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Reminiscence therapy exhibits alleviation of anxiety and improvement of life quality in postoperative gastric cancer patients
A randomized, controlled study

Lisha Zhang, MM[a], Yanling Li, MM[a], Wenjia Kou, MM[a], Yue Xia, MM[a], Xiaohui Yu, MM[a], Xin Du, MD[b,*] [ID]

Abstract

Although reminiscence therapy alleviates mental illness and improves quality of life in neurocognitive disorders patients, little study reports its clinical application in cancer patients. Thus, this study aimed to explore the effect of reminiscence therapy on anxiety, depression, quality of life, and survival profile in postoperative gastric cancer patients.

One hundred sixty surgical gastric cancer patients were enrolled in this randomized, controlled study, then randomly assigned to Reminiscence therapy group (N=80) and Control group (N=80) as 1:1 ratio. The evaluation was carried at baseline (M0), month 3 (M3), month 6 (M6), month 9 (M9), and month 12 (M12) after intervention by Hospital Anxiety and Depression Scale and European Organization for Research and Treatment of Cancer quality of life Questionnaire-Core 30 (QLQ-C30). Furthermore, disease-free survival and overall survival were analyzed using follow-up data.

Reminiscence therapy decreased HADS for anxiety score at M6, M9, and M12, decreased anxiety rate at M9 and M12 compared to control care; while it did not affect HADS for depression score or depression rate at any time-point. Also, reminiscence therapy raised QLQ-C30 global health status score at M12, reduced QLQ-C30 symptoms score at M6, while did not affect QLQ-C30 function score at any time-point compared to control care. Reminiscence therapy did not affect disease-free survival and overall survival, either. Further subgroup analyses (divided by age and gender) observed that the effect of reminiscence therapy seemed more obvious in patients with age ≤60 years and male patients.

Reminiscence therapy exhibits alleviation of anxiety and improvement of quality of life in postoperative gastric cancer patients.

Abbreviations: AD = Alzheimer disease, HADS = Hospital Anxiety and Depression Scale, HADS-Anxiety = HADS for anxiety, HADS-Depression = HADS for depression, QoL = quality of life, QLQ-C30 = European Organization for Research and Treatment of Cancer quality of life Questionnaire-Core 30.

Keywords: mental health, postoperative gastric cancer patients, quality of life, reminiscence therapy, survival profile

1. Introduction

Gastric cancer is the third leading cause of cancer-associated mortality across the world.[1] It is estimated that approximately 783,000 patients are died from gastric cancer globally in 2018.[1] Although survival profile has been enhanced in gastric cancer patients after the intervention of surgery (including laparoscopic gastrectomy and open gastrectomy) with neoadjuvant and/or adjuvant therapy, multiple recurrence still occurs.[1,2] More importantly, common psychological distress of these postoperative gastric cancer survivors has been reported. For example, a Chinese population-based study reports that around 28.9% and 37.2% postoperative gastrointestinal cancer patients experience depression and anxiety, respectively, indicating the high prevalence of psychological distress in these patients.[3] Subsequently, these psychological distress such as anxiety and depression would further lead to unsatisfied quality of life (QoL) and unfavorable survival profile in postoperative gastric cancer patients.[4,5] Currently, the supporting psychological therapy to take care of postoperative gastric cancer patients is still lacking. Therefore, discovering potentially effective psychological therapy to improve the mental health status of postoperative gastric cancer patients is necessary.

Reminiscence therapy is a way aiming to promote a sense of integrity and adjustment of patients, which is featured by discussing/sharing past events and experiences (with the aid of photos, video etc) to evoke unsolved difficulties and conflicts in patients.[6] Previous studies show that reminiscence therapy improves cognitive function and QoL, alleviates anxiety and depression in dementia and neurocognitive disorders patients as well as acute ischemic stroke patients.[7–9] However, fewer study reports the application of reminiscence therapy in caring cancer patients. Only a recent study reveals that telephone-based reminiscence therapy reduces anxiety and depression compared to normal care in postoperative colorectal cancer patients.[10] Inspired by these mentioned studies, we hypothesized that reminiscence therapy may improve mental health status and QoL in postoperative gastric cancer patients as well. However, no relevant study has been conducted yet.

Therefore, this study aimed to explore the effect of reminiscence therapy on anxiety, depression, QoL, and survival profile in postoperative gastric cancer patients.

2. Methods

2.1. Participants

This was a randomized, controlled study with 160 surgical gastric cancer patients enrolled from May 2016 to December 2018. The detailed inclusion criteria were: was diagnosed as primary gastric cancer; age ≥18 years; scheduled for surgical excision as primary treatment; able to conduct a normal communication with others; willing to receive study intervention and able to complete study assessment. The exclusion criteria included the following: manifested as relapsed disease, secondary disease, or distant metastases; complicated with other types of malignancy; had clinically-confirmed diagnosis of anxiety or depression before enrollment, or had severe mental diseases requiring long-term medications; known cognitive disorder (e.g., Alzheimer disease [AD]) and unable to complete the study assessment; had poorly-controlled chronic diseases that seriously affect their QoL and mental health status; pregnant or lactating patients. This study was conducted in line with Declaration of Helsinki and approved by Ethics Committee of The Second Hospital Affiliated to Harbin Medical University. After fully understanding the study, all patients signed informed consents before enrollment.

