |
| <b>Psychological security</b> | Satisfaction with life    | 16.07            | 1.33 | 17.67             | 1.23 | -1.95                                            | -1.25 | 9.80            | 0.001 | 9.96%             |
|                               | Psychological Tranquility | 22.60            | 1.64 | 24.60             | 1.50 | -2.42                                            | -1.58 | 10.25           | 0.001 | 8.85%             |
|                               | Social stability          | 24.40            | 1.40 | 25.73             | 1.33 | -1.95                                            | -0.72 | 4.64            | 0.001 | 5.45%             |
|                               | Social appreciation       | 12.07            | 1.33 | 13.53             | 1.30 | -1.75                                            | -1.18 | 11.00           | 0.001 | 12.10%            |
|                               | total scale               | 75.13            | 2.75 | 81.53             | 2.64 | -7.09                                            | -5.71 | 19.96           | 0.001 | 8.52%             |

**Table 6.** Mean, standard deviation, and t-value for the experimental and control groups.

| Variables                      |                           | Experimental |      | Control |      | t- value | Sig.  | DRI    | 95% Confidence Interval of the Difference |       |
|--------------------------------|---------------------------|--------------|------|---------|------|----------|-------|--------|-------------------------------------------|-------|
|                                |                           | Mean         | Std. | Mean    | Std. |          |       |        | Lower                                     | Upper |
| <b>Psychological stress</b>    | personality               | 17.27        | 1.22 | 13.00   | 1.00 | 10.46    | 0.001 | 34.3%  | 3.43                                      | 5.10  |
|                                | Healthy                   | 7.53         | 0.74 | 5.07    | 0.59 | 10.04    | 0.001 | 45.7%  | 1.96                                      | 2.97  |
|                                | Social                    | 20.93        | 0.70 | 14.73   | 1.62 | 13.57    | 0.001 | 40.77% | 5.26                                      | 7.14  |
|                                | total scale               | 45.73        | 1.67 | 32.80   | 2.04 | 19.00    | 0.001 | 39.1%  | 11.54                                     | 14.33 |
| <b>%Psychological security</b> | Satisfaction with life    | 23.00        | 1.51 | 17.67   | 1.23 | 10.58    | 0.001 | 33.16% | 4.30                                      | 6.37  |
|                                | Psychological Tranquility | 31.40        | 1.35 | 24.60   | 1.50 | 13.03    | 0.001 | 29.66% | 5.73                                      | 7.87  |
|                                | Social stability          | 33.27        | 1.49 | 25.73   | 1.33 | 14.61    | 0.001 | 31.29% | 6.48                                      | 8.59  |
|                                | Social appreciation       | 17.27        | 1.16 | 13.53   | 1.30 | 8.28     | 0.001 | 34.26% | 2.81                                      | 4.66  |
|                                | total scale               | 104.93       | 2.84 | 81.53   | 2.64 | 23.36    | 0.001 | 31.63% | 21.35                                     | 25.45 |

DRI: Differences in the rate of improvement

This suggests that the experimental group's application of a cardio-karate training program had a positive effect on lowering psychological pressures. Enhancing the psychological security of bereaved women.  $P < 0.05$  indicates that the calculated t value for the variables psychological stress and psychological security is higher than the tabulated t value. According to the study's findings, there were notable variations in the experimental and control groups' pre- and post-measurements of psychological stress and psychological security. The gains seen in the experimental group, however, were more noticeable, indicating that the cardio-karate training program had a beneficial impact on psychological security and reduction of stress in widowed women. At a significance level of  $p < 0.05$ , it was discovered that the computed t-values for the psychological stress and psychological security variables were higher than the tabulated t-values. This suggests that there is statistical significance in the variations between the pre- and post-measurements that were detected. Given that the cardio karate training program significantly decreased psychological stress and increased psychological security, these results offer compelling evidence that it improved the psychological well-being of widowed women. The outcomes demonstrate how well the program works to meet the unique demands and difficulties that this population faces. Cardio-karate training has been shown to positively affect psychological stress and psychological security in various populations. For example, a study on orphan children found that cardio-karate training improved physical variables, tension indications, and psychological security [32]. Moreover, a study conducted on top karate athletes revealed that a psychological skills training program, which included techniques such as autogenic

training and guided imagery, resulted in a decrease in anxiety levels and an increase in self-confidence [26].

The study highlighted that engaging in sports, particularly combat sports or self-defense activities, such as cardio karate, positively contributes to increasing feelings of psychological security and tranquility, especially among widowed individuals. These activities help widows build self-confidence, a sense of safety, and peace of mind. Therefore, cardio-karate training is considered one of the best methods to enhance psychological security, as it provides excitement and thrills and helps individuals achieve a sense of balance and social well-being. It also increases motivation for success and fulfills various individual needs. Cardio-karate exercises have been shown to have a positive effect on improving psychological security and reducing psychological stress [33]. These exercises contribute to increasing the sense of psychological security, providing self-confidence, safety, and tranquility [34].

