

Article

Rural literature and media innovation: Psychological support for cancer patients

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Abstract: A cancer diagnosis is a serious condition that has a substantial impact on an individual's emotional and psychological well-being, and their general health. This burden is more profound for cancer patients living in rural regions, where access to psychological support checks, advanced medical facilities, and community-based resources is restricted. The research aims to analyze the viability and tolerability of a novel psychological support intervention that combines rural literature and media innovation to tackle the exclusive challenges faced by cancer patients. A mixed-methods approach is employed, with a pre- and post-intervention survey and semi-structured interviews to assess the intervention's impact on psychosocial well-being. The intervention is an 8-week media innovation (interactive digital tools) and literature-based intervention designed to address common cancer-specific stressors. A total of 31 participants, including both cancer survivors and those undergoing active treatment. Qualitative feedback from participants is collected through interviews and textual data, while quantitative data assesses changes in psychosocial well-being. The findings showed a post-intervention significant decrease in depressive symptoms and psychological distress, along with non-significant increases in mindfulness and Quality of Life (QoL). This research highlights the potential of combining media innovation and literature-based interventions to improve psychological support for cancer patients, particularly in rural settings, while also emphasizing the need for enhanced community engagement and access to digital resources.

Keywords: rural literature; media innovation; psychological support; cancer patients; psychological distress

1. Introduction

Cancer is a primary source of illness and death worldwide, with approximately 18.1M original cancer identifications and 9.6M cancer fatalities recorded. Cancer and its therapies have been proven to be incapacitating, affecting both the patient's substantial and cerebral welfare. Patients with cancer confront enduring challenges in a variety of substantial and emotional circumstances. Cancer has a durable influence on Quality of Life (QoL), nervousness, sadness, and fecundity, in addition to communal challenges like a sense of disgrace or shame linked to the situation [1]. About one-third of cancer patients in major metropolitan cities live in 'rural' settings. In addition to the difficulties that come with receiving a cancer diagnosis, rural cancer patients also have to deal with a number of other stressors, such as the distance they must travel for treatment [2]. Rural survivors face more suffering and a lower QoL due to inferior treatment outcomes, restricted contact with data, and many obstacles to receiving assistance [3]. Rural cancer survivors find it difficult to complete therapy and return to rural communities after leaving metropolitan treatment centers. A minute amount of qualitative research among pastoral [4] cancer

patients has indicated that after finishing treatment and recurring residence, they frequently state feelings of isolation, dread, and exhaustion. Losing access to expert care teams during this time is challenging, especially if individual believe their local health practitioners are unaware of cancer. In general, current quantitative research has found that pastoral cancer survivors are more likely than municipal cancer patients to be heavy and not connect in any substantial movement [5]. These tendencies are possibly factual for the whole rural inhabitants, but they are especially troublesome for cancer patients since they have a major influence on their QoL and raise their hazard of cancer repetition [6]. Individuals in distant parts of rural area are 35% more likely to mortality within five years following receiving cancer identification than those in big municipalities, and while endurance rates are typically increasing, gaps in results among rural and urban cancer survivors are widening. Therefore, choosing culturally and ethnically relevant strategies to increase rural cancer patients' adherence to health-promoting practices like exercise and partial observation is essential [7], as developing pertinent sympathetic concern measures to improve their quality of life. Numerous verification-based initiatives to help cancer patients enhance their QoL after management have been created and proven effective in common cancer residents. However, since some communications are in person, rural patients have limited access, and the applicability of urbanized survivorship concern treatments by pastoral cancer patients, who are recognized to have exclusive importance and diverse sentiments toward seeking help can be unreliable [8]. There is very limited information concerning rural cancer patients' desire to participate in self-organization measures aimed at improving their QoL. Intervention programs are gradually enlarged to help cancer patients with post-treatment QoL problems like panic of cancer reappearance and sleep interruption. While rural patients stand to benefit greatly from online survivorship interventions, the majority of research is persistent on online interferences intended for urban cancer patients [9]. To tackle these information breaks and notify potential interference efforts, there is an obvious requirement identifying the kinds of approaches that support rural cancer patients in adopting vigorous existences, managing treatment consequences, lowering their hazard of cancer reappearance, and, further broadly, improving their QoL. Since carers play an important role in biased cancer survivors and patients with disease administration and management, mainly in rural locations where contact with specialized provisions is partial and they depend on support with transportation, considering sufficient from their viewpoint is critical [10]. **Figure 1** shows the potential mechanism of media-based intervention.

Rural cancer patients face more significant challenges in accessing medical care and mental health support compared to those in urban areas. It is essential to thoroughly examine regional differences in cancer-related mortality as cancer is a leading cause of death globally, and survival rates vary by location. This research aims to assess the effectiveness of interactive digital tools and literary interventions in improving the psychosocial well-being of rural cancer patients and addressing barriers to accessing interventions. The study will measure the impact of the intervention on patients and gather feedback from participants to enhance future interventions. By addressing these research questions and objectives, this study provides valuable insights into psychological support strategies for rural cancer

patients worldwide. The study utilizes interactive digital tools and literary interventions consisting of multiple components. Individuals seeking stress relief exercises can utilize mobile applications such as Headspace or Calm, which offer personalized mindfulness guidance. The combination of virtual support groups and interactive websites allows for live participant interaction to foster shared experiences among rural cancer patients, while also providing specialized content tailored to their needs. Literary intervention programs that focus on personal narratives should encourage participants to explore literature related to survival to enhance their reflective skills through written engagement. Reading circles can facilitate discussions on selected literature that resonates with participants' personal cancer experiences, fostering meaningful connections within the group. Storytelling projects offer patients the opportunity to document their cancer experiences and heal through the exchange of shared narratives. Targeting interventions directly at specific individuals can lead to greater meaning, increased involvement, and stronger support from participants.