2.2. Random assignment

Eligible patients were randomly assigned to Reminiscence therapy group (N=80) or Control group (N=80) in a ratio of 1:1. The random assignment was conducted by a nurse who was only responsible for this random assignment and was not involved in the following study. The randomization assignment information was concealed in the sealed envelope, and a code was written on each envelope. After the eligibility was confirmed, each patient was assigned a number which was used as patient ID corresponding to the code on the envelope, then the envelope was opened, and the patient was allocated to the corresponding group indicated in the envelope. The assignment sequence was made using block randomization method.

2.3. Study intervention

After surgery, all patients were given postoperative usual care, including surgical incision nursing, nutrition therapy, infection

prevention, and so on. Furthermore, on the day of discharge from the hospital, all patients were given rehabilitation guidance, including necessary nutritional support recommendations, dietary recommendations, appropriate physical exercise, surveillance of disease, matters needing attention, and regular re-examination. Besides, patients' postoperative adjuvant therapy (if necessary) was determined by the attending physician, which was not disturbed by the present study.

In the Control group, patients only received the postoperative usual care and the rehabilitation guidance on hospital discharge, as described above, without other nursing measures.

In the Reminiscence therapy group, in addition to the postoperative usual care and the rehabilitation guidance on hospital discharge, reminiscence therapy was administered for patients in the rehabilitation center from the first month after hospital discharge. The reminiscence therapy was carried out in the form of group session. Each group session was made up of 6 to 8 patients and conducted by 2 trained nurses. Also, each group session was carried out for 60 minutes, twice per month, for 12 consecutive months. Patients were given a total of 24 reminiscence therapy sessions based on the following 12 themes: introducing yourself and sharing a brief family history; sharing childhood stories; sharing school life stories; sharing the memory of hometown; introducing the custom of Spring Festival in your hometown; sharing love experience and married life; sharing career and work experience; sharing an adventure experience; elaborating an epoch-making event in one's life; sharing old photos or videos and related stories; showing our talents; reviewing 24 sessions and saying goodbye to each other. The reminiscence therapy was carried out in a comfortable environment and relaxed atmosphere. The trained nurses were responsible for motivating patients, maintaining order, and guiding patients to share their experience and stories. Besides, patients were encouraged to bring some materials to the session, such as significant documents, pictures or videos, aimed at helping patients refresh their memory.

2.4. Data collection and assessment

Baseline characteristics of all patients were recorded, including demographic information, drinking and smoking status, comorbidities, Eastern Cooperative Oncology Group Performance Status score, Helicobacter pylori Infection status, tumor-related features, surgical types, and adjuvant therapy. Anxiety status, depression status, and QoL of patients were assessed at baseline (M0), then at month 3 (M3), month 6 (M6), month 9 (M9), and month 12 (M12) after the initiation of study intervention, using Hospital Anxiety and Depression Scale (HADS) and European Organization for Research and Treatment of Cancer quality of life Questionnaire-Core 30 (QLQ-C30, Version 3). The HADS was made up of 2 subscales including HADS for anxiety (HADS-Anxiety) and HADS for depression (HADS-Depression), which were used for evaluating anxiety and depression, respectively. Both HADS-Anxiety scale and HADS-Depression scale had score ranging from 0 to 21. A cutoff value of 8 was used for differentiating the anxiety/depression patients from normal subject, that was, the HADS-Anxiety score ≥8 was considered as anxiety, correspondingly, the HADS-Depression score ≥8 was considered as depression.[11] For assessing the QoL of postoperative gastric cancer patients, QLQ-C30 (Version 3) was applied. In detail, this questionnaire had 30 questions containing 3 domains: physical function domain (physical, role, cognitive,

emotional, and social), cancer-related symptom domain (fatigue, pain and nausea/vomiting, dyspnea, insomnia, appetite loss, constipation, and diarrhea) and 1 global health domain.[12] Both physical function and cancer-related symptoms were scaled from 1 (not at all) to 4 (very much), while global health status was measured from 1 (very poor) to 7 (excellent).[12] Once the patients finished the questionnaire, the raw score in each domain was recorded and then linearly transformed into standard score with a range from 0 to 100.[13] Higher scores in global health and physical function suggested a higher QoL, while a higher score in symptom suggested a lower QoL of tested patients.[12]

2.5. Follow-up

When the study intervention was completed, patients were routinely followed up according to clinical needs, which was not interfered by the current study. For the survival analysis in this study, survival data up to January 31, 2020 were collected from the clinical visit records. Based on the collected survival data, disease-free survival and overall survival were calculated. In the survival analysis, patients who lost follow-up were censored on the date that they were last examined.

