

## Original Article

**Cite this article:** Wang S, Zhu Y, Wang Z, Zheng M, Li X, Zhang Y, Wan H (2023). Efficacy of meaning-centered group psychotherapy in Chinese patients with cancer: A randomized controlled trial. *Palliative and Supportive Care* 21, 773–781. <https://doi.org/10.1017/S1478951523000998>

Received: 22 February 2023

Revised: 23 May 2023

Accepted: 17 June 2023



**Keywords:**

Cancer; Meaning-centered group psychotherapy; Meaning in life; Randomized controlled trial

**Corresponding author:** Hongwei Wan;

Email: [hong\\_whw@aliyun.com](mailto:hong_whw@aliyun.com)

# Efficacy of meaning-centered group psychotherapy in Chinese patients with cancer: A randomized controlled trial

Shuman Wang, B.Sc.<sup>1,2,3</sup> , Yu Zhu, M.MED.<sup>1,2,3</sup>, Ziyang Wang, M.MED.<sup>1,2,3</sup>, Mimi Zheng, M.MED.<sup>1,2,3</sup>, Xiaoru Li, M.MED.<sup>1,2,3</sup>, Yu Zhang, B.Sc.<sup>1,2,3</sup> and Hongwei Wan, PH.D.<sup>1,2,3</sup> 

<sup>1</sup>Department of Nursing, Shanghai Proton and Heavy Ion Center, Fudan University Cancer Hospital, Shanghai, China; <sup>2</sup>Shanghai Key Laboratory of Radiation Oncology (20dz2261000), Shanghai Proton Heavy Ion Hospital, Shanghai, China and <sup>3</sup>Shanghai Engineering Research Center of Proton and Heavy Ion Radiation Therapy, Shanghai Proton Heavy Ion Hospital, Shanghai, China

**Abstract**

**Objectives.** Meaninglessness is one of the most common psychological problems in cancer patients, which can lead to anxiety, depression and psychological distress, and diminished quality of life. Recent evidence indicates that meaning-centered group psychotherapy (MCGP) effectively enhances the meaning in life among cancer patients. This study aimed to evaluate the impact of MCGP on the meaning in life, post-traumatic growth, psychological distress, and fear of recurrence among Chinese cancer patients with a favorable prognosis.

**Methods.** Sixty-six cancer patients were randomly assigned to either the MCGP group ( $n = 33$ ) or the control group ( $n = 33$ ). Participants in the MCGP group underwent a 4-week, 8-session MCGP, while those in the control group received usual care. Meaning in life, post-traumatic growth, psychological distress, and fear of recurrence were assessed at both baseline and postintervention to evaluate the impact of the intervention. The intervention outcomes were analyzed using paired *t*-tests or analysis of covariance, as appropriate.

**Results.** Patients in the MCGP group demonstrated significant improvements in meaning in life, post-traumatic growth, and fear of recurrence from baseline to postintervention. In comparison to the control group, the MCGP group displayed positive effects on meaning in life and post-traumatic growth following the intervention. However, no significant effects were observed in terms of psychological distress and fear of recurrence.

**Significance of results.** Our research offers evidence supporting the effectiveness of MCGP in enhancing meaning in life and post-traumatic growth among Chinese cancer patients with a favorable prognosis.

**Introduction**

It is well known that cancer is a serious threat to human health due to its increasing incidence and mortality rate. The diagnosis and treatment of cancer not only bring physical harm to patients but also cause a series of psychological problems, such as a sense of meaninglessness, psychological distress, fear of recurrence, and suicidal tendencies (Herschbach et al. 2020; Rhoten et al. 2018). The pursuit of meaning and purpose in life deserves our attention as one of the most significant needs of cancer patients (Hsiao et al. 2011; LeMay and Wilson 2008; Yong et al. 2008).

Meaning in life plays a crucial role in reducing anxiety, depression, hopelessness, and suicidal thoughts while also enhancing overall quality of life, physical well-being, and mental well-being (Czekierda et al. 2019a, 2019b; Sleight et al. 2021; Vehling et al. 2011; Winger et al. 2016). However, several surveys have indicated that patients experience varying degrees of meaninglessness in the early phases, advanced phases, and palliative phases of treatment (Erci 2015; Krok et al. 2019; Lee and Loiselle 2012; Sleight et al. 2021).

Meaning-centered group psychotherapy (MCGP), which is a psychotherapeutic intervention specifically designed to address meaning in life among advanced cancer patients, has shown promising therapeutic effects (Breitbart et al. 2015). It was developed based on Viktor Frankl's theory and principles and contains some existential elements, such as freedom, responsibility, creativity, identity, and transcendence. In addition to utilizing MCGP in patients with advanced cancer, many researchers adapted the original MCGP for different target populations, such as cancer survivors (Holtmaat et al. 2020; van der Spek N et al. 2017) and cancer caregivers (Applebaum et al. 2015). Additionally, MCGP has been practiced in many countries, including the United States (Applebaum et al. 2015; Breitbart et al. 2015), Netherlands

(Holtmaat *et al.* 2020; van der Spek N *et al.* 2017), Israel (Goldzweig *et al.* 2016), Portugal (da Ponte *et al.* 2021), and Spain (Fraguell *et al.* 2018). MCGP has been applied in several samples and settings. However, its utilization within the Chinese cultural context, particularly among cancer patients with positive prognoses, has been relatively rare. The existential issues evoked by cancer can be as powerful and pervasive in the early stages as they are in the survivorship and end-of-life phases (Lee and Loiselle 2012). Consequently, meaning in life discussions ought to be taken into account among patients with early-stage cancer instead of being postponed until the cancer advances or becomes terminal.

