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PSYCHOSOCIAL SUPPORT AND POST-TRAUMATIC STRESS DISORDER AMONG GENOCIDE SURVIVORS IN RWANDA

A CASE OF CARSA, THE COW FOR PEACE INTERVENTION, KAMONYI DISTRICT, SOUTHERN PROVINCE, RWANDA

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Abstract

Post-traumatic stress disorder (PTSD) is developed in response to severe mental distress from a traumatic event. Genocide against Tutsi in 1994 was a major traumatizing events claiming over one million lives and imposing extreme physical and physiological violence to survivors. Cow for peace is an intervention to encourage healing and reconciliation between the survivor and the direct perpetrator of the genocide against Tutsi in 1994. This study aimed at determining the effect of cow for peace intervention on PTSD among the genocide survivors in Kamonyi District, Rwanda. It is of a cross-sectional design with a quantitative approach. The study population were survivors of the genocide against Tutsi in 1994. This study included 318 respondents selected through a simple random sampling method. The ages of the respondents ranged from 36 to 83 years, with a mean age of 55.76 (SD = 9.53). The majority (64.8%) of study respondents were female. The mean household size was 4.22 (SD = 1.46), while the mean monthly income was 16584.91 Rwandan francs (SD = 8166.87). In terms of education, 18.6% of respondents were illiterate, 67.9% had completed primary school, and 13.5% had attended secondary school. The significant improvement in PTSD symptoms were experienced by 99.7% during training on trauma healing, 51.3% during reconciliation cell groups, and 19.5% during shared cow raising. There were non-statistically significant association between the effect of training on trauma healing and sex, age, household size, Education, and income ($p > 0.05$). Respondents who had attended primary school ($AOR = 0.42$, $p < 0.05$, 95% CI = [0.214, 0.805]) or secondary school ($AOR = 0.36$, $p < 0.05$, 95% CI = [0.141, 0.910]) compared to illiterates and those who earned a monthly income of 27000 Rwandan franc or more ($AOR = 0.25$, $p < 0.05$, 95% CI = [0.080, 0.778]) compared those who

earned less had a lower likelihood of experiencing a statistically significant change in their PTSD scores during the reconciliation cell groups. Respondents who were between 55 and 64 years old (AOR = 3.06, $p < 0.05$, 95% CI = [1.003, 9.346]) and respondents aged 65 years and above (AOR = 4.084, $p < 0.05$, 95% CI = [1.271, 13.109]) had higher likelihood of experiencing an improvement in their PTSD scores during shared cow raising, compared to respondents under 55 years of age. Given the significant improvement in PTSD symptoms observed in this study, it is recommended that at least training on trauma healing and reconciliation cell groups be made available to genocide survivors throughout all districts of Rwanda. further research should be conducted to evaluate the effectiveness of cow for peace intervention and to identify ways to optimize its delivery, dissemination, and impact.

Introduction

Post-traumatic stress disorder (PTSD) is developed in response to severe mental distress such as car accidents, sexual violence, and wars (Bryant, 2019). Psychologically, PTSD patients experience emotional numbing, extreme negative beliefs about oneself, and patterns of arousal symptoms (Reed et al., 2019). Only in 100 days, genocide against Tutsi in 1994 claimed over one million lives, subjecting survivors to extreme physical, physiological, and psychological violence (Ng & Harerimana, 2016). Consequently, 30 years after the terror, the prevalence of PTSD among genocide survivors is still 8 times (27.9 versus 3.6%) higher than the overall prevalence among Rwandan in general (Kayiteshonga, Sezibera, Mugabo, & Iyamuremye, 2022). Despite mental health disorders, genocide against Tutsi in 1994 left resentment, mistrust, anger and destroyed Rwandan communities (Nikuze, 2014). Cow for peace intervention was designed to promote healing and reconciliation through restoring trust, connectedness, and social cohesion between genocide survivors and genocide perpetrators (Kang *et al*., 2020). Cow for peace is supported by Christian Action for Reconciliation and Social Assistance (CARSA) (Kang, Delzell, Snyder, Mwemere, & Mbonyingabo, 2020). The intervention comprises of 7-day workshops intending to assist a person to gain skills for confronting post-traumatic stressors. From 7 day to 22 months, perpetrator-survivor duets who completed the workshops voluntarily meet at local residential areas for shared activities and continued conversation. At 8^{th} months the duet cooperatively raises a cow alongside continuing to participate in reconciliation cell groups. The intervention was implemented in Muhanga, and Kamonyi district, in Southern Province of Rwanda. However, postinterventional studies were only conducted in Muhanga District, and were specifically assessing the effectiveness of the intervention on reconciliation (Kang *et al*., 2020; Kindler *et al*., 2022). The impact of cow for peace intervention on PTSD among genocide survivors in Kamonyi

