Reminiscence Therapy-Engaged Care Exhibits a Pleasing Effect on Attenuating Psychological Burden and Bolstering Quality of Life in Elderly Postoperative Cervical Cancer Patients with Anxiety or Depression

Wei Wei,[1] Ping Fu,[1] Lei Ju,[1] Li Chen[1] and Hongyu Hui[1]

[1]Department of Intensive Care Unit, The Obstetrics and Gynecology Hospital of Fudan University, Shanghai, China

Reminiscence therapy (RT) is an effective psychological intervention to address mental disorders in the elderly; however, it is insufficiently appraised in elderly postoperative cervical cancer patients complicated with anxiety or depression. Hence, this study aimed to explore the effect of RT-engaged care (RTEC) on this population. Totally, 112 elderly postoperative cervical cancer patients with anxiety or depression were enrolled in this single-center, randomized, controlled study, and randomized into RTEC group (N = 56) or usual care group (N = 56) for a 12-week intervention. Evaluations were performed at baseline and the 4th week (W4), 8th week (W8), and 12th week (W12) after intervention initiation. Hospital anxiety and depression scale (HADS)-anxiety score at W12 (P = 0.028) as well as HADS-depression score at W8 (P = 0.028) and W12 (P = 0.017) were reduced in RTEC group compared to usual care group. However, the mini-mental state examination score at W4, W8, and W12 was not different between the two groups (all P > 0.050). Concerning quality of life (QoL), EuroQol 5-dimensions score at W12 was reduced in RTEC group than in usual care group (P = 0.010). Both quality of life questionnaire Core 30 (QLQ-C30) global-health-status score and QLQ-C30 function score at W8 and W12 were elevated in RTEC group compared to usual care group (all P < 0.050). Whereas no difference was seen in QLQ-C30 symptom score at these timepoints between the two groups (all P > 0.050). In conclusion, RTEC alleviates psychological burden and improves QoL in elderly postoperative cervical cancer patients with anxiety or depression, while the effect in enhancing cognitive function is not obvious.

Introduction

Cervical cancer remains a major health challenge to women worldwide with approximately 604,127 new cases and 341,831 related deaths in 2020 (Singh et al. 2023). Radical surgery is the standard treatment for early-stage cervical cancer (International Federation of Gynecology and Obstetrics (FIGO) stage I~IIa) (Poddar and Maheshwari 2021; Chou et al. 2022). However, postoperative cervical cancer patients may suffer from treatment-related adverse events, changes in physical and sexual dimensions, and impaired quality of life (QoL), which puts them at high risk of concomitant psychiatric symptoms, such as depression and anxiety; meanwhile, cervical cancer patients with mental disorders have worse survival compared to those without (Zhao et al. 2020; Li et al. 2021b; Wang et al. 2022; Herweijer et al. 2023). In addition, mental disorders tend to be prevalent in the elderly due to several factors, such as objective and perceived social isolation, malnutrition, compromised functional reserve, heavier comorbidity burden, etc. (Vink et al. 2008; Silva et al. 2022; Srifuengfung et al. 2023). Consequently, elderly postoperative cervical cancer patients with anxiety or depression have more pressing needs for effective nursing care.

Reminiscence therapy (RT) is an extensively utilized psychological intervention that encourages participants to recall their memories and share life events or stories, which is especially effective for the elderly with psychological problems such as cognitive impairment and distress (Justo-Henriques et al. 2021; Liu et al. 2021; Yan et al. 2023). In addition, the effect of RT on ameliorating anxiety and depression in postoperative cancer patients (including cervical cancer) has been outlined recently (Dong et al. 2019; Zhang et al. 2021; Liu et al. 2022). For example, one study performs telephone-based RT for postoperative colorectal cancer patients with adjuvant chemotherapy who are complicated with depression; subsequently, anxiety and depression decline in these patients after the 6-week intervention (Dong et al. 2019). Concerning cervical cancer, only one previous study discloses that RT involved care program reduces anxiety and depression as well as elevates the QoL of postoperative cervical cancer patients (Liu et al. 2022). Whereas this study does not focus on the elderly and patients with anxiety or depression; therefore, the effectiveness of RT is insufficiently appraised (Liu et al. 2022).

Herein, this randomized, controlled study merged RT with usual care as RT-engaged care (RTEC), aiming to explore the effect of RTEC on anxiety, depression, cognitive function, and QoL in elderly postoperative cervical cancer patients with anxiety or depression.

Methods

Participants

One hundred and twelve elderly postoperative cervical cancer patients with anxiety or depression were consecutively enrolled. Patients who met all of the following criteria were included: 1) pathologic diagnosis as cervical cancer; 2) aged greater than or equal to 60 years; 3) received surgical resection; 4) had anxiety or depression at discharge, with anxiety defined as the hospital anxiety and depression scale (HADS)-anxiety (A) $\geq$ 8, and depression defined as HADS-depression (D) $\geq$ 8 (Wang et al. 2016); 5) could cooperate to complete the assessment. Patients who met one of the following criteria were excluded: 1) were in end-stage with an expected survival < 3 months; 2) combined with other solid tumors or malignant diseases; 3) had poor compliance and could not complete 12 weeks of interventions; 4) were participating in other studies. This study was approved by the Ethics Committee. All participants signed a written informed consent form.

Randomization

All enrolled patients were divided into usual care and RTEC groups in a 1:1 ratio using SAS 9.4 software with a block randomization method (block length was 4). The personal and grouping information of patients were placed in sealed opaque envelopes and distributed to the patients at discharge. This randomization process was conducted by a researcher who was not involved in the study.

Usual care intervention

Patients in the usual care group were divided into different teams and each team had 6-8 patients (based on discharge time) for the usual care intervention. The intervention took place in a quiet and comfortable rehabilitation training room. Each team of intervention was led by 1-2 professionally trained nurses. The intervention was conducted once a week for 12 weeks and lasted for 2 hours each time.

