



The effectiveness of a nurse-led short term life review intervention in enhancing the spiritual and psychological well-being of people receiving palliative care: A mixed method study



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ABSTRACT

Background: A life review is a promising intervention to enhance spiritual well-being in older people. Conventional life review interventions are lengthy and often led by psychologists.

Objectives: This is the first randomised controlled trial study to examine the effectiveness and applicability of a nurse-led short term life-review intervention in people with life limiting diseases, the purpose being to enhance their spiritual well-being and lower their anxiety and depression.

Design: A sequential mixed method approach, randomised controlled trial and qualitative evaluation, was adopted. The intervention group received the short version life review, and the control group attention placebo. Participants were randomly assigned to either intervention or control groups by computerised randomisation. Both participants and outcome assessors were blinded to the group assignment.

Settings: The study was conducted in three publicly funded regional hospitals in Hong Kong.

Participants: The target population were people suffering from life-limiting diseases, and receiving hospitalised, day hospice or outreach home care from the palliative care team.

Methods: Two sets of questionnaires were used: the spiritual sub-scale of the McGill Quality of Life Questionnaire, Hong Kong version and the Hospital Anxiety and Depression Scale, Chinese version. The intervention process was assessed by means of observation log sheets and semi-structured interviews of 12 participants.

Results: A total of 109 participants were recruited (54 in the intervention group, 55 in the control group). The intervention group showed significantly more improvement in spiritual well-being than the control group, with a Cohen's d-effect size of 0.65. Although there were improvements in both anxiety and depression levels in the intervention group, statistical significance in between-group comparisons was not reached. The process evaluation found that most participants were highly involved (92.6%), interested (77.8%) and participated in the intervention (79.6%). The participants described the intervention process as 'comfortable', 'relaxing' and 'interesting', and felt enlightened, with raised self-awareness, after it.

Conclusion: The nurse-led short term life-review intervention demonstrated significant improvement effects in spiritual well-being. Participant feedback on nurses' performance was positive, finding the intervention acceptable and useful. The setting of the intervention has now been extended from bedside to home. It is recommended to incorporate life review into palliative nursing specialty training, empowering more nurses to deliver the intervention in their daily practice.

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What is already known about the topic?

- Life-review interventions have demonstrated their value for older people to re-evaluate their life events and promote their spiritual well-being.
- Conventional life-review interventions are too lengthy, beyond the physical tolerance of people receiving palliative care, and often conducted by psychologists

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What this paper adds

- This research paper documents the first randomised controlled trial to test a nurse-led, short term life-review intervention for people receiving palliative care.
- The results demonstrate the effectiveness, acceptability and feasibility of short-term life-review intervention in enhancing the spiritual well-being of people receiving palliative care.
- The intervention settings are extended from hospital to day hospice care and home settings.

1. Introduction

Palliative care is an approach that improves the quality of life of individuals and their families who are facing problems associated with life-threatening illness, by preventing or relieving suffering through early identification and treatment of pain and other problems, whether physical, psychosocial or spiritual (World Health Organization, 2017). People suffering from life-limiting illnesses requiring palliative care are referred to as people receiving palliative care in this paper.

Spiritual well-being is regarded as the health of the person's spiritual dimension, ranging from spiritual distress to spiritual wellness (Selman et al., 2011). People receiving palliative care often experience spiritual distress (Chan et al., 2014; Winkelmann et al., 2011), which is defined as the impaired ability to experience and integrate meaning and purpose in life (Meraviglia et al., 2008). It may be manifested as fear, nervousness, anxiety, hopelessness, suicidal thought, depression or despair (Edwards et al., 2010). On the other hand, those with higher spiritual well-being (i.e., faith, meaning, peace and purpose in life) exhibit fewer symptoms of anxiety and depression (Johnson et al., 2011; Nelson et al., 2002).

Milligan (2011) suggests that life review exercise could address the spiritual needs of individuals. Life review refers to a progressive recall of past memories in attempts to find meaning in life and to achieve emotional resolution (Jenke et al., 2007). This process involves the narration of life experiences from the earliest memory of an individual to the present. Both unresolved conflicts and pleasurable experiences are recalled in life reviews, and these life experiences are evaluated and reframed to help an individual find meaning in life (Binder et al., 2009; Korte et al., 2012).

According to Erikson's lifespan developmental psychology theory, towards the end of life individuals may face a psychological crisis where ego and integrity clash with despair. These people must obtain a sense of satisfaction and achievement at this stage to feel a life well-lived. Life review is therefore regarded as a naturally occurring and universal process that allows older people to recall their past experiences and unresolved conflicts in a non-structured manner (Babb de Ramon, 1983). Lewis and Butler (1974) developed a structured life review intervention to help the elderly re-examine and reconstruct the meaning of their lives. Conventional life review interventions are often conducted by psychologists through one-to-one interviews an hour a week for eight to 10 weeks. The life review process is usually prompted by the awareness of an impending death (Kwan et al., 2017). Thus, this intervention is expected to help people receiving palliative care who, whatever their chronological age, are nearing the end of their lives. They may face the same developmental crises being experienced by the elderly and demonstrate a decline in their functions, thereby prompting them to review their past life experiences (Jenke et al., 2007).