district is currently not known. This study aimed at determining the effect of cow for peace intervention on PTSD among genocide survivors in Kamonyi, District, Southern Province, Rwanda

Materials and Methods

Study population and sampling design

This is a cross-sectional study using a quantitative approach. It took place in Kamonyi District, Rwanda. The target population for this study were survivors of the 1994 genocide against Tusti, who were residents of 7 sectors in Kamonyi district, Rwanda at the time of data collection. These sectors are Mugina, Nyamiyaga, Nyarubaka, Rukoma, Rugarika, Musambira and Gacurabwenge. The inclusion criterium for participation was being a genocide survivor of the 1994 genocide against Tutsi in Rwanda. The exclusion criteria were not consenting for participation and having illness that can interfere with data collection. The minimum computed sample size was 310. The Fisher's formula ($n= (z^2 p(1-p))/d^2$**)** was used to get the sample size (n) with the z-score (z) of 1.96 for 95% confidence level, the margin error (d) of 0.05, and the estimated proportion of 27.9% (p), an estimated prevalence of PTSD in Rwanda adopted from Kayiteshonga *et al*. (2022). By adding 10% to account for non-response, the final sample size for this study is 341. This study used random sampling technique to select participants of this study. Sampling frame was created in a computer-based Microsoft Excel sheets. The Microsoft excel capabilities of generating random samples was exploited to draw random sample of respondent from target population.

Data Collection Methods

The data collection instrument contained contain Cow for Peace participation status item, sociodemographic and socioeconomic related items including age, gender, education level, Household size, Family size, and income. The instrument had also adopted the PTSD checklist of DSM-5. The PTSD checklist of DSM-5 include 20 items that assess symptom of PTSD according to DSM-5. This tool concurrently assessed PTSD status before Cow for peace intervention, after training on trauma healing, during reconciliation cell groups, and during shared cow raising. The Post-traumatic disorder checklist of DSM-5 (PCL-5) obtained adequate reliability in its evaluation

in context of Rwanda (Jansen et al., 2022; Niyonsenga et al., 2021). A pilot study of was conducted to tests the research instrument for feasibility of the study and accurate understandability or interpretability of items by responded. Twelve people who undergone cow for peace intervention in Muhanga district were included in the pilot study. The internal consistence by using Cronbach's α score was also assessed. The overall Cronbach's α score of the research instrument was 0.93. The Postgraduate Department of Mount Kenya University assessed content and face validity of the research instrument before approval and use. The interviewers received training on how to conduct the structured interview using the actual study instrument. They were also trained to be non-judgmental and to avoid influencing the responses of the participants. The research approval was obtained from Mount Kenya University and Christian Action for Reconciliation and Social Assistance, a faith-based organization that run cow for peace. A face-to-face computer-based structured interview technique was used to collect data. This technique is beneficial to the study because the researcher ensures the comprehensibility of items, try to avoid non responses, and safe storage and retrieval of the collected data. For this purpose, the online Kobo Toolbox platform for data collection was utilized. The Kinyarwanda version of the research instrument was used to collect data. Data was collected by three trained interviewers under close supervision of the researcher. During data collection, consent was obtained from the respondent, and the interview proceeded by adhering to the sequence and phrasing of items in the research instrument. Research interviews was performed in privacy, the respondent study identification number was used as the only identifier on the data collection instrument, and only aggregated results were reported. The right of participants of being explained research procedures and to quit at any time during the interview were respected. After interviews the collected data were retrieved in a computer-based spreadsheet form for safe storage, cleaning and analysis.

