

Review

Life goals in patients with cancer: a systematic review of the literature

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Abstract

Objective: Purposes of this systematic review of life goal research in cancer patients were to (1) identify life goal characteristics and processes being examined, (2) describe instruments used to assess life goal constructs, (3) identify theoretical models being used to guide research, and (4) summarize what is known about the impact of the cancer experience on life goal characteristics, processes, and psychological outcomes.

Methods: We conducted this systematic review using MEDLINE, PubMed, CINAHL, and PsycINFO databases. Inclusion criteria were as follows: (1) published between 1993 and 2014, (2) English language, (3) cancer patient population, and (4) original research articles that assessed life goal characteristics and/or goal processes. One hundred ninety-seven articles were screened and 27 included in the final review.

Results: Seven life goal characteristics and seven life goal processes were identified, and less than half of studies investigated associations between goal characteristics and processes. Conceptual definitions were not provided for about half of the identified life goal constructs. Studies used both validated and author-developed instruments to assess goal constructs. Twenty-four different theoretical models were identified, with self-regulation theory most frequently cited. Overall, the literature suggests that cancer impacts patients' life goal characteristics and processes, and life goal disturbance is related to poorer psychological outcomes.

Conclusions: The impact of the cancer experience on life goals is an important and emerging area of research that would benefit from conceptual and theoretical clarity and measurement consistency.

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Received: 6 August 2014

Revised: 16 March 2015

Accepted: 14 April 2015

Background

Approximately 13.7 million Americans have a history of cancer, and nearly 1.7 million more are expected to be diagnosed with cancer this year [1]. Cancer and its treatment can significantly disrupt patients' life goals [2]. Further, the time commitment required for treatment can negatively impact patients' abilities to pursue their life goals [3]. Successful life goal pursuit is important for positive well-being [4] and psychological adjustment to chronic illness [5]. As such, the extent to which the cancer experience impacts life goals may be an important factor that contributes to patients' psychological adjustment.

Life goals give meaning to a person's life, are an important part of developing one's identity [6,7], and are defined as internal representations of desired states that motivate behavior [8]. For the purpose of this review, we differentiate between goal characteristics and goal processes. Goal characteristics refer to ways of describing goals, including goal content, life domains, importance, difficulty, attainability, intrinsic/extrinsic, and temporal range [8]. The cancer experience can affect the characteristics of

individuals' life goals [9]. Life goal characteristics may also be differentially related to psychological outcomes in cancer patients [9,10].

Goal processes refer to ways that goals can be interacted with, such as the pursuit, loss, disruption, or adjustment of life goals. The cancer experience and cancer-related symptoms can disrupt the processes involved in pursuing patients' life goals [11,12]. Similarly, cancer is negatively related to attainment of goals [13]. Research findings suggest that goal pursuit and adjustment are related to better well-being, whereas goal loss and disruption are related to poorer well-being [14].

Life situations, such as changes in health status or the diagnosis of a new illness like cancer, can impact goal characteristics and processes [3]. The cancer experience can also affect a patient's emotional functioning, which in turn can impact the types of life goals pursued [9]. For example, patients with poorer emotional functioning are more likely to have goals related to improving interpersonal relationships and reducing drug and alcohol use [15]. Cancer treatment often disrupts daily life, impairs quality of life, and can negatively affect pursuit of life



goals [11]. For example, fatigue and pain related to cancer treatment may prevent a cancer survivor from engaging in valued roles such as returning to work or engaging in social activities [2,16]. However, experiencing cancer may also lead to positive changes in life goals. For example, patients may have more positive health-related goals, such as eating a better diet after treatment [17], or they may change their priorities, such as finding more meaning and joy in smaller goals [16].

The application of theory to life goal research is important as investigators seek to understand the mechanisms by which the cancer experience impacts patients' life goal characteristics and goal processes. A variety of theories have been applied to life goals and the process by which life goals are related to positive and negative psychological outcomes in the general population, including self-regulation theory (SRT) [6] and life course development theory [18]. However, absent from the literature is a summary of the theories being applied to life goal research with cancer patients. Given that research on cancer patients' life goals is an emerging area of research, such summative description would allow for the identification of relevant and appropriate theories. Identification of relevant theories is imperative because those theories that gain recognition in a given area of research shape the trajectory of empirical investigation [19]. In the context of psycho-oncology, theories can provide frameworks for (1) understanding the relationship between life goals and psychological adjustment outcomes in cancer patients and (2) developing future interventions to improve life goal pursuit and psychological adjustment [20].

Theoretical models also inform the definition and measurement of constructs [19]. A number of different life goal characteristics and processes have emerged in the broader literature [4,8,21,22]; however, it is unclear how the cancer experience may differentially affect each of these life goal characteristics, processes, and related outcomes. As such, it is imperative to identify what life goal constructs are being examined, how they are being defined and measured, and any inconsistencies to inform research progression. Conceptual clarity is necessary to advance life goals research to a cohesive, cogent body of literature; therefore, it is important to use constructs that are well defined and measured consistently across studies [23,24].

To examine the current state of the literature, we critically reviewed original research articles that examined life goals of individuals with cancer. Specific research questions were as follows:

1. What life goal characteristics and processes are being examined in cancer patients?
2. What instruments are being used to assess life goal constructs in the cancer literature?
3. What theoretical models are being used to guide research on life goals of cancer patients?

4. What is known about the impact of the cancer experience on patients' life goal characteristics and processes and subsequent psychological outcomes?

