

REVIEW ARTICLE

Does psychosocial interventions enhance posttraumatic growth and spirituality in cancer patients and survivors? A narrative review of the literature

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ABSTRACT

This narrative review present and critically appraise the evidence of psychosocial interventions in enhancing post-traumatic growth (PTG) and spirituality in cancer patients and survivors. A comprehensive search of published English language literatures which include both quantitative and qualitative studies was conducted via Google Scholar, PubMed, Medline, PsycINFO, EMBASE, Cochrane Library, Scopus and Web of Science up to September 2018. Out of an initial 17,000 articles, 10 studies were finally included in the review. There were three randomized controlled trials, two non-randomized comparison trials, three time series/pre and post-intervention designs, one mixed design study and one qualitative study which demonstrated psychosocial interventions enhanced PTG and spirituality in cancer patients and survivors. We concluded mindfulness-based interventions may be promising to enhance PTG and spirituality in cancer patients and survivors. On the contrary, evidence for psycho-spiritual therapy, cancer support group, health behavioural change intervention and individual psychotherapy were lacking and poor.

Keywords: Posttraumatic growth, Spirituality, Positive psychology, Psychosocial intervention, Cancer patients

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INTRODUCTION

Psychologists have been focusing on the negative complications of life-threatening crises or traumatic events like cancer for the past few decades such as depression, anxiety disorders, posttraumatic stress disorder and adjustment difficulties. But for the recent two decades since the 1990s, more evidence have emerged that life-threatening crises or traumatic events may also bring about positive psychological changes such as posttraumatic growth (PTG). It is also interesting to explore how spirituality influence the well-being of people with life threatening illness such as cancer.

Posttraumatic growth (PTG) is positive psychological changes experienced by a person as a result of struggle with life-threatening crises or events. PTG can only developed when a person is exposed to major life-threatening crises and not minor life events or stressors. Rather than a form of coping with life crises, PTG is an outcome or an on-going process resulting from struggling

with major life crises. It is a genuine transformative life changes which is triggered by major life crises. Finally, posttraumatic growth is not merely the experience of improvement in certain areas of life to restore the pre-existing level prior to the major life crises, but changes occurred to the point beyond the pre-existing level. It is made up of five factors or components i.e. appreciation of life, personal strength, relationship with others, spiritual development and possibilities in life. This indicated that PTG resulted in enhancement of several aspects in life such as increase in appreciation of one's life, greater personal strength, improvement in one's relationship with others, enhanced spiritual development and increase in more possibilities in life (1). Spirituality is the degree of belief and obedience to an all-powerful being usually called God, which guides the life and destiny of man through principles and teachings that direct all vital activities of living towards growth and construction. It produces positive qualities in life such as honesty, loyalty, love, compassion, tolerance, faith and hope (2-3).

Posttraumatic growth has been reported in various cancer diagnoses such as breast cancer, liver cancer, colorectal cancer, ovarian and cervical cancer, head and neck cancer, lung cancer, childhood cancer survivors such as in lymphoma and leukaemia survivors, prostate

cancer, testicular cancer and malignant melanoma (4-6). Posttraumatic growth has also been reported in Malaysian cancer patients as demonstrated by two quantitative studies involving one hundred and thirteen cancer patients of various cancer sites and fifty head and neck cancer patients respectively (7-8). Cancer patients are also prone for various psychological complications such as depression, anxiety, psychological distress and posttraumatic stress disorder (PTSD). Numerous studies have evaluated the association between posttraumatic growth and these psychological complications in cancer patients. Findings from these studies revealed that there are significant weak negative association between posttraumatic growth and depression and psychological distress, significant weak positive association between posttraumatic growth and posttraumatic stress disorder (PTSD) symptoms but there is no association between posttraumatic growth and anxiety (5-6). In regard to the health-related quality of life of cancer patients, a systematic review of posttraumatic growth in cancer patients reported that posttraumatic growth has a positive association with health-related quality of life (6). Another study of sixty two newly diagnosed cancer patients with assessment conducted at three months post-diagnosis and repeated another three months later, demonstrated a linear association between posttraumatic growth and quality of life, in which greater posttraumatic growth at baseline assessment predicted better physical health at follow up (9). Similarly, spirituality bring about positive psychological changes in cancer patients because it is positively associated with hope. Increase spirituality leads to enhanced level of hopefulness which are reported by studies on gynaecological cancer, breast cancer, and bone marrow transplantation survivors. These patients reported feeling more positive, and having less anxiety and fear to deal with their illness and to undergo treatment for their illnesses (10-13). With respect to the relationship between spirituality and psychological complications of cancer, a study of three hundred and sixty seven men with prostate cancer reported that after controlling for marital status, age, time since diagnosis, hormone therapy, stage of cancer, anxiety and quality of life, spirituality and religiosity is significantly negatively correlated with depression which is mediated by sense of meaning and peace experienced by patients (14). Another study on eighty five advanced stage cancer patients also found spirituality to be significantly negatively correlated with depression and anxiety but did not find any relationship between religious well-being and depression and anxiety (15). Quality of life is an important measure of outcome or impact of cancer and its treatment onto patients. Studies of cancer patients with large sample size have reported that spirituality and religious coping is associated with higher quality of life in cancer patients (16-17). This finding provide us important information on clinical implications, whereby psychosocial interventions which enhance spirituality, may facilitate improvement in quality of life of cancer patients.