The quest for discovering meaning in life is highly valued in traditional Chinese culture, and this aligns with the fundamental principles of meaning in MCGP. Hence, MCGP may hold particular significance for Chinese individuals who are confronted with the difficulties of cancer. Nonetheless, it remains crucial to take into account the cultural distinctions between Eastern and Western cultures when implementing MCGP in the Chinese cultural context. For instance, as a core theme within MCGP, the subject of “death” is considered taboo in China, whereas Western cultures tend to approach discussions about death with more openness and honesty (Hsu *et al.* 2009). Furthermore, the perception of “humor” varies significantly between Eastern and Western cultural contexts. In the West, humor is regarded as positive and beneficial, whereas Chinese culture holds a more negative and implicit attitude toward humor, employing it less frequently (Yue *et al.* 2016). Therefore, it is essential to modify MCGP to align with the Chinese cultural context before implementing it with early-stage (stage I–III) cancer patients and evaluating its efficacy. We hypothesized that MCGP would show significant effects on cancer patients with a good prognosis in China in terms of meaning in life, psychological distress, post-traumatic growth, and fear of cancer recurrence.

## Methods

### Study design and participants

This was a prospective, parallel-group, assessor-blinded randomized controlled trial (RCT). The RCT was conducted in Shanghai between June 2022 and September 2022. Sixty-six cancer patients were randomly assigned to the MCGP program (intervention group) or to receive usual care (control group). The study protocol was approved by the Institutional Review Board of Shanghai Proton and Heavy Ion Hospital (2202-53-04) and registered in the Chinese Clinical Trial Registry, number ChiCTR2200060672.

The inclusion criteria for participants were as follows: (a) inpatients diagnosed with any type of early-stage (Stage I–III) solid tumor cancer, (b) aged between 18 and 60 years old, (c) had knowledge of the diagnosis, (d) fluent in Mandarin, and (e) voluntarily participated in this study and signed the informed consent form. We limited participants’ age to 18–60 years because studies have demonstrated that patients in this age range may have a lower level of meaningfulness (Kamijo and Miyamura 2020; Munoz *et al.* 2015). The exclusion criteria were as follows: (a) in the acute phase of the disease or in combination with severe hepatic or renal function or cardiopulmonary impairment, (b) with severe mental disorders or severe cognitive deficits, and (c) actively taking psychiatric medications or participating in other similar psychological interventions.

### Randomization and masking

The study used block randomization. A block size of 4 and an allocation of 1:1 were adopted. The computer-generated random allocation sequence was controlled by an independent researcher. Allocation concealment was assured by using sealed opaque envelopes that were distributed by other researchers. Data collectors and data analysts were blinded to group assignment.

### Intervention: Meaning-centered group psychotherapy

MCGP includes one 2-hour session weekly for 8 weeks, with groups of 6–8 participants. The original intervention program includes 8 themes: the concept and sources of meaning, identity before and after a cancer diagnosis, historical sources of meaning (past), historical sources of meaning (present and future), attitudinal sources of meaning, creative sources of meaning, experiential sources of meaning, and hope for the future (Breitbart 2016). A more comprehensive description of MCGP has been published in other articles (Breitbart *et al.* 2010, 2015).

Taking into account cultural factors, disease stage, and patient treatment characteristics (1-month hospital stay), a group-based, 4-week, 8-session modified MCGP program was adopted in the intervention group. The themes were kept the same as in the original manual. The modified MCGP protocol in this study had the following changes:

- (a) The weekly, 8-week intervention schedule was adjusted to a twice-weekly, 4-week intervention schedule with 2–3 days between each activity to ensure rest and careful reflection by the patient.
- (b) To ensure better alignment with the Chinese cultural context and reduce ambiguity, we have made necessary adjustments to the manual. During this process, we identified certain words that were less suitable and had a higher risk of misunderstanding. As a result, we replaced “legacy” with “story” and “achievement” with “satisfaction” as examples. Additionally, we recognize that some terms used in the manual might present challenges for patients to comprehend. Therefore, we have taken proactive steps to provide more explicit explanations for terms such as “creative sources,” “life lessons,” and “legacy.”
- (c) In the first activity, we removed the experience exercise to ensure that patients had sufficient time to present themselves and their illness experience. To guide patients to become aware of their changes, in the second activity, we added the experiential exercise “Which identity is the one you want to spend more time and energy focusing on after your illness?”
- (d) In the Chinese cultural context, “death” has always been an untouchable topic, and the survival of the patients included in this study was relatively optimistic. Therefore, in the fifth activity, the experience exercises “What do you think is a good or meaningful death?” and “Legacy Project” were eliminated to avoid causing patient discomfort. In China, “humor” is not as normalized as it is in Western culture. Therefore, in the seventh activity, we put more emphasis on “love” and “beauty”.

The revised MCGP has been reviewed by a panel of experts, including existentialists, group psychologists, nursing psychologists, and nurses with extensive nursing experience to ensure the reasonability of the program. The intervention was conducted by a psychotherapist with 10 years of experience leading groups and a

doctoral student in psychological nursing with specialized training in existential psychology, both of whom had participated in meaning-centered therapy workshops in China for training. To assess compliance with the prescribed treatment, all group therapy sessions were recorded. An independent physician with a dual background in psychology and medicine and familiar with MCGP assessed the fidelity of randomly selected portions of the recordings. The assessment was conducted using the treatment adherence checklist from the Chinese version of the MCGP manual.

### Usual care

Patients in the control group were given routine care throughout their hospital stay, which included the distribution of health education brochures, education on diet and physical activity after radiation provided by the study team, and routine psychosocial support. The psychosocial support involved systematic and ongoing screening of patients' emotional and overall health status by trained nurses, who provided nonspecific components of psychological support when necessary, such as empathy, reassurance, and opportunities for disclosure. If patients were identified as requiring additional support, they were referred promptly and proactively to appropriate psychosocial services.

