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Primary concerns of advanced cancer patients identified through the structured life review process: A qualitative study using a text mining technique

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ABSTRACT

Objective: This study aims to clarify characteristics of the contents of life review in reminiscence therapies in cancer patients by age, gender, and stage of disease.

Methods: Sixteen patients who were terminally ill and were receiving anticancer treatments participated in life review therapy. Patients reviewed there lives according to their developmental stage, and they mainly reviewed impressive achievements. A clinical psychologist interviewed each patient four times and the total number of sessions was 64. The contents of each life review were transcribed, and a correspondence analysis and a significance test were conducted on these data to choose characteristic words or phrases.

Results: The main concern of 40-year-olds was "about children." For 50-year-olds, it was "how to confront death" and for 60-year-olds, "death-related anxiety" and "new discoveries". For 70-year-olds, "resignation about death" and "evaluative reminiscence of their lives" were most important, and for 80-year-olds the main concern was "relationships with others." When analyzing the data according to disease stage and gender, "transcendence to children", "reflection on their past behavior", and "gratitude for my family" were characteristic words for males receiving treatment, "work," "worries about children," "side effects," "homecare," and "reflection on their past behavior" were characteristic words for females receiving treatment. "Physical condition", "desire for death" and "how to confront death" were common phrase for males in the terminal stages of the disease process, while "resignation to life" was characteristic reaction for females.

Significance of results: There appear to be considerable differences in the focus of life review interviews by age, disease age, disease stage, and gender. Clinicians should consider these differences when using life-review therapy in order to tailor it to the individual.

KEYWORDS: Life review, Death and dying, Age, Disease stage, Gender

INTRODUCTION

Patients often review their disease history or their lives in nursing or care situations. Many studies on reminiscence therapy have been conducted for the elderly in which they review their lives (Butler, 1974; Haight, 1988; Haight et al., 1995). These studies are mainly of three types (Thornton & Brotchie, 1987). The first are studies about the effects of reminiscence therapy, which demonstrate effects on depression (Haight et al., 2000), self-esteem (Haight et al., 1998), and life satisfaction (Haight, 1988).

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The second are interview studies such as the function of reminiscence therapy (Wong & Watt, 1991) or contents analysis; the third consists of the data from questionnaires (Webster, 1993). The present study is about contents analysis concerning the method of life review, which is included in the second category.

Structured life review is the most popular method in which reviewers look back at their lives along developmental stages similar to those outlined by Erikson (Haight, 1988). The other method is the autobiographical method (de Vries et al., 1995), in which reviewers write about a particular theme, for example, "love" or "family." They then talk their life experience of these themes in groups. Reminiscence therapy has three kinds of functions (Coleman, 1974). First is "simple reminiscence," in which the elderly review only their good memories. The second is "informative reminiscence," in which the elderly talk about their precious or formative experience from past experiences; and the third is "life review," in which the elderly review and evaluate their lives or an individual basis. The functions of reminiscence therapy have been categorized in more detail by Wong & Watt (1991).

Although patients often review their lives in nursing or care situations, relatively few studies on reminiscence therapy are available. Pickrel (1989) suggested that the effects of this therapy may hold possibility for cancer patients, and Wholihan (1992) demonstrated how various tools like photographs could be used to promote reminiscence therapy. Ando et al. (2006*a*) showed the effects of this therapy on depression and self-esteem, and Ando et al. (2007) demonstrated the effects of this therapy on quality of life for cancer patients. Moreover, Chochinov et al. (2005) demonstrated the effects of patients' life review, although the term "reminiscence therapy" was not used in this study. However, few studies consider the most appropriate methods for this therapy in cancer patients, and their emotional states are likely to differ depending upon their ages, gender, and stages of the disease. To promote reminiscence therapy methods and tailor them to individual cancer patients, we investigated differences in reminiscence therapy by choosing characteristic words and phrases in interviews from the viewpoint of age, gender, and disease stages in patients receiving anticancer treatments and those in the terminal stage of the illness.