Methods

Identification of relevant studies

We searched for English language, original research articles published between 1993 and 2014, which assessed life goal characteristics and goal processes in adult cancer patients. As life goals are an emerging area of research, we chose to search the last two decades of literature for relevant articles. Because we were interested in how the cancer experience affects patient life goals, we included original research articles that examined the impact of cancer on life goals in adult patients ($M \geq 18$ years of age) on active treatment or who had survived cancer. We excluded examinations of treatment-related or palliative care goals, as these are often assigned by healthcare providers and directly influenced by treatment protocols. Studies focused on cancer prevention goals were also excluded because our population of interest is those with a cancer diagnosis. Articles examining the goals of cancer patients' family or friends were excluded. Additionally, review articles and questionnaire development studies in which life goals emerged as a relevant item/subscale were excluded.

Search strategies

The first author conducted the initial search using MEDLINE, PubMed, CINAHL, and PsycINFO electronic databases. Dissertations were also identified and assessed for eligibility using CINAHL and PsycINFO. Each search string included *cancer* as the first search term and a goal-related search term, using the AND combination. Goal-related search terms included the following: *life goals*, *personal goals*, *personal projects*, *personal strivings*, *life tasks*, *goal setting*, *goal pursuit*, and *goal achievement*. In addition, reference lists of articles identified through database searches were examined for inclusion.

The initial electronic database search yielded 353 articles, and subsequent reference list review yielded an additional 20 articles (Figure 1). After removing duplicate articles, 197 abstracts were screened for eligibility, and 55 articles retained. These articles were read in full and independently by two of the three authors to further assess eligibility, and an additional 28 articles were deemed ineligible, for a total of 27 eligible articles. Reasons for article exclusion are summarized in Figure 1. Disagreements regarding study selection were resolved by discussion and consensus among the authors.

Review process

Based on study questions, a table was developed for data extraction and included the following seven categories: study design, age, cancer type, theoretical model, goal

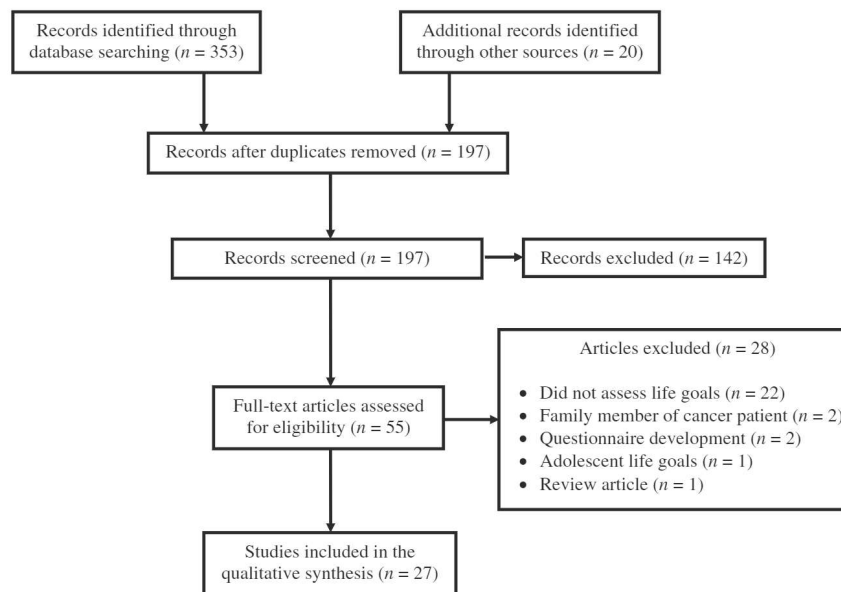


Figure 1. PRISMA flow diagram

characteristics, goal processes, and relevant results. Two of the three authors independently reviewed each article and extracted relevant data. For the purpose of this review, a theoretical model was any author-identified theory, conceptual model, or framework. Goal characteristics were defined as ways of describing a goal, including the content of life goals, domains of goals, or other attributes, and these constructs were entered into the ‘Goal Characteristics’ column. Goal processes were defined as ways that a goal can be interacted with, including pursuit and adjustment, and these constructs were entered into the “Goal Processes” column. Disagreements regarding article coding and identification were resolved by discussion and consensus among the review authors. The authors completed an AMSTAR checklist detailing the methodological quality of this systematic review (see supporting information).

Results

We identified 27 studies for review, including 22 quantitative, three qualitative, and two mixed-method studies. Fifteen studies were cross-sectional, and 12 were longitudinal. Most studies were single-group descriptive studies; however, six studies included a healthy control group. Table 1 summarizes each of the studies identified, including study design, age, cancer type, theoretical models, goal characteristics, goal processes, and relevant results. In the following, we summarize results for each of our research questions.

What life goal characteristics and processes are being examined in cancer patients?

We identified seven different life goal characteristics as follows: (1) content, (2) life domains, (3) importance, (4)

attainability, (5) difficulty, (6) temporal range, and (7) intrinsic/extrinsic. Five studies investigated more than one life goal characteristic and the associations among these characteristics. The most commonly studied life goal characteristic was content (n = 10).

Seven different life goal process constructs were also identified as follows: (1) self-efficacy, (2) effort, (3) pursuit, (4) attainment, (5) disturbance, (6) loss, and (7) adjustment. Eight studies investigated more than one life goal process and the associations among these processes. The most commonly studied life goal process was disturbance (n = 8). Less than half of the studies (n = 10) assessed both life goal characteristics and processes and their interrelationships.