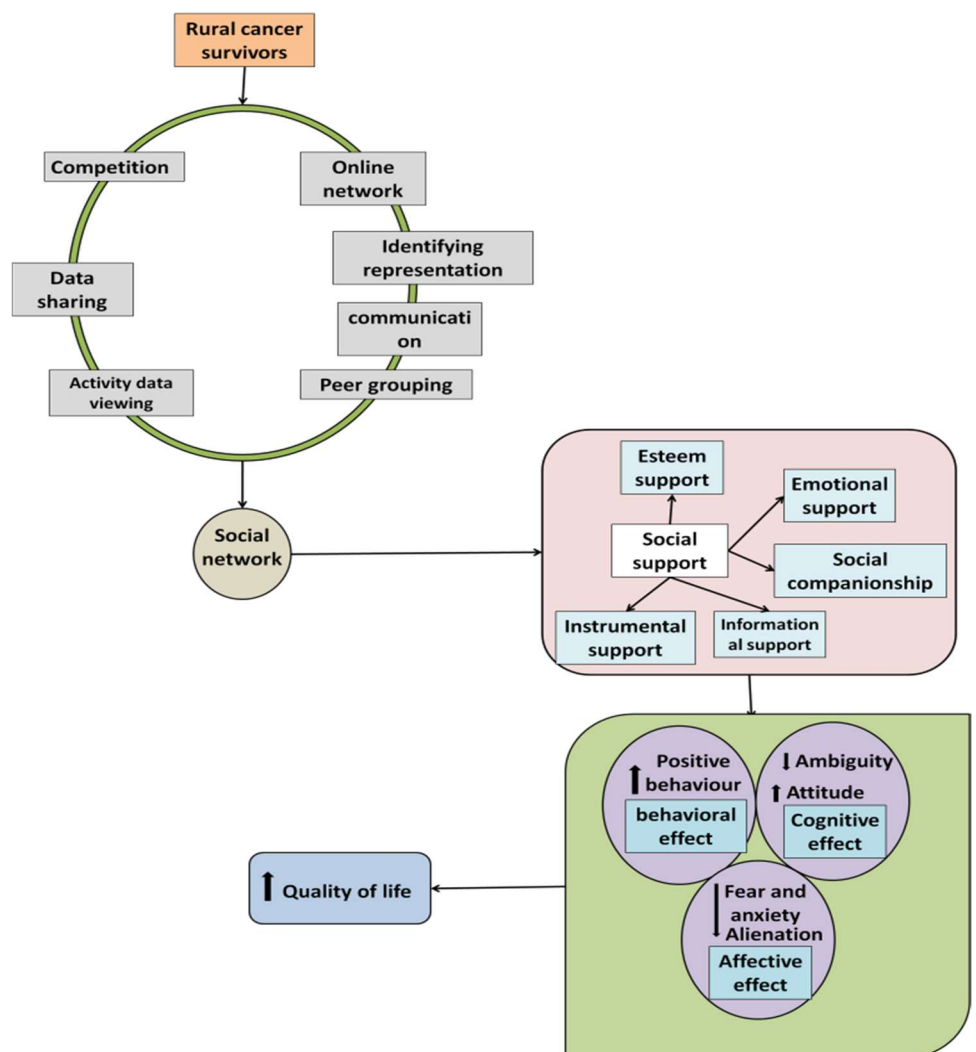


Figure 1. Mechanism of Media-based intervention.

This research evaluates the viability and tolerability of a psychological support intervention integrating rural literature and media innovation for cancer patients in

rural areas. Using an 8-week digital and literature-based program, it assesses impacts on psychological well-being, highlighting reductions in distress and the need for enhanced community engagement and digital resource accessibility in rural healthcare.

Research highlights

The research focuses on addressing the psychological challenges faced by cancer patients, particularly in rural areas, by introducing an innovative psychological support intervention that integrates rural literature and media innovation. The highlights are given below:

The research objective is to examine the viability and adequacy of a 8-week media and literature based intervention aimed at alleviating cancer specific stressors and improving psychosocial well-being in cancer patients.

The data includes 31 participants, comprising both cancer survivors and patients currently undergoing treatment, providing insights across diverse phases of the cancer journey.

The research includes pre and post intervention surveys and semi-structured interviews, allowing for both quantitative and qualitative assessment of the interventions impact on depressive symptoms, distress, mindfulness and QoL.

The intervention resulted in significant reductions in depressive symptoms and psychological distress, while also showing non-significant increases in mindfulness and QoL, suggesting the intervention's effectiveness in managing emotional challenges.

The research demonstrates the potential of combining media innovation with literature-based interventions to improve psychological support for cancer patients, especially those in rural settings with limited access to conventional psychological services.

Sections comprise the remaining section of the research. Section 2 gives the objective related to the research. Section 3 presented the methodology. Section 4 gives the findings of the research. Section 4 and 5 demonstrated the discussion and conclusion.

2. Related work

This section reviews existing literature on psychosocial interventions for cancer patients, focusing on media and literature-based approaches. It also highlights research gaps and contextualizes the current research innovative intervention within this landscape.

Gunn et al. [11] examined the obstacles that rural cancer survivors meet after treatment, as well as recommendations for improving support systems. Semi-structured interviews with 22 patients indicated physical, psychological, and practical challenges were exacerbated by skepticism in rural healthcare and uncertain post-treatment options. Nurse-led, telephone-based, and constant provider assistance were the preferred approaches.

Graham et al. [12] investigated the issues experienced by rural cancer survivors, notably in the United Kingdom (UK), where there was little data on post-treatment

experiences. Secondary analysis of interview transcripts ($n = 16$) revealed the impact of rurality on recovery, emphasizing the importance of community support, healthcare access, and local general practitioner (GP) relationships.

Nicoll et al. [13] analyzed the obstacles, good experiences, and improvement ideas of rural cancer patients one to three years after treatment. A qualitative expressive evaluation of 4646 survey responses suggested that decreasing physical capacity and treatment effects posed significant obstacles. Survivors emphasized the significance of improved communication, local support services, and self-care resources.

Bateman et al. [14] evaluated helpful concern services for cancer patients in Aotearoa New Zealand (NZ) after treatment. It emphasized the psychosocial and physical obstacles that survivors experience, analyzed impediments, such as resource constraints and staff attitudes, and proposed defining post-treatment survivorship as a separate phase to improve care, referral channels, and responsibility clarity.

Rowe et al. [15] explored the survivorship trouble data obtained by cancer patients in pastoral Australia, determining whether it varies based on demographics or cancer type. Only 35% of patients had a survivorship concern preparation, and there was little data about long-term health. There were no important demographic or cancer form differences detected.

Fitch et al. [16] evaluated the influence of residency site on cancer patients' experiences as individual transition to follow-up care. According to research on 13,319 people, rural survivors had more difficulty returning to work, finding childcare, and getting help. The findings highlighted the need for community-based support services in rural areas to address unmet needs.