We would expect spirituality to be associated with posttraumatic growth in cancer patients as spiritual growth is one of the component or domain of posttraumatic growth. Two meta-analyses of seventy and one hundred and three studies on posttraumatic growth in cancer patients respectively have reported that spirituality is significantly positively associated with posttraumatic growth. Spiritual beliefs and spiritual activity like prayers function as cognitive processing which may facilitate meaning making at the aftermath of the diagnosis of cancer and hence, it helps to reconstruct the assumptive world by accommodating new trauma-related information with the shattered pre-existing assumptive world and this facilitate development of posttraumatic growth. In addition, increased spirituality also improved sense of community and enhance community support to foster meaning making after the traumatic diagnosis of cancer. Simply by talking through the experience of having cancer with others in the community will facilitate development of posttraumatic growth as well (4-5).

Despite several positive health benefits and outcomes brought about by PTG and spirituality, there has been a paucity of comprehensive and updated review on psychosocial interventions which may enhanced PTG and spirituality in cancer patients. A comprehensive up-to-date review of literatures will provide evidence-based guidance for treating clinicians to select which psychosocial interventions to incorporate into the treatment regime of cancer patients and survivors in order to foster improvement in the treatment outcomes. Hence, this narrative review aimed to synthesize up-to-date evidence on the possible psychosocial interventions which may enhanced PTG and spirituality, and other positive outcomes in cancer patients and survivors.

MATERIALS AND METHODS

Study selection criteria

Primary studies published in peer-reviewed English language journals including articles in press were included while previous reviews, case reports, letters and editorials were excluded. Unpublished clinical trials, thesis and academic conference proceedings as well as published peer-reviewed journals in languages other than English were also excluded. There were no limitations regarding the number of participants in studies and the outcome measures used. Studies with titles and abstracts indicating participants comprised of patients and survivors of all age, cancer sites, duration of diagnosis, stages and mode of treatment were included. All empirical studies which utilized psychosocial interventions for cancer patients and survivors such as mindfulness, group, individual therapies, cancer support group, health behavioural change intervention, supportive expressive therapy, cognitive behavioural therapy, art therapy, psycho-spiritual therapy, hope therapy, well-being therapy and positive psychology

interventions were included. Psychosocial interventions which focus on posttraumatic growth, spirituality and meaning-making were also included.

Literature search

Electronic literature search was carried out using major databases such as Google Scholar, PubMed, Medline, PsycINFO, EMBASE, Cochrane Library, Scopus and Web of Science from 1st January 1990 until 21st September 2018. Preliminary search was performed with keywords such as 'posttraumatic growth' OR 'spirituality' OR 'cancer'. Then, refined search was carried out with additional keywords such as 'psychosocial intervention' OR 'mindfulness-based intervention' OR 'group therapy' OR 'individual therapy' OR 'support group' OR 'health behavioural change intervention' OR 'supportive-expressive therapy' OR 'cognitive behavioural therapy' OR 'art therapy' OR 'psycho-spiritual therapy' OR 'hope therapy' OR 'well-being therapy' OR 'positive psychology interventions'. The search were conducted independently by the two authors (MFILA and MAM). Then, the individual search results were compared and any discrepancies in the search results were sorted out between the two authors (MFILA and MAM) before the final selection of articles was carried out based on consensus between the two authors.

RESULTS

Search results

The electronic search flow is illustrated in Figure 1. Initially, seventeen thousand studies were extracted through the database searches. Sixteen thousand seven hundred and ninety one studies were removed as they did not involve psychosocial interventions. Then, two hundred and nine abstracts were screened and one hundred and seventy nine studies were excluded as they did not investigate the effects of psychosocial interventions on posttraumatic growth and/or spirituality in cancer patients or survivors. Then, the full text articles for thirty studies were screened and another twenty studies were excluded as they did not investigate the effects of psychosocial interventions on both posttraumatic growth and spirituality in cancer patients or survivors, or did not clearly report the study results. The final number of studies selected for the review was ten studies. The summary of all the studies selected for this review are illustrated in Table I.