The main measures of usual care intervention were as follows: 1) Basic care. Patients were educated by nurses about disease knowledge, which included the perception of the disease and the precautions to be taken after discharge such as diet, sleep, exercise, and post-operative care; 2) Physical care. Patients performed respiratory training, positional training, and anal retraction exercises under the direction of the nurse; 3) Psychological care. Patients communicated together in their teams freely. And they could ask the nurse or doctor if they had any questions (Supplementary Table S1).

RTEC intervention

Before the implementation of the formal intervention, the psychotherapist provided professional training to the nurses involved in the RTEC intervention by direct instruction and practical teaching for 3 months, then examinations were performed to ensure the uniformity and quality assurance of the RTEC intervention. The nurses talked with the patients and their families about their life experiences, hobbies, and work-life environments. At the same time, the nurse collected the objects that triggered the patient's memories such as old photographs. Finally, the nurse developed an intervention plan to guide the patient's positive emotions.

Patients in the RTEC group were divided into different teams and each team had 6-8 patients for the intervention depending on the time of discharge. The intervention was carried out in a quiet and comfortable rehabilitation room. Each intervention team was led by 1-2 specially trained nurses. The intervention was conducted once a week for 12 weeks and lasted 2 hours each time.

The main measures of RTEC intervention were as follows: 1) Usual and physical care. Patients in the RTEC group received the same usual and physical care as the usual care group; 2) Psychological care. Patients in the team had weekly topic communication, with a different topic every week. The topics of each week were self-introduction and interests, sharing favorite songs, sharing favorite plays, sharing favorite movies, sharing favorite old photos, sharing favorite traditional festivals, sharing favorite food, sharing childhood memories, sharing love experiences, discussing major historical events, sharing the most desired places, and recalling a lifetime of accomplishments. Under the selected topic, each patient would make a presentation about the reason for their favorite and the person or event they recalled (Supplementary Table S1). In the end,

the patients in the team could discuss freely and express their feelings. If the patient was impeded during the communication, the nurse could encourage or guide appropriately. Nurses should respect and understand the needs and preferences of different patients during the intervention and conduct personalized interactions.

Outcomes

HADS-A, HADS-D, mini-mental state examination (MMSE), EuroQol 5-dimensions (EQ-5D), quality of life questionnaire Core 30 (QLQ-C30) global-health-status (GHS), QLQ-C30 function, and QLQ-C30 symptom scores were assessed at baseline, four weeks after intervention initiation (W4), eight weeks after intervention initiation (W8), and twelve weeks after intervention initiation (W12), respectively. The primary outcome was HADS-A score at W12, and secondary outcomes included the above-mentioned indexes at W4, W8, and W12.

The HADS score included 14 items, among which 7 items were used to assess anxiety (HADS-A) and 7 to assess depression (HADS-D). Each item had four levels of response (0-3 points). The total score for both the HADS-A and HADS-D was 21 points. The higher the score, the more anxious or depressed the patient was (Wang et al. 2016). A difference of 1 point on the HADS-A or HADS-D score between the RTEC group and usual care group was defined as having clinical meaning. The MMSE was used to assess the patient's cognitive function from five dimen-

sions. The MMSE consisted of 30 items with a score of 1 point for each item. The total score was 0-30. Higher scores indicated better cognitive function (Li et al. 2021a). The EQ-5D was used to assess the patient's overall health status. It was assessed on five dimensions. The total score was 0-15, with higher scores indicating a poorer health status (Konig et al. 2010). The QLQ-C30 was used to assess patients' QoL. The scale consisted of 30 questions containing QLQ-C30 GHS, functions (QLQ-C30 function), and symptoms (QLQ-C30 symptom). Different questions corresponded to different scores, and the score of each question was linearly transformed with a total score of 0-100. Higher QLQ-C30 GHS and QLQ-C30 function scores indicated a better quality of life. Lower QLQ-C30 symptom scores indicated better quality of life (Coon et al. 2022). The reliability and validity of the above-mentioned scales with Chinese version have been reported and tested, including HADS (Yang et al. 2014), MMSE (Wang et al. 2017), EQ-5D (Xia et al. 2020), and QLQ-C30 (Zhao and Kanda 2000).

Statistical analysis

The primary endpoint of the study was the HADS-A score at W12. Based on the clinical experience, it was assumed that the mean HADS-A score at W12 in the RTEC group was 7.0 and the usual care group was 8.0, with a standard deviation (SD) of 1.5. At a significance (α) level of 0.05 and a power of 85%, the minimum sample size for
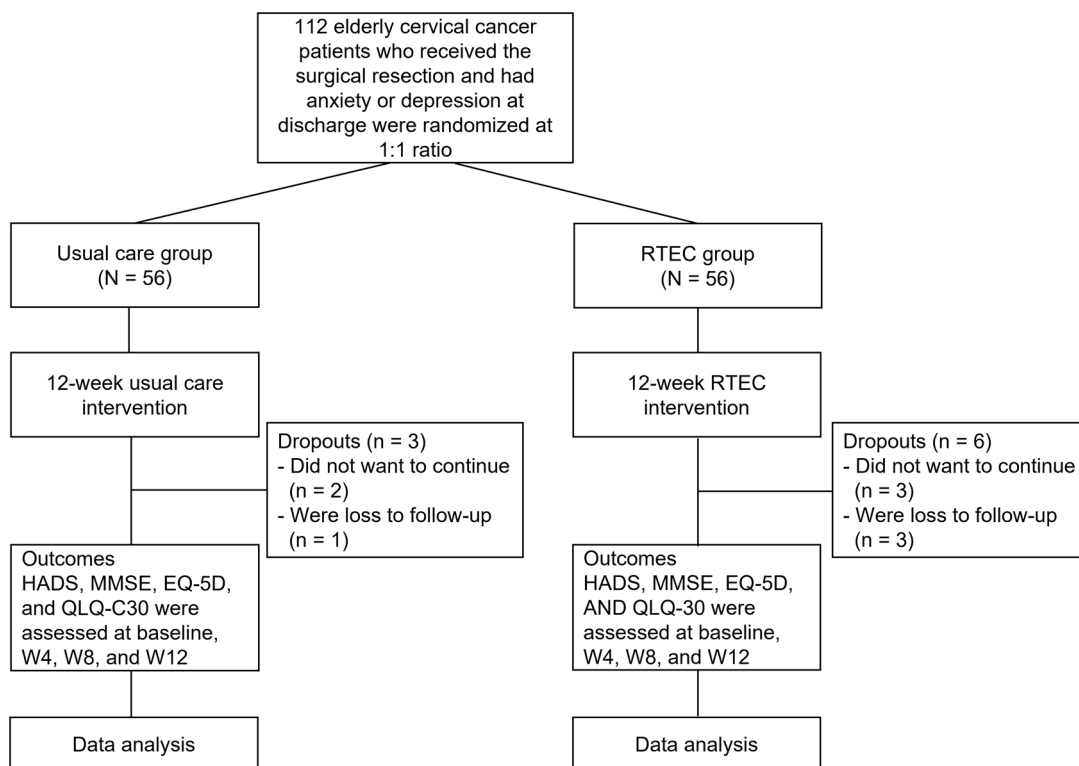

