

# A non-randomized study investigating the effectiveness of cognitive reframing in socially disconnected widows

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## ABSTRACT

**Objectives:** Socially disconnected widows usually live a lonely and depressing life with anxiety and low self-worth. Many have contemplated suicide and others have become a victim of suicide already. Evolving an intervention to provide succor to them to take control of their lives may help a great deal. This paper presents the results of a nonrandomized study assessing the potency of cognitive reframing (CR) in reducing social disconnectedness (SD) among the widows.

**Methods:** The pre- and post-data was collected from a non-randomized sample of 41 widows in the treatment group and 45 in the waitlist control group. The mean age of the participants was  $41.383 \pm 6.730$  [95% CI = 39.940–42.940] (min. = 25 - max. = 56) years. The cognitive reframing administered spanned for eight weeks.

**Results:** Analysis of the data collected suggests that cognitive reframing is significantly effective in reducing socially disconnected behavior among the widows in the study. The social disconnected behavior among the widows reduced by 40.95% compared to 8.29% observed in the waitlist control group.

**Conclusions:** The CR technique may be helpful in reducing social disconnectedness in widows. However, further study may be required in a randomized sample to enhance generalization.

**Keywords:** Social disconnectedness, widows, cognitive reframing

A widow is a woman whose spouse has died. Losing a spouse to death through natural or man-made tragedy only brings pains, forcing many women into unprepared widowhood. All over the world, there are an estimated 258 million widows, with over 115 million living in poverty [1]. In Nigeria, male adult mortality increased from 25.98 in 1970 to 31.92 deaths per 100 male population aged 15-60 in 2015. The average annual death rate for adult male in Nigeria is 2.38% as of 2015 [2]. When a husband dies, typically, the world of a woman falls apart, and she has to dwell in a cruel world, full of misery and shame and abuses for the rest of her life. It brings a lot of negative impact on the health and well being of widows [3, 4]. Widow-

hood has been described as one of the most stressful events in life [5, 6]. The literature demonstrates that widowhood in old age is a dreaded phase of life due to its influence on health and well being [6-8]. The plight of widows is one of the most important, yet under-reported issues facing the world today. For many women, becoming a widow does not just mean the heartache of losing a husband, but often losing everything else altogether. Through no fault of theirs, widows suffer stigma, violence, sometimes, as in parts of sub-Saharan Africa, being forced to “cleanse” herself by having sexual intercourse with a relative or a stranger or forced to marry the deceased relative [9]. Across the world, gender inequality remains the norm,

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and women have continued to encounter discriminatory practices as a result of religious and cultural practices [10]. In some parts of Africa and Nigeria, in particular, women are still treated as minors and sometimes as second-class citizens who are only to be seen and not to be heard [11, 12]. The unjust treatment faced by widows has made many to suffer from various serious mental and physical health challenges.

as a social relationship is a fundamental and vital component of human life and has important impacts on health, many widows continue to suffer from social disconnectedness, which is associated with a wide variety of adverse health outcomes [13-15]. Specifically, the term “social disconnectedness” is not a diagnosis for a specific psychiatric disorder, but a phenomenon of social isolation and the pathology of introverted behavior. The former refers to the condition of staying in one’s own house to avoid relationships with others, the latter means pathology due to some psychiatric disorders or personality of introversion [16]. It is also viewed as an individual’s subjective experience of a lack of satisfying human relationships, usually accompanied by a negative feeling, causing distress to an individual. Socially disconnected people often experience a subjective sense of inner emptiness or hollowness, with feelings of separation or isolation from the world, and a woman grieving over the loss of her husband is not an exemption [17, 18]. Although social support may buffer the effects of loneliness, mental problems such as depression, insomnia, and hallucinations of the dead, continue to live many widows in trouble. Widows arguably have lower levels of social support in Nigeria than married individuals do. One of the major effects of widowhood is poverty and emotional trauma. Many Nigerian widows are pauperized by those. Upon the death of a husband, widows may be completely dispossessed and chased off [19]. Widowhood among the women is simply a life of deprivation and it can have far-reaching consequences for mental well-being. In order to promote mental and general well-being and to alleviate loneliness and social disconnectedness among widows, intervention programs must be developed to improve existing or develop new relationships such as friendships [20-22].