Life review offers people receiving palliative care an opportunity to express their emotions, confirm their roles in life, reassess their attitudes towards death and reorganise their perspectives towards life (Ando et al., 2008; McSherry, 2011). People who can

develop a constructive reappraisal of past events tend to have lower levels of anxiety and depression (Korte et al., 2012). This is in line with the Conflict Reintegration Model (Black and Haight, 1992), which posits that life review can help individuals reorganise their perceptions towards life and restore effective coping. In this model, people are perceived as energy fields with organised patterns that interact with the environment. These organised patterns would be disturbed and even disorganised when interactions with the environment is increased. Life events, such as having a terminal illness, is one of the examples of such interactions. Individuals must recall their unresolved conflicts and reorganise their lives to restore an organised pattern effectively. If no reorganisation takes place, these individuals would not be able to cope with their present situations effectively. According to Black and Haight (1992), life review is a method to help the individuals reorganise perceptions of life events and restore an organised pattern, which indicates effective coping. This model also suggests that nurses can facilitate the life review process.

The process of reorganisation involves three components, re-contextualising, forgiving and reclaiming un-lived life (Jenke et al., 2007). Re-contextualising refers to re-analysing and reframing previous failures in a positive manner. Forgiving involves redirecting previous anger and resentment towards positive thoughts and attitudes. Reclaiming an un-lived life involves spending time to compensate for something that has not been done before (Jenke et al., 2007).

Palliative research often faces a variety of recurring problems, which include poor physical condition, high drop-out rates and missing data due to subjects' deteriorating condition and fatigue (Chan et al., 2012; Fitzsimons and Strachan, 2012). Our team has therefore conducted a systematic review on life review interventions for people receiving palliative care (Kwan et al., 2017), and found that only seven relevant studies were conducted by two research teams, Ando and Steinhauser. Among the seven studies, only two were randomised controlled trials. One on conventional life review interventions did not report a statistically significant improvement in outcomes (Steinhauser et al., 2008) while the other reported a promising outcome of a short term life review intervention on Japanese people with late-stage cancer (Ando et al., 2010). However, the participants and assessors were not blinded in Ando et al's study, and their intervention was delivered by a psychologist.

Despite the usefulness of life review in palliative care (Trueman and Parker, 2006), nurses have only limited experience using this intervention. Moreover, conventional life review programmes take six to ten weeks to complete, often beyond the life expectancy and physical tolerance of terminally ill individuals. It is also difficult for nurses to apply it in the busy clinical situation.

2. Aims & objectives

The aim of this interventional study is to evaluate the effectiveness of short term life review intervention and its implementation in palliative care settings. The objectives of the study are as follows:

- To evaluate the effectiveness of short term life review intervention in enhancing spiritual well-being and lowering anxiety and depression in people receiving palliative care; and
- To evaluate the delivery of interventions, and subjects' participation and acceptance of short term life review intervention.

To achieve these objectives, a sequential mixed methods approach was employed, and a randomised control trial used to test the effectiveness of the short term life review intervention. Process evaluation by observation log and semi-structured

interview was used to examine the delivery of the intervention and subjects' participation.

3. Method

3.1. Outcome evaluation

A randomised control trial was employed to evaluate outcome variables with the following hypotheses:

- i People receiving palliative care receiving the short term life review intervention would have higher levels of spiritual well-being than those without such an intervention;
- ii People receiving palliative care receiving the short term life review intervention would have lower levels of anxiety and depression than those without such an intervention.

In this study, people receiving palliative care from three publicly funded regional hospitals in Hong Kong were recruited from the hospital wards, day hospices and outreach home services provided by a palliative care team. The inclusion criteria for recruitment were (1) adult aged 18 or above, (2) able to communicate in Chinese and (3) a life expectancy of not less than one month estimated by a primary doctor. Those cognitively impaired, eg suffering from dementia or delirium, or too ill to complete the intervention, were excluded. An independent statistician performed the randomisation process. Random numbers for the intervention or control group were computer-generated in a block size of six, and then placed in sealed envelopes. A participant was assigned to the treatment or control group according to the sequentially numbered opaque sealed envelopes containing assignment information. Random assignment to either group occurred after the baseline measurements had been taken. Both the participants and the person collecting data were blinded to the group allocation. Block randomization by day was employed for group allocation among participants attending day care centres.

In order to minimise the difference in attention between the groups, a different set of questions that serves as placebo was offered to the control group as an alternative. All participants were informed that they would be given, randomly, either of the two sets of interview questions. The intervener administered the Set A questions, the life review guiding questions, to the intervention group. The same intervener also approached the control group and conducted Set B questions (placebo questions) on symptoms and social issues. In fact, Set B questions were the stuff of normal conversation between primary nurses and people receiving palliative care. In this way, the placebo effect of additional attention by the researcher would possibly be ruled out by offering the usual care attention (Polit and Beck, 2012).

3.2. Process evaluation

Process evaluation is a research method that assesses the integrity of an intervention and identifies why and how it works (Chan, 2008). The process involves documenting how the intervention was executed (McCarthy et al., 2015) and participants' involvement (Chan, 2008), as well as interviewing the participants on their views of the intervention experience (Chan, 2008). This data is valuable in guiding the implementation of interventions in clinical settings.

In this study, process evaluation included a review of the observational log sheet and individual interview. The intervener observed and recorded the participants' levels of involvement and response to the life review questions through the use of a self-developed log sheet, and a score was assigned for this parameter based on a set of pre-determined criteria as presented in

Appendix 1 in Supplementary material. The intervener also kept a written note of the participants' special presentations during the intervention as supplementary data. Semi-structured interviews of participants were conducted by an independent assessor to elicit the participants' perceptions and feelings towards the whole exercise. The individual interviews were audio-recorded and transcribed. The qualitative content analysis method was employed to analyse narrative data.

3.3. Sample size

Using the power analysis software PASS 13.0 (NCSS, Kaysville, USA), a sample size of 45 participants per group would give the study 80% power to detect a moderate effect size of 0.6 on the outcomes at a 5% level of significance. An attrition rate of 12%, similar to that of Ando et al. (2010), was assumed, so that at least 51 (=45/0.88) participants per group had to be recruited.