Moss et al. [17] examined the rural-urban discrepancies in Health-Related QoL (HRQOL) among older cancer survivors. The findings demonstrated inferior HRQOL in rural settings, with rural cancer survivors reporting weaker vitality, social functioning, and mental health. Interventions were required to enhance HRQOL among rural cancer patients.

Hastert et al. [18] analyzed the link among communal needs and HRQOL in cancer survivors. Methods included Linear Regression (LR) analysis of data from 1754 African American survivors to assess social needs and HRQOL. The results revealed significant HRQOL disparities based on social demands. Limitations included possibly unmeasured confounders.

Kent et al. [19] combined interviews with 24 caregivers and 17 hospital workers to investigate the communal requirements of rural families dealing with cancer. The findings emphasized both economic and physical constraints, including transportation barriers. Caregivers demand further assistance from healthcare systems. Addressing financial hardship and inadequate internet access was critical for successful interventions.

Ratnapradipa et al. [20] addressed rural cancer caregivers' and survivors' understanding with cancer care services. Three intervention cohorts in rural Nebraska discovered diagnostic prototypes, good referral experiences, and communication-dependent care attitudes. Finances, transportation, and access to support were among the barriers. The findings help to inform outreach methods for reducing cancer inequalities in remote communities.

Al-Omari et al. [21] explored the gaps in cancer survivors' helpful concern requirements. Using the Supportive Care Needs Survey–Short Form 34 (SCNS-SF34), findings revealed significant unmet needs in the financial, physical, and psychosomatic areas. Limitations comprise the single-center plan and the need for enduring transcribed restricts generalizability.

Abdelhad [22] analyzed longitudinal information from the Medical Expenditure Panel Survey (2016–2019) to investigate the control of emotional suffering on the excellence of trouble for cancer survivors. According to the findings, upset survivors have poorer patient outcomes and need more healthcare services. Limitations include potential unmeasured factors that influence the results.

Heß et al. [23] investigated the concealed desires that were explored for their influence on cancer patients' psychological health and QoL. The research enrolled 449 cancer patients and assessed depression, anxiety, emotional functioning, and QoL at four time periods. Patients who did not voice their requirements had poorer results and received less professional help, according to the findings. Limitations include the need for additional research to identify causal linkages and target this patient population for better care.

Matthys et al. [24] compared two therapies (nurse-led and web-based) for improving mental operation and self-efficiency in cancer patients and relatives. The research included 936 randomized dyads from six European countries. The findings were intended to inform cost-effective palliative care strategies. Limitations include context-specific results due to differences in healthcare systems.

Titler et al. [25] used a pre/post-intervention design to assess the acceptability of the FOCUS psycho educational interference among 72 cancer survivors and their caregivers. The findings revealed great satisfaction, with participants appreciating the group structure and dyadic approach. Limitations included a lack of generalizability and the need for additional research on long-term benefits.

Pethybridge et al. [26] investigated the function of family caregivers in indicator-connected Self-Management (SMS) for difficult cancer survivors. The findings obtained through semi-structured interviews and inductive content investigation, indicated three important subjects: SMS engagement, interaction with healthcare providers, and balancing needs and expectations. Patient symptom profiles varied, which was a limitation. Health professionals provide better support to caregivers.

As a result, comprehensive cancer care necessitates the association of the survivor's relatives and societal surroundings, as well as the provision of need-based psychological assistance to relatives. Taking biopsychosocial parameters like SMS into account as manipulating the features of suffering and psychological comorbidities will provide much-desired information for more focused mental therapy for cohorts with special requirements [27]. The information will probably identify features that were critical for improving flexibility and resource direction.

3. Methods and materials

The data is collected from 31 cancer patients, including survivors and those in treatment, using both qualitative and quantitative methodologies. Participants are

getting an 8-week psychological intervention. Depression, psychological distress, mindfulness, and QoL are all measured pre and post-intervention. The International Business Machines Statistical Package for the Social Sciences (IBM SPSS) software is employed for data analyses. **Figure 2** demonstrates the data analysis flow.

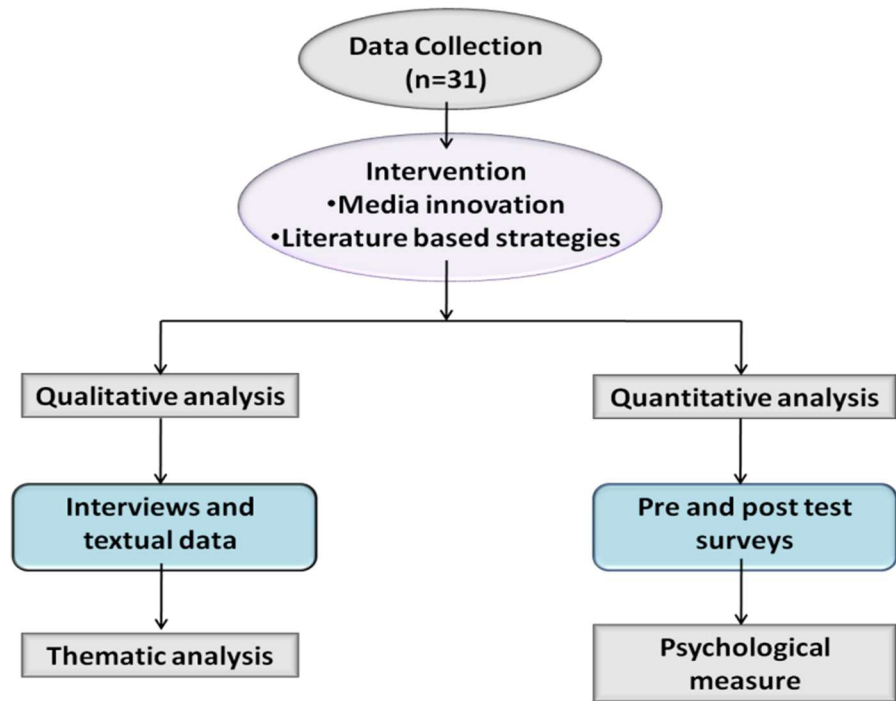


Figure 2. Data analysis.

