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A Clinical Study on the Effect of Group Nostalgia Therapy on Quality of Life and Cognitive Function in Elderly Patients with Depression

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ABSTRACT

Background: Elderly people with depression require special care and attention. However, nostalgia is a complex emotional situation for a person who recalls the missing past. To improve mental health, quality of life, and attitudes toward aging in institutional care, group nostalgia therapy can be a nursing intermediary for the elderly. This study aimed to analyze the effect of group nostalgia therapy on quality of life cognitive function in elderly patients with depression. **Methods:** A total of 89 participants were enrolled in this study, which was further categorized into a control (n = 40) and a nostalgia therapy group (n = 49). A standard questionnaire was used to compare the QoL, MMSE and GDS scores between the control and the nostalgia therapy groups. **Results:** Neither the nostalgia group nor the control group showed any statistical difference based on the patient characteristics, and both groups had a homogeneous distribution with $p < 0.05$. However, in the intervention with nostalgia therapy, the therapy group showed improvements in almost all four domains of quality of life: physical health, psychological, environmental and social well-being. Moreover, the standard regression residual plot observed that both the post-test scores of MMSE and GDS showed favorable scores with respect to WHO-QoL. **Conclusion:** The study observed that group nostalgia therapy helps improve the quality of life and cognitive function in elderly patients with depression. The study also concludes that reducing depressive symptoms through nostalgia therapy could improve all four domains of the WHOQoL BREF.

KEYWORDS

Nostalgia therapy; depression; cognitive impairment; quality of life

Introduction

Elderly individuals with depression require special care and attention. The application of nostalgia therapy to improve the quality of life of suffering patients with depression is vital [1]. Although cancer is a major health concern worldwide, causing great economic loss, dementia and depression account for the same loss in some countries [2]. For social participation and mental health, quality of life enhancement, depressive symptoms lessening, and the attitude enhancement to aging in institutional care, group nostalgia therapy can be a nursing intermediary for the old aging person [3,4]. Collective nostalgia therapy indicates a way that gives elderly adults to reconsider their earlier lives. Its ability to augment the established one's self-esteem, and to boost their individuality towards the efficacy of group nostalgia treatment on certain features of life value headed for age, and depressing indications [5]. In connection with

other substitute therapies, best-evidence practices advocate the treatment of moderate and severe depression. To safeguard mental well-being and improve quality of life reminiscence therapy can be used [6]. Reminiscence is a process that thoroughly replicates an individual's life with a focus on re-examination and steadfastness of encounters from the past, it is also the remembrance of past events or experiences; and the search for sense in their lives [4]. Dementia affects memory hurting the cognitive function of a person which in turn imbalances the well-being and daily life activities. They are at high peril of obtaining admission to care homes and other institutional care [7]. The key purpose of integrative reminiscence is to accomplish the logic of self-worth, consistency, and understanding with respect to one's past, which ought to be linked to a strong and joyful elderly life [8]. Most of the trials that surveyed nostalgia psychotherapy employed patients with extraordinary levels of education, raising uncertainties about it's generalize ability to other groups, though it has positive effects on cognitive and behavioral signs [9]. Dementia parents were given mood care and were overall well-being in the care home. Certain abrupt and long-term psychosocial assistance to dementia patients for their reminiscence work, which involves a life appraisal course or modified, specific reminiscence work has been reported [10]. This study adds to the prevailing literature by giving substantiating the generalize ability of the positive effects of individual RT on people with a low educational level. They highlighted that the size of the sample and the struggle made through the intervention protocol to standardize them via physical and therapist training by which the interference is functional are among its assets [11]. There is always a burden and mental well-being problem faced by family caregivers. A customized nostalgia tactic that provides precise needs, likes and benefits will support personhood and stimulate well-being. Psychosocial treatment is the preferred treatment for patients with depression, and healthcare professionals over medication [12]. As the individual makes a sensible effort, remembering the preceding life consistently and positively affects mental capability. It has been reported that there were no noteworthy attentive effects of nostalgic treatment resulting in an idler rate of more than 40% and a lower observance with a low educational level [13]. There is a probability of single nostalgic therapy interference on established people with Alzheimer's disease or vascular dementia using the resources available, with assistance for the members as observed [11]. Non-pharmacological involvement in place of psychotropic medicine is appropriate for the old person, due to the jeopardies associated with anti-depressant prescription [14]. Nurses can consciously reassure older patients to exchange stories as a way of obtaining an improved understanding of the elderly, as well as providing better care [14]. The extent to which general nostalgia materials can be utilized in association with psychosocial benefits is important. From both clinical and research perspectives, story books and multimedia alternative uses appear to be worth pursuing [15]. Nostalgia techniques assist the elderly in activating their pleasant memories, improving an energetic method of life, and raising a sense