Fig. 1. Illustration of randomization, intervention, dropouts, and assessments.

Table 1. Clinical characteristics of elderly cervical cancer patients.

Items	Usual care group (N = 56)	RTEC group (N = 56)	P value
Age (years), median (IQR)	66.5 (64.0-69.8)	68.0 (64.0-72.8)	0.421
Nationality, No. (%)			0.618
Han	53 (94.6)	55 (98.2)	
Others	3 (5.4)	1 (1.8)	
Married, No. (%)			0.846
No	22 (39.3)	21 (37.5)	
Yes	34 (60.7)	35 (62.5)	
Education level, No. (%)			0.564
Primary school or uneducated	11 (19.6)	6 (10.7)	
Middle school	25 (44.6)	30 (53.6)	
High school	14 (25.0)	13 (23.2)	
University or above	6 (10.6)	7 (12.5)	
Household register, No. (%)			0.541
Rural	51 (91.1)	49 (87.5)	
Urban	5 (8.9)	7 (12.5)	
Hypertension, No. (%)	20 (35.7)	27 (48.2)	0.180
Diabetes, No. (%)	7 (12.5)	15 (26.8)	0.057
HPV positive, No. (%)	49 (87.5)	45 (80.4)	0.303
Histological type, No. (%)			0.169
Adenosquamous carcinoma	5 (8.9)	2 (3.6)	
Adenocarcinoma	7 (12.5)	14 (25.0)	
Squamous carcinoma	44 (78.6)	40 (71.4)	
Pathological grade, No. (%)			0.346
I	16 (28.6)	15 (26.8)	
II	19 (33.9)	26 (46.4)	
III	21 (37.5)	15 (26.8)	
FIGO stage, No. (%)			0.696
I	36 (64.3)	34 (60.7)	
IIa	20 (35.7)	22 (39.3)	

RTEC, reminiscence therapy engaged care; IQR, interquartile range; HPV, human papillomavirus; FIGO, international federation of gynecology and obstetrics.

each group was 42, The sample size was adjusted to 56 patients per group by considering the 25% dropout rate in the study. Statistical analysis was performed using SPSS 22.0 (IBM, Armonk, New York, USA). Student's t, Mann-Whitney U, Chi-square, and Fisher's exact tests were used for comparative analysis between the two groups. Meanwhile, repeated-measures analysis of variance (ANOVA) was also performed. P-value < 0.05 was considered statistically different.

Results

Study flow

A total of 112 eligible elderly cervical cancer patients who received the surgical resection and had anxiety or depression at discharge were randomized into the RTEC group (N = 56) and the usual care group (N = 56) at a 1:1 ratio to receive the corresponding intervention. During the 12-week intervention, 6 patients in the RTEC group dropped out, including 3 patients who did not want to continue and 3 patients who lost to follow-up. Meanwhile, 3 patients in the usual care group dropped out, among whom 2 patients did not want to continue and 1 patient lost to follow-up. Assessments, including HADS, MMSE, EQ-5D, and QLQ-C30, were performed at baseline, W4, W8, and W12 in the two groups for further data analysis (Fig. 1).

Clinical characteristics

The median (interquartile range) age of the RTEC group and the usual care group was 68.0 (64.0-72.8) years and 66.5 (64.0-69.8) years, respectively. In the RTEC group, 15 (26.8%), 26 (46.4%), and 15 (26.8%) patients were recognized as pathological grade I, II, and III, accordingly. Moreover, a respective of 34 (60.7%) and 22 (39.3%) patients were at FIGO stage I and IIa. In the usual care group, there were 16 (28.6%), 19 (33.9%), and 21 (37.5%) patients evaluated as pathological grade I, II, and III, corre-

Table 2. Treatment of elderly cervical cancer patients.