METHODS

Subjects

The study included 4 cancer patients (1 man, 3 women) who were undergoing radiation treatment or chemotherapy in a general hospital and 12 cancer patients (2 men, 10 women) with incurable cancer receiving specialized inpatient palliative care in the same region. The inclusion criteria for this study were (1) the patient had cancer, (2) the patient had no cognitive impairment, (3) the patient was 20 years of age or older, and (4) the primary physicians agreed that the patient would benefit from the psychological intervention of reminiscence therapy. The patients' ages ranged from 43 to 82 years, with a mean of 64. The primary tumor sites were breast ($n = 5$), liver ($n = 2$), colon ($n = 2$), lung ($n = 2$), thyroid ($n = 1$), stomach ($n = 1$), gallbladder ($n = 1$), uterus ($n = 1$), and prostate ($n = 1$).

Procedure

Ethical aspects of this study were validated by both the board and the ethical committee of two hospitals. An interviewer was a clinical psychologist. The interview procedure entailed a structured life review interview in which patients reviewed their childhood, adolescence, adult life, and current situation. Some of the questions asked were as follows: (1) Please tell me about your childhood. (2) Which events do you remember as being most impressive during your childhood? (3) How do you feel now when you review those impressive events? Four sessions were planned for each patient. Interviews were conducted in the dayroom or at the bedside. The contents of the patient's life review were recorded by the interviewer in the form of notes taken during or immediately after the session.

Analysis

Text mining is used to extract specific information from a large amount of textural data. We used Word Miner (Japan Information Processing Service, 2003). For example, when a company requires information on their customers' opinions, questions such as "What are the major concerns?" or "Who wants what?" are asked in a questionnaire. The responses are collected in the form of sentences, which are used as the raw data for text mining. Text mining involves three processes: feature extract (word segmentation and categorization or other functions to enter into the next process), the mining process (clustering or association by cluster analysis or correspondence analysis), and visualization (graphs or tables). A test was conducted such that the ratio of appearance frequency of fragments in the category (e.g., 40-year-olds group) versus all categories (e.g., all ages group). Morohoshi et al. (1999) demonstrated the efficacy of text mining in a consumers survey exploring their preference. We used text mining to obtain meaningful words when categorizing the

contents of each interview by age, stage of disease, and gender.

In the first process of text mining, characteristic extraction was performed, that is, the words in each sentence were separated. Words that had the same meaning were counted as the same word, for example, both "mom" and "mother" were counted as "mother." Moreover, articles or punctuation marks were deleted, leaving only meaningful words. These words are called "fragments." Text mining elicited 118 fragments, which were then subjected to correspondence analysis for chosen effective characteristics. In the present study, we conducted correspondence analysis on fragments pertaining to age, gender, and disease stages. In the final process of text mining, the results were presented in the form of tables and graphs.

RESULTS

From correspondence analysis between fragments and age, three components were chosen. Accumulative contribution ratio was 81.64%, and it shows the usefulness of this analysis. A test to choose significant (effective) words or phrases was conducted after correspondence analysis (Ohsumi, 2006), after which, the highest and lowest raking words or phrases in a category were chosen (Table 1). The highest raking fragments in the words of 40-year-olds represented concerns regarding children such as "My children are my emotional mainstay," "I hang on for my children," and "My children cannot accept my disease." These were chosen as the most influential words for this group of patients.

In the words of 50-year-olds, practical matters such as "I put things in order (concerns about aftermath)" and "I recovered from the shock" or willingness to confront death such as "I do not want to prolong my life" or "I want to die without suffering" were more commonly expressed.

Among 60-year-olds, words or phrases relating to spiritual pain such as "I desire to receive euthanasia," "I hate to be a burden to others," or "I want to live longer" were chosen. In addition, reflections on their behavior such as "I understand others' sufferings" or "I was an inconsiderate person" were also chosen.

In the words of 70-year-olds, mortality of death such as "Everyone passes the road to death" and "Let things take their course," or new discoveries such as "I have hurt others' feelings" and "I was an inconsiderate person" were observed. Moreover, evaluative words referring to the past such as "I have good memories of my mother" or "I enjoyed volunteer activities" were indicated more often than in the other age group.