3.1. Data collection

The data is gathered from 31 cancer patients, including survivors and those undergoing treatment. Qualitative data are gathered through pre and post-intervention semi-structured interviews and written feedback, focusing on emotional well-being and intervention experiences. Quantitative data are collected using pre and post-surveys to assess depression, psychological distress, mindfulness, and QoL. The integration of both qualitative and quantitative data provided a complete perceptive of the intervention's impact.

3.2. Selection principle

The selection criteria ensure the significance of the sample for the investigation. There are both exclusion and inclusion measures. **Table 1** shows the selection principles.

Table 1. Selection principles.

Inclusion criteria	Exclusion criteria
Participants had to be confirmed to have cancer and have finished active treatment.	Cancer patients are excluded from contributing if they have been confirmed to have non-melanocytic skin cancer.
They had to be at least 18 years old, proficient in providing knowledgeable permission, and live in outer municipal regions.	They aren't mentally or physically prepared for an hour-long interview.
Lives within an acceptable distance for treatment physicians to drive	Individuals survived for a more 18 months before completing treatment.

Table 1. (Continued).

Inclusion criteria	Exclusion criteria
Participants and/or caregivers in the family can and know how to utilize the Internet.	A diagnosis of cancer within the preceding 12 months.

Patient participation was excluded from this study when conducting research on non-melanoma skin cancer because the favorable prognosis, along with lower psychological distress levels, made their inclusion inappropriate. Patients with non-melanoma skin cancers usually achieve favorable cure outcomes through basic treatment approaches, so their psychological effects and support demands differ from those of patients with advanced or systemic cancers. The research needed to focus on mental health challenges specific to severe cancers, so the researcher decided that this exclusion criterion was essential. Further clarification is necessary regarding the stipulation that includes "beyond the acceptable range of the treating physician." Healthcare providers establish specific limitations that patients with complex cancer stages or therapies cannot exceed when determining patient suitability guidelines. A detailed criterion needs to be developed as standard guidelines, whether patients have stage III or IV TNM-classified cancer stages or require treatment requiring intensive monitoring. Clear definitions within the study enable researchers to verify that participants represent the target group experiencing substantial treatment stress as well as mental health concerns.

During the intervention process, the study took necessary steps to identify and resolve risks affecting participants, mainly through technical issues as well as psychological discomfort. The process of discussing unpleasant cancer-related subjects produced psychological distress among participants while they shared their personal experiences. Despite these risks, protective elements were included as part of the intervention design. Participants started every session by performing a readiness check that enabled individuals to communicate emotions before deciding whether to proceed with the discussion. Mental health experts trained for crisis intervention served as available support throughout the intervention to address immediate support requirements or potential crises. A technical support plan was in place to address any technical issues that might arise during the intervention period to ensure positive participant experiences. The helpdesk provided support to participants through phone or chat communication during designated help hours. Digital tools were tested before the launch date, and participants were given access to simple instruction manuals. Participants voluntarily accepted the intervention after researchers explained the research goals, potential risks, and their right to leave at any time. Full confidentiality was maintained by anonymizing and securely storing data. These measures created an environment that supported both recovery and individual growth.

3.3. Intervention

The intervention is an 8-week series intended to develop psychological well-being in cancer patients, particularly those in rural areas. It combined media innovation and literature-based approaches, utilizing interactive digital tools and rural literature to address cancer-specific stressors. The media component included

engaging digital resources like videos, apps and online platforms, while the literature components involved reading and reflecting on stories, poems, books and materials relevant to cancer experiences. The goal of the intervention is to offer accessible psychological support, reduce distress and enhance mindfulness and QoL for participants.

The effectiveness of this intervention for rural cancer patients requires several specific measures that focus on improving technical accessibility and enhancing intervention feasibility. Before starting the intervention, participants will take part in complete training about interacting with digital tools through technology. Phase-based training with tutorials, along with individual support, provides users from all technology familiarity levels the necessary tools to operate through the platforms. The intervention's access quality will increase when it operates a dual program that combines digital tools and onsite customer support. People can meet at local community centers or health facilities to use digital tools through collective access as this approach creates supportive conditions while encouraging peer socialization. The provision of multiple access points addresses problems that occur when people use the internet. Participation in online content becomes possible regardless of internet reliability because the materials enable download and offline access for those who need it. Interventions will become more practical by involving participants or community staff to serve as volunteers who facilitate the introduction of technology techniques to participants. The presence of local staff or volunteers serves as a resource for participants while they address technical matters and receive psychoactive support for in-session work so that individual members' needs are met properly. These supporting measures enhance participation levels of interventions, which generate an organized support structure while addressing rural community demands, thus leading to improved psychosocial health results.

3.4. Measures

The measures comprise both quantitative and qualitative tools to evaluate the influence of the intervention on psychosocial well-being.

3.4.1. Quantitative measures

The quantitative measures involved standardized surveys to analyse depression, psychological distress, mindfulness and QoL.

The depression is estimated using the Beck Depression Inventory (BDI).

Psychological distress is calculated with the Kessler Psychological Distress Scale (K10).

Mindfulness is assessed using the Five Facet Mindfulness Questionnaire (FFMQ).

QoL is examined using the European Organization for Research and Treatment of Cancer QoL Questionnaire-Core 30 (EORTC QLQ-C30).

3.4.2. Qualitative measures

The qualitative measures include semi-structured interviews and written feedback.

Semi-structured interviews are used to gain insights into their emotional and psychological responses to the program.

Textual data is used to analyze the recurring themes related to emotional support, engagement and perceptions of the intervention's effectiveness.

These measures provided numerical data to track changes in participant's mental health before and after the intervention. The combination of these measures allowed for a broad assessment of the intervention's effects.

3.5. Statistical analysis

The IBM SPSS 28 software is utilized to evaluate the data. The statistical analysis in this research incorporates both quantitative and qualitative approaches. Thematic analysis is used on qualitative data to find frequent ideas, including emotional support and coping techniques. The quantitative analysis is measured using different metrics like depression, psychological distress, mindfulness and QoL. It is assessed using paired *t*-tests are presented to evaluate pre- and post-intervention variables, and Cohen's *d* is employed to assess the effect sizes of these changes. Linear regression analysis is utilized to investigate the link among the intervention and numerous psychosocial variables, providing information about the intervention's overall impact.