Study designs

There were three randomized controlled trials (RCT) which examining effects of psychosocial interventions on posttraumatic growth (PTG) and spirituality in cancer patients (18-20). Another two studies selected were of non-randomized comparison trials (21-22). Three studies were of pre and post-test design (23-25), one study was of mixed design (combining quantitative and qualitative study methods) (26) and one study with qualitative study design (27).

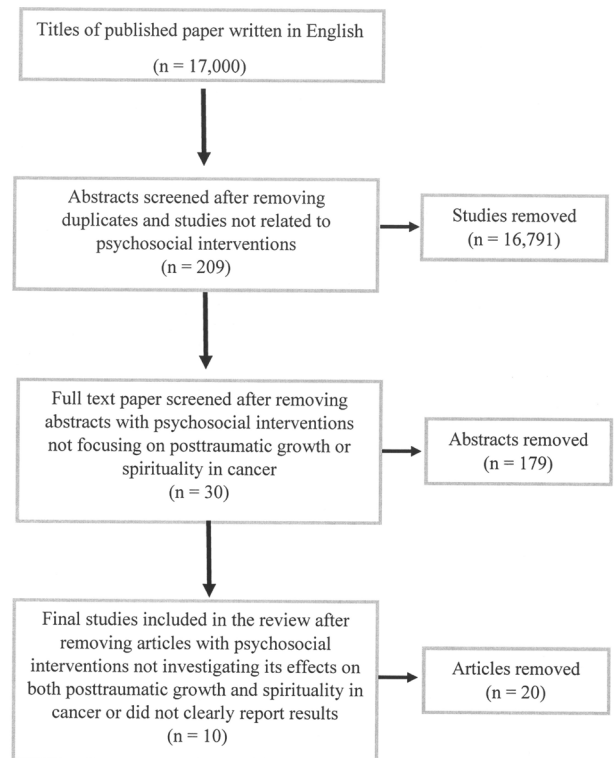


Figure 1: Flowchart of electronic literature search in this review

Participants

The total number of participants in the ten selected studies involved in this review was 1216 cancer patients and survivors (Table I). Six studies recruited cancer patients with mix site of cancer, stage of cancer and duration of diagnosis of cancer (18, 21-22, 24-25, 27). Three studies recruited only breast cancer patients and survivors (20, 23, 26) while one study recruited only colorectal cancer patients (19). While most studies recruited cancer patients with mix stages of cancer, two breast cancer studies recruited patients with only stages I to III, which were without distal metastasis (20, 23), while one study with mix site of cancer recruited patients with only advanced cancer i.e. stage IV for all cancer sites and stage III and IV for lung cancer (24). One breast cancer study also recruited patients within 10 years of diagnosis of cancer (23). Two studies recruited cancer patients with psychological distress (18, 25) while other studies did not assess the psychological state of patients during screening prior to intervention. Regarding sample size, four studies involved relatively larger sample size which were more than one hundred patients such as the two non-randomized comparison studies with mix site of cancer (n= 104 and n= 211 respectively) (21-22), one RCT with breast cancer (n= 252) (20) and one RCT with colorectal cancer (n= 410) (19). While other studies had relatively small sample size of less than one hundred patients.