2.6. Sample size calculation

We hypothesized the mean HADS-Anxiety score at M12 was 6.0 with standard deviation (SD) of 2.0 in Reminiscence therapy group and 7.0 with standard deviation of 2.0 in Control group. At the significance (α) level of 5% and the power of 80%, the required minimum sample size was 64 in each group. Taking into account that possible attrition rate of 20%, the required sample size was supposed to increase to 80 in each group, resulting in a total sample size of 160.

2.7. Statistical analysis

Data analysis was based on the intention-to-treat principles, with all 160 patients included. The missing data were processed using the last observation carried forward method. The raw data were entered into the SPSS 24.0 statistical software (IBM, Chicago, IL), where the data aggregating, cleaning, coding, and analysis were performed. The main outcomes were displayed using figures made by GraphPad Prism 7.01 software (GraphPad Software Inc., San Diego, CA). Number with percentage and the mean value with standard deviation were used to describe the characteristics of variables, and the corresponding analyses were determined by Chi-square test or two-sample independent *t* tests. Kaplan-Meier curve was used for describing the overall survival and disease-free survival, and the corresponding analysis was carried out using log-rank test. *P* value less than .05 was considered as statistically significant.

3. Results

3.1. Study flow

Totally, 184 surgical gastric cancer patients were screened while 24 patients were excluded (including 18 patients who disobeyed inclusion criteria or who met exclusion criteria, and 6 patients who disagreed with the informed consent) (Fig. 1). The remaining 160 eligible patients were enrolled and randomly assigned to

Reminiscence therapy group (N = 80) and Control group (N = 80) as 1:1 ratio. In the Reminiscence therapy group, patients received usual care before discharge, then reminiscence therapy for 12 months after discharge. During interventional period, 5 patients withdrew due to loss of follow-up, leaving 75 patients in Reminiscence therapy group. Meanwhile, in the Control group, patients received usual care before discharge without any interventions after discharge. During interventional period, 7 patients withdrew due to loss of follow-up, leaving 73 patients in Control group. Routine follow-up was subsequently performed. Besides, survival data up to 31 January 2020 were collected from clinical visits records. All postoperative gastric cancer patients were included in the final analysis based on intention-to-treat principle.

3.2. Baseline characteristics

The mean age in the Reminiscence therapy group and Control group were 59.1 ± 10.9 years and 60.4 ± 9.9 years, respectively (Table 1). Meanwhile, there were 36 (45.0%) males and 44 (55.0%) females in the Reminiscence therapy group, then 38 (47.5%) males and 42 (52.5%) females in the Control group. By comparison, there was no difference of demographic information, smoking status, drinking status, comorbidities, Eastern Cooperative Oncology Group Performance Status score, Helicobacter pylori Infection status, tumor-related features, surgical types or adjuvant therapy between Reminiscence therapy group and Control group (all $P > .05$). The detailed clinical characteristics were shown in Table 1.

3.3. Effect of reminiscence therapy on patients' anxiety and depression

Compared to Control group, Reminiscence therapy group displayed a lower HADS-Anxiety score at M6 ($P = .022$), M9 ($P = .008$), and M12 ($P = .004$) (Fig. 2A). However, no difference of HADS-Depression score between Reminiscence therapy group and Control group was observed from baseline to M12 (all $P > .05$) (Fig. 2B). Meanwhile, Reminiscence therapy group showed a reduced percentage of patients with anxiety at M9 ($P = .043$) and M12 ($P = .027$) compared to Control group (Fig. 2C). Furthermore, there was no difference in percentage of patients with depression between Reminiscence therapy group and Control group from baseline to M12 (all $P > .05$) (Fig. 2D).

3.4. Effect of reminiscence therapy on patients' QoL

Compared to Control group, Reminiscence therapy group exhibited a higher QLQ-C30 global health status score at M12 ($P = .032$) (Fig. 3A). However, there was no difference of QLQ-C30 function score between Reminiscence therapy group and Control group from baseline to M12 (all $P > 0.05$) (Fig. 3B). Furthermore, Reminiscence therapy group showed a lower QLQ-C30 symptoms score at M6 compared to Control group ($P = .048$) (Fig. 3C).