of their own value. Nostalgia therapy can be used to create and continue contact, and its use in nursing homes enhances the well-being of aging adults [16,17]. This is because cognitive impairment disturbs one's normal way of age, approaches towards aging, and approval of old age, which in turn increases the risk of failure to adapt to life in an institution together with severe progressive disability in old age. Therefore, this study aimed to analyze the effect of group nostalgia therapy on the quality of life and cognitive function of elderly patients with depression.

Methods

Ethical consideration
Prior to data collection and commencement of the study program, ethical approval was granted from the Institutional Review Boards of the authors' affiliated institutions, in accordance with the declaration of Helsinki and its later amendments.

Settings and participants
The study was conducted in the Third Hospital of Long Yan with a total of 128 patients being initially recruited for the study from September 2021 to December 2022. A Randomized Control Trial (RCT) study was designed. The designed study gathered a team of patients, research questionnaire were determined with the inclusion-exclusion criteria and interventions were determined. The methodology meets the steps required for designing an RCT. However, only 89 of them met the eligibility criteria and were included in the study. The 89 participants were then separated into two groups: the Nostalgia Therapy Group (NTG) with 49 participants, and the Control Group (CG) with 40 participants.

Inclusion and criteria
The inclusion criteria were as follows:
   i) Above 65 years
   ii) Free from severe depression as determined by the Geriatric Depression Scale, GDS (less than 15). A GDS score from 0–4 is considered normal, 5–8 mild depression and 12–15 is indicative of severe depression.
   iii) Alzheimer's disease (AD) patients were included and AD patients with severe cognitive impairment and dementia were excluded (explained in exclusion criteria)
   iv) Currently who is in the process of treatment for mental well-being?

Exclusion criteria
The criteria for exclusion in the broader study were as follows: Patients below the age of 65 were not included. Patients with acute or severe illnesses that hindered their ability to take part in the intervention sessions, those with significant sensory and physical limitations that made participation difficult, individuals with a low level of consciousness and limited attention span, those exhibiting severe neuropsychiatric symptoms (like agitation, psychosis, pronounced depressive and anxiety symptoms, or apathy), or those experiencing uncontrolled delirium that would impede their involvement in the sessions; individuals with a history of traumatic life

events or adverse experiences that discouraged their participation in RT sessions; and those who had previously experienced negative reactions during RT sessions or similar activities were all excluded from the study.

Nostalgia therapy
Nostalgia therapy was administered based on the standard protocol. All participants were initially given an awareness of the nostalgia definition, which is defined as the sentimental affection for a period in the past. All participants were instructed to recall a nostalgic event in their memory and think about their desired future events or experiences that would stand out in their minds as truly important. Some of the specific themes include (i) memories about birthplace, (ii) childhood sports and games (iii) school days (iv) love and marriage (v) favorite restaurants and (vi) holiday destinations. The group Nostalgia therapy was conducted over a period of 14 consecutive weeks with 1–2 sessions per week. Each therapy session was performed for around 45–60 min.