Table 1: Characteristics of studies involved in narrative review

Reference	Study design	Sample	Inclusion criteria	Intervention	Outcome measures	Results	Limitations
Lieberman et al. 2003 (26)	Mixed design, single group, pre-post test	32 women with breast cancer, mix stage of cancer	Not stated	Internet-delivered electronic support group, 1.5 hours once a week for 16 weeks	CES-D (Depression), PTGI (PTG, spirituality), Pain scales (pain), CECS (suppression of affect), WAI (personality traits), MAC (cancer-related coping)	Significant increase in new possibilities (p= 0.05) and spiritual growth (p = 0.02) of PTGI post-intervention. Other findings: Significant reduced CES-D score, CECS score and reaction to pain post-intervention.	No control group. Lots of technical problems due to the use of internet. Complex intervention involving a facilitated group and a bulletin board. Small sample size. Participants were all breast cancer patient.
Mackenzie et al. 2006 (27)	Qualitative design utilizing grounded theory analysis	9 cancer patients with mix site and duration of diagnosis of cancer	Cancer patients involved in MBSR drop-in group. Capable of providing relevant information.	Mindfulness-based Stress Reduction (MBSR) for 8 weeks and continue attending MBSR drop-in session.	Semi-structured interview. Focus group.	Two of the five themes emerged from the perspectives of patients were personal growth and spirituality. Other themes were shared experience, self-control and opening to change.	Findings were subjective views of patients.
Garland et al. 2007 (21)	Non-randomized comparison study, pre-post test	60 cancer patients with mix site and stage in MBSR group and 44 cancer patients with mix site and stage in HA group.	Age ≥ 18 years. Understand English. Attended ≥ 5 out of 8 classes for MBSR and ≥ 4 out of 6 classes for HA.	Mindfulness-based Stress Reduction for 8 weeks for MBSR group. Healing Art programme for 6 weeks for HA group.	PTGI-R (PTG), FACIT-Sp (Spirituality), SOSI (Stress), POMS (Mood), semi-structured interview.	Significant increase in PTG noted for both MBSR and HA (p= 0.015) post-intervention. Improvement in spirituality significantly greater for MBSR (p= 0.029). Other findings: MBSR group also show more improvement in anxiety, anger, overall stress symptoms and mood disturbance.	Patient self-select intervention. No control group.
Garlick et al. 2011 (23)	Quantitative, single group. Time series with pre, post and 1 month follow up.	24 women with breast cancer.	Diagnosed with breast cancer within past 10 years. Stages I to III without metastasis.	Psycho-spiritual Integrative Therapy (PSIT), 3 hours a week for 8 weeks to complete total 24 hours of intervention.	PTGI (PTG), FACIT-Sp-Ex (Spirituality), FACT-B (physical and psychological well-being), POMS (psychological well-being).	Significant increase in new possibilities (p< 0.01) and personal strength (p < 0.05) of PTGI, and meaning/peace and spiritual well-being (p < 0.01) of FACIT-SP-Ex across time. Other findings: Significant improvement in physical and psychological well-being.	No control group. Small sample size. Participants were all breast cancer patients.
Zernicke et al. 2014 (18)	RCT, double blind, versus wait list controls, pre and post test.	62 cancer survivors with mix site, stage and duration of diagnosis of cancer.	Cancer survivors completing primary cancer treatment within 3 years, with no access to in-person MBSR and with moderate to high psychological distress.	Online synchronous Mindfulness-based Cancer Recovery (MBCR) group programme (n=30) versus wait list control group (n= 32).	PTGI (PTG), FACIT-Sp (spirituality), POMS (Mood), SOSI (Stress), MAAS (Mindfulness)	Significant increase in posttraumatic growth (p < 0.05) and spirituality (p= 0.04) post-intervention in MBCR. Other findings: Significant improvement in mood disturbance, stress symptoms and mindfulness acting with awareness.	Only pre and post test comparison. No follow up.
Lo et al. 2014 (24)	Quantitative, single group. Time series with pre, 3 months and 6 months after starting intervention.	50 advanced cancer patients with mix site of cancer.	Age ≥ 18 years, diagnosed with stage IV of any cancer or stage III of lung cancer.	Managing Cancer and Living Meaningfully (CALM), 1 hour 3-8 individual sessions over 6 months.	PTGI (PTG), FACIT-Sp-12 (Spirituality), PHQ-9 (Depression), DADDS (death anxiety), ECR-M16 (Attachment Security).	Significant increase in spiritual well-being over time during therapy (p= 0.017) but increase in posttraumatic growth was not significant (p= 0.57). Other findings: Significant improvement in depressive symptoms and death anxiety.	No control group. Self-selected. No long-term follow up. Small sample size.
Hawkes et al. 2014 (19)	RCT double blind versus usual care controls. Time series at pre, 6 months and 12 months.	410 colorectal cancer survivors with mix stage and duration of diagnosis of cancer.	Diagnosed with colorectal cancer. Age ≥ 18 years.	Multiple Health Behavioural Change Intervention (CanChange), 6 months telephone based health coaching intervention group versus usual care group.	PTGI (PTG), FACIT-Sp-Ex (Spirituality), FFMQ (Mindfulness), POMS (Psychological distress), EORTC-QLQ-C30 (Quality of life).	Significant increase in posttraumatic growth at 6 months (p < 0.001) and 12 months (p= 0.033), and significant increase in spirituality (p= 0.011) at 6 months in CanChange group. Other findings: Significant increase in quality of life at 6 months and 12 months in CanChange group.	Participants were all colorectal cancer patients.
Labelle et al. 2015 (22)	Non-randomized comparison study. Time series at pre, mid and post test.	211 cancer patients with mix site, stage and duration of diagnosis of cancer.	Age ≥ 18 years. Diagnosed with any cancer.	Mindfulness-based Stress Reduction (MBSR) group (n= 135) versus wait list control group (n= 76).	PTGI (PTG), FACIT-Sp-Ex (Spirituality), FFMQ (Mindfulness).	Significant increase in posttraumatic growth and spirituality in the MBSR group across time. Other findings: Significant increase in mindfulness in the MBSR group. Mindfulness mediated the MBSR effect on PTG and spirituality.	Self-select. No long term follow up.
Carlson et al. 2016 (20)	RCT, double blind, versus SET. Time series at pre, post, 6 months and 12 months after therapy.	252 breast cancer survivors.	Diagnosed with stage I to III of breast cancer. Completed treatment. Age ≥ 18 years. Those in distress.	Mindfulness-based Cancer Recovery (MBCR) group (n= 134) versus Supportive Expressive Group Therapy (SET) (n= 118).	PTGI-R (PTG), FACIT-Sp (Spirituality), POMS (Mood), SOSI (Stress), MOS-SSS (Social support), FACT-B (Quality of life).	Increase in posttraumatic growth (p= 0.02) and its domain new possibilities (p=0.01) and spirituality (p=0.02) in the MBCR group was significantly greater than SET group immediately after intervention. While during follow up, the greater increase in posttraumatic growth in MBCR group over SET group maintained (p= 0.03) but not for spirituality. Other findings: Decrease in stress and mood disturbance, and increase in quality of life and social support also significantly greater in MBCR group over SET group.	No control group. It only recruit breast cancer survivors.
Zernicke et al. 2017 (25)	Quantitative, single group, pre-post test	62 cancer patients with mix site, stage and duration of diagnosis of cancer.	Age ≥ 18 years. Diagnosed with cancer and in distress.	Online Mindfulness-based Cancer Recovery (MBCR), 2 hours online class for 8 weeks.	PTGI (PTG), FACIT-Sp (Spirituality), POMS (Mood), SOSI (Stress), FFMQ (Mindfulness).	Significant increase in posttraumatic growth and spirituality post-intervention. Other findings: Significant improvement in mood and stress symptoms, and 4 out of 5 facets of mindfulness post-intervention.	Small sample size. No Control group. No long term follow up.