Even though a variety of life goal characteristics and processes are being investigated, these constructs are not being conceptually defined. Table 2 provides a list of the life goal characteristics and processes, conceptual definitions, and instruments used. About half of the time, authors did not provide conceptual definitions for the life goal characteristics (n = 14) and processes (n = 18) examined. Specifically, several characteristic (i.e., importance, attainability, and difficulty) and process constructs (i.e., effort, pursuit, and goal loss) were not defined by any of the study authors. For those constructs that were examined in multiple studies and for which the authors provided definitions, there was generally conceptual consistency.

What instruments are being used to assess life goal constructs in the cancer literature?

Several different instruments were used to assess life goal characteristics and processes (Table 2). Life goal characteristics were assessed using validated questionnaires

Table 1. Review of life goal articles

| Authors | Study design | Age | Cancer type | Theoretical model | Goal | | Relevant results |
|--------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | | characteristics (goal instrument) | process (goal instrument) | |
| Bellizzi [28] | Cross-sectional; quantitative | AYAs (M = 29; 15–39 years) | Various: <14 months post-diagnosis | None | Life domains (modified life impact checklist [28]) | None | Cancer negatively impacted plans for education, work, and having children. Patients reported positive impact on plans for future and goal setting. Two themes emerged: waiting to live (younger participants) and living despite pain (older participants). |
| Gagliese [2] | Cross-sectional; mixed-methods | Younger (M = 48.9; 39–55 years) and older (M = 72.4; 60–90 years) adults | Various advanced cancers; cancer-related pain; time since diagnosis: M = 43 months | Life span perspective | None | Disturbance; goal loss; goal pursuit (N/A) | Goal violations were negatively related to purpose in life 1 year later. |
| George & Park [36] | Longitudinal; quantitative | Young to middle-age adults (M = 46.34; 22–55 years) | Various; time since diagnosis: M = 3.5 years | Meaning in life; purpose in life; existential theory | None | Goal loss; disturbance; goal adjustment (N/A) | Late middle-age couples reported greater disappointment and anger regarding inability to reach life goals and establish financial security. |
| Harden [16] | Cross-sectional; qualitative | Adult men: Late middle age (M = 57; 50–64 years); Young-old (M = 70; 65–74 years); Old-old (M = 76; 75–84 years) and their female partners | Prostate; newly diagnosed, biochemical recurrence, and advanced disease | Family stress, adjustment, and adaptation model | None | None | None |
| Kin & Fung [37] | Cross-sectional; quantitative | AYAs (M = 31.14; 20–40 years) | History of hematological malignancy; time since last treatment: M = 2.51 years; healthy peers | Socioemotional selective theory | Life domains (hoped-for selves and feared selves [43]) | None | Cancer survivors were more likely to hope for relationship goals than healthy peers. |
| Lampic [13] | Longitudinal; quantitative | Adult women (Median = 52; 40–74 years) | Breast; all underwent mammography and were subsequently diagnosed with breast cancer or not | Life values and adjustment | Importance (life values questionnaire [44]) | Attainment (life values questionnaire [44]) | Breast cancer patients rated their attainment of health values lower than healthy women. Health importance decreased for older women and increased for younger women. Greater attainment-importance discrepancies were related to more depression/anxiety. |
| Lauer [17] | Longitudinal; qualitative | Adult women (M = 52.07; 34–77 years) | Breast or gynecological; 1 month (Time 1) and 3–4 months (Time 2) post-treatment | Theory of self-determination | Content (open-ended questions designed to elicit health-related goals) | None | Most common goals were improving physical activity, performing meaningful activities, losing weight, eating better. |
| Morganstern [15] | Cross-sectional; mixed-method | Adults (M = 66; 18 years or older) | Bladder; therapeutic plan of radical cystectomy | QOL appraisal model | Content (brief QOL appraisal profile [15]) | Attainment (brief QOL appraisal profile [15]) | Most common goals were: cancer-specific goals, provider/treatment concerns, health issues, life on my own terms, leisure activities, living comfortable, interpersonal relationships, and family. Goal attainment was positively correlated with having relationship goals and activity goals but negatively correlated with health concerns. Goal content differed by demographic characteristics and related to functioning. |

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Table 1. (Continued)