### Assessments

At baseline, demographic and clinical information was recorded. Outcome assessments took place at 2 time points: baseline ( $t_0$ ) and postintervention ( $t_1$ ). The primary outcome measure was meaning in life, as assessed with the Purpose-In-Life Test (PIL). The items were on a 7-point rating scale, and the total score on the PIL ranges from 20 to 140; higher scores indicate a stronger sense of meaning and purpose of life ( $\alpha = 0.878$ ) (Song 1992). In this study, the Cronbach's  $\alpha$  values for PIL were 0.869 and 0.906. Secondary outcomes included psychological distress, post-traumatic growth, and fear of cancer recurrence. We used the distress thermometer (DT) with a scale of 0 (no distress) to 10 (extreme distress) to evaluate psychological distress among patients (Riba et al. 2023). Post-traumatic growth was measured using the Chinese-Post-traumatic Growth Inventory (C-PTGI), scored on a range of 0–100, with higher scores indicating higher post-traumatic growth ( $\alpha = 0.874$ ) (Wang 2011). The Cronbach's  $\alpha$  values for the C-PTGI were 0.873 and 0.914 in the current sample. The 12-item Fear of Progression Questionnaire-Short Form (FOP-Q-SF) is a validated scale that assesses fear of cancer recurrence and ranges from 12 to 60 ( $\alpha = 0.883$ ). A higher score represented a higher level of fear of cancer recurrence (Mehnert et al. 2006). The Cronbach's  $\alpha$  in the present study was 0.856 at baseline and 0.893 at postintervention.

### Sample size

The sample size estimation was based on the primary outcome (meaning in life). Considering the moderate to large effect sizes for MCGP observed in previous studies, an effect size of  $d = 0.78$  can be expected and considered feasible (Breitbart et al. 2010; van der Spek N et al. 2017). The sample size was determined using Power Analysis and Sample Size Software with consideration of a two-sided significance level of 0.05. The study was designed to detect the effect with 80% power. This required a sample of 54 individuals in each arm. Estimating a 20% dropout rate, a minimum recruitment of 66 subjects was needed.

### Statistical analysis

All analyses were based on intention-to-treat (ITT) analysis. We performed all analyses using IBM SPSS Statistics version 24.0 (IBM). Continuous variables were described by means  $\pm$  standard deviations, and categorical variables were presented by counts and proportions. Paired  $t$ -tests were conducted to compare baseline and postintervention scores within groups, and effect sizes were calculated using Cohen's  $d$  formula. Differences between the 2 groups at postintervention were explored using analysis of covariance while controlling for baseline scores. The effect sizes were obtained using partial eta squared ( $\eta^2 p$ ). Per-protocol (PP) analysis was used for consistency tests, and subanalyses (MCGP:  $n = 24$ ) included participants who completed at least 7 of 8 sessions. All comparisons utilized 2-tailed, 0.05 significance levels. To assess the association between the number of sessions attended and outcome change over time, we conducted multiple linear regression analysis. Additionally, we performed a 1-way regression analysis to investigate the association between demographic and clinical characteristics and changes in each outcome score. Variables with  $p$  values less than 0.2 were chosen as covariates for the subsequent multivariate regression analysis.

## Results

### Subject recruitment and compliance

We initially approached 82 eligible patients but 13 of them declined to participate due to a lack of interest and 3 declined to participate because of a lack of time. We ultimately enrolled 66 patients who completed all assessments, including 33 in the MCGP group and 33 in the control group (Fig. 1).

### Subject characteristics

The mean age of the participants was  $37.83 \pm 9.30$  years. Most participants were married with children, employed, and had some college education. Most participants had head and neck or breast cancers and were receiving radiation therapy. There were no significant differences in the demographic characteristics of the participants in each group (Table 1).

### Efficacy of MCGP

No baseline scores varied significantly between the 2 groups. Paired  $t$ -tests showed statistically significant differences in PIL ( $t = -4.49$ ,  $p < 0.001$ , Cohen's  $d = 0.78$ ), C-PTGI ( $t = -2.48$ ,  $p = 0.019$ , Cohen's  $d = 0.43$ ), and FOP-Q-SF scores ( $t = 2.48$ ,  $p = 0.018$ , Cohen's  $d = -0.43$ ) between baseline and postintervention in the MCGP group; there were no significant differences in DT scores between baseline and postintervention. In the control group, we did not observe a noticeable improvement in the PIL, C-PTGI, DT, and FOP-Q-SF scores at postintervention compared with baseline (Table 2).

After adjusting for baseline scores, patients in the intervention group reported significantly better PIL and C-PTGI scores at postintervention compared with the control group (difference 7.62, 95% CI: 3.12–12.12,  $p = 0.001$ ; difference 8.18, 95% CI: 3.23–13.14,  $p = 0.002$ ). Nevertheless, there were no statistically significant differences in DT and FOP-Q-SF scores at postintervention (Table 3).

The results for the subsample of patients who completed at least 7 modules after the intervention (MCGP:  $n = 24$ ) were generally