In 80-year-olds, words showing dependence on others such as "I am influenced by my children," "Doctors help me," and "My children are kind to me" were chosen.

In the next analysis, following correspondence analysis and significance testing between fragments and the combination of gender and disease stages, two components were chosen and accumulative contribution ratio was 70.82%, which shows the usefulness of this analysis. High and low ranking words and phrases were chosen (Table 2).

For men receiving anticancer treatments, phrases emphasizing traditional concerns such as "I want to teach to my children" were the most influential words used by interviewees together with their rediscoveries of family values such as "I am grateful to my family," and "I share a strong family bond." For females receiving treatment, worries about children such as "My children cannot accept my disease," and "My children are my emotional mainstay" were characteristic words. Moreover, words related with daily life such as "I enjoyed my work," "I enjoyed volunteer activities," "I suffer from side effects," "I am glad to be able to eat a meal," or "I am anxious about home care" were their main concern.

For males in the terminal stage, words about how to confront death such as "I put things in order (preparing for death)," physical condition such as "I feel good," or adaptive wishes such as "I want to be away overnight" were chosen. For females in the terminal stages of cancer, words of resignation such as "Let things take their course" or "Everyone passes the road to death" were chosen together with words about human relationships such as "My family share good relationships."

DISCUSSION

Our analysis of the data shows that there are differences among characteristic words at each age. Patients in the 40-year-old group were mainly interested in children. Many words regarding children were related to worries about the future. It may be common in other countries that parents suffer when they cannot perform their parental role, but in addition, in Japanese culture, there is also a strong desire that people should not be a burden to others (Morita et al., 2004), despite being a family member.

Similar to the problems of a being a burden, telling the truth or talking about death with family members seem to be difficult because both patients and family think that they should not be a burden to each other, but, sometimes, patients are lonely because they cannot talk about death-related anxiety. This mechanics may bebased on Japanese spirit (Kitayama, 1999). Clinicians should help patients and family members

Table 1. *Words or Phrases which were selected by correspond analysis and significant test by ages*

	40 years old		50 years old		60 years old		70 years old		80 years old	
Order	Significant fragments	value	Significant fragments	value	Significant fragments	value	Significant fragments	value	Significant fragments	value
No. 1	I enjoyed my work.	3.08	I put things in order.	2.95	The romantic relationships were not good.	2.96	I feel good.	2.89	I am influenced by my children.	2.65
No. 2	I want to teach to my children.	2.71	I want to be away overnight.	2.95	I desire to receive euthanasia.	2.21	I was an inconsiderate person.	2.89	Doctors help me.	2.65
No. 3	I hang on for my children.	2.71	My physical condition is good.	2.41	I am dissatisfied with previous treatments.	2.21	Everyone passes the road to death.	2.46	My parents were kind and tender.	2.27
No. 4	My children are my emotional mainstay.	2.31	I did not expect to get cancer.	1.74	I was dying once.	2.21	Let things take their course.	1.97	I share good relations with my family.	2.01
No. 5	My children cannot accept my disease.	2.31	I experienced a lonely childhood.	1.74	I was an inconsiderate person.	2.21	I enjoyed volunteer activities.	1.97	My physical condition is good.	2.01
No. 6	I regret delayed discovery of cancer.	2.31	I recovered from shock.	1.74	I hate to be a burden to others.	2.21	I have lived with my family's support.	1.97	I feel good.	1.23
No. 7	I share good relations with my brothers.	1.84	I like pets.	1.74	I understand others' sufferings.	2.21	I have hurt others' feelings.	1.97	I underwent rehabilitation.	1.15
No. 8	I am anxious about home care.	1.84	I do not want to prolong my life.	1.74	I am dissatisfied with my life.	2.21	I recognized after I got cancer.	1.97	I share bad relations with my family.	1.15
No. 9	My child believes that I will recover from cancer.	1.84	I value nature's beauty.	1.74	There is no value to life.	2.21	I have good memories of my mother.	1.93	I share good relations with my family.	1.15
No. 10	My medication causes mood swings.	1.84	I want to go home.	1.74	I regret the delayed discovery of cancer.	2.21	I have experienced the peaceful death of family members.	1.38	My children are kind to me.	1.15
No. 11	I am concerned for my family.	1.26	I want to die without suffering.	1.74	I could not believe that I had cancer.	2.21	I believe more in destiny than luck.	1.38	I want to continue my hobbies.	1.15
No. 12	I am grateful to my family.	1.26	Last moments' worries have been resolved.	1.74	I cannot move freely.	2.15	I quit my work after marriage.	1.38	I want to walk.	1.15
No. 13	I share a strong family bond.	1.26	I will not be able to move freely.	1.74	There were no explanations for treatments before.	1.78	I have hung on until now.	1.38	My family vests me at the hospital.	0.91
No. 14	I took care of my family.	1.26	I wonder if I should resolve old problems.	1.74	My physical condition is bad.	1.78	I am resting in a hospital now.	1.38	I enjoyed my hobbies.	0.57
No. 15	I liked taking care of my brothers.	1.26	I am not happy to die now.	1.74	I want to live longer.	0.77	I enjoyed conversations with others.	1.38	I have good memories of my mother.	0.57