Measurements
Participants were then randomly allocated to either the control group or the experimental group. Participants were allocated to either the Nostalgia Therapy Group (NTG) (N = 49) or the Control Group (CG) (N = 40). The nostalgia group (n = 49) was asked to complete the WHOQoL-BREF and GDS-15 questionnaire using the neurotoolkit calculator before nostalgia therapy and 10 weeks after nostalgia therapy. Seven days after their choice to participate in the investigation, the control group (n = 40) was given the same task for completing the same questionnaire. Meanwhile the nostalgia therapy group underwent 10 weeks therapy program and both groups successfully completed the study program. The measurements of the participants are presented as MMSE scores (Mild (21–26), Moderate (11–20), Severe (>14), measurements in pre-test and post-test between NGT intervention and control groups are presented based on transformed score, Geriatric Depression Scale, GDS score from 0–4 considered normal, 5–8 mild depression and 12–15 indicative of severe depression. The multiple logistic regression analysis of the pre-test and post-test for MMSE and GDS score with respect to WHO-QoL was done with the objective of using multiple correlations to investigate whether changes in quality of life were related to changes in depressive symptoms (GDS) and cognitive function (MMSE) in both the intervention group and control group.

Statistical analysis
Statistical analysis was performed using SPSS 17.0 (SPSS Inc., USA). Descriptive analyses, such as mean and standard deviation (SD), were utilized to analyze the demographic characteristics. The data were presented as mean ± standard deviation (SD). Multiple logistic regression (MLR) analysis was conducted to examine the relationship between MMSE score, GDS-15, and WHOQoL-BREF. Another MLR analysis was performed to determine if there was any association between the pre-test and post-test of both the

NTG intervention and the control group. The threshold for statistical significance was set at p-value < 0.05.

Results

Patient's characteristics
The study involved 89 patients, with ages ranging from 65 to 95 years old. The flow chart indicating the subject eligibility and assessment analysis is presented in Fig. 1. The nostalgia therapy group had a mean age of 79.9, while the control group had a mean age of 78.55. The majority of the participants (71%) were female, and had a low level of education (78%). Patient characteristics did not differ significantly between the nostalgia and control groups (see Table 1), and the two groups were found to be statistically homogeneous with a significance level of $p < 0.05$. The participants' MMSE scores ranged from 7 to 25.

Characteristics of WHO-QoL BREF score on nostalgia therapy
After the intervention with nostalgia therapy, the therapy group showed improvements in almost all four domains of the WHO-QoL BREF score (Table 2). The nostalgia therapy group had a mean score of 12.15 (SD 2.28) on Domain-1 (physical health), compared to 11.69 (SD 2.51) of the control group. The mean score for NTG therapy on Domain-3 (social relationship) was 14.79 (SD 2.78), compared to 14.0 (SD 2.65) of the control group. There was also an improvement in the mean score of Domain-3 (environment), with 19.33 (SD 4.47) NTG, compared to 19.2 (SD 4.7) of the control group (Table 2). The mean MMSE score for the NTG group after the intervention of nostalgia was 19.33 (SD 4.47), compared to 18.98 (4.61) of the control group. Similarly, the mean GDS score for the NTG group after the intervention was 5.89 (SD 2.92), compared to 6.37 (SD 3.13) of the control group. Additionally, the comparison between the NTG and control groups with respect to post-nostalgia therapy showed a strong statistical significance based on the Pearson correlation coefficient (Table 2). Here, in this case, the Pearson correlation coefficient is used as a presenting effect of intervention describing the strength and relationship between the groups. The comparison between pre-test and post-test showed an r-value of 0.992, with a p-value of < 0.00001. Thus, the Pearson correlation coefficient was used to measure the strength of a linear association between two variables. Similarly, the association was stronger in the
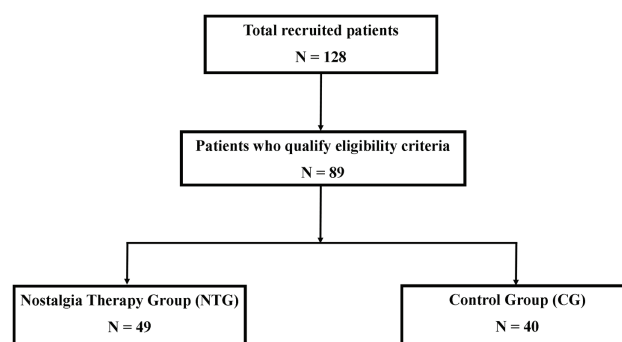

FIGURE 1. Flow diagram of the participant flow through the study.