| Authors | Study design | Age | Cancer type | Theoretical model | Goal characteristics (goal instrument) | Goal process (goal instrument) | Relevant results |
|---------------|-------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nordin [34] | Longitudinal; quantitative | Adults (M = 63.5; 38–85 years) and their spouses | Gastrointestinal, newly diagnosed (within 12 weeks of diagnosis) and 1 or 3 months later | None | Importance (life values questionnaire [44]) | Attainment (life values questionnaire [44]) | For patients, communication was most important value, highest attainment ranking. Discrepancies between life value attainment and importance related to high anxiety/depression. Cancer had negative impact on being healthy, feeling relaxed, having fun, experiencing bodily pleasure, and experiencing excitement. Goal disturbance related to depression/anxiety, goal reengagement related to less depression, and goal self-efficacy related to less depression. Goals: be healthy, get back to normal, not have recurrence, maintain healthy behaviors or change behavior; and managing cancer symptoms/side effects. |
| Offerman [29] | Cross-sectional; quantitative | Adult men (M = 60.7 years) and female partners | Head and neck, completed treatment > 1 month prior; last treatment < 1.5 years prior | Self-regulation theory | Importance (GFI [45]) | Disturbance (GFI [45]); reengagement (GAS [14]); self-efficacy (GAPI-H [46]) | Survivors' educational achievement similar to the general population. Less likely to be married than general population. Survivors of central nervous system tumors had lowest educational achievement and employment, and, among men, less likely to marry. Patients had fewer goals than healthy; had more social, transcendental, and health-related than achievement-related goals. Patients had more difficulty, lower effort, more negative health effects on attainment, and more focused on short-term than long-term goals. Older had fewer goals, fewer achievement-related goals, more easy, short-term goals, and higher effort to attain goals. Patients reported fewer achievement-related and leisure, shorter-term goals than peers. No group differences on health-related goals at baseline, but patients reported more health-related goals over time. Patients reported more health-related barriers to goal pursuit at baseline, but barriers declined over time. |
| Palmer [47] | Cross-sectional; qualitative | Adults (M = 61; 33–87 years) | Colorectal; 0–24 months post-treatment (M = 8.6 months) | Self-regulation theory | Content (semi-structured interview) | None | Attainment (life goal questionnaire) |
| Pastore [30] | Cross-sectional; quantitative | AYAAs (M = 24.3 years; 16–41 years) | Various; > 5 years post-diagnosis | None | None | None | Attainment (life goal questionnaire) |
| Pinquart [9] | Cross-sectional; quantitative | Adults (M = 57.4 years) | Various, newly diagnosed (M = 2 weeks); healthy controls | Socioemotional selectivity | Content; life domains; difficulty; temporal range (mixed idiographic-nomothetic goal interview) | Effort; disturbance (mixed idiographic-nomothetic interview) | Patients had fewer goals than healthy; had more social, transcendental, and health-related than achievement-related goals. Patients had more difficulty, lower effort, more negative health effects on attainment, and more focused on short-term than long-term goals. Older had fewer goals, fewer achievement-related goals, more easy, short-term goals, and higher effort to attain goals. Patients reported fewer achievement-related and leisure, shorter-term goals than peers. No group differences on health-related goals at baseline, but patients reported more health-related goals over time. Patients reported more health-related barriers to goal pursuit at baseline, but barriers declined over time. |
| Pinquart [11] | Longitudinal; quantitative | Adults (M = 54.4 years) | Various, newly diagnosed (M = 1 week; Time 1), 9 months later (Time 2), and 18 months later (Time 3); healthy controls | Socioemotional selectivity; terror management theory; cumulative losses model; consolidation of initial responses model | Content; life domains; attainability; difficulty; temporal range (mixed idiographic-nomothetic goal interview) | Effort; disturbance (mixed idiographic-nomothetic interview) | Patients reported fewer achievement-related and leisure, shorter-term goals than peers. No group differences on health-related goals at baseline, but patients reported more health-related goals over time. Patients reported more health-related barriers to goal pursuit at baseline, but barriers declined over time. |

(Continues)

Table 1. (Continued)

| Authors | Study design | Age | Cancer type | Theoretical model | Goal | | Relevant results |
|------------------|-------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | | characteristics (goal instrument) | process (goal instrument) | |
| Pinquart [10] | Longitudinal; quantitative | Adults (M = 54.4; 18–92 years) | Various; newly diagnosed (Time 1) and 9 months later (Time 2) | Socioemotional selectivity; terror management theory | Importance (Likert scale of striving to attain 13 life goals) | None | Higher importance of social, psychological, and health-related goals was related to greater purpose in life. Higher importance of materialistic goals was related to greater purpose in life at Time 1. Higher importance of social goals was related to positive change in purpose in life from Time 1 to 2, and higher importance of materialistic goals was related to decrease in purpose in life from Time 1 to 2. |
| Punyko [31] | Cross-sectional; quantitative | AYA's (Median = 26; 18–45 years) | Rhabdomyosarcoma; >5 years post-diagnosis (Median = 18 years); healthy siblings | None | None | Attainment (self-report of social adaptation outcomes) | Survivors less likely to complete high school or ever marry. Survivors took more sick time at work and were offered fewer jobs. Survivors with performance limitations less likely to have completed high school than those without. Survivors with cancer-related pain less likely to have completed high school and more likely to ever marry than those without. |
| Ransom [35] | Longitudinal; quantitative | Adults (M = 60.2 years) | Breast and prostate; scheduled for radiotherapy; prior to radiotherapy (Time 1) and after completion of radiotherapy (Time 2; 6 weeks later) | Organismic valuing process | Intrinsic/extrinsic (AI [48]) | None | Patients endorsed more intrinsic than extrinsic goals. There was shift toward more intrinsic goals over time, but patients did not perceive goal orientation becoming more intrinsic. They recalled goal orientation more intrinsic than actual. Changes in goal orientation related to later posttraumatic growth. |
| Roberts [32] | Cross-sectional; quantitative | AYA's (M = 31.4; 22–35 years) | Various; > 1 year post-diagnosis (M = 4.3 years) | Theoretical model of developmental stage and adaptation to cancer | None | Goal adjustment (problem checklist [32]) | The majority experienced change in their life goals because of cancer; half endorsed as a current problem. |
| Schroeviers [39] | Cross-sectional; quantitative | Adults (M = 53; 23–77 years) | Various; time since diagnosis; M = 7.3 years | Stress-coping theory; self-regulation theory | None | Disengagement; reengagement (goal Disengagement and reengagement subscales, GAS [14]) | Goal reengagement positively related to time since diagnosis and positive refocusing. Goal disengagement and reengagement negatively related to rumination and catastrophizing. They positively related to positive affect and negatively to negative affect. In a model of goal adjustment and cognitive emotion-regulation strategies, goal reengagement positively predicted positive affect. |