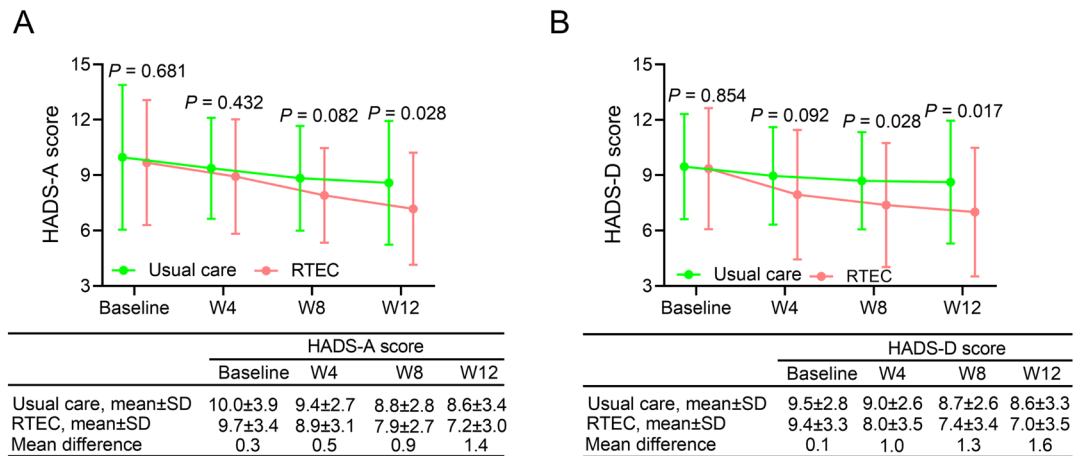| Items	Usual care group (N = 56)	RTEC group (N = 56)	P value
Surgery, No. (%)	56 (100.0)	56 (100.0)	1.000
Adjuvant radiotherapy, No. (%)	32 (57.1)	37 (66.1)	0.331
Adjuvant chemotherapy, No. (%)	18 (32.1)	13 (23.2)	0.291
Soporifics, No. (%)	30 (53.6)	25 (44.6)	0.345
Anxiolytics, No. (%)	20 (35.7)	14 (25.0)	0.218
Antidepressants, No. (%)	19 (33.9)	13 (23.2)	0.209

RTEC, reminiscence therapy engaged care.

Fig. 2. RTEC alleviated HADS-A score at W12 as well as HADS-D score at W8 and W12.
Comparison of HADS-A score (A) and HADS-D score (B) at baseline, W4, W8, and W12 between RTEC-treated and usual care-treated elderly postoperative cervical cancer patients with anxiety or depression.

spondingly. Thirty-six (64.3%) patients were at FIGO stage I and the other 20 (35.7%) patients were at FIGO stage IIa. More importantly, no clinical characteristic was different between the two groups, including age, nationality, marriage, education level, household register, hypertension, diabetes, human papillomavirus positive, histological type, pathological grade, and FIGO stage (all $P > 0.050$) (Table 1).

Treatment information

In the RTEC group, 37 (66.1%) and 13 (23.2%) patients received adjuvant radiotherapy and adjuvant chemotherapy, respectively. Additionally, a respective of 25 (44.6%), 14 (25.0%), and 13 (23.2%) patients received soporifics, anxiolytics, and antidepressants. In the usual care group, there were 32 (57.1%) and 18 (32.1%) patients treated with adjuvant radiotherapy and adjuvant chemotherapy, correspondingly. Thirty (53.6%), 20 (35.7%), and 19 (33.9%) patients were treated with soporifics, anxiolytics, and antidepressants, accordingly. Notably, the proportion of patients with each treatment therapy was not different between the RTEC group and the usual care group (all $P > 0.050$) (Table 2).

Anxiety and depression

The HADS-A score at W12 was reduced in the RTEC group compared to the usual care group (7.2 ± 3.0 vs. 8.6 ± 3.4, $P = 0.028$), whereas the HADS-A score at baseline (9.7 ± 3.4 vs. 10.0 ± 3.9, $P = 0.681$), W4 (8.9 ± 3.1 vs. 9.4 ± 2.7, $P = 0.432$), and W8 (7.9 ± 2.7 vs. 8.8 ± 2.8, $P = 0.028$) were not varied between the two groups. Additionally, the mean difference of the HADS-A score at baseline, W4, W8, and W12 between the two groups were 0.3, 0.5, 0.9, and 1.4, accordingly (Fig. 2A).

Concerning depression, the HADS-D score at W8 (7.4 ± 3.4 vs. 8.7 ± 2.6, $P = 0.028$) and W12 (7.0 ± 3.5 vs. 8.6 ± 3.3, $P = 0.017$) were decreased in the RTEC group compared with the usual care group, but the score at baseline (9.4 ± 3.3 vs. 9.5 ± 2.8, $P = 0.854$) and W4 (8.0 ± 3.5 vs. 9.0 ± 2.6, $P = 0.092$) were not varied between the groups. Furthermore, the mean difference of the HADS-D score between the two groups at baseline, W4, W8, and W12 were 0.1, 1.0, 1.3, and 1.6 (Fig. 2B).

Cognitive function

The mean MMSE score at baseline was 28.2 ± 1.4 in the RTEC group and 28.2 ± 1.0 in the usual care group ($P = 1.000$). After the intervention, the MMSE score at W4 (28.3
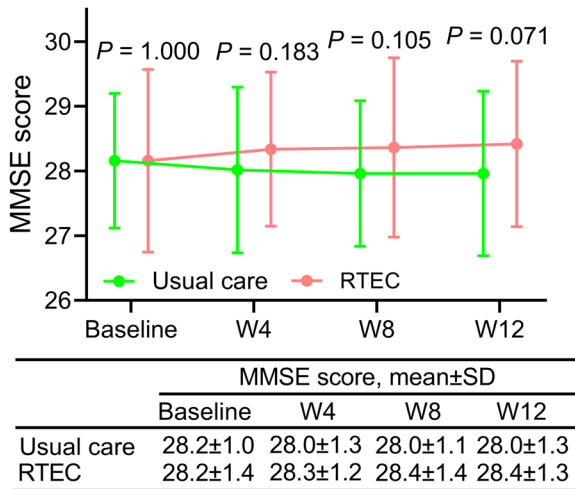
Fig. 3. The effect of RTEC on improving cognitive function at W4, W8, and W12 was not obvious.

MMSE score, mean±SD				
	Baseline	W4	W8	W12
Usual care	28.2±1.0	28.0±1.3	28.0±1.1	28.0±1.3
RTEC	28.2±1.4	28.3±1.2	28.4±1.4	28.4±1.3

± 1.2 vs. 28.0 ± 1.3, P = 0.183), W8 (28.4 ± 1.4 vs. 28.0 ± 1.1, P = 0.105), and W12 (28.4 ± 1.3 vs. 28.0 ± 1.3, P = 0.071) were not different between the RTEC group and the usual care group (Fig. 3).