TABLE 1

Patient's characteristics

Characteristics	Total	GNT therapy group (49)	Control group (40)	t	df	p
Sex	89			0.825	38	0.411
Male	35	18	17			
Female	54	31	23			
Age						
65–75	27	16	11	0.721	2	0.546
76–85	45	27	18			
>86	17	6	11			
Education level						
Primary & below	32	17	15	0.792	2	0.511
Secondary	40	25	15			
Tertiary (Bachelor)	17	7	10			
Marital status						
With partner	30	20	10	0.818	1	0.563
Without partner	59	29	30			
Clinical diagnosis						
Alzheimer's disease	42	22	20	0.188	2	0.964
Parkinson's disease	34	20	14			
Other neurodegenerative disease	13	7	6			
MMSE						
Mild (21–26)	49	27	22	2.598	2	0.121
Moderate (11–20)	29	16	13			
Severe (>14)	11	6	5			
GDS-15						
0–4 (Normal)	23	12	11	0.351	4	0.743
5–9 (Mild)	53	29	24			
10–15 (Severe)	13	8	5			

control subjects, with a value of R is 0.997 and a p-value of < 0.00001. The polar plot based on the measurement of WHOQOL-BREF Domain 1 (Physical health), Domain 2 (Psychological), Domain 3 (Social relationship), and Domain 4 (Environment), showing a strong correlation and improvement in the post-test compared to the pre-test, is presented in Fig. 2.

Association of MMSE score and GDS-15 score with respect to WHO-QoL BREF score

Multiple logistic regressions (MLR) analysis was performed on the MMSE score and GDS-15 score of all 89 participants to determine the statistical significance based on the WHOQOL-BREF domains: physical health, psychological, social relationship, and environment. Tables 3 and 4 show the results of the MLR analysis of the pre-test and post-test for MMSE and GDS score with respect to WHO-QoL. The aim was to use correlation to investigate whether changes in quality of life were related to changes in depressive symptoms (GDS) and cognitive function (MMSE) in both the intervention group and control group. In this study MMSE score and GDS score is assessed as a predictor of conversion to dementia and both of these variables are included in a multiple logistic regression model. The analysis did not reveal any statistically significant association between changes in GDS and MMSE. The results also suggest that the examined factors (physical health, psychological factors, social relationships, and the environment) do not appear to have a significant impact on cognitive performance, as measured by the MMSE and GDS-15, either before or after the intervention. These findings may imply that the intervention itself or other unexamined variables may have a more substantial influence on cognitive outcomes. Tables 3 and 4 show changes in the post test as compared to pre-test. The objective to assess the effect of nostalgia therapy on the quality of life is well analyzed and presented in the table. However, the standard regression residual plot for both post-tests of MMSE and GDS showed a higher frequency in both cases, indicating

TABLE 2

Changes in outcome measurements in pre-test and post-test between NTG intervention and control groups based on and on transformed score (4–20)