Data Analysis

Data collection was followed by coding. Sociodemographic and socioeconomic categories were from one up to the number equivalent to the total number of categories. For PTSD checklist of DSM-5 (PCL-5) part, responses ranging from not at all to extremely were scored 0 to 4. Scores of all 20 items were summed to obtain total PTSD score for each respondent (Bovin *et al.*, 2016). The effects of phases in cow for peace intervention on PTSD were manifested through the

differences between post-phase PTSD scores and pre-phase PTSD score. The effect of training on trauma healing was measured by comparing PTSD scores before and after the training. The effect of reconciliation cell groups was measured by comparing PTSD scores after the training on trauma healing and during the reconciliation cell groups. Finally, the effect of shared cow raising was measured by comparing PTSD scores during reconciliation cell groups and during shared cow raising. In this study, differences in PTSD scores were categorized using the Reliable Change Index (*RCI*). This method was used because it allows researcher to determine if the change observed in a specific case during intervention is greater than what could be attributed to measurement error alone (Blampied, 2022; Jacobson & Truax, 1991). Additionally, *RCI* continue to be used to measure and categorize PTSD status change in various population (Cloitre *et al*., 2021; Marx *et al*., 2022). The *RCI* values were calculated using the formula $RCI = (X2 - X1)/Sdiff$, where *X2* is the post-phase PTSD score, *X1* is the pre-phase PTSD score, and *Sdiff* is the Standard Error of the Difference. To calculate *Sdiff*, the Standard Error of Measurement (*SEM*) was first determined using the formula $SEM = SD1\sqrt{1} - r$, where *SD1* is the standard deviation of the pre-treatment scores and r is the test-retest reliability of the assessment. For this study, a test-retest reliability of r = 0.84 was adapted from a recent study (Marx *et al*., 2022), and the standard deviation of the pre-treatment scores was calculated. Sdiff was then calculated using the formula $Sdiff = \sqrt{2}(SEM)^2$. After calculating the *RCI* for each respondent, they were categorized based on their RCI value. Respondents with an *RCI* less than -1.96 were categorized as "improved," while those with an *RCI* equal to or greater than -1.96 were categorized as "unchanged". The presentation of data was made through informative tables, and meaningful statistics. Categorical data were presented as counts and proportions while continuous data were presented as mean (*SD*). Association between PTSD change during phases of cow for intervention and sociodemographic factors were determined with Chi-square tests and logistic regression. All statistical analysis was performed by employing Statistical Product and Service solutions (SPSS) Version 27. The statistical significance was $P < 0.05$ throughout data analysis and interpretation.

Demographic characteristics of respondents

Table 1: Characteristics of the study respondents

Characteristics	Frequency	Percentage	Mean	SD
Gender			0.35	0.478
Male	112	35.2		
Female	206	64.8		
Age (years)			55.76	9.527
<45	43	13.5		
45-54	101	31.8		
55-64	113	35.5		
65 and over	61	19.2		
Household size			4.22	1.462
<3	38	11.9		
3-5	220	69.2		
6 and over	60	18.9		
Education			0.95	0.565
Illiterate	59	18.6		
Primary	216	67.9		
Secondary	43	13.5		
Income (per-month)			16584.91	8166.873
> 7000	33	10.4		
7000-16999	140	44.0		
17000-26999	111	34.9		
27000 and over	34	10.7		
Total	318	100		

Characteristics of study respondents were presented in Table 1. Totally, 318 study respondents were included in this study. The response rate was 93.2% (318 out of 341). The ages of the respondents ranged from 36 to 83 years, with a mean age of 55.76 (SD = 9.53). The majority of respondents were between 45 and 65 years old (67%) and female (64.8%). The household size ranged from 1 to 8 people, with a mean of 4.22 (SD = 1.46), and most respondents lived in households with 3 to 5 people. In terms of education, 18.6% of respondents were illiterate, 67.9%

had completed primary school, and 13.5% had attended secondary school. The monthly income ranged from 2000 to 45000 Rwanda francs, with a mean income of 16584.91 Rwandan franc (SD = 8166.87).