3.5. Effect of reminiscence therapy on patients' survival profile

Although there was no statistical difference of disease-free survival ($P = .216$) (Fig. 4A) or overall survival ($P = .255$) (Fig. 4B) between Reminiscence therapy group and Control
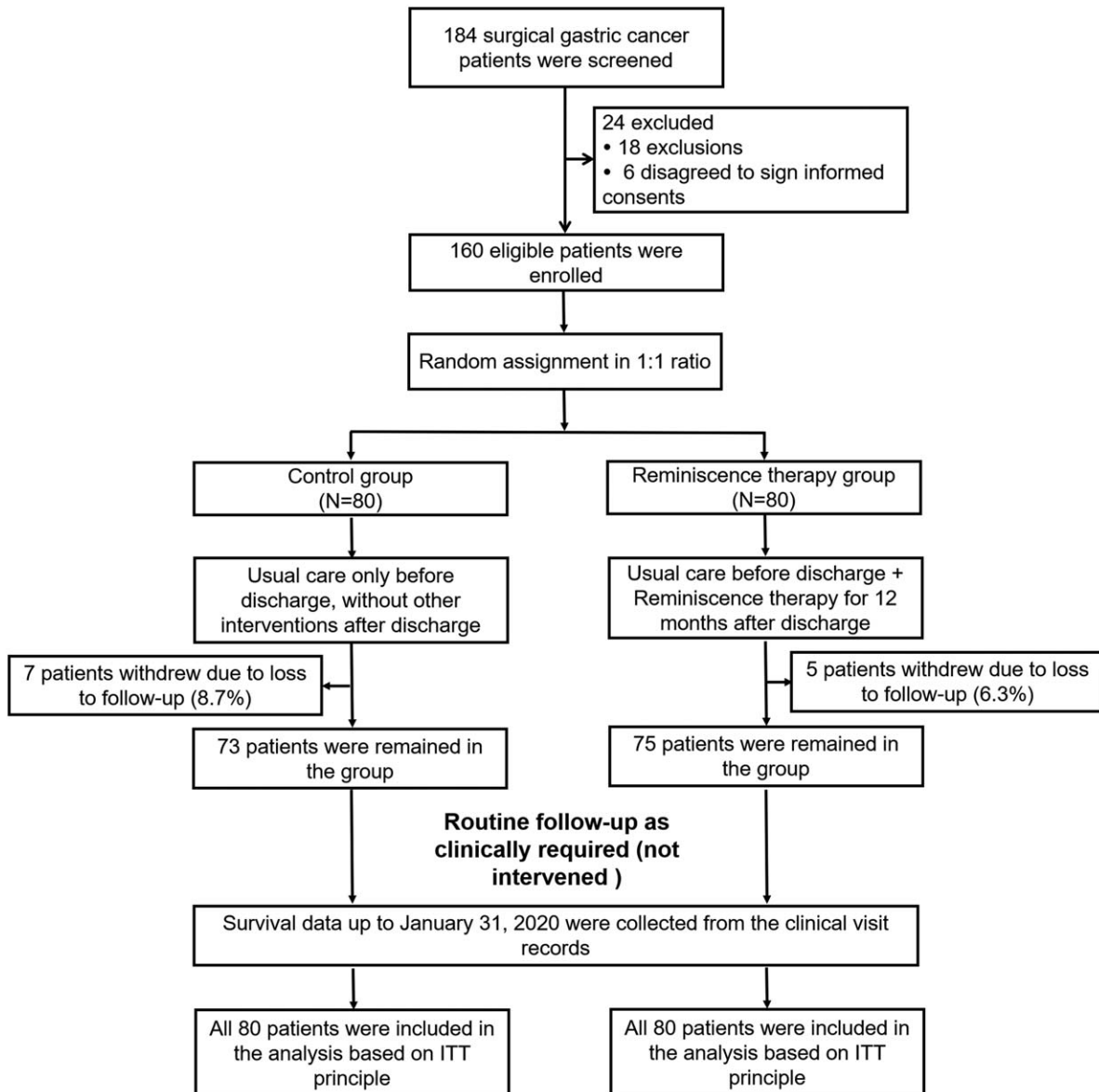
Figure 1. Study flow. ITT = intention-to-treat.

group, Reminiscence therapy group appeared a trend of prolonged survival profile in postoperative gastric cancer patients.

3.6. Subgroup analyses

Further subgroup analyses divided by age and gender was performed, which observed that the effect of reminiscence therapy seemed more obvious in patients with age ≤ 60 years (Fig. 5A–N) and male patients (Fig. 6A–N).

4. Discussion

Reminiscence therapy is firstly introduced to treat dementia in the late 1970s, whose hallmark is to recall past experiences and discuss past events with the aid of photos, audio recordings, and even mobile phones.[6] Meanwhile, reminiscence therapy empha-

sizes on sense of integrity and adjustment by looking back in their past.[6] Several studies suggest that reminiscence therapy is beneficial for improving cognitive function in AD patients. For instance, reminiscence therapy improves mini-mental state function score compared to control care in AD patients.[7,9,14] Furthermore, reminiscence therapy increases the Montreal Cognitive Assessment score compared to control care in AD patients.[9] Besides, reminiscence therapy elevates patients' self-esteem, self-health perception, and self-efficacy in institutionalized elderly patients.[15]

Apart from the above-mentioned effect of reminiscence therapy, it also attenuates the psychological distress of patients. For example, Reminiscence therapy achieved a lower Cornell scale of depression in dementia score compared to control care in AD patients.[8] Meanwhile, reminiscence therapy alleviates patients' anxiety reflected by lower HADS-Anxiety score and self-rating anxiety scale score in acute ischemic stroke patients.[9]

Table 1

Characteristics of patients with gastric cancer.