Abbreviations: CECS: The Courtauld Emotional Control Scale; CES-D: The Center for Epidemiologic Studies-Depression Scale; DADDS: Death and Dying Distress Scale; ECR-M16: Modified Experiences in Close Relationships Scale; EORTC-QLQ-C30: The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire; FACIT-Sp: Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being; FACIT-Sp-Ex: Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being-Expanded version; FACIT-Sp-12: The Functional Assessment of Chronic Illness Therapy - Spiritual Well-Being; The 12-item Spiritual Well-Being Scale; FACT-B: The Functional Assessment of Cancer Therapy-Breast Cancer version; FFMQ: Five Facet Mindfulness Questionnaire; MAAS: Mindfulness Attention Awareness Scale; MAC: The Mini Mental Adjustment to Cancer Scale; MOS-SSS: The Medical Outcomes Study Social Support Survey; PHQ-9: Public Health Questionnaire-9 Edition; POMS: The Profile of Mood State; PTGI: Posttraumatic Growth Inventory; PTGI-R: Posttraumatic Growth Inventory-Revised; SOSI: The Symptom of Stress Inventory; WAI: The Weinberger Adjustment Inventory

Psychosocial interventions

Six studies investigated the effects of mindfulness-based interventions in enhancing posttraumatic growth and spirituality in cancer patients and survivors, in which three studies investigated the effectiveness of Mindfulness-based stress reduction (MBSR) while another three studies examined the effectiveness of Mindfulness-based cancer recovery (MBCR).

These studies made up of two non-randomized comparison trials and one qualitative study which investigated on effectiveness of MBSR, and two RCTs and a single group, pre and post-test study examined the effectiveness of MBCR (18, 20, 21-22, 25, 27). There were one study each investigating the effectiveness of Multiple health behavioural change therapy (CanChange) (19), Psycho-spiritual Integrative Therapy (PSIT) (23), an individual psychotherapy called Managing Cancer and Living Meaningfully (CALM) (24) and electronic cancer support group (26) to enhance PTG and spirituality in cancer patients. Then, there were one study each investigating the effectiveness of supportive expressive group therapy (SET) (18) and healing art therapy (HA) (21) to enhance PTG and spirituality in cancer patients, in which these therapies act as comparison intervention for MBCR and MBSR in an RCT and non-randomized comparison study respectively.