3.6. Ethical statement

It is imperative to protect the data confidentiality in the study; thus, the data has not been shared for privacy and ethical reasons. The database holds privacy-sensitive details concerning both medical patients and healthcare staff members, so releasing this information creates major privacy dangers. The hospital has strict ethical and legal protocols that expressly prohibit the disclosure of such important confidential records. Compliance with established regulations and commitments to maintain ethical standards prevent the data from being released to the public domain. The researcher received ethical approval from Zhejiang Agriculture and Business College Shaoxing, and the approval number is IRB2024-1118-AB. The researchers protected participant confidentiality and privacy according to ethical standards while conducting the research. Every participant provided clear consent to participate before the study began, and researchers ensured the security of collected data throughout the research period and afterward.

4. Result

The research objective is to assess the psychological well-being of rural cancer survivors following intervention. The psychological well-being is analyzed using demographic, qualitative and quantitative analysis. Demographic analysis categorizes participants by key factors (age, gender, cancer type, etc.); qualitative analysis uses thematic analysis to identify themes, such as emotional support and coping strategies; and quantitative analysis, including paired *t*-tests, Cohen's *d*, and linear regression, measures changes in depressive symptoms, psychological distress, mindfulness, and QoL, assessing the intervention's impact on mental health.

4.1. Demographic analysis

A demographic analysis is a structured display of the major features and data of

the research population, categorizing them with features. Significant factors like age, type of cancer, gender, and type of treatment are evaluated in rural cancer survivors. **Table 2** demonstrates the traits of individuals. **Figure 3** illustrates some demographic features of the individuals **Figure 3a** represent the type of cancer, and **Figure 3b** depicts that type of treatment for research participants.

Table 2. Demographic analysis.

Categorize		Number of individuals (<i>n</i> = 31)	Percentage (%)
Age	18–45	18	58.6
	45–70	13	41.94
Gender	Female	18	58.06
	Male	13	41.94
Marital status	Single	3	9.68
	Married	21	67.84
	Widow	3	9.58
	Divorced	4	12.90
Children	Yes	24	77.42
	No	7	22.58
Education	Primary school	5	16.13
	Secondary school	8	25.81
	Diploma	10	32.26
	Undergraduate	5	16.13
	Postgraduate	3	9.67
Employment type	Full time	15	48.39
	Part-time	5	16.13
	Temporary	8	25.81
	Unemployment	1	3.23
	Other	2	6.44
Type of cancer	Breast	8	25.81
	Prostate	4	12.90
	Colon	2	6.45
	Lung	3	9.68
	Lymphoma	7	22.58
Treatment type	Other	7	22.58
	Hormone therapy	9	29.03
	Radiotherapy	3	9.68
	Chemotherapy	10	32.26
	Surgery	7	22.58
Stage of cancer	Others	2	6.45
	Primary	23	74.19
	Recurrent cancer	8	25.81

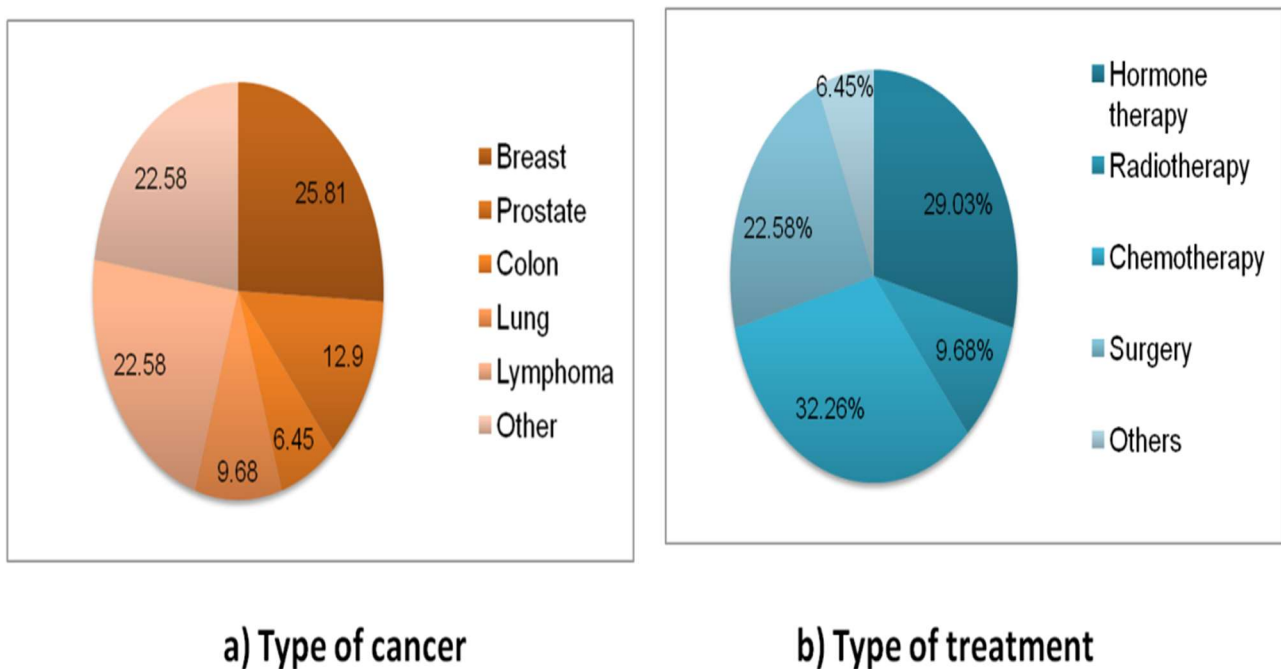


Figure 3. Visual Representation of Demographic characteristics **(a)** type of cancer; **(b)** type of treatment.

The demographic distribution of the 31 participants revealed a broad representation of significant characteristics. The majority of contributors (58.6%) are among the ages of 18 and 45, and 58.06% are female. A large number are married (67.84%) and have children (77.42%). In terms of education, 32.26% held a diploma, while 48.39% worked full-time. Breast cancer (25.81%) is the most common form, followed by lymphoma (22.58%), while chemotherapy (32.26%) is the most commonly used treatment. The vast majority (74.19%) are diagnosed with primary-stage cancer. These findings emphasize the importance of tailoring psychological and pharmacological therapies to different patient profiles.