Items	Control group (N=80)	Reminiscence therapy group (N=80)	P value
Age (years), mean±SD	60.4±9.9	59.1±10.9	.431
Gender, No. (%)			.751
Male	38 (47.5)	36 (45.0)	
Female	42 (52.5)	44 (55.0)	
Current smoke, No. (%)	20 (25.0)	26 (32.5)	.295
Current drink, No. (%)	25 (31.3)	29 (36.3)	.504
Hypertension, No. (%)	23 (28.7)	28 (35.0)	.396
Hyperlipidemia, No. (%)	16 (20.0)	18 (22.5)	.699
Diabetes, No. (%)	11 (13.8)	13 (16.3)	.658
ECOG-PS score, No. (%)			.646
0	68 (85.0)	70 (87.5)	
1	12 (15.0)	10 (12.5)	
H. pylori infection, No. (%)			.140
Negative	55 (68.8)	46 (57.5)	
Positive	25 (31.2)	34 (42.5)	
Pathological grade, No. (%)			.559
G1	10 (12.5)	17 (21.2)	
G2	60 (75.0)	50 (62.5)	
G3	10 (12.5)	13 (16.3)	
Tumor location, No. (%)			.478
Cardia	18 (22.5)	18 (22.5)	
Gastric body	8 (10.0)	4 (5.0)	
Gastric antrum	54 (67.5)	58 (72.5)	
Tumor size (cm), mean±SD	3.1±1.1	3.2±1.2	.578
T stage, No. (%)			.479
T1	5 (6.1)	2 (2.5)	
T2	5 (6.3)	12 (15.0)	
T3	69 (86.3)	65 (81.2)	
T4	1 (1.3)	1 (1.3)	
N stage, No. (%)			.523
N0	26 (32.5)	34 (42.5)	
N1	31 (38.8)	21 (26.3)	
N2	20 (25.0)	22 (27.5)	
N3	3 (3.8)	3 (3.8)	
TNM stage, No. (%)			.777
I	10 (12.5)	14 (17.5)	
II	45 (56.3)	40 (50.0)	
III	25 (31.2)	26 (32.5)	
Surgical type, No. (%)			.376
EMR/ESD	10 (12.5)	14 (17.5)	
Gastrectomy	70 (87.5)	66 (82.5)	
Adjuvant therapy, No. (%)			.477
No	3 (3.8)	6 (7.5)	
CT	58 (72.5)	59 (73.8)	
CRT	19 (23.8)	15 (18.8)	

CRT = chemoradiotherapy, CT = chemotherapy, ECOG-PS = Eastern Cooperative Oncology Group Performance Status, EMR = endoscopic mucosal resection, ESD = endoscopic submucosal dissection, H. pylori = Helicobacter pylori, N = node, SD = standard deviation, T = tumor, TNM = tumor-node-metastasis.

As to cancer patients, 1 latest study reports that reminiscence therapy reduces anxiety and depression in postoperative colorectal cancer patients undergoing chemotherapy.[10] However, the application of reminiscence therapy in gastric cancer patients is never reported. Therefore, we performed this study and discovered that reminiscence therapy could alleviate anxiety in postoperative gastric cancer patients, and this improvement was more obvious in male and age below 60 years patients. Several possible reasons were applied to explain these results as followed: Reminiscence therapy emphasized on looking back on their past experiences, which might help patients recall unsolved conflicts and further alleviated their anxiety in the targeted patients[6]; As for depression, those postoperative gastric cancer patients with depression or depressive symptoms experienced a diminished access to positive feelings and a systematic preference of materials containing negative emotional valances, which made them more difficult to recall happy memory, thus led to less improvement of depression in them[16,17]; Male patients sometimes boycotted to share their feelings and worries independently, therefore the reminiscence therapy would greatly relieve this issue; Younger patients were more likely to change and adapt themselves to the disease and may be beneficial from reminiscence therapy.