3.4. The intervention

The short term life review intervention consisted of two communication sessions with the participants, each lasting approximately 45 min. An interval of a week between the first and second sessions was allowed for the intervention group. In the first session, participants were asked the eight life review guiding questions (Appendix 2 in Supplementary material) to explore their life stories. Answers to each question were noted down by the intervener, who edited the content into a personalised life review booklet with relevant pictures and photographs inserted to enrich the presentation. A week later, in the second session, the intervener and participant looked at the booklet and went through the contents together, and it was then presented to the participant for retention.

The eight life review questions (Appendix 2 in Supplementary material), translated from English to Chinese were modified and culturally adapted from Ando et al. (2010). Expert opinions and face validity values were sought from five nurse consultants in palliative care, one nursing professor, an expert in palliative care, and one clinical psychologist serving palliative care units. All questions yielded good face validity. The questions were pilot tested in five people receiving palliative care without any difficulties or concerns.

3.5. Data collection

People who received palliative care service during the study period and who met the inclusion criteria were referred to the research team by their primary doctors or nurses for subject recruitment purposes. The first data collector would introduce the study to the potential participants in detail, invite them to join the study, obtain the informed consent from them. After informed consent was obtained, the first data collector administered the questionnaires to the participants (MQOL-HK & HADS) for the collection of baseline data. The data collector then allocated participants to the respective groups according to the sequentially numbered opaque sealed envelope assignment performed by the statistician. The first data collector then informed the intervener on the results of group allocation. The intervener administered Set A (short term life review) questions to participants in the intervention group, and the Set B (placebo social conversations) questions were given to those in the control group. The intervener, being one of the investigators of this study, was an experienced palliative care nurse consultant. She was the only intervener in this study, thus every intervention participant would receive the life review intervention of the same quality. After one week, the second data collector administered the same sets of questionnaires

(MQOL-HK & HADS) to participants in both groups. The second data collector was blinded to the group allocation. She was solely responsible for collecting post-intervention data. After completion of the post-intervention questionnaires (MQOL-HK & HADS), a third data collector conducted semi-structured interviews with participants in the intervention group.

3.6. Blinding

Apart from randomisation, other strategies were used to enhance the rigour of the quantitative study. Double-blinding, where neither the participants nor data collectors were aware of the outcome of group allocation, was employed. This study involved both hospitalised and community-dwelling participants. They were assigned randomly to the intervention or control group, and were blinded to the group assignment. Hospitalised participants mostly stayed in hospital beds and were therefore unlikely to be able to communicate with the other participants on the outcomes of group allocation. Moreover, there were only one to two participants recruited from each ward per week. Participants attending the day care centres were assigned to the intervention or control group according to the day of the week when they attend the centre. Those attending on Mondays were assigned to the intervention group, while those attending on Fridays were assigned to the control group. Individuals attending on both Mondays and Fridays were excluded from the study to avoid data contamination. Only the intervener knew this block assignment pattern. For people receiving palliative care at home, data collection and short term life review discussion were conducted in their homes. Therefore, community dwelling participants in one group were unable to communicate with those in the other group. Thus, contamination of data was unlikely.

The second data collector was also blinded to the group allocation of participants. The data collectors were responsible for either pre-intervention or post-intervention data collection only. They did not follow up on the same participants again.

3.7. Outcome measures

The outcomes of the intervention were evaluated according to how much spiritual well-being, anxiety and depression levels had improved. In this study, spiritual well-being was measured by the spiritual subscale of the McQuill Quality of Life Index—Hong Kong version (MQOL-HK) (Cohen et al., 1995; Lo et al., 2001). There are 17 items in MQOL-HK, of which five belong to the spiritual domain with scores ranging from 0 to 10. MQOL was selected because it is a cross-culturally validated tool in palliative care (Selman et al., 2011). Moreover, the Hong Kong version of MQOL (MQOL-HK) has been validated (Lo et al., 2001). The construct validity of this instrument is good, as evidenced by a significant correlation between the MQOL-HK total scores and the single item score ($r=0.5$, $P=0.001$) (Lo et al., 2001). The convergent validity of the questionnaire is also acceptable, as evidenced by the significant correlation between the MQOL-HK total score and Spitzer's Quality of Life Index total score ($r=0.40$, $P=0.004$) (Lo et al., 2001).

Anxiety and depression levels were measured by the Hospital Anxiety and Depression Scale (HADS) (Holtom and Barraclough, 2000; Lam et al., 2009, 1995). HADS is a 14-item instrument using a four-point rating scale. HADS has been translated into Chinese and validated among Chinese people in Hong Kong (Lam et al., 1995). The sensitivity was 80%, the specificity was 90%, the overall misclassification rate (OMR) was 12%, the positive predictive value was 67% and the negative predictive value was 95%. (Lam et al., 1995).

Well-validated Chinese versions of these two sets of questionnaires are available. These questions were administered by the data collectors. It took 15–20 minutes for participants to complete the two sets of questionnaires.

3.8. Statistical analysis

Data was summarised and presented using appropriate descriptive statistics. The outcome variables were analysed on the basis of the intention-to-treat principle. The generalised estimating equation (GEE) method was used to compare the differential change in each of the outcome variables across time (T1 and T2) between the two groups, with adjustment for any baseline difference in the underlying outcome variable. All statistical analyses were performed using IBM SPSS 24.0 (IBM Corp., Armonk, NY) and all statistical tests involved were two-sided, with the level of significance set at 0.05.