4.2. Qualitative analysis

Quality will be maintained by trustworthiness criteria, as well as audit processes. Thematic analysis supports both inductive and deductive examination and is managed using NVIVO software. Deductive analysis is expected to be influenced by semantic information from interviews and past evaluations of the intervention. To analyze data, themes have been developed ahead of time and assessed for their existence or absence. The process assessment objectives are going to direct the inductive analysis that focuses on key subjects and extracts experience insights from the information. Qualitative analysis is carried out in two stages: an early assessment of themes in the information resource and a more in-depth evaluation of grouping and deviation among participants. Strategies for supervision of the influence of multilingual investigation include peer debriefing during coding, developing candidate themes, and triangulating between investigators and language sources. An open discussion of data concepts is going to guide the analysis and discover shared meaning pertinent to the process evaluation. **Table 3** shows the thematic analysis of qualitative measures.

Table 3. Qualitative analysis.

Theme	Description	Example from data	Frequency of occurrence
Emotional support	Identifying the importance of social and emotional support when dealing with cancer.	Feeling so much better when talking to someone who knows the anguish.	15
Coping strategies	Participants' methods for coping with cancer-related stress and anxiety.	When feeling overwhelmed, the breathing exercises helped to feel more in control.	12
Stress relief	Participants' perceptions of how the intervention reduces stress.	I felt a lot less worried following the activities; they helped to relax.	10
Hope	The intervention provided a sense of hope that is associated with positive outlooks.	That has a fresh sense of hope for the future now that feeling supported.	8
Mindfulness	Participants' experiences with mindfulness practices during the session.	The mindfulness exercises offered me peace of mind and made myself more conscious.	7
QoL	Improvements in QoL, including emotional well-being and coping skills.	According to that the state of life has improved; the ability to better control stress and feel more relaxed.	9
Technology access	Issues and benefits of obtaining and using digital tools for intervention.	The software is difficult to use at first, but it gradually became easier for myself	5
Self-empowerment	How the intervention made participants feel empowered, giving them control over their emotions and therapy.	This program made me feel like I had control over my therapy and emotions.	6

The thematic analysis highlights the key factors influencing the psychological well-being of cancer survivors during the intervention. Emotional support emerged as the most prominent theme, with participants emphasizing the importance of social connections. Coping strategies and stress relief are also significant, with participants reporting enhanced control and relaxation through the intervention. Hope and mindfulness contributed to positive outlooks and emotional awareness. Improvements in QoL are noted, alongside challenges and benefits related to technology access. Overall, the intervention fostered self-empowerment, giving participants greater control over their emotions and treatment.

4.3. Quantitative analysis

The quantitative measures are analyzed using different tests like the paired *t*-test, Cohen's *d* test and linear regression analysis. It is evaluated using different metrics like depression, psychological distress, mindfulness and QoL. The BDI is used to measure depression. The K10 is used to determine psychological distress. The FFMQ measures mindfulness. QoL is measured by the EORTC QLQ-C30.

● Paired *t*-test

This examines the average of two similar cohorts to see if there is a numerical important distinction. This research compared quantitative measures before and after intervention within the participants to evaluate the effectiveness of the intervention. **Table 4** evaluates the outcomes of the intervention. Equation (1) is used to calculate the paired *t*-test. $\bar{c}$ is the mean of the differences between paired samples, T_c is the standard deviation of the difference, m represents the number of pairs.

$$t = \frac{\bar{c}}{T_c/\sqrt{m}} \quad (1)$$

Table 4. Outcomes of intervention.

Measures	Pre-intervention	Post-intervention	Difference	<i>t</i> -value	Degree of freedom	<i>P</i> -value	Cohen's <i>d</i>
Depressive symptoms	15.3	9.2	−6.1	4.72	30	0.0001	1.10
Psychological distress	18.7	12.4	−6.3	4.58	30	0.0001	1.08
Mindfulness	3.8	4.2	0.4	2.12	30	0.041	0.38
QoL	52.1	55.4	3.3	2.59	30	0.015	0.47

The research revealed that the intervention greatly improved cancer patients' psychosocial well-being (**Figures 4**). Depressive symptoms and psychological distress both decreased considerably, with large effect sizes (1.10 and 1.08). Furthermore, mindfulness (0.041) and QoL (0.015) improved significantly, with modest effect sizes (Cohen's *d* = 0.38 and 0.47). These data indicate that, while the intervention had a greater impact on sadness and distress, it also had a favorable impact on mindfulness and QoL, demonstrating its overall effectiveness in improving psychological health.

Field: **Pre-intervention** and Field: **Post-intervention** appear highly correlated.

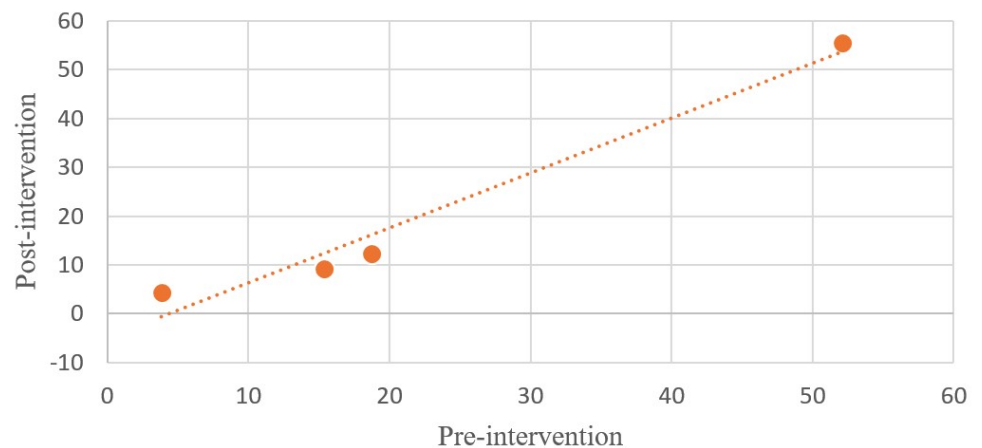


Figure 4. Scatter plot illustrates the strong correlation between pre-intervention and post-intervention values, with a dotted trend line emphasizing the positive relationship.

● Cohen's *d* test

It is an effect size metric that quantifies the amount of a treatment effect. It compares the difference between the two groups means to the variability in the data. It is utilized to estimate the intervention's efficiency in terms of depressive symptoms, psychological distress, mindfulness, and QoL. **Table 5** and **Figure 5** represent the effect size of the quantitative measures. Equation (2) is used to estimate the Cohen's *d*. N_1 and N_2 denotes the averages of the two cohorts, and T_R is the pooled standard deviation (SD).

$$d = \frac{N_1 - N_2}{T_R} \quad (2)$$

Table 5. Evaluation of effect size.