The effect of reminiscence therapy on patients' QoL is of great interest. Previous studies report that reminiscence therapy improves patients' QoL in AD patients and acute ischemic
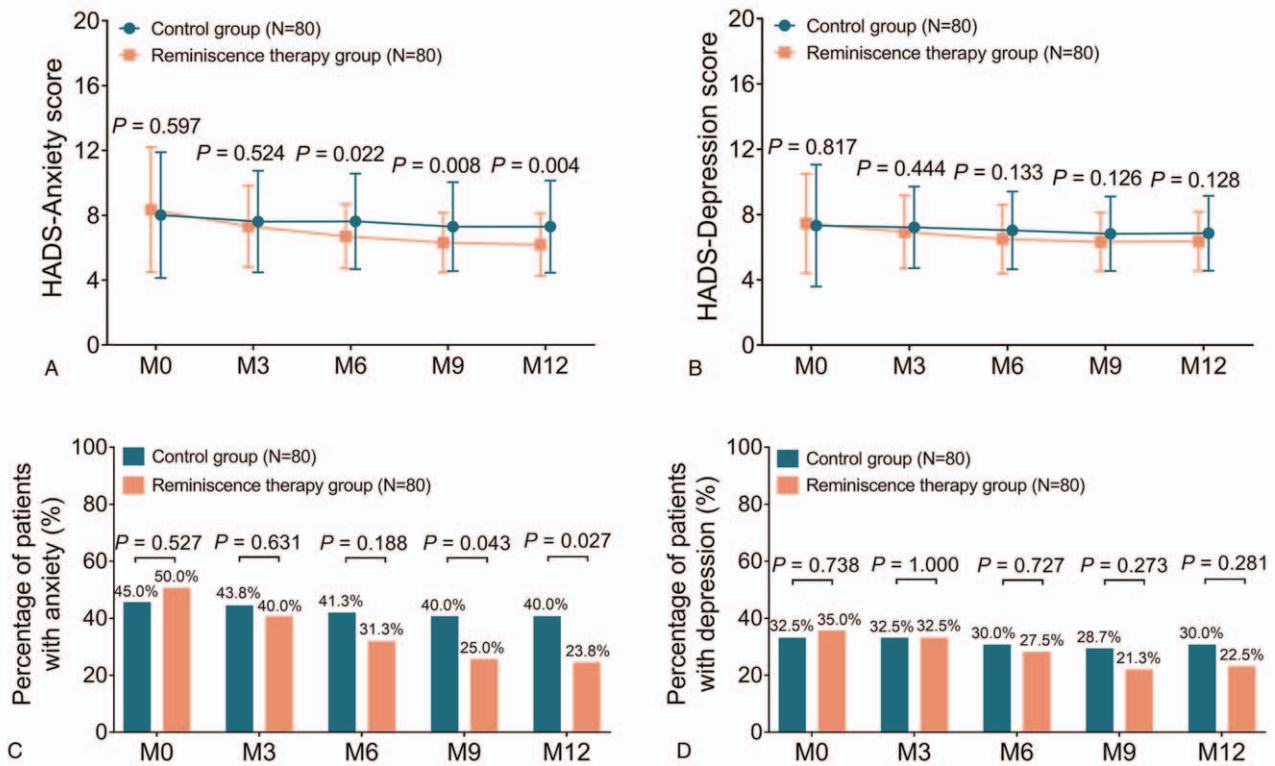
Figure 2. Effect of reminiscence therapy on patients' mental health. Comparison of HADS-Anxiety score (A), HADS-Depression score (B), percentage of patients with anxiety (C) and percentage of patients with depression (D) between Reminiscence therapy group and Control group. HADS = Hospital Anxiety and Depression Scale, HADS-Anxiety = HADS for anxiety, HADS-Depression = HADS for depression, M = month.

stroke patients.[7–9] In line with these previous studies, we discovered that reminiscence therapy could improve patients' QoL to some extent in postoperative gastric cancer patients. The possible reasons were: Reminiscence therapy could alleviate patients' anxiety as discussed earlier, which might reduce perceived stress and enhance their motivation, then further led to improved QoL in postoperative gastric cancer patients.[15,18] Additionally, we discovered that reminiscence therapy showed a prolonged trend of survival profile in postoperative gastric cancer patients (although no statistically difference). The possible reason was that reminiscence therapy could improve patients' mental health status and QoL as discussed earlier, which further elevated patients' motivation and social support, and might eventually result in favorable survival profile in these

patients. However, due to multiple factors would affect the disease relapse and survival, the relative effect of reminiscence therapy was weakened.