(Continues)

Table 1. (Continued)

| Authors | Study design | Age | Cancer type | Theoretical model | Goal characteristics (goal instrument) | Goal process (goal instrument) | Relevant results |
|------------------------|-------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Schroevers [41] | Cross-sectional; quantitative | Adults (M = 53; 23–77 years) | Various; time since diagnosis; M = 7.3 years | Stress-coping theory; self-regulation theory | None | Reengagement (goal reengagement subscale, GAS [14]) | Goal reengagement positively related to positive changes and negatively to negative changes. In a model of coping strategies and goal reengagement, positive reappraisal and goal reengagement positively predicted positive changes. |
| Schwartz & Drotar [12] | Cross-sectional; quantitative | AYAs (M = 21.7; 18–28 years) | Pediatric cancer survivors > 1 year post-treatment (M = 9.25 years); cystic fibrosis; healthy peers | Personal projects; social-cognitive; self-regulation | Content (HRHI [12]) | Self-efficacy; disturbance (HRHI [12]) | No differences between groups on goal content. Health-related hindrance of goals related to well-being/distress. Survivors with late effects had more health-related hindrance than those without. |
| Stefanic [38] | Longitudinal; quantitative | Adults (M = 58; 33–76 years) | Early-stage breast cancer; 2–3 weeks post-surgery | None | Content (mixed idiographic-nomothetic assessment); importance (visual analog scale) | Disturbance (visual analog scale) | Goal interference decreased linearly over time. Greater physical symptom burden was related to greater goal interference and psychological distress. |
| Street [49] | Longitudinal; quantitative | Adults (M = 54.4; 21–81 years) | Various; newly diagnosed (within 2 weeks) | CGS theory | Content (listed life goals); intrinsic (personal CGS scale); extrinsic (social CGS scale [50]) | None | Personal CGS positively related to rumination/depression. Social CGS positively related to depression 2 months later. |
| Thompson & Pitts [33] | Cross-sectional; quantitative | Adults (M = 56.1; 31–82 years) and their spouses | Various; time since diagnosis; Median = 18 months | Life scheme model | Intrinsic/extrinsic (goal questionnaire [33]) | None | Internal goals negatively related to depression and positively related to meaningfulness in life. Internal goals increased from pre-diagnosis to post-diagnosis. |
| Thompson [40] | Longitudinal; quantitative | Adult women (M = 57.2; 33–91 years) | Metastatic breast; time since diagnosis; M = 7.9 years | Self-regulation theory; dispositional and situational theories of goal adjustment; motivational theory of life goal adjustment | Content (semi-structured interview [51]) | Disengagement; reengagement (goal disengagement and reengagement subscales, GAS [14]; semi-structured interview [51]) | Dispositional and situational reengagement were related, but dispositional and situational disengagement were not. Greater dispositional and situational disengagement related to lower cancer-related intrusive thoughts. Greater dispositional and situational reengagement related to greater life satisfaction/purpose and lower depressive symptoms. Situational disengagement predicted increased depressive symptoms 3 months later. |
| von Blanckenburg [52] | Longitudinal; quantitative | Adults (M = 52.5; 18–65 years) | Various; in rehabilitation; time since diagnosis; M = 29 months | Self-regulation; response shift model; life course dynamics | Life domains; importance; attainability (life goals questionnaire [53]) | Attainment (life goals questionnaire [53]) | Attainment of life goals was positively related to quality of life. Goal attainment remained stable over time but importance of life goals decreased. Lower importance and higher goal attainment predicted increased quality of life. |

(Continues)

Table 1. (Continued)

| Authors | Study design | Age | Cancer type | Theoretical model | Goal characteristics (goal instrument) | Goal process (goal instrument) | Relevant results |
|------------------------|----------------------------|-----------------------------------------|----------------------------------------------------------|------------------------|----------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wrosch & Sabiston [54] | Longitudinal; quantitative | Adult women (M = 54.86; 28–79 years) | Breast; diagnosed in previous year (M = 10.59 months) | Self-regulation theory | None | Disengagement; reengagement (Goal Disengagement and Reengagement Subscales, GAS [14]) | Reengagement related to more positive affect and lower physical symptoms at baseline and more positive affect 3 months later; High disengagement and reengagement related to increased positive affect 3 months later; Baseline physical activity mediated the relationship between reengagement and affect and physical activity at baseline; Baseline sedentary activity mediated the relationship between goal adjustment and changes in positive affect. |

AI, Aspirations Index; AYA, adolescent and young adult; CGS, Conditional Goal Setting; GAS, Goal Adjustment Scale; GFI, Goal Facilitation Inventory; GAPI-H, Goal and Processes Inventory-Health; HRHI, Health-Related Hindrance Inventory; HRQOL, health-related quality of life; QOL, quality of life.

($n=7$), author-developed questionnaires ($n=7$), and author-developed, semi-structured interviews ($n=6$). Life goal processes were also assessed using author-developed questionnaires ($n=6$) and author-developed, semi-structured interviews ($n=3$), but more than half ($n=11$) were assessed using validated questionnaires. The most commonly used instrument for goal processes was the Goal Adjustment Scale [14] ($n=5$), which assessed two separate processes: goal disengagement and reengagement. No single instrument was commonly used to assess for goal characteristics.

What theoretical models are being used to guide research on life goals of cancer patients?