Posttraumatic growth and spirituality measures

Seven studies measured the degree of posttraumatic growth in cancer patients using the posttraumatic growth inventory (PTGI), while two studies measured PTG using the posttraumatic growth inventory-revised (PTGI-R) and the only qualitative study included in this review use semi-structured interview to assess PTG. Four studies evaluated the degree of spirituality using the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being (FACIT-Sp), while three studies used the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being, Expanded version (FACIT-Sp-Ex), one study utilized the Functional Assessment of Chronic Illness Therapy - Spiritual Well-Being; The 12-item Spiritual Well-Being Scale (FACIT-Sp-12), one study utilized PTGI and the only qualitative study included in this review use a semi-structured interview (Table I).

Effectiveness of psychosocial interventions to enhance posttraumatic growth and spirituality in cancer patients

Six studies reported mindfulness-based interventions significantly improved posttraumatic growth and spirituality in cancer patients. Three out of six studies demonstrated that Mindfulness-based stress reduction (MBSR) significantly improved PTG and spirituality in cancer patients. Garland et al.'s study which was a non-randomized comparison trial with mix cancer diagnoses shown that there was significant improvement in PTG immediately post-interventions for both MBSR and healing art therapy (HA) but improvement in spirituality was significantly greater in MBSR compared to HA (21).

In addition, Labelle et al.'s study which was another non-randomized comparison trial with mix cancer diagnoses indicated that there were significant improvement in both PTG and spirituality during and immediately after MBSR compared to wait list control group (22). Finally, Mackenzie et al.'s qualitative study with mixed cancer diagnoses demonstrated that two of the five themes emerged from cancer patients after completion of MBSR were personal growth and spirituality (27). On the contrary, another three studies reported that Mindfulness-based cancer recovery (MBCR) significantly improved PTG and spirituality in cancer patients. Zenicke et al. 2014 study which was an RCT with mix cancer diagnoses comparing MBCR with wait list control group demonstrated that there were significant increase in PTG and spirituality immediately after completion of MBCR as compared with wait list control group (18). Then, Carlson et al.'s study, another RCT with breast cancer survivors comparing MBCR with supportive expressive group therapy (SET) shown that there was significantly greater improvement in PTG and its domain new possibilities, and spirituality for MBCR compared to SET immediately after completion of intervention. But after 6 and 12 months after completion of interventions, only increase in PTG and not spirituality, was still significantly greater for MBCR compared to SET (20). Finally, Zenicke et al. 2017 study, which was a single group study comparing pre and post MBCR intervention scores indicated that there was significant improvement in PTG and spirituality immediately after completion of intervention (25).

There were only one study each which demonstrated that Psycho-spiritual Integrative Therapy (PSIT), Multiple Health Behavioural Change Intervention (CanChange) and electronic cancer support group enhanced PTG and spirituality in cancer patients. Garlick et al.'s study which was a single group time series assessment (pre, post and 1 month after PSIT) study with breast cancer patients indicated that there were significant increase in personal strength and new possibilities domains of the PTGI, and the meaning/peace and spiritual well-being domains of the FACIT-SP-Ex immediately after completion of PSIT and 1 month later (23). Hawkes et al.'s study which was an RCT comparing CanChange with usual care control group in colorectal cancer patients with time series assessment (pre, 6 and 12 months after starting CanChange) reported that there were significant increase in PTG and spirituality after 6 months of starting intervention, but only increase in PTG was noted after 12 months of starting intervention (19). Lieberman et al.'s study which was a mixed design single group study (quantitative and qualitative methods) with pre and post-intervention assessments investigated effects of electronic cancer support group on PTG and spirituality in breast cancer patients indicated that there were significant improvement in PTG and spirituality immediately after completion of electronic cancer support group (26). Finally, Lo et al.'s study which

was a single group time series assessments study (pre, 3 and 6 months after starting Managing Cancer and Living Meaningfully [CALM]) with cancer patients of mix cancer diagnoses demonstrated that there was significant increase in spiritual well-being across time but no significant increase in PTG was observed (24).

Other positive psychological outcomes brought about by psychosocial interventions in cancer patients and survivors

Mindfulness-based stress reduction (MBSR) also reduced anxiety, anger, stress symptoms and mood disturbances, and increase mindfulness in cancer patients and survivors. The qualitative study of cancer patients included in this review also shown another three themes emerged from patients after intervention which were shared experience with others, better self-control and more open to changes (21- 22, 27). Mindfulness-based cancer recovery (MBCR) also leads to reduced stress, improved mood, increase in mindfulness, quality of life and social support (18, 20, 25). Psycho-spiritual integrative therapy (PSIT) improved physical and psychological well-being (23). Managing Cancer and Living Meaningfully (CALM) reduced depressive symptoms and death anxiety (24). Multiple Health Behavioural Change Intervention (CanChange) improved quality of life of cancer patients (19). While electronic cancer support group reduced depressive symptoms, suppression of affect and reaction to pain of cancer patients (26).