Several limitations existed in the present study. Firstly, the follow-up period in the present study was relatively short, therefore further study could explore the long-term effect of reminiscence therapy in postoperative gastric cancer patients. Secondly, only postoperative gastric cancer patients were enrolled in this study, thus these results could not extend to unresectable gastric cancer patients. Furthermore, our study only focused on the reminiscence therapy alone, thus further study could explore the impact of reminiscence therapy combined with other psychological interventions such as art or music in caring postoperative gastric cancer patients.
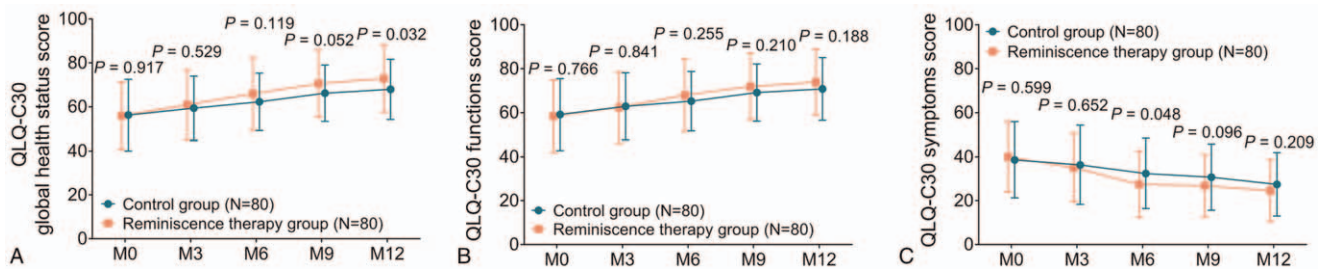
Figure 3. Effect of reminiscence therapy on patients' QoL. Comparison of QLQ-C30 global health status score (A), QLQ-C30 function score (B) and QLQ-C30 symptoms score (C) between Reminiscence therapy group and Control group. M = month, QLQ-C30 = European Organization for Research and Treatment of Cancer quality of life Questionnaire-Core 30, QoL = quality of life.
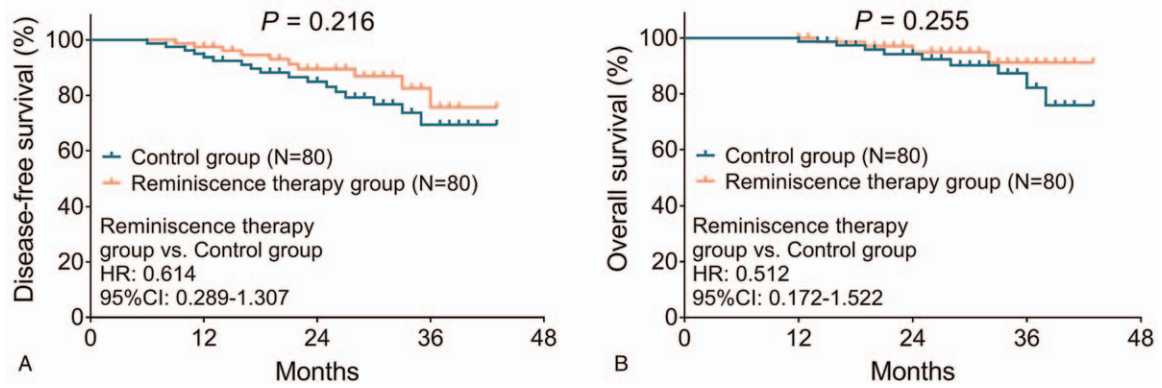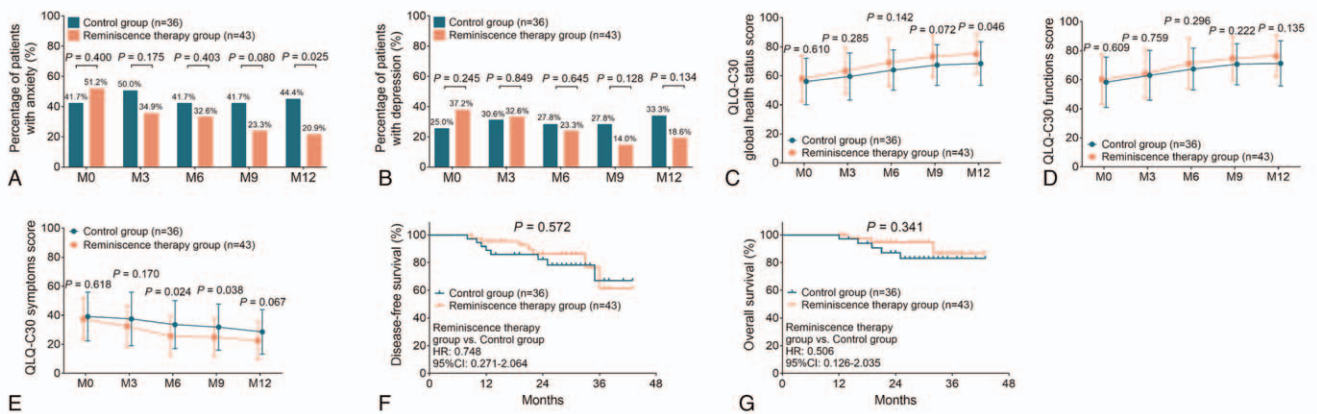
Figure 4. Effects of reminiscence therapy on patients' survival profile. Comparison of disease-free survival (A) and overall survival (B) between Reminiscence therapy group and Control group. CI = confidence interval, HR = hazard ratio.