Much research has been carried out examining the effectiveness of cognitive reframing (CR) in treating several mental problems [23-25]. CR is a psychological intervention that has to do with helping a client to

identify and then dispute irrational or maladaptive thoughts. It's used to help clients to look at his condition from a slightly different perspective. The CR has proven to be an effective behavioral intervention used in modifying various psychological problems. Therefore, if this intervention could be used to assess the extent to which it can decrease socially disconnected behavior among the widows, it will be beneficial. Hawton *et al.* [26] suggested that practices could target people at risk of social disconnectedness, as individuals need to be identified early with interventions before the deterioration of their health or quality of life occurs. This study, therefore, used an on randomized method to investigate the effectiveness of cognitive reframing in socially disconnected widows in Nigeria.

**METHODS**

**Research Design**

The research is a quasi-experimental study involving two-group pre-test/posttest design (Fig.1) [27, 28]. Using two groups in an experiment is helpful because it helps the researcher to assess the effectiveness of an intervention by comparing before and after the outcome of participants in both groups [29]. Usually, the intervention is considered effective when participants’ outcome scores improve compared to baseline across the two groups [30].

**Participants**

The study population involves widows in Kaduna metropolis who had a high score on the Social disconnected ness Questionnaire. In the study area, there is no published report about the exact number of widows by local authorities. Widows, however, constitute a large proportion of all women. A 2015 world report estimate, shows the population of widows in Nigeria was put at over two million, 2,145,605 [1]. Van Voorhis and Morgan [31] and De Winter [32]

GRP A	01	X	02
GRP B	03		04

**Fig.1. Proposed research design for the study (Interpretation: 01 = Pretest, X = Intervention, and 02 = Posttest).**

recommended using a small sample size to ensure adequate attention to the participants and eliminate rowdiness and likelihood of attrition. In this study, sixty-four participants were used for the experimental and waitlist control group respectively. After the eight-week intervention, the study recorded a 35.93% and 29.68% attrition rate in both the treatment and waitlist control group. The final analysis was done with 41 participants in the treatment group and 45 in the control group. The following flowchart shows the sample size of the study and the sample recruitment procedure (Fig. 2).

**Ethical Consideration**

Participation in this research was voluntary. Only widows identified with the social disconnectedness behavior and have agreed to participate after signing a consent form, took part in the study. The consent form as attached to the questionnaire reads: “The essence of the study has been explained to me, and I have been given the opportunity to ask questions about this research. I understand the aims, duration of the intervention and have agreed to participate. I was also assured of the confidentiality of any information I gave. I understand that my participation is voluntary, so I can withdraw from the study at any time.”

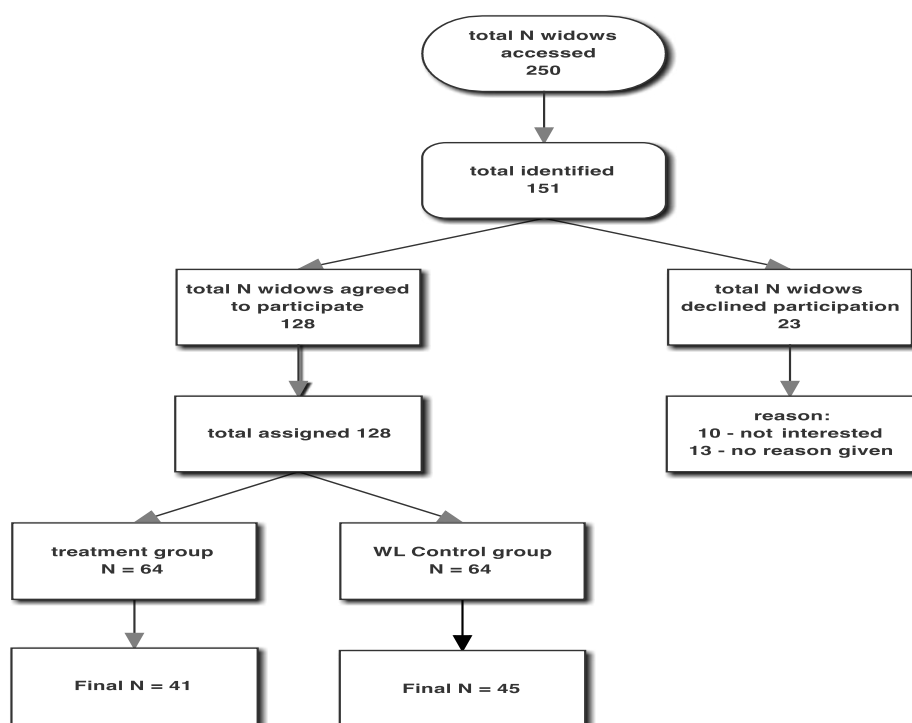
At the end of the study, the waitlist control group was introduced to the treatment and was given handout on how to use it at home [9].