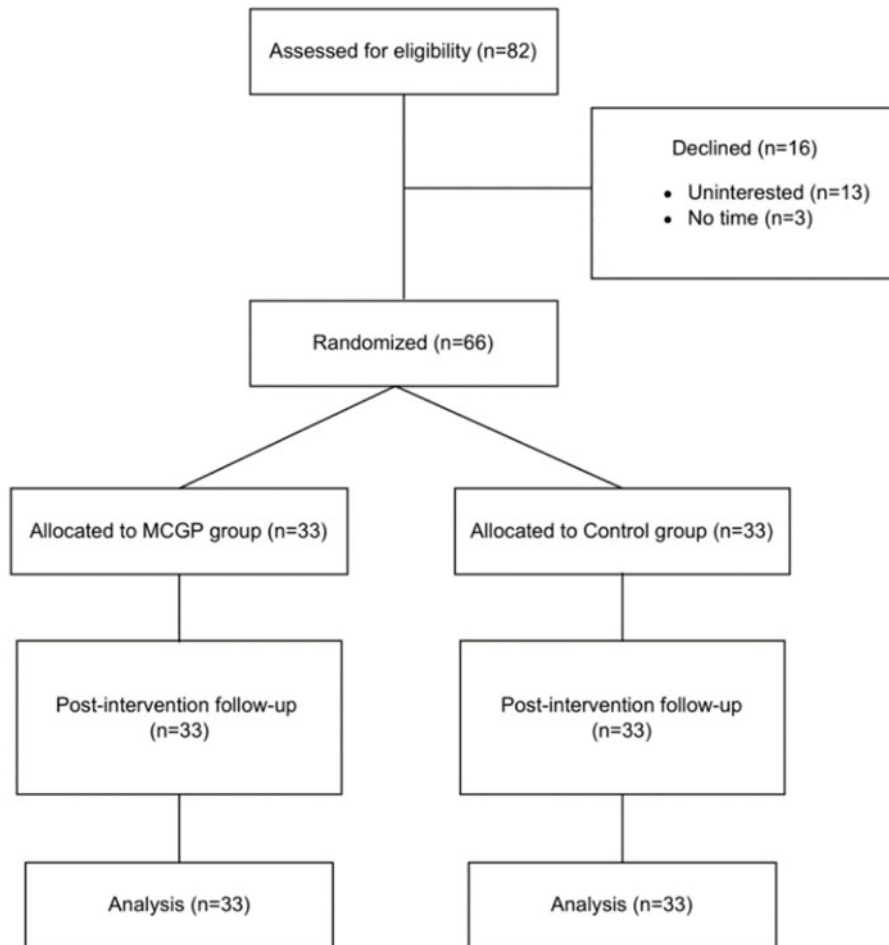


Figure 1. CONSORT flow chart.

consistent with the comparison between the total sample regarding PIL and C-PTGI, indicating a more significant improvement than in patients who did not adhere. However, no significant results were found in the comparisons of DT and FOP-Q-SF scores (Table 4, Table 5).

### Treatment adherence and fidelity

Of the 33 participants randomized to intervention, participants completed an average of 6.6 out of 8 modules, and a large percentage (72.7%) of the intervention group completed at least 7 of 8 weekly sessions. The reasons for patients' absence were mainly related to the lack of motivation, physical discomfort, and a discrepancy between the interventions delivered in the sessions and their expectations. We conducted an additional analysis to determine if there was a correlation between the number of sessions attended and changes in outcomes. After controlling for covariates in each model, a positive correlation was observed between the number of group participation and changes in PIL and C-PTGI scores ( $B = 2.08$ , 95% CI: 0.17–3.98,  $p = 0.034$ ;  $B = 2.36$ , 95% CI: 0.26–4.47,  $p = 0.029$ ) (Table 6, Table 7). After completing the treatment, we discussed the findings with supervisors and determined that the intervention application's fidelity was satisfactory based on a qualitative assessment of the consensus meeting.

### Discussion

The present study aimed to evaluate the efficacy of MCGP for Chinese cancer patients. After the intervention, this study revealed statistically significant differences in both meaning in life and post-traumatic growth between the MCGP group and the control group, as indicated by both ITT and PP analyses.

The effect size we reported for the meaning in life ( $d = 0.78$ ) is similar to those reported in other studies (Breitbart *et al.* 2010; van der Spek N *et al.* 2017). Consequently, despite being specifically designed for patients with advanced cancer, MCGP demonstrates broad applicability in enhancing meaning in life (Czekierda *et al.* 2019a). In this study, a majority of the participants consisted of head and neck cancer patients; this population is known to face distinct challenges concerning body image and functional issues, including dysphagia, loss of taste, body image disturbances, and social isolation. These factors impact an individual's identity and social and interpersonal relationships, resulting in the emergence of negative emotions and a diminished sense of self-worth, even among patients in the early stages of the disease (Alias and Henry 2018; Hammermüller *et al.* 2021). In addition, the study population in this research had a comparatively lower mean age compared to previous studies. It is widely recognized that younger cancer patients typically experience lower levels of meaning in life (Erci 2015; Munoz *et al.* 2015), attributable to various factors, such as disruptions in life goals and plans, the challenges associated with

**Table 1.** Baseline demographic and clinical characteristics (*n* = 66)

Characteristic	MCGP group ( <i>n</i> = 33)	Control group ( <i>n</i> = 33)	<i>p</i> -values
Age, years	37.58 ± 8.74	38.09 ± 9.96	0.824
Gender			0.622
Male	15 (45.5%)	17 (51.5%)	
Female	18 (54.5%)	16 (48.5%)	
Education level			0.389
High school or less	5 (15.2%)	8 (24.2%)	
Some college	23 (69.7%)	21 (63.6%)	
Postgraduate and above	5 (15.2%)	4 (12.1%)	
Have any religion			0.353
No	25 (75.8%)	28 (84.8%)	
Yes	8 (24.2%)	5 (15.2%)	
Employment status			1.000
Employed	24 (72.7%)	25 (75.8%)	
Unemployed/Student/Other	9 (9.1%)	8 (9.1%)	
Marital status			0.566
Married	26 (78.8%)	24 (72.7%)	
Divorced/widowed/never married	7 (21.2%)	9 (27.3%)	
Have any children			1.000
Yes	25 (75.8%)	25 (75.8%)	
No	8 (24.2%)	8 (24.2%)	
Yearly income (yuan)			0.948
≤150,000/year	9 (27.3%)	8 (24.2%)	
150,000 – 300,000/year	14 (42.4%)	14 (42.4%)	
≥300,000/year	10 (30.3%)	11 (33.3%)	
Tumor site			0.506
Head and neck tumors	20 (60.6%)	24 (72.7%)	
Breast tumors	10 (30.3%)	6 (18.2%)	
Other	3 (9.1%)	3 (9.1%)	
Primary/recurrence			1.000
Primary	28 (84.8%)	28 (84.8%)	
Recurrence	5 (15.2%)	5 (15.2%)	
Cancer stage			0.255
I	11 (33.3%)	11 (33.3%)	
II	18 (54.5%)	13 (39.4%)	
III	4 (12.1%)	9 (27.3%)	

(Continued)

**Table 1.** (Continued.)

Characteristic	MCGP group ( <i>n</i> = 33)	Control group ( <i>n</i> = 33)	<i>p</i> -values
Time since diagnosis (month)			0.796
≤6	21 (63.6%)	22 (66.7%)	
≥6	12 (36.4%)	11 (33.3%)	
Medical treatment			0.099
Radiotherapy only	3 (9.1%)	8 (24.2%)	
Chemotherapy and radiotherapy	30 (90.0%)	25 (75.8%)	