Measures	Pre-intervention		Post-intervention		$\bar{d}$	SD	Cohen's <i>d</i>
	Mean	σ	Mean	σ			
Depressive symptoms	24.5	6.2	12.8	4.5	−12.5	6.2	2.02
Psychological distress	28.1	7.4	14.3	5.3	−13.9	7.4	2.14
Mindfulness	3.2	1.4	4.8	1.2	1.6	1.3	1.23
QoL	3.8	1.5	5.4	1.3	1.6	1.5	1.07

$\bar{d}$ -mean difference, σ -standard deviation.

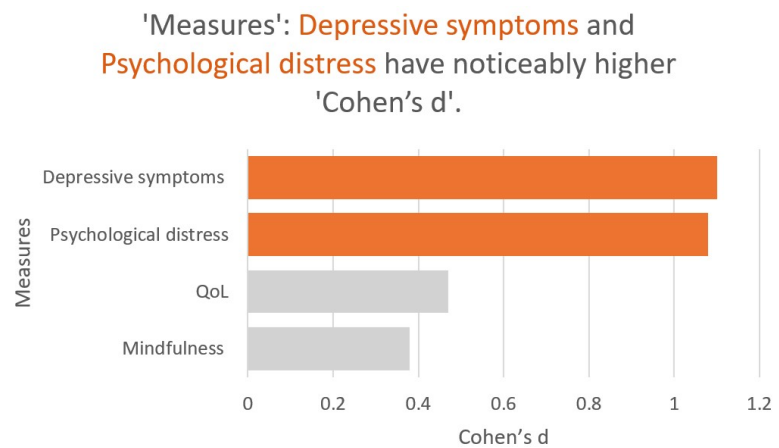


Figure 5. Comparison of 'Cohen's *d*' effect sizes across different psychological measures, highlighting that depressive symptoms and psychological distress exhibit significantly higher values than QoL and mindfulness.

The research determined that the intervention resulted in significant gains in psychological well-being. Depressive symptoms and psychological distress are significantly reduced, with Cohen's *d* values of 2.02 and 2.14, indicating considerable effects. Mindfulness and QoL both improved, with Cohen's *d* values of 1.23 and 1.07, indicating substantial effects (**Figure 6**). These findings indicate that the intervention that combines media innovation and literature-based support is successful in reducing emotional burdens, particularly for cancer patients in remote locations.

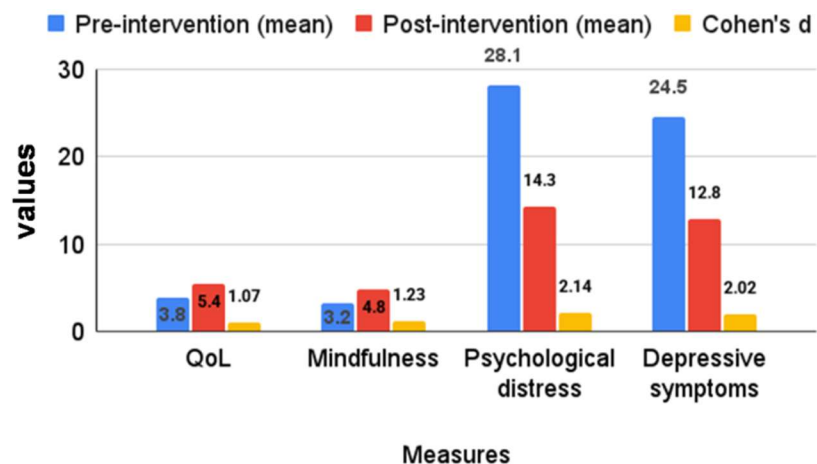


Figure 6. Estimation of effect size.

● Linear regression analysis

It is used to investigate the correlation between dependent and independent variables. It determines how an 8-week intervention affected psychosocial well-being measures in cancer survivors, resulting in substantial changes. **Table 6** demonstrates the outcomes of psychological measures. Equation (3) is used to calculate the linear regression. X is the dependent variable, Y is the independent variable, β_0 is the intercept, β_1 represents the slope and ϵ is the error term.

$$X = \beta_0 + \beta_1 Y + \epsilon \quad (3)$$

Table 6. Analysis of psychosocial measures.

Measures	Intervention	<i>B</i>	β -coefficients	<i>t</i> -value	<i>p</i> -value	Confidence interval	<i>R</i> ²
Depressive symptoms	Pre	-2.15	-0.43	-4.10	0.001	-3.25, -1.05	0.52
	Post	-3.10	-0.55	-5.20	0.0001	-4.50, -1.70	0.61
Psychological distress	Pre	-1.82	-0.39	-3.85	0.002	-2.50, -0.90	0.48
	Post	-2.50	-0.50	-4.80	0.0002	-3.60, -1.40	0.54
Mindfulness	Pre	0.35	0.25	2.15	0.04	0.05, 0.6	0.35
	Post	0.50	0.35	2.50	0.03	0.10, 0.90	0.45
QoL	Pre	1.20	0.33	2.80	0.01	0.40, 2.00	0.40
	Post	1.50	0.38	3.00	0.005	0.60, 2.40	0.49

B-Unstandardized coefficients.

The regression research demonstrates significant gains in psychological well-being following the intervention. Significant decreases in depressive symptoms and psychological distress are seen, with R^2 assessments rising from 0.52 to 0.61 and 0.48 to 0.54. Mindfulness and QoL also increased, albeit less significantly, with *p*-values of 0.03 and 0.005. Overall, the intervention improved psychosocial health, particularly by reducing distress and depressed symptoms, indicating promise for rural cancer patients.

Nearly 81% of the 31 participants maintained active involvement in programmed activities when psychological support interventions ran for 8 weeks. Most intervention activities were completed by 75% of participants. Most intervention recipients supported the combination of rural literary content with modern media platforms but demonstrated varying levels of technical expertise when working with digital materials. Participants appreciated the multimedia components in the intervention but requested additional support to better utilize the technological features. They thanked the innovative program, stating that it helped them develop better mindfulness skills and stress reduction techniques. Participants expressed a desire for in-person communication as remote support sometimes made them feel isolated from other group members. Future interventions should include improved technological training before the program begins, and a combination of digital and face-to-face support strategies should be implemented. Implementing regular feedback systems within the intervention period would help make timely adjustments to ensure participants receive appropriate support.