**Treatment Credibility**

Two items from the Treatment Evaluation Questionnaire [33] were used to assess treatment credibility, and these items were completed at post-treatment. These items were chosen because they appeared less likely to be affected by treatment success or failure, though it remained possible that treatment response biased these findings [34]. Participants reported whether they felt the treatment was logical and reasonable and whether they would recommend the intervention to a friend with a similar problem. The items were measured on a Likert scale ranging from 0 (strongly disagree) to 5 (not sure) to 10 (strongly agree) [9].

**Outcome Measure**

The social disconnectedness questionnaire developed by Russell [35] was used to assess social disconnectedness among participants during the pretreatment and post-treatment phases. The Social isolation questionnaire includes 20 questions used to assess how lonely the respondent feels. Each question



**Fig.2.** The sample size of the study.

**Table 1. Brief explanation of CR intervention for widows**

Sessions	Cognitive Reframing	Description
Session One	Introduction and pretest/intake	At this stage, the researcher introduces self to the participants, explain the essence of the study, sought for the consent and administer baseline test using SDQ
Session Two	Identifying the upsetting situation	During this session, participants were given CCD to fill. The essence was to identify upsetting thoughts.
Session Three	Recording negative feelings	The researcher along with the participants record identified upsetting/negative feelings
Session Four	Record and Analyze these thoughts	At this stage, the researcher works with the participants to analyze in order to identify prevalence negative and unbalance thoughts that need to be countered
Session Five	Construct realistic and balanced thoughts	The participants were guided to countering negative and unbalance thoughts to a more realistic thought
Session six	Continuation of session five	Same as session five
Session Seven	Evaluation of the reframing process	During this stage, participants were given a checklist of cognitive distortion (CCD) developed by Burns[42]to assess whether they have adopted a more realistic and balance thoughts
Session Eight	Posttest/termination	The SDQ was administered for the last time to examine if changes have occurred after the intervention. The sessions also terminate here

begins with the statement “How often do you feel” followed by a positive or negative description of social interactions with others. The respondent is asked to indicate the frequency he/she feels that way (never = 1, rarely = 2, sometimes = 3, always = 4) for each question. The instrument is suitable for respondents between the ages of 18 and above. Items 1, 5, 6, 9, 10, 15, 16, 19, and 20 were scored in reverse. All scores were summed together with higher scores indicating greater degrees of isolation or disconnectedness [35]. The instrument was divided into sections. The first section was made up of demographic characteristics of the respondents (age, personal income, years of widowhood, number of children, and source of financial assistance), while the second section consists of statements used to assess the dependent variable (social disconnectedness). The social disconnectedness questionnaire produced a satisfactory reliability index and consistency, and it is one of the most commonly used instrument to assess social isolation behavior. The scale has an internal

consistency of .89 to .94 and test-retest of .73 [35]. It has been used successfully in several countries of different cultures [36-38].

**Intervention**

The data collection procedure was discussed in three phases; pretreatment phase, treatment phase, and post-treatment phase (Table 1).

*Pretreatment Phase (week 1)*

During week 1, the researcher introduced himself to the volunteered research participants. The participants received a briefing on the essence of the study and filled consent form approving their voluntary participation in the study. We (researcher and two assistants) administered some questionnaire, which we used to measure widows’ level of social disconnectedness. We used the data collected at this stage to serve as the pretest data and bases for inclusion to the study. Participants were directed on how to fill the instruments and after that, advance

arrangements were made concerning further meetings [27].

**Treatment Phase (week 2-7)**

The treatment group received cognitive reframing (CR) from week 2-7. Twelve noon every Saturday was scheduled as the meeting time. The cognitive reframing used in this study were those guided by the work of Greenberger and Westbrook [39], Brosan and Hogan [40], and Gilbert [41]. The procedures were used with some modification to suit the need of the problem under investigation. Other researchers have used the techniques and procedures and they have shown to be effective in reducing mental health-related behavior problems. But there appears to be a dearth of researches using the technique in treating social disconnectedness among widows.