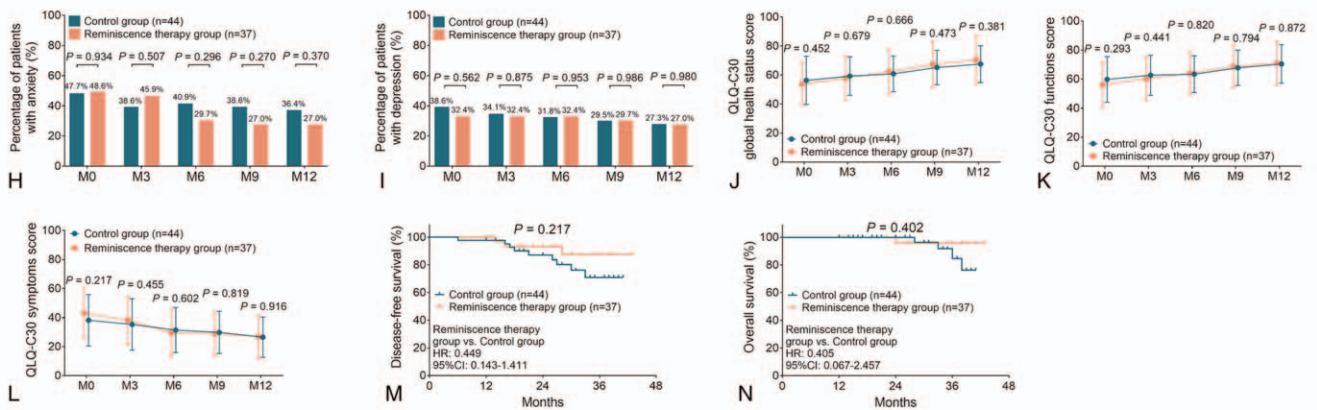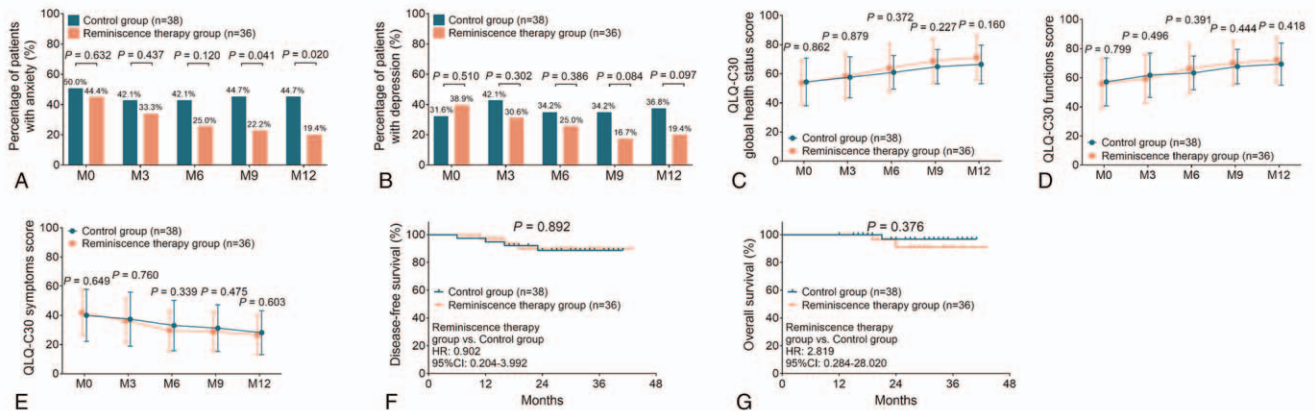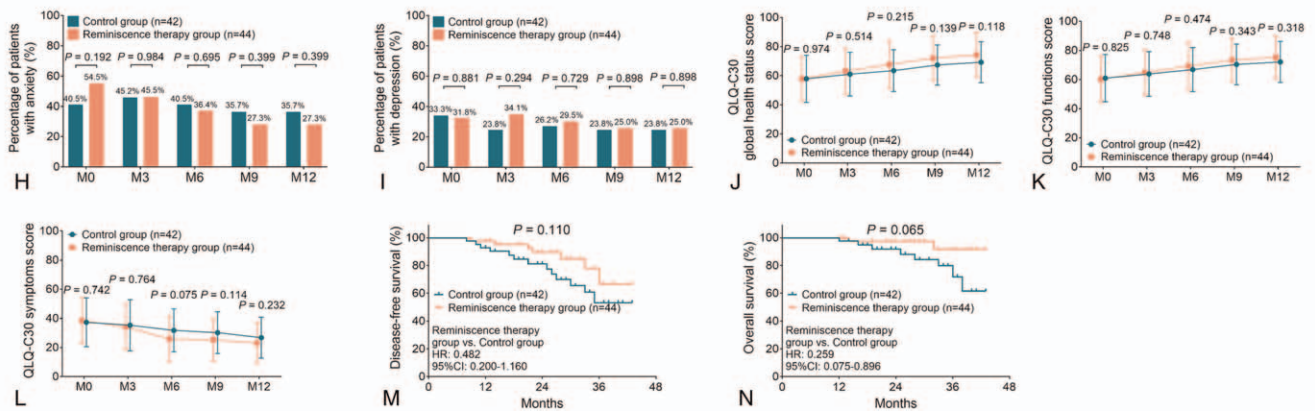

Figure 5. Effect of reminiscence therapy in age-based subgroups. Comparison of percentage of patients with anxiety (A), percentage of patients with depression (B), QLQ-C30 global health status score (C), QLQ-C30 function score (D) and QLQ-C30 symptoms score (E), disease-free survival (F) and overall survival (G) between Reminiscence therapy group and Control group in postoperative gastric cancer patients below 60 years old. Comparison of percentage of patients with anxiety (H), percentage of patients with depression (I), QLQ-C30 global health status score (J), QLQ-C30 function score (K) and QLQ-C30 symptoms score (L), disease-free survival (M) and overall survival (N) between Reminiscence therapy group and Control group in postoperative gastric cancer patients above 60 years old. CI = confidence interval, HADS = Hospital Anxiety and Depression Scale, HR = hazard ratio, M = month, QLQ-C30 = European Organization for Research and Treatment of Cancer quality of life Questionnaire-Core 30, QoL = quality of life.

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