3.9. Ethical approvals

Written consent was obtained after introduction of the research. Anonymity and voluntary participation were strictly adhered to. Strong emotions and upset feelings among participants, when induced by the discussion of their life events, were handled by the nurse intervener who was an experienced palliative care nurse. The intervener worked closely with the doctors and nurses in the palliative care team. She would report any events or problems arising from the intervention and would seek support from the team if necessary.

Ethical approval was obtained from the Joint CUHK-NTEC Clinical Research Ethics Committee and individual review boards of the participating hospitals where participants were to be recruited. Approval for adapting the short term life review intervention and the assessment tools was also obtained.

4. Results

Data collection lasted for one year from February 2016 to January 2017. A total of 167 subjects were referred to join the study by primary doctors or nurses, and 109 subjects were successfully recruited. The intervention group was reduced by five after the first session interview because of a death, physical deterioration in another and three withdrawals. Fifteen participants from the control group dropped out because of death ($n=2$), physical deterioration ($n=9$) and withdrawal ($n=4$). The reason for participants' withdrawal was feelings of tiredness completing the questionnaires. The recruitment flow of the study is shown in Fig. 1. Eventually, 89 participants completed the study, and the response rate was 81.7%.

Among the 109 participants, the majority (71.6%) were recruited from hospital care facilities, with 28.4% from home and day care facilities. There were slightly more males (56.9% [$n=62$]) than females (43.1% [$n=47$]). However, the differences were not significant ($p=0.068$) to create a bias towards male presentation. Almost 60% of the participants were ≥ 60 years old, and the mean age was 64.4 (SD: 11.98), ranging from 28 to 89. The majority were married 69.7% ($n=76$). Less than half (46.8%) had achieved a secondary or higher level of education. Nearly half (48%) had no religion. Metastatic cancer was the dominant diagnosis (94.5%), with only six participants diagnosed with other diseases, including chronic renal failure and motor neuron disease. As a routine assessment for all people receiving palliative care in the setting, the Palliative Performance Scale (PPS) showed a mean score of 56.6 (SD: 12.49). About half of the participants ($n=55$) scored ≤ 50 , and half again ($n=54$) ≥ 60 . The range of scores was 0–100 - 0=dead, 100 = full function with no signs of illness, 60 = reduced ambulation, occasionally needing assistance, 50 = able only to sit or lie, unable to do any work and needing considerable assistance (Anderson et al., 1996). In fact, participants recruited from the palliative care wards were of relatively poor health status, while those recruited from the day-care centre were of better functional status. The participants'

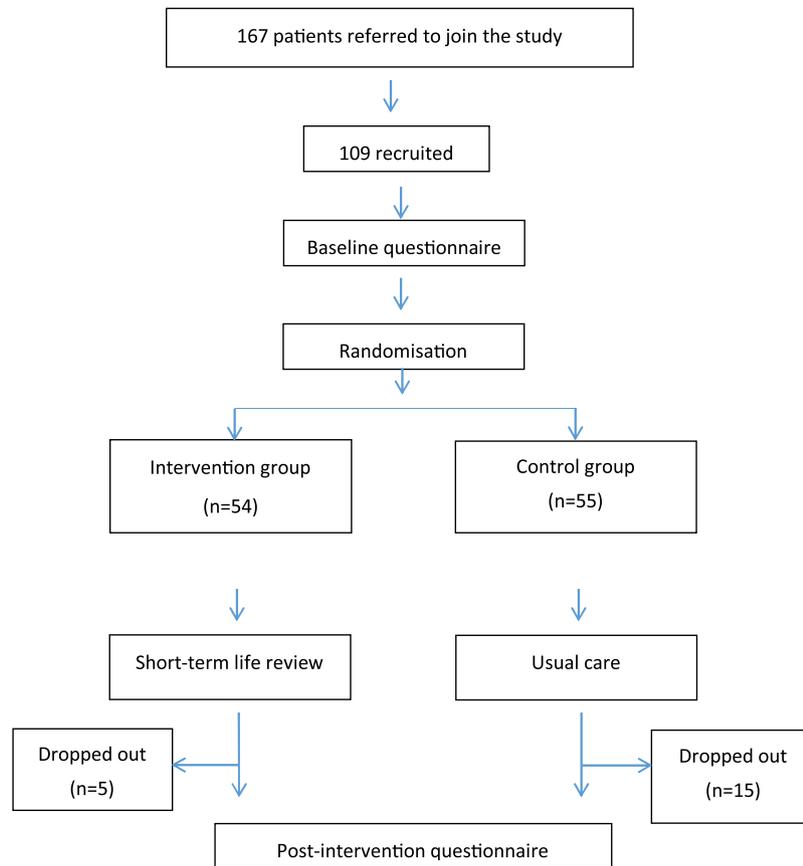


Fig. 1. Recruitment flow.

demographic data was summarised and analysed by descriptive statistics, and appears in Table 1.

In the current study, the Cronbach's alpha of the MQOL-HK spiritual subscale was 0.805, while that of the HADS was 0.822. This represents a high level of internal consistency in both tools.

The demographic data of the intervention and control groups was compared by the Pearson chi-square test, but no significant statistical difference was observed between groups. Independent sample *t*-tests were used to compare and test the baseline measurements of the HADS and MQOL-HK for differences between the groups. Again no significant statistical difference was observed in the MQOL-HK domains and HADS.

4.1. Baseline comparisons

Demographic data of the intervention and control groups were compared using the Pearson chi-square test. Table 2 summarizes the results. No significant statistical difference was observed in the demographic characteristics between groups.