**Statistical Analysis**

The data collected were statistically analyzed with JMP ver. 13.2., computer software. The analysis was done using the Analysis of Covariance to test for treatment effects. ANCOVA is usually suitable when two or more groups are subjected to pre-test and post-test while the pre-test is treated as a covariate to ‘control’ for initial differences existing between the groups. Prior to testing the treatment effects, however, a test of assumption of homogeneity of regression slope was carried out. This analysis was done using an unequal number of participants from the experimental

and control group due to attrition [27]. A 35.9% and 23.4% attrition rate was recorded for the treatment group and waitlist control group respectively. A .05 standard of statistical significance for the decision was used in testing the treatment effect.

**RESULTS**

Table 2 showed that there is no significant difference between treatment and control group in term of educational attainment,  $\chi^2 = 6.316, p = 0.097$ . The outcome indicates that 19.5% of the participants in the treatment group had no formal education as compared to the control group with only 4.4%. There were 17 (41.5%) of the participants in the experimental group who reported to have primary education compared to 22 (48%) in the control group. Additionally, 12 (29.3%) in the treatment had secondary education compared to a higher 19 (42.2%) in the waitlist control group. Only 4 participants representing 9.8% of the total sample in the treatment group reached the tertiary level of education unlike 2 participants representing 4.4% in the control group.

About family size, having to do with the number of children, data analysis indicates that 10 (24.4%) of the participants in the treatment group reported having 1-3 children compared to 5 (11.1%) participants in the control group. Over 41% in the treatment group reported having 4-6 kids compared to 33 (73.3%) in

**Table 2. A comparative descriptive statistic of the respondents by Group**

Group	Description	Levels			Statistic		
		No formal Education	Primary Education	Secondary Education	Tertiary Education	Chi <sup>2</sup>	p value
1	Education	8 (19.5%)	17 (41.5%)	12[29.3%]	4 (9.8%)	6.316	0.097
2		2 (4.4%)	22 (48.9%)	19[42.2%]	2 (4.4%)		
	Number of Children	1-3	4-6	7+			
1		10 (24.4%)	17 (41.4%)	14 (34.1%)		8.953	<b>0.011*</b>
2		5 (11.1%)	33 (73.3%)	7 (15.6%)			
	Employment status	Employed	Unemployed				
1		15[36.6%]	26[63.4%]			0.100	0.752
2		15[33.3%]	30[66.7%]				

1 = Treatment Group (n = 41), 2 = WL Control Group (n = 45)

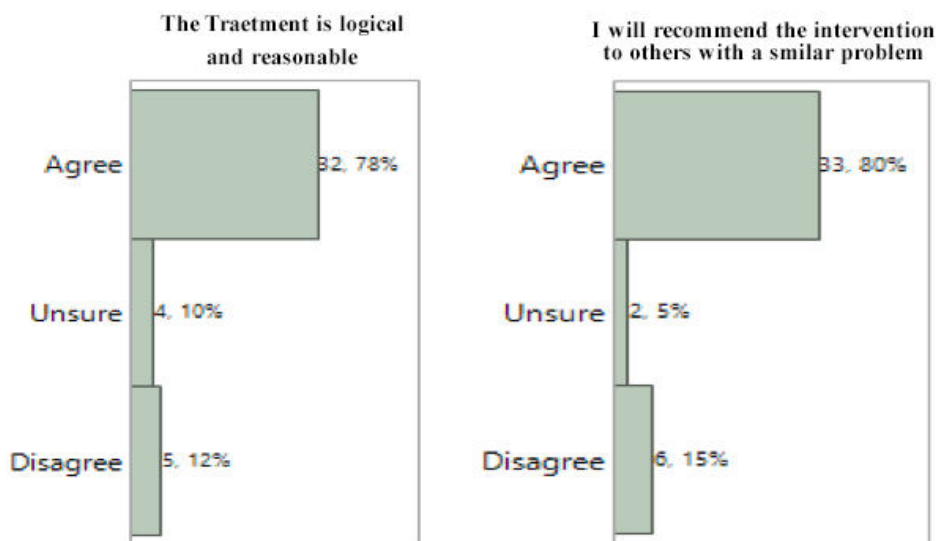


Fig.3. Analysis of responses on treatment credibility (n = 41).

the control group. The data analysis also reveals that 14 (34.1%) participants reported having 7 and above number of children in the experimental group compared to 15.6% in the control group. Largely, the result reveals a significant difference exists in the number of children between the experimental and control group,  $\chi^2 = 8.953, p = 0.011$ . There is no significant difference in the rate of employment between participants in the treatment group and the waitlist control group,  $\chi^2 = 0.100, p = 0.752$ .