Effect of Training on trauma healing

Table 2: Effect of training on trauma healing on PTSD status

PTSD status	Frequency	Percentage	Mean	SD
Improved	317	99.7	-41.1	9.5
Unchanged	1	0.3		
Total	318	100		

Table 2 shows the impact of training on trauma healing on PTSD status. The change in PTSD scores before and after the training ranged from -64 to -10, with a mean change of -41.1 (*SD* = 9.5). The Reliable Change Index (RCI) was used to categorize the differences in PTSD scores (Blampied, 2022). Of the 318 respondents, 317 (99.7%) showed a statistically significant improvement in their PTSD scores (RCI < -1.96), while only one respondent did not show a statistically significant change (RCI ≥ -1.96).

Table 3: Factors associated with the effect of training on trauma healing

Characteristics	PTSD Status after training on trauma healing				χ^2 value	*p* value
	Unchanged		Improved			
	n	%	n	%		
Gender					1.85	0.174
Male	1	0.9	111	99.1		
Female	0	0.0	206	100		
Age (years)					4.23	0.238
<45	0	0.0	43	100		
45-54	0	0.0	101	100		
55-64	0	0.0	113	100		
65 and over	1	1.6	60	98.4		
Household size					4.314	0.116
<3	0	0.0	38	100		
3-5	0	0.0	220	100		
6 and over	1	1.7	59	98.3		
Education					0.474	0.789
Illiterate	0	0.0	59	100		
Primary	1	0.5	215	99.5		
Secondary	0	0.0	43	100		
Income					1.871	0.600
> 7000	0	0.0	33	100		
7000-16999	0	0.0	140	100		
17000-26999	1	0.9	110	99.1		
27000 and over	0	0.0	34	100		

Table 3 present the association between sociodemographic factors and the effect of training on trauma healing on PTSD score. There were non-statistically significant association between the effect of training on trauma healing and sex (χ^2 (1, N = 318), p > 0.05), age (χ^2 (3, N = 318), p > 0.05), household size (χ^2 (2, N = 318), p > 0.05), Education (χ^2 (2, N = 318), p > 0.05), and income (χ^2 (3, N = 318), p > 0.05).

Effect of reconciliation cell groups

Table 4: Effect of reconciliation cell groups on PTSD status

PTSD status	Frequency	Percentage	Mean	SD
Improved	163	51.3	-7.94	4.63
Unchanged	155	48.7		
Total	318	100		

Table 4 shows the effect of reconciliation cell groups on PSD status. The change in PTSD score during reconciliation cell groups ranged from -23 to 3 with the mean change of -7.94 (*SD* = 4.63). Of 318 respondents, 163 (51.3%) showed a statistically significant improvement in their PTSD score (RCI < -1.96), while 155 (48.7%) respondents did not show a statistically significant change (RCI ≥ -1.96).

Table 5: Factors associated with the effect of reconciliation cell groups

Characteristics	PTSD Status during reconciliation cell groups				χ^2 value	*p* value
	Unchanged		Improved			
	n	%	n	%		
Gender					3.028	0.082
Male	62	55.4	50	44.6		
Female	93	45.1	113	54.9		
Age (years)					6.395	0.094
<45	27	62.8	16	37.2		
45-54	50	49.5	51	50.5		
55-64	55	48.7	58	51.3		
65 and over	23	37.7	38	62.3		
Household size					1.420	0.492
<3	16	42.1	22	57.9		
3-5	112	50.9	108	49.1		
6 and over	27	45.0.	33	55.0		
Education					**12.580**	**0.002**
Illiterate	17	28.8	42	71.2		
Primary	112	51.9	104	48.1		
Secondary	26	60.5	17	39.5		
Income					**13.013**	**0.005**
> 7000	10	30.3	23	69.7		
7000-16999	68	48.6	72	51.4		
17000-26999	52	46.8	59	53.2		
27000 and over	25	73.5	9	26.5		