| Measurements	Nostalgia therapy group (N = 49)		Control group (N = 40)	
	Pre-test	Post-test	Pre-test	Post-test
WHOQOL-BREF	Mean (SD	Mean (SD)	Mean (SD)	Mean (SD)
Domain 1 (Physical health)	11.12 (1.9)	12.15 (2.28)	11.65 (1.69)	11.69 (2.51)
Domain 2 (Psychological)	11.18 (1.80)	11.89 (2.26)	12.07 (2.14)	12.77 (2.78)
Domain 3 (Social relationship)	13.73 (2.33)	14.79 (2.78)	13.80 (2.52)	14.0 (2.65)
Domain 4 (Environment)	12.49 (2.43)	13.04 (2.60)	12.85 (2.52)	13.22 (2.82)
MMSE	18.98 (4.61)	19.33 (4.47)	19.0 (5.1)	19.2 (4.7)
GDS-15	6.37 (3.13)	5.89 (2.92)	6.12 (3.18)	5.77 (3.11)
Pearson coefficient	R = 0.9929 (p-value < 0.00001)		R = 0.9975 (p-value < 0.00001)	
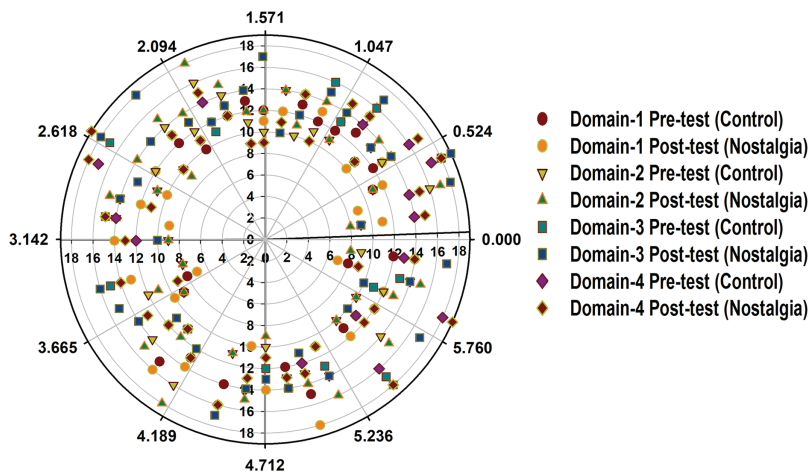
FIGURE 2. Polar plot measurement of the four domains of WHOQOL-BREF showing a strong correlation and improvement in the post-test compared to the pre-test.

TABLE 3

Regression analysis of pre-test and post-test (Control + NTG) on the association of WHOQoL BREF Domains 1–4 taking MMSE score as dependent variable

MMSE[a]	MMSE Pre-test		MMSE Post-test	
	Odds ratio (95 CI)	p-value	Odds ratio (95 CI)	p-value
Moderate[b]				
Physical health[b]	1.12 (0.86–1.45)	0.401	1.05 (0.86–1.28)	0.629
Psychological[b]	1.07 (0.84–1.36)	0.597	1.15 (0.94–1.39)	0.169
Social relationship[b]	0.86 (0.70–1.05)	0.127	0.85 (0.72–1.02)	0.079
Environment[b]	1.03 (0.85–1.25)	0.756	1.15 (0.96–1.38)	0.126
Severe[c]				
Physical health[c]	0.90 (0.61–1.33)	0.602	0.85 (0.59–1.22)	0.383
Psychological[c]	1.10 (0.79–1.53)	0.584	1.22 (0.86–1.71)	0.268
Social relationship[c]	0.89 (0.66–1.18)	0.414	1.04 (0.74–1.46)	0.834
Environment[c]	1.00 (0.75–1.32)	0.982	0.84 (0.58–1.21)	0.348

Note: [a]Mild (reference); [b]Moderate; [c]Severe.

TABLE 4

Regression analysis of pre-test and post-test (Control + NTG) on the association of WHOQoL BREF Domains 1–4 taking GDS-15 score as dependent variable

GDS-15[a]	GDS Pre-test		GDS Post-test	
	Odds ratio (95 CI)	p-value	Odds ratio (95 CI)	p-value
Mild[b]				
Physical health[b]	0.94 (0.72–1.24)	0.679	1.00 (0.81–1.23)	0.983
Psychological[b]	1.02 (0.79–1.32)	0.876	1.05 (0.86–1.27)	0.657
Social relationship[b]	1.05 (0.85–1.30)	0.638	1.01 (0.84–1.21)	0.948
Environment[b]	0.95 (0.77–1.17)	0.617	0.94 (0.78–1.13)	0.494
Severe[c]				
Physical health[c]	0.84 (0.58–1.21)	0.343	0.91 (0.70–1.19)	0.485
Psychological[c]	1.29 (0.94–1.77)	0.122	1.21 (0.93–1.56)	0.152
Social relationship[c]	1.04 (0.79–1.36)	0.789	1.06 (0.83–1.35)	0.640
Environment[c]	1.03 (0.79–1.34)	0.822	1.00 (0.79–1.27)	0.975