Numerous research studies have consistently shown that regular cardio workouts have a positive impact on mental health, particularly in alleviating the emotional burden experienced by widows. For example, Richards et al. [35] conducted a study across 15 European countries and found a positive correlation between physical activity and emotional well-being, highlighting the importance of integrating physical activity into the daily routine of widowed women to manage psychological pressure and improve overall well-being. Kandola et al. [36] discussed the therapeutic benefits of physical activity for anxiety and emphasized the potential of cardio workouts to alleviate anxiety symptoms. This insight underscores the relevance of incorporating cardio exercises into the daily routine of widowed women to manage and reduce psychological

pressure, particularly anxiety resulting from grief and loss. Bellettiere et al. [37] explored the relationship between sedentary behavior and cardiovascular disease in older women. Although not directly related to widows, this study highlights the broader impact of physical activity on cardiovascular health, which is crucial for the overall well-being of widowed women, especially considering the emotional and psychological challenges they face. Additionally, Smyth et al. [38] investigated the role of physical activity in managing emotional triggers, such as anger or emotional upset, as potential triggers for acute myocardial infarction. While the focus was on cardiovascular health, the findings suggest that physical activity, including cardio workouts, may help widowed women cope with grief-related emotional distress.

The results of the study showed that the cardio-karate training program had a significant positive impact on the psychological security and psychological stress levels of widowed women. The experimental group, which underwent the cardio-karate training program, demonstrated greater progress and higher average scores compared to the control group. This indicates that the program effectively improved the participants' sense of security and reduced their psychological stress. The findings highlight the potential benefits of incorporating cardio-karate training as an intervention for widowed women to enhance their psychological well-being. The research by Matos et al. [39] provides evidence in favor of the idea that compassionate mind training is useful in enhancing mental health since it can significantly improve psychological security and stress levels. In a similar vein, Chitra and Karunanidhi [40] showed that resilience training among female police officers had favorable effects on occupational stress, resilience, job satisfaction, and psychological well-being, indicating its potential as an intervention to improve psychological well-being in this population. The Mindfulness-Based Stress Reduction (MBSR) program has been shown to have favorable effects on psychological well-being and sleep quality by Jones et al. [41], suggesting that it may be used as an intervention to enhance psychological well-being. Liu et al. [42] have documented noteworthy enhancements in maternal mental health after training, underscoring the beneficial effects of interventions on psychological welfare. Furthermore, Neves et al. [43] discovered that senior karate players' anxiety levels were lowered, and their self-confidence was raised by an applied psychological skills program. This bolsters the notion that teaching psychological skills can enhance psychological health in particular groups of people.

The challenges faced by widowed women in Saudi Arabia are influenced by socio-economic status, cultural background, education, and health, which can impact their mental health and increase psychological stress levels. Studies have shown that these factors can also affect their social, health, and personal stress levels [44]. Additionally, cultural expectations and societal norms can limit the self-efficacy of widowed women, affecting their ability to travel

alone, perform certain actions, and even choose their clothing preferences, which can further impact their mental well-being [45].

## 5. Conclusions

The purpose of the study was to determine how a six-week cardio-karate training program affected the psychological stress and psychological security of widowed women living in the Eastern Province of the Kingdom of Saudi Arabia. Thirty widows made up the sample, which was equally split between two groups: the experimental group and the control group. The study's conclusions showed a substantial difference in psychological stress and psychological security between the two groups pre- and post-measurements. When compared to the control group, the experimental group—which completed the cardio-karate training program—showed higher improvements in these variables. These findings imply that widowed women who participated in the cardio-karate training program experienced a decrease in psychological stress and an increase in psychological security. The program likely provided them with physical exercise, stress relief, and a sense of empowerment, leading to improved psychological well-being. It is important to note that the study was conducted over a relatively short period of six weeks and focused specifically on widowed women in the Eastern Province of Saudi Arabia. Therefore, caution should be exercised when generalizing these findings to other populations or regions. Further research is needed to explore the long-term effects of cardio-karate training on psychological stress and psychological security among widowed women, as well as to investigate its effectiveness in different cultural contexts and with larger sample sizes.