Table 5 demonstrate the association between sociodemographic factors and the effect of reconciliation cell groups of PTSD scores. Education ($\chi^2(2, N = 318)$, $p < 0.05$) and income ($\chi^2(3, N = 318)$, $p < 0.05$) showed statistically significant association with the effect of reconciliation cell group on PTSD scores. There were non-statistically significant association between the effect of training on trauma healing and sex ($\chi^2(1, N = 318)$, $p > 0.05$), age ($\chi^2(3, N = 318)$, $p > 0.05$), and household size ($\chi^2(2, N = 318)$, $p > 0.05$).

Table 6: Regression analysis of factors related to the effect of reconciliation cell groups

Variables	Odds Ratio	95% Confidence Interval	*p*
Education			
Illiterate	Reference		
Primary	0.415	[0.214, 0.805]	**0.009**
Secondary	0.359	[0.141, 0.910]	**0.031**
Income			
> 7000	Reference		
7000-16999	0.653	[0.274, 1.554]	0.336
17000-26999	0.765	[0.311, 1.884]	0.560
27000 and over	0.249	[0.080, 0.778]	**0.017**

Table 6 presents the results of a binary logistic regression analysis that was conducted to identify the independent predictors of changes in PTSD scores due to the reconciliation cell group phase of the Cow for Peace intervention. The analysis considered two factors that were found to be statistically significant in bivariate analyses: education and monthly income. The results showed that respondents who had attended primary school (*AOR* = 0.42, $p < 0.05$, 95% CI = [0.214, 0.805]) or secondary school *(AOR* = 0.36, $p < 0.05$, 95% CI = [0.141, 0.910]) were less likely to experience a statistically significant decrease in their PTSD scores during the reconciliation cell group phase than those who were illiterate. Similarly, respondents who earned a monthly income of 27000 frw or more had a less likelihood of experiencing a statistically significant improvement in their PTSD scores during the reconciliation cell group phase compared to those who earned less (*AOR* = 0.25, $p < 0.05$, 95% CI = [0.080, 0.778]).

Effect of shared cow raising

Table 7: Effect of shared cow raising on PTSD status

PTSD status	Frequency	Percentage	Mean	SD
Improved	62	19.5	-3.23	3.98
Unchanged	256	80.5		
Total	318	100		

Table 7 displays the effect of shared cow raising phase of Cow for Peace intervention on PTSD scores. The PTSD change during shared cow raising ranged from -21 to 10 with the mean change of -3.23 (*SD* = 3.98). Of 318 respondents, 62 (19.5%) showed a statistically significant improvement in their PTSD score (RCI < -1.96), while 256 (80.5%) respondents did not show a statistically significant change (RCI ≥ -1.96).

Table 8: Factors associated with the effect of shared cow raising

Characteristics	PTSD Status during shared cow raising				χ^2 value	*p* value
	Unchanged		Improved			
	n	%	n	%		
Gender					2.054	0.152
Male	95	84.8	17	15.2		
Female	161	78.2	45	21.8		
Age (years)					**10.959**	**0.012**
<45	39	90.7	4	9.3		
45-54	88	87.1	13	12.9		
55-64	86	76.1	27	23.9		
65 and over	43	70.5	18	29.5		
Household size					2.432	0.296
<3	31	81.6	7	18.4		
3-5	181	82.3	39	17.7		
6 and over	44	73.3	16	26.7		
Education					0.993	0.609
Illiterate	45	76.3	14	23.7		
Primary	175	81.0	41	19.0		
Secondary	36	83.7	7	16.3		
Income					1.182	0.757
> 7000	26	78.8	7	21.2		
7000-16999	110	78.6	30	21.4		
17000-26999	93	83.8	18	16.2		
27000 and over	27	79.4	7	20.6		

Table 8 demonstrate the association between sociodemographic factors and the effect of shared cow raising. Age showed a statistically significant association with the change in PTSD scores during shared cow raising phase ($\chi^2(3, N = 318)$, $p < 0.05$). There were non-statistically significant association between the effect of training on trauma healing and sex ($\chi^2(1, N = 318)$, $p > 0.05$), household size ($\chi^2(2, N = 318)$, $p > 0.05$), Education ($\chi^2(2, N = 318)$, $p > 0.05$), and income ($\chi^2(3, N = 318)$, $p > 0.05$).