Overall health status and QoL

The EQ-5D score at W12 was reduced in the RTEC group than in the usual care group (7.3 ± 1.8 vs. 8.3 ± 1.9, P = 0.010), while no difference was seen in EQ-5D score at baseline (9.8 ± 1.9 vs. 9.9 ± 1.9, P = 0.734), W4 (8.5 ± 2.0 vs. 8.9 ± 2.0, P = 0.339), or W8 (7.8 ± 2.1 vs. 8.5 ± 2.1, P = 0.115) between the two groups (Fig. 4A). Moreover, the QLQ-C30 GHS score at W8 (76.0 ± 14.2 vs. 70.1 ± 11.4, P = 0.020) and W12 (80.7 ± 15.1 vs. 73.9 ± 15.9, P = 0.028) were elevated in the RTEC group compared to the usual care group, but not at baseline (63.7 ± 14.7 vs. 62.2 ± 14.7, P = 0.590) or W4 (71.2 ± 16.4 vs. 65.9 ± 14.2, P = 0.073) (Fig. 4B). Similarly, the QLC-C30 function score at W8 (71.7 ± 15.5 vs. 65.9 ± 11.5, P = 0.035) and W12 (76.1 ± 15.6 vs. 69.2 ± 13.8, P = 0.020) were increased in the RTEC group compared with the usual care group; however,

EQ-5D score, mean±SD				
	Baseline	W4	W8	W12
Usual care	9.9±1.9	8.9±2.0	8.5±2.1	8.3±1.9
RTEC	9.8±1.9	8.5±2.0	7.8±2.1	7.3±1.8

QLQ-C30 GHS score, mean±SD				
	Baseline	W4	W8	W12
Usual care	62.2±14.7	65.9±14.2	70.1±11.4	73.9±15.9
RTEC	63.7±14.7	71.2±16.4	76.0±14.2	80.7±15.1

QLQ-C30 function score, mean±SD				
	Baseline	W4	W8	W12
Usual care	54.6±16.4	61.5±14.4	65.9±11.5	69.2±13.8
RTEC	57.3±16.0	66.9±16.2	71.7±15.5	76.1±15.6

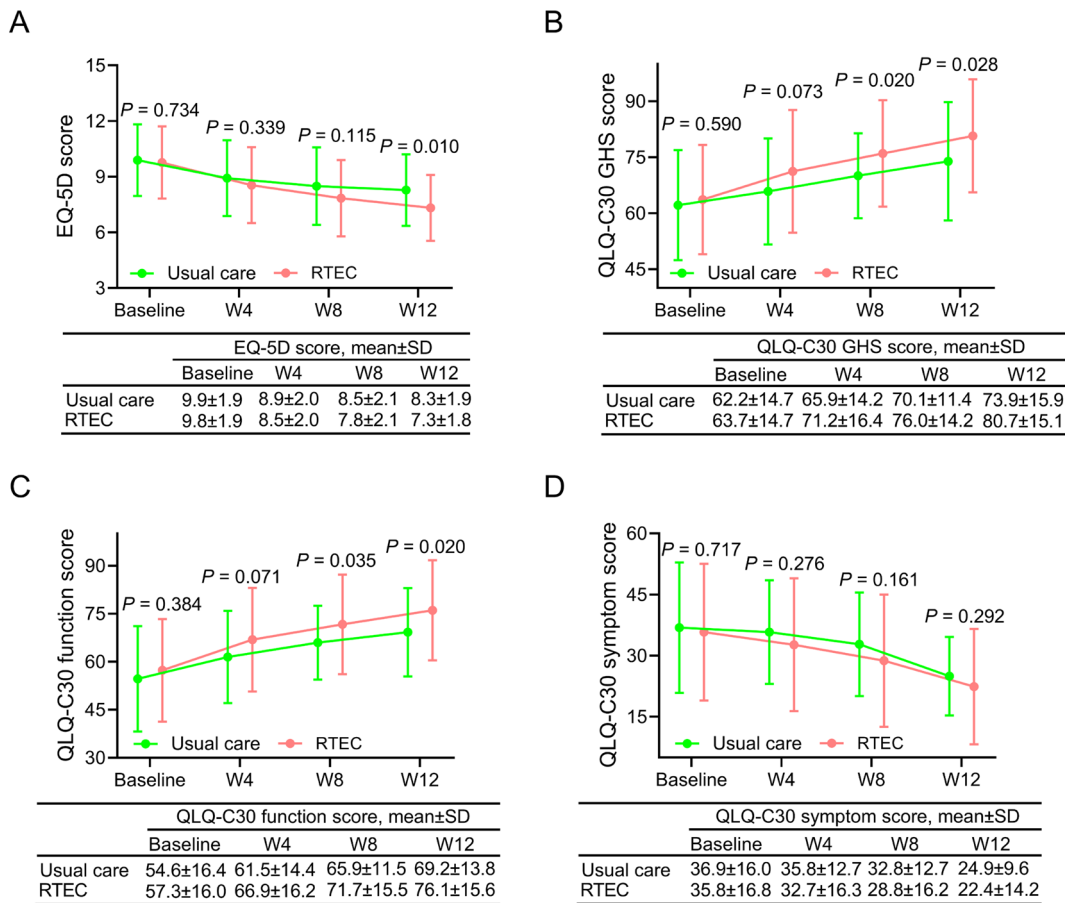| QLQ-C30 symptom score, mean±SD				
	Baseline	W4	W8	W12
Usual care	36.9±16.0	35.8±12.7	32.8±12.7	24.9±9.6
RTEC	35.8±16.8	32.7±16.3	28.8±16.2	22.4±14.2

Fig. 4. RTEC reduced EQ-5D score at W12, but increased QLQ-C30 GHS score and QLQ-C30 function score at W8 and W12.
Comparison of EQ-5D score (A), QLQ-C30 GHS score (B), QLQ-C30 function score (C), and QLQ-C30 symptom score (D) at baseline, W4, W8, and W12 between RTEC-treated and usual care-treated elderly postoperative cervical cancer patients with anxiety or depression. Reminiscence therapy engaged care.