DISCUSSION

This comprehensive narrative review is the first review which examined up-to-date evidence on the effectiveness of psychosocial interventions to enhance both posttraumatic growth and spirituality in cancer patients and survivors. It also provides a brief overview of other positive outcomes brought about by psychosocial interventions in cancer patients and survivors.

Mindfulness-based interventions

From our findings, mindfulness-based interventions such as mindfulness-based cancer recovery (MBCR) and mindfulness-based stress reduction (MBSR) may be effective in enhancing PTG and spirituality in cancer patients and survivors. In order to enhance mindfulness, attention to focus on observing the internal and external experiences of oneself from time to time is necessary which is facilitated by mindfulness-based interventions. This in turn leads to exposure of the person to traumatic thoughts and feelings which reduced maladaptive avoidance of these traumatic stimuli and depreciation of emotional reactivity. Turning one's attention to these traumatic thoughts and feelings, observing and then acknowledged these without reacting to these will allowed reappraisal of the traumatic event to accommodate new trauma-related information into the existing cognitive schemas and eventually, this facilitate the reconstruction of a new assumptive world

of the person about self, others and the surrounding world, hence the development of posttraumatic growth (1, 28). This may explained how mindfulness-based interventions enhanced PTG in cancer patients. In addition, the effects of mindfulness which facilitate awareness of self and surrounding from moment to moment, detachment from beliefs, thoughts and emotions to create better emotional balance and well-being, and spiritual self-transcendence of having a larger view beyond self, may allowed mindfulness to improve spirituality in cancer patients (29).

Mindfulness-based cancer recovery (MBCR)

Among all the psychosocial interventions, MBCR had the most evidence supporting its effectiveness. Two double blind randomized controlled trials i.e. Zernicke et al., 2014 and Carlson et al. trials, and a single group, pre and post-interventions assessment study i.e. Zernicke et al. 2017 demonstrated that MBCR significantly enhanced PTG and spirituality in cancer patients (18, 20, 25). We also learn from Carlson et al. trial that MBCR effect on enhanced PTG was maintained even after 6 to 12 months after completion of intervention but its effect on enhanced spirituality was not maintained (20). Nevertheless, there were a few limitations of these studies to take note of. Zernicke et al., 2014 trial had small sample size (n= 62) and only involved pre and post-intervention assessments with no follow-up. Carlson et al.'s trial (n= 252) investigated effects of MBCR only on breast cancer patients and the only comparison group available was supportive expressive group therapy (SET) without comparison to a control group. Finally, Zernicke et al., 2017 study had small sample size (n= 62), no control group comparison and only involved pre and post-intervention assessment without follow up (Table 1). Hence, improvement in methodology of the studies is needed to provide better evidence on the effectiveness of MBCR to enhance PTG and spirituality in cancer patients and survivors.

Mindfulness-based stress reduction (MBSR)

Then, MBSR was the second intervention with most evidence supporting its effectiveness in enhancing PTG and spirituality in cancer patients and survivors. Two non-randomized comparison trials with sample size of more than 100 patients i.e. Garland et al.'s (n= 104) and Labelle et al.'s trials (n= 211), and a qualitative study i.e. Mackenzie et al.'s study (n= 9), all with mix cancer diagnoses, reported MBSR enhanced PTG and spirituality (21-22, 27). Once again, limitations of these studies should be noted. Garland et al.'s trial had no control group for comparison and patients were given the freedom to self-select which intervention group (MBSR or healing art) they would like to be assigned. Labelle et al.'s trial did not have long-term follow up assessment (only pre, mid and post-intervention assessments) and patients were also given the freedom to self-select which intervention group (MBSR or wait list) they would like to be assigned. In Mackenzie et al.'s qualitative study,

the findings were subjective views of the participants without objective or quantitative measures to confirm the findings (Table I). Hence, improvement in methodology of the studies is also needed to provide better evidence of the effectiveness of MBSR to enhance PTG and spirituality in cancer patients and survivors.