An assessment of the treatment credibility shows that there is a significant difference in the participant's

response on whether the treatment is logical and reasonable,  $\chi^2 = 36.926, p < 0.001$ . About 78% agreed the treatment is logical and reasonable as against 10% and 12% who are unsure and disagreed, respectively (Fig. 3). In addition, 80% agreed they would recommend the intervention to others with a similar problem while 15% disagreed, with only 5% being unsure. The difference in responses on recommendation is significant,  $\chi^2 = 41.609, p < 0.001$ . Fig. 4 is the analysis of covariance (ANCOVA) assumption test, which entails that the relationship between the covariate and dependent variable for each

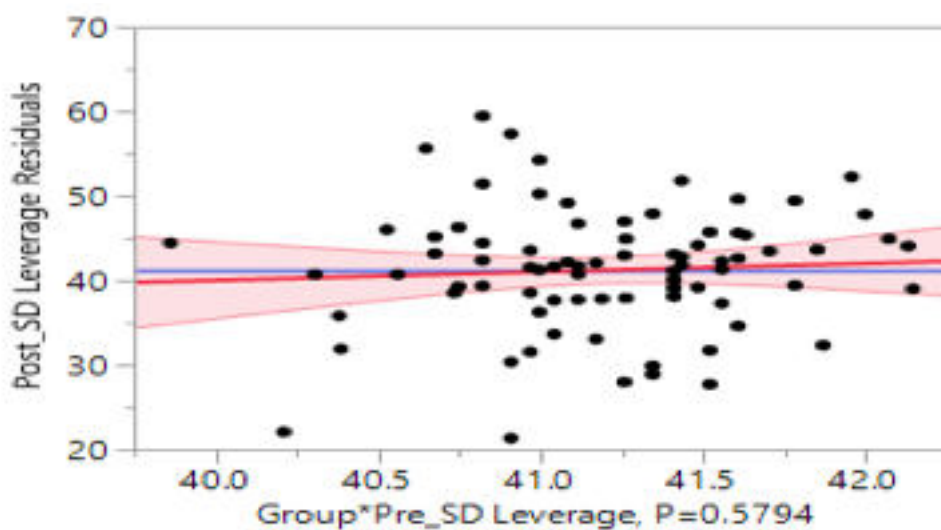


Fig.4. Leverage Plot for Pre\_SD\*Group testing the homogeneity of regression slope assumption.

**Table 3. Test of Lack of Fit for the model**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F	Max RSq
Lack of Fit	36	2151.7927	59.7720	1.2053	0.2728	0.8106
Pure Error	46	2281.2500	49.5924			
Total Error	82	4433.0427				

of the groups is the same. Usually, similar slopes on the regression line for each group indicate this. Unequal slopes would indicate that there is an interaction between the covariate and the treatment. If there is an interaction then the results of ANCOVA could be deceptive [44, 45]. In this case, the interaction is not significant,  $F(1,82) = 0.310, p = 0.579$ , hence supporting the appropriateness of ANCOVA.

Table 3 is the lack of a fit report, which is the result of the effectiveness of cognitive reframing for widows. The essence of the test was to observe if the model fit the data collected appropriately. The lack of error analysis return sin significant outcome,  $F = 0.2728, p = 0.8106$ . This suggests that the model fits the data pretty well.