Independent samples *t*-test was used to compare the differences in the baseline measurements of the HADS and MQOL-HK between the two groups. The mean values of the measurements were compared to determine whether there are significant differences in the scores between the two groups at baseline. Table 3 presents the results of the independent samples *t*-test. The results confirmed that no significant statistical differences exist in the baseline measurements between the intervention and the control groups in HADS scores and the score for the spiritual domain of MQOL-HK.

For MQOL-HK, each item was assigned a score ranging from 0 to 10. However, some items would utilise a reverse scale. For ease of

interpretation, these items were reversely scored. Therefore, a higher score for every item in MQOL-HK indicates a better outcome. For HADS, the anxiety sub-scale ratings range from 0 to 21, and the depression sub-scale ratings also range from 0 to 21. A higher score indicates a worse psychological outcome.

4.2. Spiritual well-being

There was an increase in the overall mean score of the spiritual domain after the short term life review intervention in that group [from 6.29 (SD 1.963) to 6.91 (SD 1.775)]. Table 4 presents the mean scores at the two time points, baseline (T1) and one week later (T2), of both groups. The control group recorded a decrease in the overall mean score in the spiritual domain, from 6.22 (SD 2.000) to 5.93 (SD 2.311).

4.3. Anxiety and depression

A higher HADS score represented a much worse anxiety and depression condition. In this study, both groups showed a decrease in the overall anxiety and depression scores after one week. The intervention group had a reduction in both anxiety and depression sub-sets, whereas the control group reported a reduction in the depression sub-set and an increase in the anxiety sub-set.

Generalised Estimating Equations (GEE) were used to compare the outcomes across time between the two groups.

Table 5 summarises the statistical findings of the outcome measurements. The *p* values of the group by time interaction-term in the GEE models for the spiritual domain were $p=0.001$ and in HADS $p=0.536$. Only the *p* values for the differences between groups across time in the spiritual domain of the MQOL-HK [B (Group*Time)=0.28, 95% CI: 0.36, 1.44, $p=0.001$] achieved a

Table 1
Demographic characteristics.

		Intervention (54)	Control (55)	Total (109)
Gender	Male	26	36	62
	Female	28	19	47
Marital status	Single	8	4	12
	Married	33	43	76
	Widowed	8	4	12
	Divorced	5	4	9
Age range	21–30	1	1	2
	41–50	2	7	9
	51–60	16	17	33
	61–70	18	14	32
	71–80	13	8	21
	81–90	4	8	12
Education	Non-formal	8	7	15
	Primary	17	26	43
	Secondary	24	21	45
	College or above	5	1	6
Religion	None	25	27	52
	Christian	15	14	29
	Buddhist	6	6	12
	Traditional Chinese Taoist	7 1	8 0	15 1
Site	Hospital	41	37	78
	Day centre	1	6	7
	Clinic	1	1	2
	Home	11	11	22
Primary diagnosis	End stage organ failure	2	4	6
	Metastatic cancer of the lung	19	16	35
	Metastatic cancer of the gastrointestinal tract	13	16	29
	Metastatic cancer of the reproductive organs	5	7	12
	Metastatic cancer of other organs	15	12	27
PPS	30	1	1	2
	40	5	11	16
	50	19	18	37
	60	18	9	27
	70	10	7	17
	80	1	8	9
	90	0	1	1

statistical significance of less than 0.05, with a Cohen's *d* effect size of 0.65.

Subsequently, the components of each domain were studied. The intervention group exhibited greater improvement in all components of the spiritual domain than the control group, as indicated by the positive coefficients of the Group by Time interaction-term in the GEE models. The improvement in the components of 'life goals achieved' [B (Group*Time) = 1.30, 95% CI: 0.48, 2.10, $p = 0.002$] and 'feeling good about oneself' [B (Group*Time) = 1.34, 95% CI: 0.35, 2.32, $p = 0.008$] reached statistical significance.

The coefficients of the HADS showed negative values because scaling was in the opposite direction to that of MQOL-HK variables. A negative coefficient value represented greater improvement in the intervention group than in the control group. Therefore, the intervention group exhibited considerable improvement in anxiety and depression levels in the HADS [B (Group*Time) = -0.62, 95% CI: -2.59, 1.35, $p = 0.536$], although not reaching statistical significance.

4.4. Level of involvement and level of response of the intervention group

As for the level of involvement, over 90% of the participants were highly attentive and exhibited interest and high levels of

Table 2

Comparison of the baseline characteristics of the intervention and the control groups using the Pearson chi-square test.

	Value	df	Asymptotic significance (2-sided)
Gender (Male, Female)	3.327	1	0.068
Age (≤ 60 , 60–70, ≥ 70)	1.339	2	0.512
Education level (Primary education or below, secondary education or above)	2.055	1	0.152
Marital status (single/widowed/divorced, married)	3.762	1	0.052
Religion (No religion, have a religion)	0.085	1	0.770
Diagnosis (not diagnosed with cancer, diagnosed with cancer)	0.001	1	0.974
PPS (≤ 50 , ≥ 60)	0.742	1	0.389

Table 3

Independent samples *t*-test comparing the baseline measurements of the two groups.

	t	df	Sig. (2-tailed)
HAD	1.534	107	0.128
HAD—anxiety	1.692	107	0.094
HAD—depression	0.937	107	0.361
MQOL-HK			
<i>Spiritual domain</i>			
Meaning and purpose	0.018	107	0.986
Life goals achieved	-0.825	107	0.411
Feel that life is worthwhile	-0.150	107	0.881
Feel good about myself	-0.817	107	0.416
Feel burdened	0.044	107	0.965

participation during the life review discussion. Forty-four participants expressed interest in the personal life review album. Ten participants did not want to have one made because they were either single or widowed without children, and claimed they did not have anyone to pass the album on to. These ten participants constituted the 18.5% under 'low involvement or interest in producing a life review booklet'.