The majority of studies ($n=22$) were guided by at least one theoretical model, but some ($n=5$) did not specify a theoretical model, and several ($n=8$) cited more than one (Table 1). There was great variability in the theories being applied, with 24 different theoretical models explicitly identified. SRT was the most frequently used theory ($n=8$) [6]. Other theoretical models cited more than once included socioemotional selective theory ($n=4$) [25], stress and coping model ($n=2$) [26], and terror management theory ($n=2$) [27].

What is known about the impact of the cancer experience on patients' life goal characteristics and processes and subsequent psychological outcomes?

Overall, the literature suggests that cancer impacts patients' life goals [2,9,28–33] and that life goal disturbance is related to poorer psychological outcomes in cancer patients [12,13,15,34–36] (Table 1). Identified studies demonstrate a shift in life goal content and life domains after cancer diagnosis. Individuals with cancer may have fewer life goals [9] and fewer achievement-related and leisure goals than healthy peers [11]. Cancer patients may also have more short-term than long-term goals [9]. There is also evidence that patients experience positive changes in life goals [28], including having more intrinsic goals (e.g., social, transcendental, and health-related goals) over time compared with healthy peers [9,11,33,35,37]. Having more intrinsic goals may be related to positive psychological outcomes, including posttraumatic growth and meaningfulness in life [33,35]. Another goal characteristic, importance, may be related to psychological outcomes. For example, higher importance of social, psychological, and health-related goals is related to a greater purpose in life [10], and greater attainment-importance discrepancies are related to more depression and anxiety [13,34].

Life goal attainment was primarily assessed in young adult survivors of cancer. Findings suggest that these survivors may be less likely to attain normative social goals than the general population [30,31]. Goal disturbance was examined in many of the studies. Overall, cancer

Table 2. Goal constructs, conceptual definitions, and instruments

| Goal construct | Study | Author's terminology and conceptual definition | Instrument used |
|---------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Goal Characteristics Content | Harden [16] Kin & Fung [37] | <i>Life goals:</i> none <i>Selves:</i> The kind of people we might become, the way we might feel, or the actions we might take <i>Hoped-for:</i> The selves that we hoped for the most <i>Feared:</i> The selves that we were afraid that we might eventually become. | Author-developed, semi-structured interviews [16] Hoped-for selves and feared selves [43] |
| | Lauver [17] | <i>Health-related goals:</i> What you would like to be able to do in the future that you are not able to do now; goals for your future that may be related to your health | Author-developed, open-ended questions to elicit health-related goals [17] |
| | Morganstern [15] Palmer [47] | <i>Goal content:</i> none <i>Health-promotion goals:</i> none | Brief quality of life appraisal profile [15] Author-developed, semi-structured interview [47] |
| | Pinquart [9] | <i>Goals:</i> future-oriented representations of what individuals are striving for in their current life situations, what they try to attain or avoid in various life domains | Mixed idiographic-nomothetic goal interview [9] |
| | Pinquart [11] | <i>Goals:</i> what they were currently pursuing, what they wanted to achieve in the future | Mixed idiographic-nomothetic goal interview [11] |
| | Stefanic [38] | <i>Personal goals:</i> important goals or objectives they were currently pursuing in their life and wanted to achieve in the future | Mixed idiographic-nomothetic assessment [38] |
| | Street [49] | <i>Life goals:</i> most important things people want to have, to keep, to pursue in their lives | Listed life goals [49] |
| | Schwartz & Drotar [12] | <i>Life goals:</i> plans, undertakings, or activities in the pursuit of some valued goal/outcome | HRHI [12] |
| | Thompson [40] | <i>Life goals:</i> none | Author-developed, semi-structured interview [51] |
| | Life domains | Bellizzi [28] Pinquart [9] | <i>Plans for various life domains:</i> none <i>Goal categories:</i> achievement-related goals (e.g., career success, gaining material possessions), health-related goals (e.g., improving one's health), social goals (e.g., spending time with friends and relatives), and transcendental goal (e.g., coming closer to God), and other goals |
| Pinquart [11] | | <i>Goal categories:</i> (a) achievement-related goals that include gain in prosperity and material possessions, improvement in one's material conditions, career development, and gain in social prestige; (b) health-related goals that focus on maintenance and improvement of one's physical health; (c) social goals that focus on interpersonal relations, such as enlargement and maintenance of one's present social relationships; (d) leisure goals that focus on intrinsically meaningful and self-rewarding activity in which people engage by choice rather than necessity; and (e) psychological goals that focus on inner psychological states | Mixed idiographic-nomothetic goal interview [11] |
| von Blanckenburg [52] | | <i>Life goal domains:</i> affiliation, altruism, intimacy, achievement, power, and variation | Life goals questionnaire [53] |
| Extrinsic goals | Ransom [35] Street [49] | <i>Extrinsic personal goals:</i> goals related to desires for wealth, popularity, beauty <i>Social conditional goal setting:</i> social norms influence a need to achieve specific goals | AI [48] Social CGS scale [50] |
| | Thompson & Pitts [33] | <i>External goals:</i> materialistic goals | Goal questionnaire [33] |
| Intrinsic goals | Ransom [35] | <i>Intrinsic personal goals:</i> goals related to personal development, relationship building, community enhancement | AI [48] |
| | Street [49] | <i>Personal conditional goal setting:</i> personal happiness/well-being are dependent on the achievement of specific goals | Personal CGS scale [50] |
| | Thompson & Pitts [33] | <i>Internal goals:</i> nonmaterialistic goals (living life one day at a time, appreciating family/friends, acquiring self-knowledge) | Goal questionnaire [33] |
| Importance | Lampic [13], Nordin [34] Offerman [29] Pinquart [11] Stefanic [38] von Blanckenburg [52] | <i>Life values importance:</i> none <i>Goal importance:</i> none <i>Life goal importance:</i> none <i>Importance:</i> none <i>Importance:</i> none | Life values questionnaire [44] GFI [45] Striving to attain 13 life goals [11] Visual analog scale [38] Life goals questionnaire [53] |