Table 3.   Repeated-measures ANOVA results.

Items	*F* value	*P* value
HADS-A score	14.698	< 0.001
HADS-D score	11.481	< 0.001
MMSE score	0.078	0.972
EQ-5D score	39.852	< 0.001
QLQ-C30 GHS score	116.069	< 0.001
QLQ-C30 function score	99.187	< 0.001
QLQ-C30 symptom score	96.574	< 0.001

ANOVA, analysis of variance; HADS-A, hospital anxiety and depression scale-anxiety; HADS-D, hospital anxiety and depression scale-depression; MMSE, mini-mental state examination, EQ-5D, EuroQol 5-dimensions; QLQ-C30, quality of life questionnaire Core 30; GHS, global-health-status.

QLC-C30 function score at baseline (57.3 ± 16.0 vs. 54.6 ± 16.4, $P = 0.384$) and W4 (66.9 ± 16.2 vs. 61.5 ± 14.4, $P = 0.071$) were of no difference between the groups (Fig. 4C). However, the QLQ-C30 symptom score at baseline (35.8 ± 16.8 vs. 36.9 ± 16.0, $P = 0.717$), W4 (32.7 ± 16.3 vs. 35.8 ± 12.7, $P = 0.276$), W8 (28.8 ± 16.2 vs. 32.8 ± 12.7, $P = 0.161$), and W12 (22.4 ± 14.2 vs. 24.9 ± 9.6, $P = 0.292$) were not varied between the RTEC group and the usual care group (Fig. 4D).

Repeated-measures ANOVA findings

Repeated-measures ANOVA was also performed, which observed that RTEC improved HADS-A score ($P < 0.001$), HADS-D score ($P < 0.001$), EQ-5D score ($P < 0.001$) and QLQ-C30 score ($P < 0.001$), but did not change MMSE score ($P = 0.972$), compared to the usual care (Table 3).

Discussion

RT is initially developed by Butler in 1963 as a life-review approach for aged dementia treatment, which gradually occupies an important position in improving psychological health (Butler 1963; Syed Elias et al. 2015). Recently, several studies have elucidated the effect of RT on relieving anxiety and depression in cancer patients (Liu and Li 2021; Li et al. 2022; Wu and Zhang 2023). The present study revealed that RTEC realized the decrease of HADS-A score at W12 as well as HADS-D score at W8 and W12 in elderly postoperative cervical cancer patients with anxiety or depression. The probable explanations were as follows: (1) RTEC sessions encouraged patients to share several meaningful things, including childhood memories, love or accomplished life experiences, favorite music, plays, and past photographs, which enhanced their happiness and then improved their psychological well-being (Yousefi et al. 2015; Wu et al. 2018). (2) RTEC provided group activity for patients to augment meaningful social interactions with others, which attenuated alienation and negative emotions (Cho et al. 2023). As a result, anxiety

and depression were alleviated by RTEC in elderly postoperative cervical cancer patients with anxiety or depression. Interestingly, the mean difference of HADS-anxiety at W12 and HADS-depression W4, W8, and W12 between the two groups was > 1.0, indicating that the effect of RTEC on ameliorating depression at W4, W8, and W12 possessed clinical significance. Besides, the current study enrolled elderly postoperative cervical cancer patients with anxiety or depression; since they already had anxiety or depression at the enrollment, they had high scores of HADS-A and HADS-D, which might be higher than generally cervical cancer patients. Therefore, the effect of RTEC on alleviating anxiety and depression in generally cervical cancer patients needed further validation. Furthermore, the use of antidepressants or treated by a psychiatrist was not prohibited in this study; since if so, the patients' selection bias would be high to affect the findings of the study, therefore, we did not strict this item.

Vast studies indicate the capability of RT to attenuate cognitive impairment by enhancing information-organizing ability to activate the function of the lateral frontoparietal network (Huang et al. 2015; Cammisuli et al. 2022; Li and Liu 2022). However, this study showed that the effect of RTEC on improving cognitive function in elderly postoperative cervical cancer patients with anxiety or depression was not obvious, which might be explained by those: (1) The mean MMSE score at baseline of the participants in this study was > 28, which was considered as normal cognitive function in Chinese elderly population (Li et al. 2016). (2) The 12-week follow-up duration was relatively short. The above two aspects both weakened the role of RTEC on improving cognitive function in this study.

QoL, as a comprehensive psychological concept that involves many dimensions, including physical, psychological, social, environmental, and spiritual spheres, has gained increasing attention in health promotion programs (Graziani and Tsakos 2020). The current study noticed that the EQ-5D score at W12 was reduced, while the QLQ-C30 GHS score at W8 and W12 as well as the QLQ-C30 function score at W8 and W12 were increased in RTEC-treated elderly postoperative cervical cancer patients with anxiety or depression than in those who received usual care. The likely reasons were as follows: (1) RTEC comprehensively helped patients to cope with psychological disorders and adapt to the present situation; subsequently, patients would hold a more positive attitude to postoperative treatment and their daily life (Graziani and Tsakos 2020; Shin et al. 2023). Thus, the general QoL was improved (reflected by declined EQ-5D score and increased QLQ-C30 GHS score) in these patients. (2) As noticed in this study, RTEC effectively ameliorated anxiety and depression. Meanwhile, improvement in psychic anxiety and depression will contribute to the improvement in functional outcomes (Sheehan et al. 2008). Consequently, RTEC realized elevated QLQ-C30 function score in elderly postoperative cervical cancer patients with anxiety or depression. Regrettably, the QLQ-

C30 symptom score at each timepoint was not varied between patients treated with RTEC and usual care, which could be explained by that: RTEC, as a non-pharmacological intervention, had a limited ability to alleviate the disease symptoms of cancer patients.