Table 2. *Characteristic words or phrases selected by correspondent analysis and significance test*

	anticancer treatments		anticancer treatments		terminal		terminal	
Rank	males	value	females	value	males	value	females	value
No.1	I want to teach to my children.	4.19	I enjoyed my work.	2.95	I put things in order.	3.21	I enjoyed my hobbies.	2.45
No.2	I hang on for my children.	2.29	I was an inconsiderate person.	2.59	I want to be away overnight.	3.21	My family share good relationships	2.06
No.3	I am grateful to my family.	2.25	My children are my emotional mainstay.	2.2	I feel good.	2.63	My physical condition was bad.	2.06
No.4	I share a strong family bond.	2.25	My children can not accept my disease.	2.2	I coul not believe that I had cancer.	1.93	Everyone pass the road to death.	2.06
No.5	I was an incosiderate person.	2.25	I regret delayed discovery of cancer.	2.2	I experienced a lonely childhood.	1.93	Let thing takes their coursese.	1.62
No.6	My turning point is at job change.	2.25	I enjoyed volunteer activities.	1.74	I recovered from shock.	1.93	There were no explanations for treatments before.	1.62
No.7	I have sweet memories of my childhood.	2.25	I share good relations with my brothers.	1.74	I do not want to prolong my life.	1.93	I have lived with my family's suport.	1.62
No.8	I enjoyed trips.	2.25	I am anxious about home care.	1.74	I value nature's beauty.	1.93	My parents were kinds to me.	1.62
No.9	I understand other's sufferings.	1.83	My child believes that I will recover from cancer.	1.74	I want to go home.	1.93	My physical condition was bad.	1.46
No.10	I can not move freely.	1.57	My mdedication causees mood swing.	1.74	I want to die without sufferings.	1.93	The romantic relationships were not good.	1.62
No.11	I began to consider others.	0.92	I am glad to be able to eat a meal.	1.74	Last moments' worries have been resolved.	1.93	I feel good.	1.46
No.12	I want to do something for my family.	0.8	I have hurt others' feelings.	1.74	I will not be able to move freely.	1.93	I want to live longer.	1.08
No.13	I think about enjoyments.	0.8	I recognized after I got illness.	1.74	I wonder if I should resolve old problems.	1.93	I like pets.	1.08
No.14	I worry about cancer recurrence.	0.8	I feel good.	1.63	I am not happy to die now.	1.93	I desire for eusanasia.	1.08
No.15	I am dissatisfied with my life.	0.8	I suffer from side effects.	1.63	I want to live longer.	1.46	I am dissatisfied with previous treatments.	1.08

to tell their emotion or intention redundantly to release their burdens.