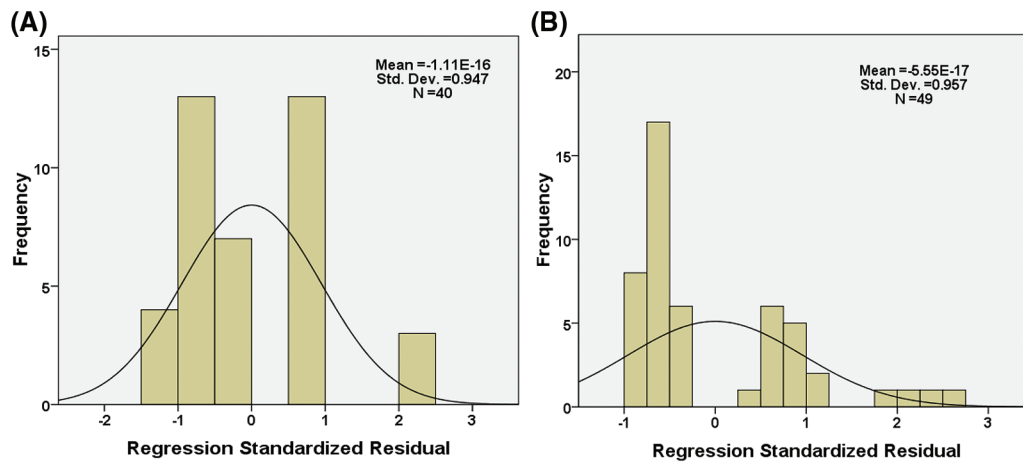Note: [a]Normal (reference); [b]Mild; [c]Severe.

FIGURE 3. Residual plot of (A) Pre-test and (B) Post-test of MMSE score showing a frequency indicating favorable changes with respect to WHOQoL BREF.
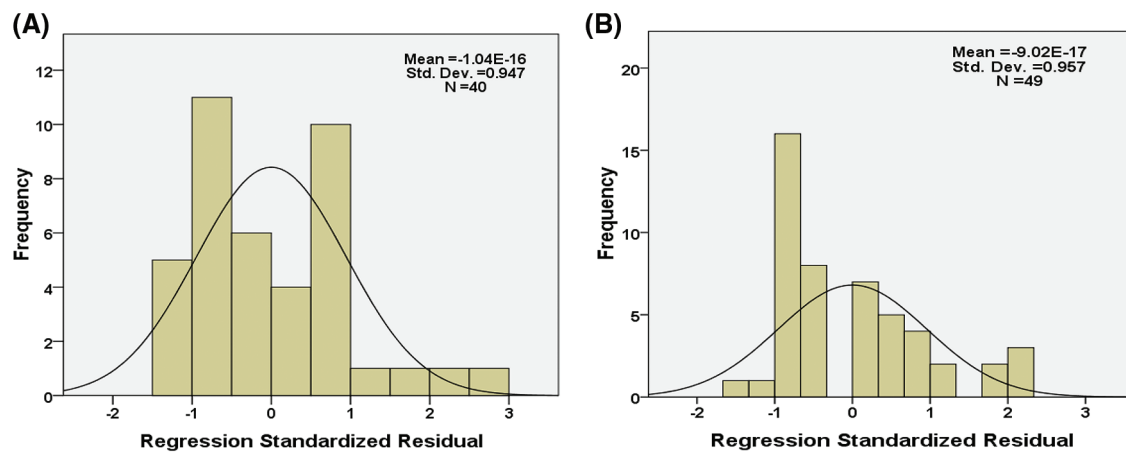

FIGURE 4. Residual plot of (A) Pre-test and (B) Post-test of GDS-15 score showing a frequency indicating favorable changes with respect to WHOQoL BREF.

some changes in MMSE and GDS with respect to WHO-QoL (Figs. 3 and 4).