Data are presented as either the number (%) or as the mean ± standard deviation. "Other" cancers include lung, cervical, and gallbladder.

confronting a life-threatening illness at an early stage, and the profound impact of a cancer diagnosis on their identity and future prospects. Based on these findings, patients involved in this study displayed a greater potential for improvement in their meaning in life and were more likely to experience substantial benefits from engaging in MCGP. It is noteworthy that a significant proportion of individuals in China, as reflected in this study's sample, identify as nonreligious (Yang 2009), which contrasts with the prevalence of religiosity in most countries where MCGP has been developed and studied. While religiosity is a significant pathway to finding meaning (Shiah et al. 2015), the sources of meaning offered in MCGP are not limited solely to those who are religious. Even individuals without religious beliefs can derive meaning from sources such as personal values, meaningful relationships, and a connection to nature. As a result, the validity of MCGP can endure even in the absence of widespread religious beliefs.

Despite the considerable psychological distress and physical damage that accompany a cancer diagnosis and treatment, it is evident that MCGP has shown a distinct positive influence on post-traumatic growth among cancer patients during treatment in this study. Chinese cancer patients often tend to suppress their thoughts and feelings in the presence of family and friends (Wei et al. 2013; Wu and Tseng 1985), and we create a secure and supportive environment where patients can receive social support from peers who share similar experiences and feelings regarding cancer. Such an environment is highly likely to meet the emotional disclosure and social support needs of Chinese cancer patients, ultimately fostering their post-traumatic growth (Almeida et al. 2022; Zhang et al. 2020; Zhou et al. 2021). In addition, MCGP is specifically designed to promote meaning in life and purpose in life. According to a meta-analysis, there exists a positive association between meaning in life and post-traumatic growth among cancer patients (Almeida et al. 2022). Meaning in life can facilitate post-traumatic growth by strengthening interpersonal relationships, expanding possibilities, enhancing personal resilience, inducing spiritual growth, and fostering appreciation for life – all of which are dimensions of the C-PTGI (Wang et al. 2021).

However, some expected results were not observed. In this study, psychological distress did not improve more after the intervention. There are 2 plausible explanations. One possible explanation is that this study only measured the immediate intervention effects and not the long-term intervention effects. According to

**Table 2.** Outcome measure changes from baseline to postintervention (intention-to-treat)

Outcomes	Group	Baseline	Postintervention	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
PIL	MCGP	99.42 ± 17.62 <sup>a</sup>	107.24 ± 16.70	-4.49	0.000	0.78
	Control	99.12 ± 13.04	99.39 ± 12.93	-0.16	0.870	0.03
C-PTGI	MCGP	65.58 ± 10.19 <sup>a</sup>	70.52 ± 12.20	-2.48	0.019	0.43
	Control	63.79 ± 14.37	61.18 ± 13.35	1.44	0.158	-0.25
DT	MCGP	2.30 ± 1.16 <sup>a</sup>	2.24 ± 1.09	0.27	0.790	-0.05
	Control	2.21 ± 1.29	2.36 ± 1.43	-0.40	0.693	0.07
FOP-Q-SF	MCGP	30.76 ± 8.27 <sup>a</sup>	28.12 ± 8.24	2.48	0.018	-0.43
	Control	30.21 ± 6.98	29.85 ± 6.87	0.29	0.774	-0.05

PIL = Purpose-In-Life Test, PTGI = Post-Traumatic Growth Inventory, DT = distress thermometer, FOP-Q-SF = Fear of Progression Questionnaire-Short Form, *p*-values from within group paired *t*-tests.

<sup>a</sup>Compared with the control group at baseline, *p* > 0.05.

**Table 3.** Comparison of outcome between the 2 groups at postintervention (intention-to-treat)

Outcomes	MCGP		MCGP vs control		<i>p</i>	$\eta^2p$
	Least squares means (95% CI)		Control	Adjusted difference (95% CI)		
PIL	107.13 (103.95–110.31)		99.51 (96.33–102.69)	7.62 (3.12–12.12)	0.001	0.154
C-PTGI	69.94 (66.44–73.44)		61.76 (58.26–65.26)	8.18 (3.23–13.14)	0.002	0.147
DT	2.24 (1.80–2.69)		2.36 (1.92–2.81)	-0.12 (-0.75 to 0.51)	0.709	0.002
FOP-Q-SF	27.96 (25.86–30.05)		30.02 (27.92–32.11)	-2.061 (-5.03 to 0.90)	0.170	0.030

95% CI = 95% confidence interval. *p*-values were calculated using analyses of covariance with adjustment for baseline scores.  $\eta^2p$ : partial eta squared.

**Table 4.** Outcome measure changes from baseline to postintervention (per-protocol)

Outcomes	Group	Baseline	Postintervention	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
PIL	MCGP	96.46 ± 15.86	106.50 ± 16.20	-4.63	0.000	0.96
	Control	99.12 ± 13.04	99.39 ± 12.93	-0.16	0.870	0.03
C-PTGI	MCGP	65.38 ± 10.48	73.38 ± 11.52	-3.49	0.002	0.71
	Control	63.79 ± 14.37	61.18 ± 13.35	1.44	0.158	-0.25
DT	MCGP	2.42 ± 1.28	2.17 ± 1.00	0.95	0.354	-0.19
	Control	2.21 ± 1.29	2.36 ± 1.43	-0.40	0.693	0.07
FOP-Q-SF	MCGP	30.13 ± 9.18	28.42 ± 8.41	1.33	0.197	-0.27
	Control	30.21 ± 6.98	29.85 ± 6.87	0.29	0.774	-0.05

PIL = Purpose-In-Life Test, PTGI = Post-Traumatic Growth Inventory, DT = distress thermometer, FOP-Q-SF = Fear of Progression Questionnaire-Short Form. *p*-values from within group paired *t*-tests.