### 5.1. Study Limitations and Strengths and Future Directions

The study was conducted in the Eastern Province of the Kingdom of Saudi Arabia to investigate the impact of cardio-karate training on psychological stress reduction and enhancing the psychological security of widowed women. However, the study encountered certain limitations and challenges that need to be acknowledged. Firstly, the sample size was relatively small due to some women declining to participate in the training. This could be attributed to household resistance, family restrictions, and concerns for their children. It is important to recognize that these social and cultural factors can influence the participation of widowed women in research studies and training programs. Additionally, it is crucial to consider that the study was conducted in a specific region of Saudi Arabia, which may limit the generalizability of the findings to the entire country. Social, cultural, and economic factors may vary across different regions, thereby impacting the

response of widowed women to cardio-karate training and its effects on psychological stress and psychological security. Therefore, these limitations should be taken into account when interpreting the study results and applying them more broadly. Future research endeavors could focus on expanding the sample size and including diverse regions within the Kingdom of Saudi Arabia to obtain more representative and generalizable outcomes. Furthermore, future studies could explore the social and cultural factors influencing widowed women's participation in training programs and develop strategies to enhance their engagement and maximize the mental health benefits of cardio-karate training. Recommendations for future research may involve investigating the impact of cardio-karate training on psychological stress among widowed women in Saudi Arabia using reliable and validated measurement tools to assess various psychological dimensions such as anxiety, depression, and stress. Additionally, study the effects of cardio karate training on enhancing the psychological security of widowed women by evaluating indicators such as self-confidence, independence, and coping abilities with psychological challenges in the Kingdom of Saudi Arabia. Furthermore, examining the influence of training duration and frequency on psychological stress and psychological security among widowed women in Saudi Arabia is necessary to determine the optimal feasibility of training programs. Lastly, it analyzes the effects of cardio karate training on biological

factors associated with psychological stress and psychological security, such as stress-related hormone levels and inflammation, while also considering other social and psychological factors for widowed women in Saudi Arabia. Conducting these future studies will contribute to expanding our understanding of the impact of cardio karate training on psychological stress reduction and enhancing psychological security among widowed women in the Kingdom of Saudi Arabia, ultimately aiding in the development of targeted training programs for this significant group of women.

## **Informed Consent Statement**

Before participating in the study, all participants provided their informed consent.

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## **Conflicts of Interest**

There is no conflict of interest for the author.

## Supplementary Materials

### Appendix A: The Appendix Includes the Psychological Stress Scale

Table S1. Psychological stress scale

| No. | axes               | phrases                                                                                         | Yes | To some extent | No |
|-----|--------------------|-------------------------------------------------------------------------------------------------|-----|----------------|----|
| 1   | <b>Personality</b> | I experience extreme fatigue and exhaustion, even with minimal physical exertion.               |     |                |    |
| 2   |                    | I feel anxious and concerned about my future as well as the future of my children.              |     |                |    |
| 3   |                    | I constantly worry about experiencing discomfort or difficulties when leaving the house.        |     |                |    |
| 4   |                    | I frequently experience mood swings, with my emotions fluctuating rapidly.                      |     |                |    |
| 5   |                    | I am easily hurt by the words or actions of others.                                             |     |                |    |
| 6   |                    | I constantly feel nervous and tense.                                                            |     |                |    |
| 7   |                    | I feel a deep sadness when I must be separated from my husband.                                 |     |                |    |
| 8   |                    | I struggle to fall asleep and have difficulty maintaining a regular sleep pattern.              |     |                |    |
| 9   | <b>Healthy</b>     | I have trouble swallowing and digesting food properly.                                          |     |                |    |
| 10  |                    | I have been diagnosed with high blood pressure.                                                 |     |                |    |
| 11  |                    | I notice an increase in my heart rate, which causes me concern.                                 |     |                |    |
| 12  | <b>Social</b>      | I am worried about the lack of sufficient support from others in my life.                       |     |                |    |
| 13  |                    | I feel restricted and lack the freedom to leave my house as I would like.                       |     |                |    |
| 14  |                    | I face pressure from my family due to my unmarried status and living at home.                   |     |                |    |
| 15  |                    | I often feel as though others pity me when they help.                                           |     |                |    |
| 16  |                    | I tend to decline invitations to participate in social events.                                  |     |                |    |
| 17  |                    | I struggle to pay my official bills and provide for my basic needs.                             |     |                |    |
| 18  |                    | I rely on charitable organizations as a source of income.                                       |     |                |    |
| 19  |                    | I work for a low salary that does not adequately meet my own needs or the needs of my children. |     |                |    |
| 20  |                    | I constantly feel unwanted and unappreciated by others.                                         |     |                |    |