Discussion

Nostalgia therapy rules out gloominess and sadness in the elderly person; it increases the happiness quotient, increases the mental well-being, connections with the surroundings. A report stated that nostalgia therapy advertising exploration gave the approach for reassessing reminiscence as an optimistic emotional asset with solitary attention in envisaging feeding associated consequences; their study did not discover emotional conditions induced through reminiscence [18]. In this study, both groups were carefully balanced, making it probable that any variations in outcomes between them stem from the intervention (nostalgia therapy) rather than initial dissimilarities among the patients. The findings of the study revealed that individuals who received nostalgia therapy experienced enhancements across nearly all aspects of the WHO-QoL BREF score. This underscores the promising and advantageous effects of nostalgia therapy. Moreover, participants in the nostalgia therapy group exhibited greater proficiency in eliciting positive emotions, fostering social

connectedness, and cultivating a sense of continuity with their personal history. The WHOQOL-BREF was envisioned in simulating various possessions of the WHOQOL-100 survey in a smaller form. It is planned to quantify an individual's sensitivity of their worth of life, well-defined by the WHO as "individuals" understandings of their condition in life in culture and significance schemes where they live relative to their goals, prospects, values and apprehension. The group operated from field centers located in 15 countries to develop a survey that aimed to be cross-culturally relevant to quality of life. The two questionnaires are meant that give a worldwide calculation of life's quality. Higher the scores greater the quality of life. The measurements are calculated summing the values of the four domains. GDS scores are recorded based on the questionnaires of GDS score published in 1982. In fact, the present-day exploration rebounds additional modern results in representing the welfares of wistfulness; upcoming experiential determinations resolve better to contemplate the opportunity which showed that reminiscence is not a point of adaptation for everyone [19]. Nostalgia therapy yielded statistically significant improvements in various dimensions of quality of life, including physical health, mental health, environment, global quality of life, past/present/future