Park's meaning-making model (Park 2010), psychological distress decreases when individuals successfully seek meaning. In a study of MCGP among Dutch cancer survivors, there was no change in psychological distress at the end of the intervention, but a decrease in psychological distress was observed 6 months after the end of the intervention (van der Spek N et al. 2017). Therefore, the benefits of MCGP for psychological distress in cancer patients might appear in the long term. Another possible explanation is that the score for psychological distress was lower at baseline, which likely reduced the opportunity for improvement. Notably, in light of the stigma surrounding illnesses in China (Lei et al. 2021), it is possible that many Chinese patients would report a more favorable score to conceal their true inner pain. Therefore, it is possible that MCGP has effectively addressed a potential need for many cancer patients.

Another new finding of this study is that although there was no significant difference in fear of recurrence after the intervention for patients in the MCGP group compared to the control group, the paired *t*-test results found that there was still a positive trend in fear of recurrence among cancer patients in the MCGP group. Cancer patients can be frightened by the uncertainty and unpredictability of cancer recurrence and the consequences of recurrence (Dwl et al. 2020; Zhu et al. 2022). MCGP focuses on helping patients reconnect with the meaning in their life and discover what is important to them in their daily lives, which may better help patients cope with unhelpful thoughts of recurrence through meaning.

In addition, we observed a positive correlation between the number of treatment sessions attended and changes in PIL and C-PTGI scores. In the future, patients should be informed of

**Table 5.** Comparison of outcome between the 2 groups at postintervention (per-protocol)

Outcomes	MCGP		MCGP vs control		<i>p</i>	$\eta^2p$
	Least squares means (95% CI)	Control	Adjusted difference (95% CI)			
PIL	107.68 (103.78–111.57)	98.54 (95.22–101.86)	9.14 (4.01–14.26)		0.001	0.191
C-PTGI	72.79 (68.81–76.77)	61.60 (58.21–65.00)	11.19 (5.95–16.43)		0.000	0.254
DT	2.17 (1.65–2.70)	2.36 (1.91–2.81)	–0.19 (–0.88 to 0.51)		0.593	0.005
FOP-Q-SF	28.45 (25.98–30.91)	29.83 (27.73–31.93)	–1.38 (–4.62 to 1.86)		0.397	0.013

95% CI = 95% confidence interval. *p*-values were calculated using analyses of covariance with adjustment for baseline scores;  $\eta^2p$ : partial eta squared.

**Table 6.** Univariate regression analysis of demographic and clinical characteristics and changes in scores (*n* = 33)

Outcomes	PIL		C-PTGI		DT		FOP-Q-SF	
	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>
Age, years	–0.09	0.617	0.06	0.755	–0.04	0.845	–0.28	0.118*
Gender (reference = male)	0.21	0.237	0.10	0.568	–0.38	0.029*	–0.05	0.799
Education level (reference = high school or less)								
Some college	0.01	0.971	–0.56	0.013*	0.12	0.627	–0.31	0.191*
Postgraduate and above	0.41	0.071*	–0.26	0.230	0.05	0.831	–0.02	0.917
Have any religion (reference = no)	–0.11	0.537	–0.13	0.475	0.20	0.266	0.20	0.261
Employment status (reference = employed)	–0.11	0.532	–0.12	0.493	0.15	0.407	–0.11	0.561
Marital status (reference = married)	0.07	0.700	–0.17	0.349	0.15	0.405	0.06	0.761
Have any children (reference = yes)	0.15	0.415	0.00	0.987	0.10	0.584	0.05	0.790
Yearly income (reference = ≤300,000/year)	0.32	0.070*	0.19	0.302	0.10	0.566	–0.05	0.778
Tumor site (reference = head and neck tumors)								
Breast Tumors	–0.03	0.862	0.16	0.373	–0.10	0.588	0.00	1.000
Other	0.04	0.824	0.33	0.075*	–0.29	0.112*	0.19	0.304
Primary/recurrence (reference = primary)	0.15	0.421	0.01	0.957	0.10	0.594	–0.08	0.650
Cancer stage (reference = I)								
II	0.27	0.167*	0.33	0.096*	–0.18	0.363	0.18	0.356
III	0.06	0.752	0.24	0.212	–0.04	0.832	0.24	0.232
Time since diagnosis (month) (reference = ≤6)	0.14	0.453	0.23	0.191*	–0.07	0.702	–0.04	0.845

PIL = Purpose-In-Life Test, PTGI = Post-Traumatic Growth Inventory, DT = distress thermometer, FOP-Q-SF = Fear of Progression Questionnaire-Short Form. \**p* < 0.2.

**Table 7.** Multiple linear regression analysis of number of sessions attended and changes in scores (*n* = 33)

Changes in scores	Number of sessions attended		
	B (95% CI)	<i>t</i>	<i>p</i>
PIL	2.08 (0.17–3.98)	2.24	0.034*
C-PTGI	2.36 (0.26–4.47)	2.32	0.029*
DT	0.03 (–0.24 to 0.31)	0.25	0.808
FOP-Q-SF	0.44 (–0.83 to 1.70)	0.70	0.487

PIL = Purpose-In-Life Test, PTGI = Post-Traumatic Growth Inventory, DT = distress thermometer, FOP-Q-SF = Fear of Progression Questionnaire-Short Form. \**p* < 0.05.

the relationship between intervention adherence and its effectiveness in prior studies. Implementing institutions should also offer accommodations and incentives to enhance patient engagement.

**Study limitations**

There are several limitations to this study. First, all participants were recruited from a dedicated radiotherapy hospital. This is the first hospital in China with both proton and heavy ion technology, and the majority of patients treated here are socioeconomically privileged and well educated, which may limit the generalization of our findings to other settings. Second, our results may be restricted to fairly young cancer patients (mean age: 37.83 years) with more favorable prognoses; thus, it is difficult to generalize the results to all individuals diagnosed with cancer. Third, this study only evaluated postintervention outcomes. Future studies could increase the frequency of evaluation to explore the long-term effects of MCGP. Fourth, it should be noted that the control group in our study received usual care instead of an active control, which could potentially weaken the robustness of our findings. It is possible that the effectiveness of our intervention was partly due to nonspecific effects of group therapy.