**Appendix B: The Appendix Includes a Psychological Security Scale****Table S2.** Psychological stress scale

| No. | axes                             | phrases                                                                                                                 | Applies perfectly | Applies to some extent | Do not apply |
|-----|----------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------|--------------|
| 1   | <b>Satisfaction with life</b>    | I expect negativity from the people around me.                                                                          |                   |                        |              |
| 2   |                                  | I feel unsuccessful in my daily life.                                                                                   |                   |                        |              |
| 3   |                                  | I lack trust in my ability to protect myself.                                                                           |                   |                        |              |
| 4   |                                  | I perceive that life is continuously deteriorating.                                                                     |                   |                        |              |
| 5   |                                  | I experience insecurity and lack of stability in my life.                                                               |                   |                        |              |
| 6   |                                  | I believe that my life is worse now compared to the past.                                                               |                   |                        |              |
| 7   |                                  | I struggle to accept criticism from others.                                                                             |                   |                        |              |
| 8   |                                  | I feel that my life is filled with sadness and brokenness.                                                              |                   |                        |              |
| 9   |                                  | I frequently feel sad and cry.                                                                                          |                   |                        |              |
| 10  |                                  | I have moments where I despise and blame myself.                                                                        |                   |                        |              |
| 11  | <b>Psychological Tranquility</b> | I rely on the protection of my family and relatives for safety.                                                         |                   |                        |              |
| 12  |                                  | My religious values and worship provide me with a sense of safety and reassurance.                                      |                   |                        |              |
| 13  |                                  | I feel dissatisfied and uncomfortable with my life circumstances.                                                       |                   |                        |              |
| 14  |                                  | My self-confidence is low.                                                                                              |                   |                        |              |
| 15  |                                  | I am loved and respected by people.                                                                                     |                   |                        |              |
| 16  |                                  | I perceive my morale to be weak.                                                                                        |                   |                        |              |
| 17  |                                  | I miss the support of my family members.                                                                                |                   |                        |              |
| 18  |                                  | I find it challenging to live harmoniously with others.                                                                 |                   |                        |              |
| 19  |                                  | I feel bothered by others trying to control my personal decisions.                                                      |                   |                        |              |
| 20  |                                  | I often feel like crying.                                                                                               |                   |                        |              |
| 21  |                                  | I experience discomfort and uneasiness most of the time.                                                                |                   |                        |              |
| 22  |                                  | I have moments of fear.                                                                                                 |                   |                        |              |
| 23  |                                  | Worrying about the future threatens my life, stability, and security.                                                   |                   |                        |              |
| 24  |                                  | I have irregular sleep patterns.                                                                                        |                   |                        |              |
| 25  |                                  | I frequently suffer from insomnia, which reduces my sense of comfort and calmness.                                      |                   |                        |              |
| 26  | <b>Social stability</b>          | I feel like my life is in danger.                                                                                       |                   |                        |              |
| 27  |                                  | I have feelings of pessimism and despair.                                                                               |                   |                        |              |
| 28  |                                  | I struggle to confront and solve my problems.                                                                           |                   |                        |              |
| 29  |                                  | My family finds it difficult to understand my situation.                                                                |                   |                        |              |
| 30  |                                  | I tend to avoid participating in social events with others.                                                             |                   |                        |              |
| 31  |                                  | Those around me often remind me that my circumstances have changed and expect me to adhere to certain social behaviors. |                   |                        |              |

Table S2 continued

|    |                            |                                                                              |  |  |  |
|----|----------------------------|------------------------------------------------------------------------------|--|--|--|
| 32 |                            | I have a poor social life.                                                   |  |  |  |
| 33 |                            | I unintentionally bring sadness and pessimism to others.                     |  |  |  |
| 34 |                            | I am unable to share both the good and bad times with my relatives.          |  |  |  |
| 35 |                            | I feel restricted in my freedom to leave the house with others.              |  |  |  |
| 36 |                            | I receive a lot of comments in my social life.                               |  |  |  |
| 37 |                            | I cannot face reality, even if it is harsh.                                  |  |  |  |
| 38 |                            | I feel insecure when interacting with others.                                |  |  |  |
| 39 |                            | I often find myself getting angry with others.                               |  |  |  |
| 40 |                            | I do not feel secure and stable in my social life.                           |  |  |  |
| 41 |                            | I dislike living among people and dealing with them with love and affection. |  |  |  |
| 42 | <b>Social appreciation</b> | My family holds me accountable for every little and big thing.               |  |  |  |
| 43 |                            | Showing appreciation and respect towards others makes me feel safe.          |  |  |  |
| 44 |                            | I feel that others do not trust my abilities.                                |  |  |  |
| 45 |                            | I feel that people do not regard me with respect and appreciation.           |  |  |  |
| 46 |                            | I struggle to make decisions and bear their consequences.                    |  |  |  |
| 47 |                            | I feel that my ideas and opinions are not valued by others.                  |  |  |  |
| 48 |                            | I feel that I have little value or significance in life.                     |  |  |  |

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