5. Discussion

The research objective was to assess the effectiveness of an intervention in enhancing the psychosocial well-being of rural cancer survivors, with an emphasis on factors, such as depressive symptoms, psychological distress, mindfulness, and overall QoL. The findings revealed that the intervention had a strong positive influence on the participants, with significant reductions in depressive symptoms and psychological distress ($p = 0.0001$), as well as small gains in mindfulness and QoL. Cohen's d values for depressive symptoms and psychological distress (1.10 and 1.08, respectively) suggested substantial effect sizes, but mindfulness and QoL had moderate effects (Cohen's $d = 0.38$ and 0.47). The regression analysis corroborated the gains, showing significant reductions in depression symptoms and distress, as well as increases in mindfulness and QoL. These data indicate that the intervention helped improve psychological health, particularly in reducing emotional distress in cancer patients in rural areas.

The incorporation of rural cultural components in intervention materials enhances both their meaning and success rate for treating rural cancer patients. The inclusion of rural life elements within the materials promotes participant connection to both strategies and content by reflecting rural values and thematic content to their rural background. Rural patients feel connected to intervention content when authors and stories represent their everyday rural experiences. Through cultural alignment with patients' background, rural patients demonstrate increased engagement as well as proven validation of their unique healthcare experiences, granting them a sense of recognition in their medical path. Individual healthcare plans that combine the specific type of cancer and patient treatment level alongside individual requirements will create better supportive care outcomes. An intervention becomes more significant and relevant when content specifically targets individual challenges, including treatment side effects, while offering both physical and emotional assistance at different treatment stages. The intervention includes making type-specific cancer resources and peer support networks accessible to patients with matching treatments, giving members space to exchange their individual journeys and coping approaches. Pulling resources from individuals on a personal level creates better psychological care alongside community bonding, leading to superior quality experiences and life quality for participants who face such difficult situations.

The intervention can benefit from establishing partnerships with local organizations to offer necessary equipment, as well as implementing an internet support system through community Wi-Fi hotspots and subsidized local plans. The program will deliver training through hands-on workshops run by community volunteers who demonstrate excellent technical skills to teach participants the digital tools needed for the intervention. The intervention will remain culturally fitting through the implementation of a community advisory board formed with cancer survivors, healthcare providers, and cultural leaders to gather consistent feedback that enables ongoing flexibility in meeting community needs.

Long-term sustainability of intervention measures in rural areas needs attention to three critical barriers, which include funding distribution issues, workforce constraints, and technology support programs. The proposed solution aims to train

medical staff together with community volunteers so they can deliver continuous support services, which will build lasting healthcare networks. A combination of local financial support together with health organization partnerships guarantees continuous access to suitable resources for this undertaking. Quality care will increase through the establishment of a mentorship program that pairs experienced facilitators with new staff members. Control mechanisms that provide ongoing assessments along with feedback allow the identification of new community issues, enabling timely adjustments to both strategies and the maintenance of functional community technology systems. First-aid intervention maintenance across the long term requires active solutions for anticipated and existing problems.

The study has some limitations in the areas of technology accessibility, sustainability, universal implementation, and cultural adaptability. Future research will develop a multi-step solution to help people access the internet and provide necessary devices to address the accessibility issue. The partnership between research teams and local organizations will offer participants better opportunities to improve their digital skills through workshops. Further research will create basic-level intervention materials to extend access to participants who lack digital resources or do not use technology-based devices. In the future, sustainability research should establish a detailed procedure to educate local healthcare providers on maintenance and implementation skills for integrating the intervention post-program completion. Local healthcare professionals involved in the intervention will ensure its durability and flexibility to adapt to various situations. During the intervention phase, the program should adjust its aspects based on feedback from all rural demographics to achieve universality. Community members and cultural leaders from the area should actively participate in material creation to develop an intervention that truly reflects the specific needs of rural cancer patients.

The implemented intervention approaches hold substantial practical value because they offer enhanced psychological support solutions to cancer patients who live in resource-constrained rural territories. These measures should be integrated with medical service systems through community health centers and remote medical platforms to build a complete support network. Community health centers would become platforms for cancer patients to receive personalized treatment and psychological support at the same site. By combining all resources within a single system, patients can avoid facing their cancer diagnosis independently and maintain easy access to vital assistance and emotional support. The remote medical platforms create avenues to provide extended educational support to people who struggle with mobility issues or have transportation limitations. These digital platforms build online support networks and deliver instructional content that teaches patients effective ways to handle their illness. Such integration both simplifies access points and improves patient life quality while boosting their complete journey experience. Through the combination of existing community resources with modern technology, the intervention methods will construct an entire healthcare system that serves the mental health requirements of rural cancer patients, thus filling the healthcare deficit for this demographic population.

6. Conclusion

This research introduces a novel intervention that combines rural literature and media innovation to provide psychological support for cancer patients in underserved areas. By leveraging local narratives, the study offers a tailored approach to mental health care for rural populations, highlighting the importance of psychosocial support in cancer treatment. The study outcomes demonstrated was useful, culturally relevant, and effective, making psychological help more accessible. This method boosts participation, lowers emotional loads, and promotes psychological well-being, especially among underprivileged populations. The research aimed to determine the outcome of such intervention on psychosocial well-being, like depressive symptoms, psychological distress, mindfulness, and QoL. The research found that the intervention resulted in important reductions in depression symptoms and psychological distress, as well as small gains in mindfulness and QoL. However, the research's limitations include a small data volume, possible bias in self-reported data, and a focus on a specific rural demographic that restricts generalisability. Future research should look into increasing the sample size, encompassing varied rural regions, and investigating the long-term impacts of the intervention. Furthermore, incorporating more interactive media tools and individualized support tactics improved the intervention's efficacy and scalability in broader contexts. Future research could explore the long-term effects of the intervention, design specialized versions for specific cancer types or demographics, assess scalability within healthcare systems, and address the training needs of healthcare providers. These research directions aim to enhance the implementation and effectiveness of innovative psychological support interventions for cancer patients in rural settings.

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