As far as the level of response to the life review questions was concerned, over 65% of the participants had high response levels to questions 1–3, with a mean score > 3 . A moderate-to-high response level means they responded spontaneously after they were asked to share their stories or disclose information with or without some probing. For questions 4 and 5, the high level response rates were 59.3% and 50%, respectively. A reverse pattern was observed in questions 6, 7 and 8, to which more than half of these participants exhibited a partial-to-low response. The mean score was < 2 . Questions 6 and 7 elicited a particularly low level of response, over 70% claiming they had nothing to share in these respects. Appendix 3 in Supplementary material lists the percentage distribution and the mean score of involvement and response levels to the life review questions.

4.5. Semi-structured interviews

Although there were 54 participants in the intervention group, only 12 participants were successfully interviewed. Those refusing to join the interview were either physically too tired or just did not

Table 4
Mean scores from the MQOL-HK and HADS at T1 and T2 for intervention and control groups.

		Intervention group		Control group	
		Mean	SD	Mean	SD
HAD	T1	11.83	6.68	12.38	5.82
	T2	10.73	6.91	12.18	6.44
HAD—anxiety	T1	2.67	3.12	3.40	3.12
	T2	2.42	3.29	3.55	3.69
HAD—depression	T1	9.17	4.52	8.98	4.87
	T2	8.31	5.01	8.63	4.94
MQOL-HK					
<i>Spiritual domain</i>					
Meaning and purpose	T1	5.45	3.13	5.68	2.84
	T2	6.10	2.77	5.78	3.15
Life goals achieved	T1	6.33	2.30	5.98	2.83
	T2	7.16	2.10	5.50	2.89
Feeling that life is worthwhile	T1	5.43	2.65	5.33	2.97
	T2	6.24	2.92	5.53	3.11
Feeling good about oneself	T1	6.71	2.42	6.30	2.90
	T2	7.45	1.92	5.70	3.03
Feeling burdened	T1	7.53	3.12	7.83	3.28
	T2	7.61	3.24	7.13	3.26

Score range: HADS (0–42); 0=better, high marks=worse. MQOL-HK (0–10); 0=worse, 10=better.

want to be recorded. The interviews were audio-recorded and transcribed into the text of the original language, Chinese. A qualitative content analysis method was used to analyse the narrative data. Content analysis of all 12 interviews revealed 5 categories and 12 sub-categories; Table 6 presents an overview.

Positive and negative feelings arose during the process of reviewing life. Short term life review intervention was reported as a comfortable and relaxing experience. The participants expressed feelings of happiness, comfort and relaxation. They were free to ventilate their feelings and share their stories. They treasured the opportunity to talk about their past experiences. However, negative emotions also arose. Two participants expressed a sense of sadness when bad experiences in the past were recalled, such as the moment they received the bad news of a cancer diagnosis.

The participants indicated that by recalling their past they gained the opportunity to recognise the love and care of their families and friends, and learned to treasure their relationships more. For these participants, the life review and reflection had helped them transform some hatred feelings into gratitude. A sense of thankfulness and joy arose. They had a new look on the old stories, and thus gained a new perspective on their life experiences and the people surrounding them. They gained a wider and in-depth understanding of the people they encountered and things that happened in the past. They had more insights into their personality and the way they treated others. Moreover, they stated

that the life review process enlightened them by allowing them to think differently.

A very important element of the short term life review intervention was the intervener who conducted the life review interview with the participants, who evaluated the intervener positively. Participants said they found intervener amiable, exhibiting a caring attitude and listening attentively to their stories, and thereby indicating that the intervener had demonstrated good communication skills during the life review interviews.

Lastly, these participants were all delighted to receive booklets. They said they would keep them carefully and read them at times for further review. Some participants also stated that they planned to share their booklets with their families, children, church colleagues and friends. Some participants also said they would like to pass down their booklets to their children as a memorial.

5. Discussion

5.1. Effect on spiritual well-being and anxiety and depression

The findings of this study support the first hypothesis, that people receiving palliative care receiving the short term life review intervention would have enhanced spiritual well-being compared with those without such intervention. However, the second hypothesis, concerned with lowered anxiety and depression levels, was rejected.

The results of the current study are similar to those of previous empirical studies conducted in Japan (Ando et al., 2010, 2008; Sakaguchi and Okamura, 2015), in which a significantly better spiritual well-being performance was identified in the intervention group than in the control group. In particular, a significantly improved performance was obtained in the intervention group on the “life goals achieved” and “feeling good about oneself” components. This result may indicate that after the short term life review intervention individuals were considerably more able to identify their achievements in life and develop positive thoughts about themselves. The evaluation of “life goals achieved” and “feeling good about oneself” was considerably more straightforward and precise. Many individuals referred to their life goals achievement as having brought up children, earned a living for the family or owned an apartment. They rated highly on “feeling good about oneself” when they said that they had been good to others and accepted imperfections.

On the other hand, “Meaning and purpose” and “feeling that life is worthwhile” were perceived as more abstract and substantially difficult to comprehend. Only a few participants said they discovered that they had lived a meaningful and worthy life but

Table 5
Generalised estimating equation (GEE) models for the comparison of primary and secondary outcomes across time between the control and intervention groups.