This randomized controlled study particularly highlighted the intervention value of RTEC in elderly postoperative cervical cancer patients with anxiety or depression, but some inevitable limitations should be pointed out. Firstly, the relatively small sample size made the subgroup analysis less practicable to find the beneficial population of RTEC. Secondly, there was a limitation in generalizing the results of this study because of the single-center setting. Thirdly, postintervention follow-up was not conducted in both two groups.

Collectively, RTEC alleviates psychological burden and improves QoL in elderly postoperative cervical cancer patients with anxiety or depression, while its role in enhancing cognitive function is not obvious. The findings imply that RTEC could be considered as a health promotion program for elderly postoperative cancer individuals with anxiety or depression.

Conflict of Interest

The authors declare no conflict of interest.

References

Butler, R.N. (1963) The life review: an interpretation of reminiscence in the aged. *Psychiatry*, **26**, 65-76.

Cammisuli, D.M., Cipriani, G., Giusti, E.M. & Castelnuovo, G. (2022) Effects of Reminiscence Therapy on Cognition, Depression and Quality of Life in Elderly People with Alzheimer's Disease: A Systematic Review of Randomized Controlled Trials. *J. Clin. Med.*, **11**.

Cho, E., Shin, J., Seok, J.W., Lee, H., Lee, K.H., Jang, J., Heo, S.J. & Kang, B. (2023) The effectiveness of non-pharmacological interventions using information and communication technologies for behavioral and psychological symptoms of dementia: A systematic review and meta-analysis. *Int. J. Nurs. Stud.*, **138**, 104392.

Chou, B., Prasad Venkatesulu, B., Coleman, R.L., Harkenrider, M. & Small, W. Jr. (2022) Management of stage I and II cervical cancer: a review. *Int. J. Gynecol. Cancer*, **32**, 216-224.

Coon, C.D., Schlichting, M. & Zhang, X. (2022) Interpreting Within-Patient Changes on the EORTC QLQ-C30 and EORTC QLQ-LC13. *Patient*, **15**, 691-702.

Dong, X., Sun, G., Zhan, J., Liu, F., Ma, S., Li, P., Zhang, C., Zhang, H., Xing, C. & Liu, Y. (2019) Telephone-based reminiscence therapy for colorectal cancer patients undergoing postoperative chemotherapy complicated with depression: a three-arm randomised controlled trial. *Support Care Cancer*, **27**, 2761-2769.

Graziani, F. & Tsakos, G. (2020) Patient-based outcomes and quality of life. *Periodontol. 2000*, **83**, 277-294.

Herweijer, E., Wang, J., Hu, K., Valdimarsdottir, U.A., Adami, H.O., Sparen, P., Sundstrom, K. & Fang, F. (2023) Overall and Cervical Cancer Survival in Patients With and Without Mental Disorders. *JAMA Netw. Open*, **6**, e2336213.

Huang, H.C., Chen, Y.T., Chen, P.Y., Huey-Lan Hu, S., Liu, F., Kuo, Y.L. & Chiu, H.Y. (2015) Reminiscence Therapy Improves Cognitive Functions and Reduces Depressive Symptoms in Elderly People With Dementia: A Meta-Analysis of Randomized Controlled Trials. *J. Am. Med. Dir. Assoc.*, **16**,

1087-1094.

Justo-Henriques, S.I., Perez-Saez, E., Apostolo, J.L.A. & Carvalho, J.O. (2021) Effectiveness of a Randomized Controlled Trial of Individual Reminiscence Therapy on Cognition, Mood and Quality of Life in Azorean Older Adults with Neurocognitive Disorders. *J. Clin. Med.*, **10**, 5395.

Konig, H.H., Born, A., Gunther, O., Matschinger, H., Heinrich, S., Riedel-Heller, S.G., Angermeyer, M.C. & Roick, C. (2010) Validity and responsiveness of the EQ-5D in assessing and valuing health status in patients with anxiety disorders. *Health Qual. Life Outcomes*, **8**, 47.

Li, A. & Liu, Y. (2022) Reminiscence therapy serves as an optional nursing care strategy in attenuating cognitive impairment, anxiety, and depression in acute ischemic stroke patients. *Ir. J. Med. Sci.*, **191**, 877-884.

Li, H., Jia, J. & Yang, Z. (2016) Mini-Mental State Examination in Elderly Chinese: A Population-Based Normative Study. *J. Alzheimers Dis.*, **53**, 487-496.

Li, L., Liu, M., Zeng, H. & Pan, L. (2021a) Multi-component exercise training improves the physical and cognitive function of the elderly with mild cognitive impairment: a six-month randomized controlled trial. *Ann. Palliat. Med.*, **10**, 8919-8929.

Li, T., Li, B., Tan, L. & Lv, B. (2022) Reminiscence Therapy as a Potential Method to Improve Psychological Health and Quality of Life in Elderly Hepatocellular Carcinoma Patients: A Randomized, Controlled Trial. *Front. Surg.*, **9**, 873843.

Li, Y., Kong, Q., Wei, H. & Wang, Y. (2021b) Comparison of the complications between minimally invasive surgery and open surgical treatments for early-stage cervical cancer: A systematic review and meta-analysis. *PLoS One*, **16**, e0253143.

Liu, M. & Li, Y. (2021) Reminiscence therapy-based care program relieves anxiety, depression, and improves quality of life in post-operational non-small cell lung cancer patients. *Clin. Respir. J.*, **15**, 472-481.

Liu, X., Yuan, K., Ye, X. & Liu, R. (2022) Proposing a novel care program: reminiscence therapy involved care for anxiety, depression, and quality of life in postoperative cervical cancer patients. *Ir. J. Med. Sci.*, **191**, 2019-2027.