(Continues)

Table 2. (Continued)

| Goal construct | Study | Author's terminology and conceptual definition | Instrument used |
|----------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Goal Characteristics | | | |
| Attainability | Pinquart [11] | <i>Likelihood of goal attainment</i> : none | Mixed idiographic-nomothetic goal interview [11] |
| | von Blanckenburg [52] | <i>General attainability</i> : none | Life goals questionnaire [53] |
| Difficulty | Pinquart [9] | <i>Perceived difficulty of goal</i> : none | Mixed idiographic-nomothetic goal interview [9] |
| Temporal range | Pinquart [9] | <i>Time of goal attainment</i> : number of weeks estimated as necessary to fulfill a goal | Mixed idiographic-nomothetic goal interview [9] |
| | Pinquart [11] | <i>Time of goal attainment</i> : number of months estimated as necessary to fulfill a goal | Mixed idiographic-nomothetic goal interview [11] |
| Goal Processes | | | |
| Self-efficacy | Offerman [29] | <i>Goal-related self-efficacy</i> : a person's belief and confidence to perform certain behavior leading to a desired outcome in a particular situation | GAPI-H [46] |
| | Schwartz & Drotar [12] | <i>Goal self-efficacy</i> : none | HRHI [12] |
| Effort | Pinquart [9], Pinquart [11] | <i>Perceived effort to attain goal</i> : none | Mixed idiographic-nomothetic goal interview [9] |
| Pursuit | Gagliese [2] | None | N/A; life goal constructs emerged from inductive interviews |
| Attainment | Lampic [13], Nordin [34] | <i>Life values attainment</i> : none | Life values questionnaire [44] |
| | Morganstern [15] | <i>Goal attainment</i> : sense of progress toward fulfillment of goal | Brief quality of life appraisal profile [15] |
| | Pastore [30] | <i>Social life goals</i> : none | Life goal questionnaire [30] |
| | Punyko [31] | <i>Life goals</i> : none | Self-report of social adaptation outcomes [31] |
| | von Blanckenburg [52] | <i>Life goal attainment</i> : present success at attaining | Life goals questionnaire [53] |
| Disturbance | Gagliese [2] | None | N/A; life goal constructs emerged from inductive interviews |
| | George & Park [36] | <i>Goal violations due to cancer</i> : none | Meaning assessment scale, goals subscale [42] |
| | Harden [16] | None | N/A; life goal constructs emerged from inductive interviews |
| | Offerman [29] | <i>Goal disturbance</i> : none | GFI [45] |
| | Pinquart [9], Pinquart [11] | <i>Perceived influence of health status on goal attainment</i> : none | Mixed idiographic-nomothetic goal interview [9] |
| | Schwartz & Drotar [12] | <i>Health-related hindrance</i> : impact of specific aspects of health on self-identified personal goals | HRHI [12] |
| | Stefanic [38] | <i>Cancer-related interference</i> : perceived current cancer-related interference of each goal | Visual analog scale [38] |
| Goal loss | Gagliese [2] | None | N/A; life goal constructs emerged from inductive interviews |
| | Harden [16] | None | N/A; life goal constructs emerged from inductive interviews |
| Goal adjustment | Harden [16] | None | N/A; life goal constructs emerged from inductive interviews |
| | Roberts [32] | <i>Change in life goals</i> : none | Problem checklist [32] |
| Disengagement | Schroevers [39] | <i>Goal disengagement</i> : ease with which patients were able to reduce effort/commitment towards an unattainable goal | GAS, goal disengagement subscale [14] |
| | Thompson [40] | <i>Situational goal disengagement</i> : ability to give up blocked goals in specific situational contexts | Author-developed, semi-structured interview [51] |
| | Thompson [40] | <i>Dispositional goal disengagement</i> : ability to give up blocked goals | GAS, goal disengagement subscale [14] |
| | Wrosch & Sabiston [54] | <i>Goal disengagement</i> : reduction of effort/commitment from goals that are no longer feasible/maladaptive | GAS, goal disengagement subscale [14] |
| Reengagement | Offerman [29] | <i>Goal reengagement</i> : being able to find renewed purpose in life elsewhere when goals are unattainable | GAS, goal reengagement subscale [14] |

(Continues)

Table 2. (Continued)

| Goal construct | Study | Author's terminology and conceptual definition | Instrument used |
|--------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Goal Characteristics Reengagement | Schroevers [39,41] | <i>Goal reengagement</i> : extent to which patients reengaged in other new goals when they faced an unattainable goal | GAS, goal reengagement subscale [14] |
| | Thompson [40] | <i>Situational goal reengagement</i> : ability to engage in new or preexisting alternative goals in specific situational contexts | Author-developed, semi-structured interview [51] |
| | Thompson [40] | <i>Dispositional goal reengagement</i> : ability to engage in new or preexisting alternative goals | GAS, goal reengagement subscale [14] |
| | Wrosch & Sabiston [54] | <i>Goal reengagement</i> : Identification of, commitment to, and pursuit of new goals when unattainable goals are encountered | GAS, goal reengagement subscale [14] |