Outcomes	Regression coefficients of the GEE models					
	Group		Time		Group*Time	
	B (95% CI)	p	B (95% CI)	p	B (95% CI)	p
HAD	−1.82 (−4.13, 0.49)	0.122	−0.48 (−1.97, 1.01)	0.529	−0.62 (−2.59, 1.35)	0.536
HAD—anxiety	−0.99 (−2.12, 0.15)	0.088	−0.06 (−0.99, 1.12)	0.913	−0.28 (−1.63, 1.06)	0.681
HAD—depression	−0.83 (−2.56, 0.89)	0.344	−0.55 (−1.5, 0.38)	0.249	−0.31 (−1.65, 1.02)	0.646
MQOL-HK						
<i>Spiritual domain</i>						
Meaningful and purposeful	−0.01 (−1.13, 1.11)	0.985	0.20 (−0.61, 1.0)	0.633	0.47 (−0.63, 1.57)	0.404
Life goals achieved	0.41 (−0.55, 1.37)	0.404	−0.46 (−1.07, 0.14)	0.135	1.30 (0.48, 2.10)	0.002
Feel that life is worthwhile	0.08 (−0.96, 1.12)	0.880	0.19 (−0.55, 0.93)	0.608	0.62 (−0.35, 1.60)	0.209
Feel good about myself	0.41 (−0.57, 1.40)	0.409	−0.61 (−1.44, 0.22)	0.148	1.34 (0.35, 2.32)	0.008
Feel burdened	−0.03 (−1.23, 1.17)	0.964	−0.55 (−1.58, 0.48)	0.292	0.65 (−0.67, 1.97)	0.334

Only the model estimates of the regression coefficients of the dummy variables for the group [Group: 0= Control (reference); 1= Intervention], time point [Time: 0=pretest (reference); 1= posttest] and the time points and group interaction terms (Group*Time) are shown for the GEE models.

Table 6
Overview of categories and sub-categories.

Categories	Sub-categories	Sample quotes
During the life review interview		
Positive feelings	Comfortable and relaxing experience	'I felt comfortable I said what I could, there was no difficulty. Not difficult!' [05-2, 3] 'Quite interesting. The questions were quite interesting. I haven't thought about them before.' [06-2]
	Free to ventilate	'Very relaxed . . . because there was someone willing to listen to me. I am not a talkative person. I can keep silent for a whole day.' [12-12] 'I could say as much as I want.' [11-14] 'It allowed me to pour out everything that was in my heart.' [10-3] 'It gave me an opportunity to talk about myself and ventilate.' [10-12]
Negative feelings	Feeling sad when recalling bad experiences	'When I knew about I had cancer . . . that is, when I recalled that part [of life experience] . . . I was not, of course, feeling happy.' [04-3]
Changes brought about by the intervention		
Increase in joy	Happier	'I felt happier afterwards.' [03-11] 'I haven't thought of having such a session to review past experiences. Now, having this opportunity, I found nothing was a big deal . . . and it gave you the kind of . . . more happiness.' [07-28,29]
	Treasure more	'My family members are so supportive of me . . . and . . . others . . . like church friends are so caring towards me . . . so it is worth it, worth it for me to treasure [them] more.' [08-5]
New perspective	More thankful	'It is helpful. I feel more thankful because my old stories were revisited . . . I had lots of hatred in the past. Now, I am filled with more gratitude.' [11-1, 11-10]
	Wider and in-depth understanding	'My mind was more open and inclusive . . . I feel that I have a wider view than before. I was stingy and narrow-minded. Now I have a wider view and more cheerful than before.' [10-7] 'I am thankful to realise that I did not see and treat the people and things around me in a deeper and clearer way in the past.' [11-2]
	Enlightened	'Through this programme and by answering the questions, I found that, I mean, I realised how I see things and problems. I think I can be more open-minded and happier later on Because, having joined this programme, I became enlightened.' [04-4] 'All of a sudden, like a lamp switched on, "ding" . . . that is, the things I treated very seriously before, I have a different view of now.' [07-25]
	Know more about myself	'I found that in the "Inner melody" [life review booklet], I realised that everything of me was around my daughter.' [07-26]
The intervener		
Caring attitude	Attentive	'Because she was really caring. She wanted to listen to what you say. Other people wouldn't. If they do not want to listen, they will feel bored.' [12-12]
	Compassionate Gave time	'I see great love; you people approached me amiably.' [12-14] 'She cares about me. She made time to [talk to me].' [08-13]

it was hard to find meaning when currently suffering from a serious illness. The majority of the subjects in this study were recruited in wards, and so represented those suffering from serious levels of illness that required hospitalisation.

On anxiety and depression, the intervention and control groups demonstrated an improving trend, albeit statistically insignificant, compared with the baseline and between groups. The baseline HADS scores were 11.8 and 12.4 for the intervention and control group, respectively. O'Connor et al (2010) explained that the cut-off score for the combined anxiety and depression totals was ≥ 19 . Given that the participants in the current study did not exhibit severe levels of anxiety and depression, a large enough improvement might have been difficult to achieve after the implementation of short term life review. Such scenarios may also reflect that the palliative care team in the study setting had generally provided adequate levels and amounts of emotional support to people in their usual care.

The qualitative data from the semi-structured interviews supports the findings from the quantitative section. These participants exhibited positive changes in mood and spiritual well-being. The short term life review intervention had an effect on the spiritual aspect by enlightening and expanding individuals' perspectives. These results were brought about by the re-evaluation of positive or negative life events, as well as the development of new understandings and perspectives of these events. Thus, the overall findings may suggest that short term life review had relatively benefited individuals in the emotional and spiritual well-being areas.