Table 9: Regression analysis of factors related to the effect of shared cow raising

Variables	Odds Ratio	95% Confidence Interval	*p*
Age (years)			
<45	Reference		
45-54	1.440	[0.442, 4.699]	0.545
55-64	3.061	[1.003, 9.346]	**0.049**
65 and over	4.084	[1.271, 13.109]	**0.018**

Table 9 presents the results of a binary logistic regression analysis that was conducted to identify the predictors of changes in PTSD scores due to the shared cow raising phase of the intervention. The analysis found that only the age of respondents showed a statistically significant association with the effect of the shared cow raising phase in bivariate analysis, and therefore it was included in the multivariate analysis. The results showed that respondents who were between 55 and 64 years old (AOR = 3.06, $p < 0.05$, 95% CI = [1.003, 9.346]) had a 3 times higher likelihood of experiencing an improvement in their PTSD scores compared to respondents under 55 years of age. Similarly, respondents aged 65 years and above (AOR = 4.084, $p < 0.05$, 95% CI = [1.271, 13.109]) were 4 times more likely to experience an improvement in their PTSD scores compared to respondents under 55 years of age. The results suggest that older respondents were more likely to experience an improvement in their PTSD scores due to the shared cow raising phase of the intervention.

Discussions

The present study investigated the effect of psychosocial supports on PTSD among survivors of the 1994 genocide against Tutsi in Kamonyi District, Rwanda. Cow for peace intervention is among psychosocial supports that foster reconciliation and trauma healing among survivors and direct perpetrators of the genocide (Kang et al., 2021). The intervention includes 7-day workshops to help participants deal with post-traumatic stressors. The workshops improved PTSD scores in 99.7% of respondents. The intervention also includes reconciliation cell groups where survivors and perpetrators meet for shared activities and conversation. These groups improved PTSD scores

in 51.3% of respondents. Finally, participants cooperatively raise a cow while continuing to participate in reconciliation cell groups. Shared cow raising phase further improved the PTSD scores of 19.5% of the study respondents. This section discusses the findings of this study. The first objective of the present study was to determine the effect of training on trauma healing on PTSD among Genocide survivor in Kamonyi District. Of the 318 respondents, 317 (99.7%) showed a statistically significant improvement in their PTSD scores. There were non-statistically significant association between the effect of training on trauma healing and sex, age, household size, education, and monthly income. These findings imply the effectiveness of training on trauma healing for almost all respondents, regardless of their sex, age, household size, education level, or monthly income. These findings are in line with the findings of a longitudinal study that investigated the effectiveness of Cow for Peace Intervention in Muhanga districts, Rwanda. The study reported a significant decrease of traumatic stress among Genocide survivors after the workshops of trauma healing (Kang et al., 2020; Kindler, Mbonyingabo, Karekezi, & Kang, 2022). The second objective of this study was to explore the effectiveness of reconciliation cell group in improving PTSD among genocide survivors in Kamonyi District Rwanda. According to the findings, 51.3% of respondent showed a statistically significant improvement in PTSD score. Reconciliation cell groups involve meeting through groups to resolve needs, engage in activities, and support each other, helping to rebuild trust and community foundations. These were also evidenced with a study conducted in Musanze, where sharing suffering narratives and sharing life with other community members promote healing (Otake, 2018). In contrast Genocide survivors in a longitudinal study in Muhanga district did not show a significant improvement of PTSD symptoms during reconciliation cell groups (Kang et al., 2020). This may be explained through various factors. For example, this study shows that higher levels of education and income were associated with a lower likelihood of experiencing statistically significant changes in PTSD scores during the reconciliation cell groups. However, Kang *et al*. (2020) did not explore factors associated with improvement in traumatic stress symptoms among genocide survivors during reconciliation cell groups. Finally, this study examined the effect of interaction between genocide survivors and direct perpetrators through shared cow raising in Kamonyi district, Rwanda. According to the findings 19.5% of respondent showed a significant improvement of PTSD scores due to shared cow raising. The assessment of Cow for peace intervention in Muhanga District did not observe further traumatic stress improvement among genocide survivors due to shared cow