AI, Aspirations Index; CGS, Conditional Goal Setting; GAS, Goal Adjustment Scale; GFI, Goal Facilitation Inventory; GAPI-H, Goal and Processes Inventory-Health; HRHI, Health-Related Hindrance Inventory; N/A, not applicable.

patients report more disturbance in attaining their goals than healthy peers [9,13], and those with cancer-related symptoms may have greater disturbance [12,38]. Several studies identified age differences in goal disturbance, with younger patients reporting more life goal disturbance than older patients [2,15,16]. Goal disturbance in cancer patients may be related to negative psychological outcomes [12,29,36,38]. With regard to goal adjustment, greater goal disengagement and goal reengagement may be related to positive psychological outcomes [29,39–41].

Conclusions

A variety of life goal characteristic and processes were identified in this review. However, less than half of the studies examined both life goal characteristics and processes, and many of the studies examined goal processes without identifying what types of goals the patients were considering. This limits our ability to fully understand the impact of cancer on life goals. For example, the process of achieving life goals may vary by life domain of the goal, but the methodology currently employed misses this distinction. Future studies should examine goal characteristics in conjunction with goal processes.

Regarding conceptual definitions of life goal constructs, only half were defined by the authors. This lack of conceptual clarity may lead to ambiguity in the literature and limit its utility. Those constructs for which the authors did provide a conceptual definition tended to be similar across studies. The dearth of conceptual definitions makes it difficult to compare results across studies and draw firm conclusions. Increasing conceptual clarity will help advance the emerging body of literature examining the impact of cancer on life goals.

The majority of instruments used to assess life goal constructs were author-developed questionnaires and semi-structured interviews. This may suggest a lack of psychometrically sound, validated instruments for measuring life goal constructs in the cancer population, or limited awareness of existing, well-validated life goal

measures. Author-developed instruments may be idiosyncratic and make it difficult to compare across studies. The validated instruments that were identified tended to assess for goal processes only. The reliance on author-developed instruments, in conjunction with poor conceptual clarity, is problematic because it makes it difficult to synthesize the literature into a coherent whole.

Several theoretical models were used to study the impact of cancer on patients' life goals. SRT [6], which posits that individuals regulate their behavior by comparing their actual state with their intended state (i.e., goals), was the most frequently cited theory, but it was applied in less than one-third of the studies. Further, many studies were guided by theoretical models or frameworks, which may not be considered true theories (e.g., quality of life appraisal model [15]) or may not be as relevant to life goals and their processes (e.g., stress and coping model [26]). Although difficult to ascertain, these results suggest that existing theoretical frameworks may not fully explain the impact of cancer on patients' life goals. Future studies are needed to develop and test new, over-arching theoretical frameworks to understand the impact of the cancer experience on life goals.

For many of the studies that cited established theories, there was congruence between the theory cited and the life goal constructs being measured (e.g., SRT and goal adjustment). However, those studies that cite theoretical models that are less explicitly connected to life goals run the risk of measuring constructs that are less relevant. The application of established theories that explain life goals and their processes is imperative to advancing the literature on the impact of cancer on life goals.

The variability of life goal characteristics and processes being examined in the literature makes it challenging to summarize existing knowledge about the impact of the cancer experience on patients' life goals. In general, the literature suggests that the cancer experience has an impact on the types of goals patients set and their ability to pursue their goals [2,9,28–33]. Consistent with life goals literature from the general population, life goal

attainment is related to better psychological outcomes, and inability to attain life goals is related to poorer outcomes [12,13,15,34–36]. Also, disengagement from unattainable life goals and reengagement in new life goals facilitate better psychological outcomes [29,39–41]. There appears to be age differences in the impact of cancer on life goals. Specifically, cancer tends to be a greater disturbance to younger adults' life goals compared with that of older adults. This suggests that cancer experienced during younger adulthood may be a more disruptive, off-time event [2,15,16]. The literature also shows that cancer symptoms are related to difficulty attaining goals [2,12,15,30,31].

There is little information on how life goal characteristics and processes interact to contribute to cancer patients' psychological outcomes. Identifying moderating factors in this relationship could inform the development of interventions to enhance patients' life goals and associated psychological outcomes. Another gap in the literature is how life goal characteristics and processes change over the course of the cancer experience and into survivorship. It is recommended that future studies conduct longitudinal analyses to describe these constructs over time and inform the timing of life goal interventions for cancer patients.

Review findings should be viewed in light of several limitations. First, non-English language publications were

excluded and relevant publications may have been omitted. Second, these findings may reflect a file drawer effect in which only studies with significant findings were published. We attempted to minimize this bias by including unpublished dissertations. Third, we attempted to generate an exhaustive list of search terms relevant to life goals; however, there may be additional terms that would have yielded more publications. Given the diversity in life goal constructs identified through our review, this is a strong possibility.

In summary, literature on the impact of cancer on patients' life goals is emerging, and the existing research lacks theoretical, conceptual, and methodological consistency. A consistent terminology surrounding life goals is needed for researchers to build upon each other's work, and research methods must be replicable and transparent. Future studies would benefit from applying theory, providing clear and explicit conceptual definitions of life goal constructs, and using existing validated instruments when available.

Acknowledgements

Dr. Hullmann's contribution to this work was supported by NCI R25 117865, *Training for Research in Behavioral Oncology and Cancer Control* (PI: Champion).

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