Table 4 showed the mean response and standard errors of participants’ social disconnectedness before

**Table 4. Pre and post-Least Sq Mean response of treatment Group and WL Control Group**

Level	Group	Least Sq Mean	Std Error	Lower95%	Upper 95%
Pre_SD	Treatment Group	53.122	0.870	51.391	54.853
	WL Control Group	54.689	0.831	53.036	56.341
Post_SD	Treatment Group	31.366	1.139	29.099	33.632
	WL Control Group	50.155	1.087	47.992	52.318

**Table 5. Analysis of variance showing model effects for groups**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Model	2	7595.855	3797.93	70.8412	< 0.0001*
Error	83	4449.784	53.61		
C. Total	85	12045.640			

Summary of Fit: RSquare = 0.631; RSquare Adj = 0.622; Root Mean Square Error = 7.322; Mean of Response = 41.197; N = 86

and after the self-monitoring intervention. Mean pre-cognitive reframing of social disconnectedness among treatment group was  $53.122 \pm 0.870$ ; 95% CI = 51.391-54.853, but after the intervention, mean social disconnectedness reduced to  $31.366 \pm 1.139$ ; 95% CI = 29.099-33.632. The outcome showed a 40.95% remission in social disconnectedness behavior among the treated patient. The waitlist control group, on the other hand, had a mean social disconnectedness of  $54.689 \pm 0.831$ ; 95% CI = 53.036-56.341 at the pre-intervention stage, but at the end of the study, WL control group mean response reduced to  $50.155 \pm$

$1.087$ ; 95% CI = 47.992-52.318, implying a remission of only 8.29% after eight weeks.

Table 5 is the analysis of the covariance estimate, which was used to determine the overall treatment effects of group on social disconnectedness. The result revealed that overall, there is a significant effect of group  $F(2, 83) = 70.8412, p < 0.0001$ ; RMSE = 7.322, suggesting that the two groups (experimental and waitlist control group) vary significantly in their response due to cognitive reframing administered. The outcome also reveals that the overall model was found to explain 63.1% variance.

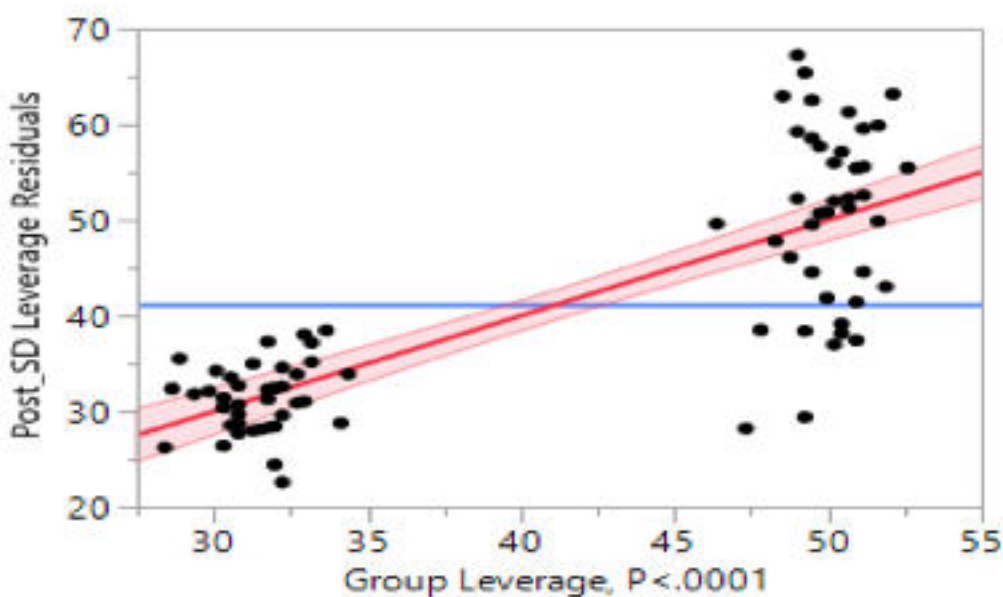
**Table 6. Expanded estimates nominal factors expanded to all levels [treatment vs wait-list control]**

Term	Estimate	Std Error	t Ratio	Prob >  t	Lower 95%	Upper 95%
Intercept	45.669	7.766	5.88	< .0001*	30.222	61.115
Pre_SD	-0.091	0.143	-0.64	0.5270	-0.376	0.194
Group [Treatment Group]	-9.466	0.798	-11.86	< .0001*	-11.054	-7.878
Group [WL Control Group]	9.466	0.798	11.86	< .0001*	7.878	11.054