raising (Kang et al., 2020). In this study, respondents over 55 years of age were more likely to experience significant PTSD improvement than respondents aged less than 55. This may be explained by the culturally rooted place of a cow in Rwanda. Cows were highly respected and represent family, friendship, and community (Garcia, Mpatswenumugabo, Ntampaka, Nandi, & Cullor, 2023). In Kamonyi District, the process of receiving and caring for cows, as well as enjoying their products, strengthened social connections and communication between genocide survivors and former perpetrators, thereby improving their relationships (Mugenzi, 2018). Overall, this study demonstrates the potential benefits of psychosocial supports in improving PTSD among survivors of the 1994 genocide against Tutsi in Rwanda. In addition to determining the independent effect of each phase in the Cow for Peace intervention, this study also investigated the factors associated with change. This is a strength of the present study, as it provides a more comprehensive understanding of the intervention's effectiveness compared a previous study (Kang et al., 2020; Kindler et al., 2022). The study's focus on genocide survivors in Kamonyi district also provides valuable information about the impact of the interventions in this particular context. However, this study is not without limitations. It was a cross-sectional study, where the PTSD assessment tool was concurrently administered for each phase in the Cow for Peace intervention. This may have led to recall bias, as respondents were being asked about past experiences. Generally, findings suggest that training had a large and significant effect on trauma healing, while reconciliation cell groups and shared cow raising had smaller but still significant effects. The effects of these interventions varied by demographic characteristics such as education level and age. In conclusion, this study provides valuable insights into the effectiveness of psychosocial supports, including the Cow for Peace intervention, in improving PTSD among survivors of the 1994 genocide against Tutsi in Kamonyi District, Rwanda.

Conclusion

Based on the study findings, training on trauma healing had a significant effect PTSD improvement, with a large majority (99.7%) of the 318 respondents showing a statistically significant improvement in their PTSD scores after the training. The change occurred regardless, regardless of their sex, age, household size, education level, or monthly income. The mean change in PTSD scores before and after the training was -41.1, indicating a large decrease in symptoms due to the training on trauma healing.

The study also examined the effect of reconciliation cell groups on trauma healing. The results showed that 51.3% of the 318 respondents experienced a statistically significant improvement in their PTSD scores during the reconciliation cell group phase. However, respondents who had attended primary or secondary school were less likely to experience a statistically significant change in their PTSD scores during this phase compared to those who were illiterate. Similarly, respondents who earned a monthly income of 27000 frw or more were less likely to experience a statistically significant change in their PTSD scores during this phase compared to those who earned less. Age, household size, and sex were not significantly associated with PTSD change during the reconciliation cell group phase.

Finally, the study examined the effect of shared cow raising on trauma healing. The results showed that 19.5% of the 318 respondents experienced a statistically significant improvement in their PTSD scores during the shared cow raising phase. Further analysis revealed that during shared cow raising, respondents aged 55-64 years and those aged 65 years and above were more likely to experience an improvement in their PTSD scores compared to respondents under 55 years of age.

Generally, findings suggest that training had a large and significant effect on trauma healing, while reconciliation cell groups and shared cow raising had smaller but still significant effects. The effects of these interventions varied by demographic characteristics such as education level and age.

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Ethical approval:

This study obtained ethical approval from the postgraduate department of Mount Kenya and Christian Action for reconciliation and social assistance (CARSA).

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