Patients in the 50- and 60-year-old groups were more likely to be preoccupied by death-related anxiety about how they would confront the imminence of their own death. They may not expect to be cured of cancer, and they seem to try to prepare for death while reconstructing their lives to include the reality of their disease. Clinicians should therefore sympathetically help patients to find realistic solutions to these problems and develop coping strategies during the life review process. Moreover, to the sufferings such as "I desire to receive euthanasia" or "There is no value to life," "Psychotherapeutic Intervention" by Breitbart et al. (2004) or "Meaning Making Intervention" by Lee et al. (2006), which focus on meaning of life or spirituality, may help patients. These focused interventions to these problems may be more needed in addition to life review interview in Japan.

Patients in the 70-year-old group talked about their resignation to death. They also reviewed and evaluated their lives in detail, and with great ease, suggesting that this may be a more normative process for them. It is considered that some people may not survive until they turn 70, and thus, they are more likely to think of their own death, believing that they might not live much longer after this age. This shows that life review was more suitable for this age group in this research.

For patients in the 80-year-old group, profound life review with evaluation is sometimes more difficult, as this group tends to forget various things and retain only the most impressive memories they had. They did not talk so much about children or spiritual pain. These patients part with various memories and often accept their mortality. One 80-year-old woman said, "I have forgotten most of them. Old times seem good but I do not remember them." For these people, structured life reviews with evaluation is sometimes not suitable, and simple reminiscence therapy (Coleman, 1974), in which a person reviews his or her good memories without deep evaluation, may be more suitable.

Next, we investigated the results of fragments separated into a combination between disease stage (anticancer treatment, terminal) and gender. Both men and women receiving treatment demonstrated reflection on their lives and new discoveries. Some patients had a renewed sense of gratitude to their family or reflected on their past behavior toward others. Illness had given them an opportunity to reflect upon their lives. From the viewpoint of a cultural aspect, Kubler-Ross (1969) described the psychological stage as "Transaction with God"; however, in Japanese culture, it is thought of as "Consideration for others" because consciousness of sin in the sight to God means very little to the Japanese, whereas harmony with others is the most important attitude they value. The clinician should help patients reevaluate their human relations or make good ones new.

The theme of children was common among men and women receiving anticancer treatments. Women were worried about their children and whether they understood their disease, whereas men hoped to pass on their values to their children. Generativity may have been stronger in men, who wanted to pass their values on to their children and were newly grateful to their family or realized their family bond, which they did not feel until they became ill. It may be, therefore, that illness provides Japanese men with a renewed appreciation of family and family life and a stronger desire to shape the values and future of their offspring.

In the terminal stage, men spoke in detail about confronting death, saying things like "I do not want to prolong death" or "I want to die without suffering." In contrast, women in this study showed interest in human relationships or resignation toward death. These suggest that the provision of information on how to confront death or a coping mechanism such as Lazarus and Folkman's (1988) may help reduce men's anxiety, whereas empathetic support for patients' voice about mortality will help women. Some patients said things such as "Everyone passes the road to death, I am very peaceful because I can meet my dead mother or dead old people in the heaven." Like these patients who believe in another world after death, Japanese often do not have a specific religion, but they seem to be more religious.

Comparison of words between those receiving anticancer treatments and those in the terminal stage of cancer showed that interests of patients receiving anticancer patients focused on treatments such as side effects, home care, treatments, or meals, whereas, in the terminal stage, interest seems to be focused more on value of human relationships, how to prepare for death, and resignation to their own mortality. These differences show the importance of many kinds of support, such as instrumental or emotional support, and clinicians need to prepare to talk about various ranges of interests.

Study Limitations and Conclusions

There are some limitations of the study, which was conducted in only two hospitals. Thus, it is difficult to generalize these results. Moreover, there are differences in the number of participants between men and women, the number of men being small. This is no surprise, however, because men do not like to talk about themselves in comparison to women

and refused to participate. Only a small number of patients met the criteria for entry to the study. In future research, we will examine these problems. However, although there are some limitations, the present study reinforced the need to carefully consider differing interests among ages, gender, and stages. Further study will be needed into the use of reminiscence therapy and the impact of variables in the appropriateness of different reminiscence techniques; but in general, the data presented here contain several developmental theories of aging and preparatory grief work.

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