activities, and social participation. Additionally, nostalgia therapy has been shown to enhance the capacity for remembering past life experiences. The capability of nostalgia therapy to endorse emotional safety might be connected to society's outlooks around the past [20]. Nostalgic therapy is a means of connection a sufferer's current life with a previous bygone life. Patient attributes such as gender, age, educational attainment, and marital status hold significant relevance when considering the application of therapy. In the current investigation, a notable majority of participants were female, with a significant portion (78%) having lower levels of education. This demographic composition offers valuable insights into the efficacy of NTG as an intervention within this specific group. Nostalgia therapy usually involves providing awareness, emotional warmth and friendliness. Standard care was required for the elderly patients in the control group. Nostalgia seems to ensure that emotional welfare is enabled by an additional convoluted sentimental monogram. However, the limited effectiveness of existing treatments for ending or slowing the development of neurological perceptive syndromes has attracted attention in non-pharmacological analyses, which not only have the intention to adjust the essential patho-physiological tools, but also treat the symptoms and, finally, increase the value of life of societies living with neuro-cognitive disorders [21]. Individual interference allows for improved focus on the needs, even with the increased demand interferences, the benefits that give the highly personalized interferences, such as the closer contact between patient and therapist and the high observance to interference that is worth it [16]. Highlighting the focus on intellectual stimulation, the nostalgic intervention employed in the study was limited to a comprehensive recall approach, which could potentially account for the lack of observed outcomes. Another factor that might clarify the impressive results achieved in the planned research is the minimal instances of unsuccessful outcomes, the strong adherence among participating individuals to the intervention, and the high degree of engagement in the nostalgic therapy sessions. In another study, reminiscence therapies were highly encouraged and expected results derived from a theoretical point of view were observed owing to the consequence of revealing partakers to lyrics of songs that they took formerly and which were recognized as sentimental [22]. This is because the members involved in reminiscence subsequently inspected the skill, and the encounter of explanation and confrontation was ridiculous. The impacts of wistfulness on the availability of positive occasions in their future, and consequent classified positive and unbiased character. Reminiscence therapy also has a positive effect on depression, mental well-being and cognitive functions. This therapy has been reviewed and studied in various systematic studies. In fact, there were statistically significant differences in superiority of life, as such in psychological well-being and societal involvement, and outlooks to ageing (areas: mental victims, and physical variations), and depressing signs (GDS score) [23]. Post-recollection therapy in aging individuals has the potential to reduce depressive symptoms, and this reduction was found to be associated with an enhancement in the quality of interpersonal relationships. An illustration of the beneficial effects of specific nostalgia therapy on general cognitive abilities and the overall quality of life was observed in individuals with probable Alzheimer's disease or vascular dementia. These findings, when considered alongside the outcomes of numerous other studies published thus far, contribute to the accumulating body of evidence. A few studies have measured the consequences of nostalgia therapy for supervisory purposes and none of them have attained an important effect [24]. However, in some cases, mental danger triggers wistfulness and, thus, sentimentality works on prosperity across a few elements of well-being (i.e., full of feeling, social, self, and existential). It follows that wistfulness has interventional potential and late discoveries can be predicted with this recommendation. In times when individuals encounter avoidance or feelings of sadness, they may turn to nostalgic memories online as a way to address feelings of not belonging. This process involves seeking solace in the belief that they possess social competence and are valued by individuals in their lives. Further research is required to delve into the potential benefits of leveraging nostalgia during experiences of loneliness. Another issue with mental well-being is that people who go to wistfulness when they are at a lower chance of aliments related to neglected social requirements than individuals who do not take part in sentimentality. This may be due to its sentiment which is an effective survival technique for feeling alone. A story of nostalgic encounters from college understudies reported on the members who received some information about an encounter of sentimentality and afterward detailed how the experience caused them to feel. Although research has not yet fully elucidated the effects of nostalgia on the activation of self-attributes, some findings indicate that engaging in nostalgic contemplation brings forth memories of oneself playing an active role in events that are predominantly positive or potentially redemptive in nature [25]. In some cases, nostalgic dreams might be executed as a mental asset assisting in adapting to assimilation stress among migrants and global understudies, which may, to some extent, make sense of the lift in imagination recorded in prior research on culture and imagination. This is because imagination is critical to the human turn toward events and cultural advancement [26]. Nostalgia appears to contribute to emotional well-being through an intricate emotional mechanism. While the regression analysis did not establish a statistically significant link between MMSE score and GDS-15 score concerning WHO-QoL BREF, the modest odds ratios could be due to the limited sample size. Nevertheless, the outcomes indicate the effectiveness of nostalgia therapy in improving the ability to recall past life experiences.

Conclusion

The study's findings indicate that group nostalgia therapy has a favorable effect on the quality of life and cognitive function of elderly patients with depression. These outcomes could hold significance for nursing practice when caring for patients with Alzheimer's or Parkinson's disease. The research also demonstrated that alleviating depressive

symptoms through nostalgia therapy correlated with enhancements in all four aspects of the WHOQoL BREF, implying a comprehensive improvement in quality of life. Moreover, the intervention seemed to augment cognitive function, potentially playing a role in the reduced depressive symptoms and heightened quality of life observed among the elderly participants.

Author Contributions: The authors confirm contribution to the paper as follows: study conception and design: Huang Yan, Liao Xiaoye, Cai Fen; data collection: Huang Yan, Liao Xiaoye; analysis and interpretation of results: Huang Yan, Liao Xiaoye, Cai Fen; draft manuscript preparation: Huang Yan, Liao Xiaoye, Cai Fen. All authors reviewed the results and approved the final version of the manuscript.

Availability of Data and Materials: The data will be provided upon request to the corresponding author.

Ethics Approval: Ethical approval was granted from the Institutional Review Boards of the authors' affiliated institutions, in accordance with the declaration of Helsinki and its later amendments.

Conflicts of Interest: We declare that they have no conflicts of interest to report regarding the present study.

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