Table 6 is an expanded estimates nominal factors expanded to all levels. It indicates that pretreatment outcome did not significantly influence the outcome of the study,  $\beta = -0.091$  [95% CI = -0.376- 0.194],  $t = -0.64$ ,  $p = 0.5270$ . The treatment was significantly effective for the widows in the treatment group,  $\beta = -9.466$  [95%CI = -11.054- -7.878],  $t = -11.86$ ,  $p < 0.0001$  when compared to widows in the wait-list control group,  $\beta = 9.466$  [95%CI = 7.878- 11.054],  $t = 11.86$ ,  $p < 0.0001$ . Subjects in the intervention group reported a higher reduction in their social disconnectedness behavior than did those in the wait-list control group. To have a graphical view of the variance in the effects of the intervention after eight weeks, a leverage plot for the group was presented (see Fig. 5).

**DISCUSSION**

There is a dearth in empirical research providing evidence of CR in decreasing socially disconnected behavior among widows. This attempted to examine if eight intervention using CR would be beneficial to widows who are socially disconnected. The result revealed that there is a significant decrease in social disconnectedness among widows after the intervention. The widows reported about 40.95% reduction when compared to their pre-test outcome. The reduction is significantly better than that of the waitlist control group who reported 8.29% decrease. Several results reported by previous studies corroborated the outcome of this study. In a study aimed to explore the feasibility and efficacy of a



**Fig.5. A leverage plot for group responsiveness to CR.**



manualized cognitive restructuring program for treating adolescents suffering from posttraumatic stress disorder (PTSD), Rosenberg, Jankowski, Fortuna, Rosenberg, and Mueser [43] reported that after weekly intervention for 12–16 weeks, there were statistically significant improvements in PTSD and depression. Treatment gains were maintained at 3-month follow-up. Preliminary results suggest the feasibility of implementing a manualized cognitive restructuring program to treat PTSD in adolescents. Completers rated themselves as improved and satisfied at post-treatment and 3-month follow-up. Feedback from referring clinicians also indicated high satisfaction. In addition, Dublin [44] compared the effectiveness of Cognitive Restructuring versus Cognitive Defusion for Claustrophobic Anxiety and Avoidance. The result corroborates this outcome of this study as it shows that participants in the cognitive restructuring and cognitive defusion intervention conditions reported a significantly greater reduction in subjective anxiety at post-intervention assessment compared to those in the wait-list condition. Other findings reported that CBT for social anxiety disorder evidenced a medium to large effect size at immediate post-treatment as compared to control or waitlist treatments, with significant maintenance and even improvement of gains at follow-up [45]. Further, exposure, cognitive restructuring, social skills training, and both group/individual formats were equally efficacious [46], with superior performance over psychopharmacology in the long term [47].

### Limitations

This present study has several limitations, though. Firstly, the study relied on self-reported measures of social disconnectedness instead of objective measure. Secondly, other physical and mental health problems not included or taken care of in this study may create asymmetries in widows' social relationship and limit their abilities and desires to develop and maintain healthy social relationships. Thirdly, the study only questioned the participant's level of education, number of children and employment status. Other socio demographic features like the number of siblings, the degree of closeness with siblings, the existence of close friends, the time of loss of a spouse, the number of years of widowhood, may all be related to losing

reaction. The age of a widow partly accounts for some of the health disparities among widows [48]. Therefore, the fact that these variables were not looked at is a limitation of this study. Fourthly, using individual rather than group intervention may produce a better outcome as each participant would be given adequate attention. Fifthly, the used of a non-randomized method in selecting the study sample may hinder the generalization of the findings of this study. Based on these limitations, therefore, causal connections implied by the findings of this study should be interpreted and taken with caution. It is hoped that further research would refine these concepts, address the study limitations to reveal causal mechanisms and help researchers and policymakers to better understand the health risks of social disconnectedness among widows and the application of a behavioral method to help widows to take back their lives [9].

### CONCLUSION

The research presents an opportunity toward searching the relative effects of cognitive reframing on social disconnectedness among widows. The eight weeks group intervention method used in the study sample (widows) has suggested a successfully reduced socially disconnected behavior among widows by 40.95% compared to 8.29% for the waitlist control group. The treatment was reported as credible as 78% viewed it as logical and reasonable while 80% would recommend it to a friend or others with a similar problem. This study outcome may provide insight into the area of grieve support and encourage a healthy adjustment to widowhood.

### *Conflict of interest*

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

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