Liu, Z., Yang, F., Lou, Y., Zhou, W. & Tong, F. (2021) The Effectiveness of Reminiscence Therapy on Alleviating Depressive Symptoms in Older Adults: A Systematic Review. *Front. Psychol.*, **12**, 709853.

Poddar, P. & Maheshwari, A. (2021) Surgery for cervical cancer: consensus & controversies. *Indian J. Med. Res.*, **154**, 284-292.

Sheehan, D.V., Meyers, A.L., Prakash, A., Robinson, M.J., Swindle, R.W., Russell, J.M. & Mallinckrodt, C.H. (2008) The relationship between functional outcomes and the treatment of anxious and painful somatic symptoms in patients with generalized anxiety disorder. *Curr. Med. Res. Opin.*, **24**, 2457-2466.

Shin, E., Kim, M., Kim, S. & Sok, S. (2023) Effects of reminiscence therapy on quality of life and life satisfaction of the elderly in the community: a systematic review. *BMC Geriatr.*, **23**, 420.

Silva, S., Bartolo, A., Santos, I.M., Pereira, A. & Monteiro, S. (2022) Towards a Better Understanding of the Factors Associated with Distress in Elderly Cancer Patients: A Systematic Review. *Int. J. Environ. Res. Public Health*, **19**, 3424.

Singh, D., Vignat, J., Lorenzoni, V., Eslahi, M., Ginsburg, O., Lauby-Secretan, B., Arbyn, M., Basu, P., Bray, F. & Vaccarella, S. (2023) Global estimates of incidence and mortality of cervical cancer in 2020: a baseline analysis of the WHO Global Cervical Cancer Elimination Initiative. *Lancet Glob. Health*, **11**, e197-e206.

Srifuengfung, M., Abraham, J., Avidan, M.S. & Lenze, E.J. (2023) Perioperative Anxiety and Depression in Older Adults: Epidemiology and Treatment. *Am. J. Geriatr. Psychiatry*, **31**,

996-1008.

Syed Elias, S.M., Neville, C. & Scott, T. (2015) The effectiveness of group reminiscence therapy for loneliness, anxiety and depression in older adults in long-term care: a systematic review. *Geriatr. Nurs.*, **36**, 372-380.

Vink, D., Aartsen, M.J. & Schoevers, R.A. (2008) Risk factors for anxiety and depression in the elderly: a review. *J. Affect. Disord.*, **106**, 29-44.

Wang, H.Z., He, R.J., Zhuang, X.R., Xue, Y.W. & Lu, Y. (2022) Assessment of long-term sexual function of cervical cancer survivors after treatment: A cross-sectional study. *J. Obstet Gynaecol. Res.*, **48**, 2888-2895.

Wang, L.J., Chen, S.W., Chen, C.K., Yen, C.L., Chang, J.J., Lee, T.S., Liu, C.J., Chen, L.W. & Chien, R.N. (2016) Treatment-emergent depression and anxiety between peginterferon alpha-2a versus alpha-2b plus ribavirin for chronic hepatitis C. *BMC Psychiatry*, **16**, 424.

Wang, X., Sun, Z., Xiong, L., Semrau, M., He, J., Li, Y., Zhu, J., Zhang, N., Wang, A., Jiang, Q., Mu, N., Zhao, Y., Chen, W., Wu, D., Zheng, Z., et al. (2017) Reliability and validity of the international dementia alliance schedule for the assessment and staging of care in China. *BMC Psychiatry*, **17**, 371.

Wu, D., Chen, T., Yang, H., Gong, Q. & Hu, X. (2018) Verbal responses, depressive symptoms, reminiscence functions and cognitive emotion regulation in older women receiving individual reminiscence therapy. *J. Clin. Nurs.*, **27**, 2609-2619.

Wu, X. & Zhang, W. (2023) Reminiscence therapy-based care program alleviates anxiety and depression, as well as improves the quality of life in recurrent gastric cancer patients. *Front. Psychol.*, **14**, 1133470.

Xia, J., Wu, N.W., Ma, T.P., Yu, C. & Li, N.X. (2020) Evaluation of Reliability and Validity of EQ-5D-5L Based on Residents in Southwest China. *Sichuan Da Xue Xue Bao Yi Xue Ban*, **51**, 691-694.

Yan, Z., Dong, M., Lin, L. & Wu, D. (2023) Effectiveness of reminiscence therapy interventions for older people: Evidence mapping and qualitative evaluation. *J. Psychiatr. Ment. Health Nurs.*, **30**, 375-388.

Yang, Y., Ding, R., Hu, D., Zhang, F. & Sheng, L. (2014) Reliability and validity of a Chinese version of the HADS for screening depression and anxiety in psycho-cardiological outpatients. *Compr. Psychiatry*, **55**, 215-220.

Yousefi, Z., Sharifi, K., Tagharrobi, Z. & Akbari, H. (2015) The Effect of Narrative Reminiscence on Happiness of Elderly Women. *Iran Red Crescent Med. J.*, **17**, e19612.

Zhang, L., Li, Y., Kou, W., Xia, Y., Yu, X. & Du, X. (2021) Reminiscence therapy exhibits alleviation of anxiety and improvement of life quality in postoperative gastric cancer patients: A randomized, controlled study. *Medicine* (Baltimore), **100**, e26821.

Zhao, H. & Kanda, K. (2000) Translation and validation of the standard Chinese version of the EORTC QLQ-C30. *Qual. Life Res.*, **9**, 129-137.

Zhao, H., Zhao, Z. & Chen, C. (2020) Prevalence, risk factors and prognostic value of anxiety and depression in cervical cancer patients underwent surgery. *Transl. Cancer Res.*, **9**, 65-74.

Supplementary Files

Please find supplementary file(s);
https://doi.org/10.1620/tjem.2024.J060