5.2. Life review as a vehicle to achieve life developmental

This study found that the majority of the participants were considerably involved in the short term life review intervention, in

their attention, interest and participation in the life review interview. They actively discussed their life experiences, spontaneously disclosed their stories, and described details with minimal probing and encouragement by the intervener. The recalling and telling of life stories occurred naturally during the interviews. This result echoes Erikson's lifespan developmental stages - at the final stage of life, a person needs to restore integrity by acquiring a sense of satisfaction with a life well-lived (McLeod, 2008; So et al., 2013). The participants in the present study evidently exhibited good engagement in recollecting life accomplishments and satisfaction with the lives they had lived. This result is reflected in the quantitative finding that the item on "life goals achieved" recorded significant improvements ($p < 0.05$). Thus, the short term life review intervention appears to assist individuals to achieve the goal of integrity restoration in the final lifespan developmental stage.

Such findings are in line with the literature, in that life review can help people with advanced diseases to accept their deaths and enhance their spiritual well-being (Ando et al., 2010; Xiao et al., 2012). Subjects generally reported a feeling of emotional relief, improved perceptions of meaning in life and were able to leave a legacy.

5.3. Life review reintegrates conflict and restores harmony

Many people receiving palliative care enjoyed talking about their past achievements at work, special talents and their children and grandchildren. Several participants shed tears when they recalled the hardships they had experienced in the past, particularly how their mothers had loved them and worked extremely hard to bring them up. Although negative emotions were aroused, the improvement in HADS and spiritual well-being

scores may suggest that the recollection of bitter memories does not necessarily harm the individuals' emotions.

Furthermore, in the Conflict Reintegration Model (Black and Haight, 1992) on which the current study is based, the nurse as a facilitator assists a person to "reintegrate" and "reorganise" conflicts to obtain an effective life pattern. Therefore, when the individuals revisit any happy or unhappy events that naturally occur (Babb de Ramon, 1983), they are supported by the intervener and are encouraged to evaluate the context in different perspectives. Having a re-analysis of the events or a person, they would be able to gain a deeper understanding and a wider perspective that would result in more positive actions, such as forgiving a person or themselves, and spending more time with families. Thus, the individuals can be directed towards a positive meaning, reconstruction and forgiving. The mechanism of life review involves the revival of positive life stories and re-evaluation of bitterness in life in a constructive manner.

Nevertheless, some individuals may appear to be reluctant to recall past events. Indeed, there were several potential participants who refused to join the study because they did not want to recall life experience in the past. Therefore, respecting individual's willingness to receive life review intervention is vitally important during subject recruitment.

5.4. Limitations

This study has several limitations. First, it was unable to include all participants who had received short term life review intervention in the semi-structured interviews because they refused to join. These potential participants may provide information additional to this research. Second, the study missed certain individuals who had refused to participate for unknown reasons. Third, it failed to analyse the long-term effects of the intervention. In particular, the effects on the family of the participants who had received the intervention were not assessed. Lastly, only one nurse intervener was employed in this research. Despite the availability of a scoring guide describing the level of involvement and response during the intervention, it is possible that the intervener would exercise a certain level of subjectivity in such ratings. The implementation of the intervention by other nurses in a real-life day-to-day clinical setting has yet to be studied.

5.5. Implications for future research

This study demonstrates a breakthrough in the difficulties, such as high dropout rates, in conducting palliative care research. It shows the feasibility of empirically evaluating a short form intervention for such individuals with a reasonable attrition rate. The merit of using a mixed methods approach to measure the outcomes as well as the process produced a more comprehensive picture of the intervention's effectiveness and clinical usefulness. It would certainly be worthwhile to evaluate the real-life clinical implementations and long-term effects of the intervention in future research. Any such study should be longitudinal and considerably larger in scale, with a substantially longer period of implementation to assess the effectiveness of the intervention. It could be implemented and evaluated by more front-line nurses in hospital and community as part of their routine nursing care. It would also be worthwhile to investigate the responses to short term life review of the families of the participants.

5.6. Implications for clinical application

This short term life review intervention, delivered by nurses, is a concise and structured programme that does not exhaust the energy and time of participants, including life-limited people

receiving palliative care. It serves as an option to address the spiritual needs of such people. The use of a short term life review, particularly the positive reinforcement of their achievements and contributions, may enhance the spiritual well-being of individuals. Given that this process is a short version and nurses have readier access to people receiving palliative care, it is highly applicable to clinical settings, particularly by specialty nurses experienced in palliative care.

After the study, life review has already been adopted as a standard nursing intervention by one palliative care clinic in Hong Kong. It will then be further extended to palliative home care, where nurses are substantially experienced and the setting allows them to have extensive individual time spent with the individuals. In fact, life review interventions could be incorporated into palliative care nursing specialty training programmes. In addition to basic communication skills, the nurse would need to acquire skills in counselling individuals with strong emotions. In addition, the knowledge and skills in facilitating people in finding the meaning of life would also be important in conducting life review. It is hoped that more nurses are able to master these skills and enhance the clinical applicability of a short-term life review intervention.

Furthermore, this intervention is not confined to palliative care settings; elderly or end-of-life people in other acute or infirmary settings would also benefit from it. The application of the short term life review intervention could also be extended to people in community and home settings.

6. Conclusion

The nurse-led short term life review intervention is effective in enhancing the spiritual well-being of people receiving palliative care, particularly in two components of the spiritual domain, "life goals achieved" and "feeling good about oneself". Individuals are able to reflect on their life stories and find new perspectives and joy through the process of life review. The implementation of short term life review requires the intervener to be an experienced nurse who has competent communication skills. Given appropriate training, specialty palliative care nurses are likely to be able to implement the short term life review intervention.

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Appendix A. Supplementary data

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