### Clinical implications

This study provides evidence for MCGP successfully enhancing meaning in life and post-traumatic growth among Chinese cancer patients. This positive outcome has important implications for the mental health of Chinese cancer patients. However, more research is needed to elucidate the effects of MCGP on psychological distress and fear of cancer recurrence. Given the above limitations, a larger sample size of RCTs and long-term follow-up assessments are needed to confirm the results of this work. In addition, patients with different ages and disease stages will have different perceptions and ideas. In future studies, stratified analyses by age should be performed in addition to stratified analyses by stage and prognosis group.

### Conclusion

Our findings suggested that MCGP improved meaning in life and post-traumatic growth in Chinese cancer patients with a good prognosis. Given the broad applicability of MCGP, it has the potential to improve the mental health of a broader cancer population.

**Acknowledgments.** We thank the clinical and administrative staff at the Shanghai Proton Heavy Ion Hospital of Fudan University, who contributed to the completion of this study.

**Competing interests.** None of the authors had any conflict of interest in this study.

### References

- Alias A and Henry M (2018) Psychosocial effects of head and neck cancer. *Oral and Maxillofacial Surgery Clinics of North America* **30**(4), 499–512. doi:10.1016/j.coms.2018.06.010
- Almeida M, Ramos C, Maciel L, *et al.* (2022) Meaning in life, meaning-making and posttraumatic growth in cancer patients: Systematic review and meta-analysis. *Frontiers in Psychology* **13**, 995981. doi:10.3389/fpsyg.2022.995981
- Applebaum AJ, Kulikowski JR and Breitbart W (2015) Meaning-centered psychotherapy for Cancer Caregivers (MCP-C): Rationale and overview. *Palliative & Supportive Care* **13**(6), 1631–1641. doi:10.1017/s1478951515000450
- Breitbart W (2016) *Meaning-Centered Psychotherapy in the Cancer Setting Finding Meaning and Hope in the Face of Suffering: Finding Meaning and Hope in the Face of Suffering*. New York: Oxford University Press.
- Breitbart W, Rosenfeld B, Gibson C, *et al.* (2010) Meaning-centered group psychotherapy for patients with advanced cancer: A pilot randomized controlled trial. *Psycho-Oncology* **19**(1), 21–28. doi:10.1002/pon.1556
- Breitbart W, Rosenfeld B, Pessin H, *et al.* (2015) Meaning-centered group psychotherapy: An effective intervention for improving psychological well-being in patients with advanced cancer. *Journal of Clinical Oncology* **33**(7), 749–754. doi:10.1200/jco.2014.57.2198
- Czekierda K, Horodyska K, Banik A, *et al.* (2019a) Meaning in life and physical quality of life: Cross-lagged associations during inpatient rehabilitation. *Rehabilitation Psychology* **64**(4), 425–434. doi:10.1037/rep0000281
- Czekierda K, Zarychta K, Knoll N, *et al.* (2019b) Links between meaning in life and physical quality of life after rehabilitation: Mediating effects of positive experiences with physical exercises and mobility. *PLoS One* **14**(10), e0224503. doi:10.1371/journal.pone.0224503
- da Ponte G, Ouakinin S, Santo JE, *et al.* (2021) Meaning-centered group psychotherapy in Portuguese cancer patients: A pilot exploratory trial. *Palliative & Supportive Care* **19**(4), 464–473. doi:10.1017/s1478951521000602
- Dwl N, Foo CC, SSM N, *et al.* (2020) The role of metacognition and its indirect effect through cognitive attentional syndrome on fear of cancer recurrence trajectories: A longitudinal study. *Psycho-Oncology* **29**(2), 271–279. doi:10.1002/pon.5234
- Erci B (2015) Meaning in life of patients with cancer. *Palliative & Supportive Care* **13**(1), 3–10. doi:10.1017/s1478951513000254
- Fraguell C, Limonero JT and Gil F (2018) Psychological aspects of meaning-centered group psychotherapy: Spanish experience. *Palliat Support Care* **16**(3), 317–324. doi:10.1017/s1478951517000293
- Goldzweig G, Hasson-Ohayon I, Pizem N, *et al.* (2016) Adaptation of Meaning Centered Group Psychotherapy (MCGP) in the Israeli Context: The Process of Importing an Intervention and Preliminary Results. In Breitbart W (ed.), *Meaning Centered Psychotherapy in the Cancer Setting: Finding Meaning and Hope in the Face of Suffering*. New York: Oxford University Press, 145–156.
- Hammermüller C, Hinz A, Dietz A, *et al.* (2021) Depression, anxiety, fatigue, and quality of life in a large sample of patients suffering from head and neck cancer in comparison with the general population. *BMC Cancer* **21**(1), 94. doi:10.1186/s12885-020-07773-6
- Herschbach P, Britzelmeir I, Dinkel A, *et al.* (2020) Distress in cancer patients: Who are the main groups at risk? *Psycho-Oncology* **29**(4), 703–710. doi:10.1002/pon.5321
- Holtmaat K, van der Spek N, Lissenberg-Witte B, *et al.* (2020) Long-term efficacy of meaning-centered group psychotherapy for cancer survivors: 2-Year follow-up results of a randomized controlled trial. *Psycho-Oncology* **29**(4), 711–718. doi:10.1002/pon.5323
- Hsiao SM, Gau ML, Ingleton C, *et al.* (2011) An exploration of spiritual needs of Taiwanese patients with advanced cancer during the therapeutic processes. *Journal of Clinical Nursing* **20**(7–8), 950–959. doi:10.1111/j.1365-2702.2010.03278.x
- Hsu CY, O'Connor M and Lee S (2009) Understandings of death and dying for people of Chinese origin. *Death Stud* **33**(2), 153–174. doi:10.1080/07481180802440431
- Kamijo Y and Miyamura T (2020) Spirituality and associated factors among cancer patients undergoing chemotherapy. *Japan Journal of Nursing Science* **17**(1), e12276. doi:10.1111/jjns.12276
- Krok D, Telka E and Zarzycka B (2019) Illness perception and affective symptoms in gastrointestinal cancer patients: A moderated mediation analysis of meaning in life and coping. *Psycho-Oncology* **28**(8), 1728–1734. doi:10.1002/pon.5157
- Lee V and Loïselle CG (2012) The salience of existential concerns across the cancer control continuum. *Palliative & Supportive Care* **10**(2), 123–133. doi:10.1017/s1478951511000745
- Lei H, Tian X, Jin YF, *et al.* (2021) The chain mediating role of social support and stigma in the relationship between mindfulness and psychological distress among Chinese lung cancer patients. *Supportive Care in Cancer* **29**(11), 6761–6770. doi:10.1007/s00520-021-06278-7
- LeMay K and Wilson KG (2008) Treatment of existential distress in life threatening illness: A review of manualized interventions. *Clinical Psychology Review* **28**(3), 472–493. doi:10.1016/j.cpr.2007.07.013
- Mehnert A, Herschbach P, Berg P, *et al.* (2006) Fear of progression in breast cancer patients – validation of the short form of the Fear of Progression Questionnaire (FoP-Q-SF). *Zeitschrift Fur Psychosomatische Medizin Und Psychotherapie* **52**(3), 274–288. doi:10.13109/zptm.2006.52.3.274
- Munoz AR, Salsman JM, Stein KD, *et al.* (2015) Reference values of the functional assessment of chronic illness therapy-spiritual well-being: A report from the American Cancer Society's studies of cancer survivors. *Cancer* **121**(11), 1838–1844. doi:10.1002/cncr.29286
- Park CL (2010) Making sense of the meaning literature: An integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin* **136**(2), 257–301. doi:10.1037/a0018301
- Rhoten BA, Murphy BA, Dietrich MS, *et al.* (2018) Depressive symptoms, social anxiety, and perceived neck function in patients with head and neck cancer. *Head & Neck* **40**(7), 1443–1452. doi:10.1002/hed.25129
- Riba MB, Donovan KA, Ahmed K, *et al.* (2023) NCCN Guidelines® Insights: Distress management, version 2.2023. *Journal of the National Comprehensive Cancer Network* **21**(5), 450–457. doi:10.6004/jnccn.2023.0026
- Shiah YJ, Chang F, Chiang SK, *et al.* (2015) Religion and health: Anxiety, religiosity, meaning of life and mental health. *Journal of Religion and Health* **54**(1), 35–45. doi:10.1007/s10943-013-9781-3
- Sleight AG, Boyd P, Klein WMP, *et al.* (2021) Spiritual peace and life meaning may buffer the effect of anxiety on physical well-being in newly diagnosed cancer survivors. *Psycho-Oncology* **30**(1), 52–58. doi:10.1002/pon.5533