Other psychosocial interventions

Evidence which supported the effectiveness of Psycho-spirituality Integrative Therapy (PSIT), Multiple Health Behavioural Change Intervention (CanChange) and electronic cancer support group to enhance PTG and spirituality in cancer patients and survivors were scarce as there were only one study for each of these interventions which investigated the above (19, 23-24, 26). Among the interventions mentioned above, Multiple Health Behavioural Change Intervention (CanChange) effectiveness to enhance PTG and spirituality in cancer patients was the most evidenced supported by a double blind randomized controlled trial (Hawkes et al.'s trial) with relatively large sample size (n=411) and follow up assessments (pre, 6 months and 12 months) (19). The only limitation of this study was that it recruited only colorectal cancer patients and thus, its findings cannot be generalized to the entire cancer population (Table I). Evidence supporting effectiveness of electronic cancer support group to enhance PTG and spirituality in cancer patients was not strong as only one study with mixed design (quantitative and qualitative study design) supporting it (26). However, this study had several limitations such as having a small sample size (n= 32), no control group for comparison, had lots of technical problems due to the need to use internet for intervention, all participants were breast cancer patients and hence its findings cannot be generalized to the entire cancer population, and the intervention was complex involving a facilitated group and a bulletin board (Table I). Evidence supporting effectiveness of Psycho-spirituality Integrative Therapy (PSIT) to enhance PTG and spirituality was also not strong with only one single group with time series assessment (pre, post and 1 month) study supporting it (23). Again, there were several limitations of this study such as having a small sample size (n= 24), no control group for comparison, all participants were breast cancer patients and no long-term follow up assessment performed (assessment only up to 1 month after therapy) (Table I). Finally, Managing Cancer and Living Meaningfully (CALM) is effective only to enhance spirituality and not PTG in cancer patients which was supported by a single group with time series assessment (pre, 3 and 6 month after intervention) study (24). Again, the evidence was not strong as there were several limitations of this study such as having a small sample size (n= 50), no control group for comparison and participants were self-selected by researchers (Table I).

Recommendations for future studies

Mindfulness-based interventions such as MBCR and

MBSR look promising as psychosocial interventions which may be incorporated into the treatment regime of cancer patients and survivors as these interventions not only enhance PTG and spirituality, but also improve mood, anger, anxiety, mindfulness, stress, quality of life and social support (Table I). However, there was heterogeneity in the methodology of available studies in which their limitations need to be addressed. From the findings of our review, we would recommend more double blind RCT with mix cancer diagnoses, duration of diagnosis, stage of cancer and mode of treatment, and with adequate sample size (at least more than one hundred patients) and adequate follow up assessments (pre, post, 6 and 12 months) to be conducted in the future to investigate the effectiveness of MBCR and MBSR to enhance PTG and spirituality in cancer patients and survivors, in order to overcome the methodology flaws of the previous studies. CanChange may be a potential psychosocial intervention which can enhance PTG and spirituality in cancer patients as it is supported by a double blind RCT with large sample size (19). However, more large sample size double blind RCTs with follow up assessments and recruiting patients with mix cancer diagnoses, duration of diagnosis, stage of cancer and mode of treatment should be conducted in the future to provide more evidence. Evidence for the effectiveness of other psychosocial interventions such as PSIT, electronic support group and CALM, to enhance PTG and spirituality in cancer patients and survivors were weak and insufficient, and hence, more well-designed future studies are needed to provide more solid evidence.

Limitation of this review

This review involved only comprehensive search for studies published in English language. There may be other studies published in other languages which may provide evidence for effectiveness of psychosocial interventions to enhance PTG and spirituality which were not search for in this review. We were restricted by the lack of experts in other languages to help us to interpret the findings of studies published in other languages. Hence, we recommend future literature reviews to look into this limitation in order to provide a more thorough literature review. Nevertheless, we believe this review had covered most of the published studies as there were no additional literatures which we missed when compared to other literature reviews on psychosocial interventions in cancer patients and survivors (30-32).

CONCLUSION

This narrative review is the first comprehensive literature search review which focus on identifying possible psychosocial interventions which effectively enhance posttraumatic growth and spirituality in cancer patients and survivors. Our findings indicated that Mindfulness-based cancer recovery (MBCR) and Mindfulness-based

stress reduction (MBSR) may be effective to enhance PTG and spirituality in cancer patients and survivors but due to heterogeneity of methodology employed by available studies, future studies with improve methodology are warranted to provide more solid evidence on their effectiveness. Evidence for other psychosocial interventions such as Multiple Health Behavioural Change Intervention (CanChange), Managing Cancer and Living Meaningfully (CALM), Psycho-spirituality Integrative Therapy (PSIT) and electronic cancer support group were lacking and/or poor in quality, and hence, more future studies with improve methodology are warranted as well. More qualitative studies are also needed to increase our understanding of the mechanism in which psychosocial interventions increase PTG and spirituality in cancer patients and survivors. This review also provide useful information for clinicians on which psychosocial interventions to apply for cancer treatment regime in order to ensure a holistic treatment approach to improve not only physical outcomes, but also psychological outcomes of cancer patients and survivors.

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