- Song QR** (1992) A Study of the Meaning of Adolescent Life. Master dissertation, Department of education, National Changhua University of Education.
- van der Spek N, Vos J, van Uden-kraan CF, et al.** (2017) Efficacy of meaning-centered group psychotherapy for cancer survivors: A randomized controlled trial. *Psychological Medicine* **47**(11), 1990–2001. doi:10.1017/s0033291717000447
- Vehling S, Lehmann C, Oechsle K, et al.** (2011) Global meaning and meaning-related life attitudes: Exploring their role in predicting depression, anxiety, and demoralization in cancer patients. *Supportive Care in Cancer* **19**(4), 513–520. doi:10.1007/s00520-010-0845-6
- Wang J** (2011) Development of a post-traumatic growth scale and its normative model for people with accidental trauma. Master dissertation, Department of Nursing, Naval Medical University.
- Wang J, She Y, Wang M, et al.** (2021) Relationships among hope, meaning in life, and post-traumatic growth in patients with chronic obstructive pulmonary disease: A cross-sectional study. *Journal of Advanced Nursing* **77**(1), 244–254. doi:10.1111/jan.14605
- Wei D, Tian Y, Gao H, et al.** (2013) Patient distress and emotional disclosure: A study of Chinese cancer patients. *Journal of Cancer Education* **28**(2), 346–351. doi:10.1007/s13187-012-0404-6
- Winger JG, Adams RN and Mosher CE** (2016) Relations of meaning in life and sense of coherence to distress in cancer patients: A meta-analysis. *Psycho-Oncology* **25**(1), 2–10. doi:10.1002/pon.3798
- Wu DYH and Tseng W-S** (1985) CHAPTER 1 – Introduction: The characteristics of Chinese Culture. In Tseng W-S and Wu DYH (eds), *Chinese Culture and Mental Health*. Orlando: Academic Press, 3–13.
- Yang F** (2009) Religion in China under communism: A shortage economy explanation. *Journal of Church and State* **52**(1), 3–33. doi:10.1093/jcs/csp042
- Yong J, Kim J, Han SS, et al.** (2008) Development and validation of a scale assessing spiritual needs for Korean patients with cancer. *Journal of Palliative Care* **24**(4), 240–246. doi:10.1177/082585970802400403
- Yue X, Jiang F, Lu S, et al.** (2016) To be or not to be humorous? Cross cultural perspectives on humor. *Frontiers in Psychology* **7**, 1495. doi:10.3389/fpsyg.2016.01495
- Zhang L, Lu Y, Qin Y, et al.** (2020) Post-traumatic growth and related factors among 1221 Chinese cancer survivors. *Psycho-Oncology* **29**(2), 413–422. doi:10.1002/pon.5279
- Zhou LH, Hong JF, Qin RM, et al.** (2021) Post-traumatic growth and its influencing factors among Chinese women diagnosed with gynecological cancer: A cross-sectional study. *European Journal of Oncology Nursing* **51**, 101903. doi:10.1016/j.ejon.2021.101903
- Zhu L, Wei L, Xiaomin Y, et al.** (2022) Self-compassion and fear of cancer recurrence in Chinese breast cancer patients: The mediating role of maladaptive cognitive styles. *Psycho-Oncology* **31**(12), 2185–2192. doi:10.1002/pon.6070