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Review Article

## Preferences of Cancer Patients Regarding Communication of Bad News: A Systematic Literature Review

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Most physicians regard the communication of bad news to be a difficult issue in clinical oncology practice. The optimal manner of communicating bad news to patients so that physicians can create maximal understanding in patients and facilitate their psychological adjustment is unknown. A systematic review of the literature was conducted to clarify available knowledge on patient preferences regarding the communication of bad news and associated factors. A comprehensive computer search of databases (MEDLINE and PsychINFO) and a manual search identified 24 studies. The above issue has been discussed mainly in Western countries. Most studies used different measures to obtain information on patient preferences and have provided mostly descriptive evidence. The findings in this review suggest that patient preferences with regard to the communication of bad news by physicians consist of four components: setting, manner of communicating bad news, what and how much information is provided and emotional support, and that patients' preferences are associated with demographic factors. Younger patients, female patients and more highly educated patients consistently expressed a desire to receive as much detailed information as possible and to receive emotional support. Asian patients were shown to prefer that relatives be present when receiving bad news more than Westerners do and to prefer to discuss their life expectancy less than Westerners. Physicians need to recognize these preferences to help patients understand.

*Key words:* communication – patient preferences – bad news – review

### INTRODUCTION

Communication between physicians and patients is a fundamental aspect of cancer care, especially when bad news is being communicated. Bad news consists of any information likely to drastically alter a patients' view of their future (1) and includes information regarding diagnosis, recurrence and treatment failure in clinical oncology settings (2).

The manner in which physicians communicate bad news concerning cancer can affect the degree of the patient's

distress in response to the news (3–5). Significant associations have been founded between physician support and low levels of distress and helplessness/hopelessness and a high 'fighting spirit' level (6). On the other hand, the problems physicians face when communicating bad news to their patients include a lack of sufficient time, being honest without causing distress (7), dealing with the patients' families, responding to the patients' emotions (7,8) and discussing life expectancy (8).

Because of the above issues, communication between patients and their physicians needs to be facilitated further (9), but there is a lack of guidance for physicians with regard to the optimal way to approach the communication of bad news. Since patients' preferred manner of communication of

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bad news by physicians has recently been shown to be related to a lower level of psychological distress and a higher level of patient satisfaction (10), some recent studies have focused on preferences regarding communication style, such as what information to give and how to convey it. Our own in-depth interview-and-questionnaire survey in Japan showed that the cancer patients preferred that physicians spend sufficient time to discuss their illness with them, discuss the impact of their disease and treatment on their daily activities, facilitate their understanding, and encourage and allow expression of their emotions (11,12). In order to provide guidance to physicians when communicating bad news and to clarify this issue, we systematically reviewed the literature on cancer patients' preferences regarding communication of bad news by physicians, and associated factors.

## SEARCH STRATEGY AND SELECTION CRITERIA

A search of two relevant databases, MEDLINE and PsychINFO, was conducted up to and including November 2008 by using the following search terms: (Cancer OR Oncology OR Palliative care) AND (Communication OR Relationship) AND (Bad news OR Prognosis OR Unfavourable news OR Truth disclosure OR Truth telling) AND (Patients' preferences OR Patients' perspectives OR Patients' views). The search was restricted to papers published in English.

The two reviewers excluded non-original articles and duplicates from the resulting list, and then selected studies based on an eligibility checklist and agreement between the two reviewers. The eligibility criteria were: the aims of the study included identifying cancer patients' preferences regarding communication of bad news to them by physicians, the study method adopted was an interview or questionnaire survey and the results included data regarding the preferences of cancer patients. Studies involving participants with illnesses other than cancer but in which a substantial proportion of the participants were cancer patients were included. Studies that involved a non-clinical sample, e.g. surveys of the general population regarding a hypothetical cancer scenario, were excluded. Some studies included participants with different types of cancer and different stages of disease. A manual search of the references cited in the articles that met the criteria for inclusion in the review was also conducted.

The results of the studies were shown as summaries of patient preferences for communication of bad news and of factors associated with patient preferences for communication of bad news. These two aims guided the organization of the results.

## RESULTS

The initial search yielded 266 articles. After excluding articles on the basis of the above criteria (247 articles) and

adding articles retrieved in the manual search (5 articles), we identified 24 articles that met our selection criteria (11–34). Studies that addressed more than one of the two aims are listed in Table 1. Cassileth et al. (13) first reported in 1980 that patients prefer to be informed of bad news and to participate in medical decisions. The majority of the selected 24 articles was of studies conducted in Western countries (13–28,30,33,34), only 5 were conducted in Asian countries (11,12,29,31,32). As expected, given the exploratory nature of the patients' preferences regarding communication of bad news, the majority of the articles was qualitative or descriptive studies that used unvalidated measures. Four of the studies used a validated questionnaire, the Measurement of Patients' Preferences, developed by Parker et al. (21,25,31,32) in the United States. In 17 of the studies, the subjects had different types of cancer (11–19,21,23,24,29–32,34). The other studies surveyed patients with head and neck cancer (20), melanoma (22), prostate cancer (25), haematologic cancer (26), breast cancer (33) and unspecified cancer (27,28).

### PATIENT PREFERENCES FOR COMMUNICATION OF BAD NEWS

Nine studies examined the components of patient preferences for the communication of bad news (11–13,16,21,23, 25,26,31,32). Two of them were conducted by means of in-depth interviews, exploring this issue by content analysis (11,26), and the other seven studies were questionnaire surveys followed by factor analyses (12,16,21,22,25,31,32). These nine studies reported identifying from two to six different components of patient preferences. We have summarized these components in Table 2 and identified four main structural components: 'setting', 'manner of communicating bad news', 'what and how much information to be provided' and 'emotional support'.

Nineteen studies reported the most preferred manner of communication based on these components by using descriptive data such as proportions or mean scores (12–25,27–33).

### SETTING

Seven articles identified setting (11,12,21,25,26,31,32) as component, which included face-to-face consultation (15,19,24,29–31), sufficient consultation time (11,21,22,25, 26,32) and privacy (11,15,22). There was high inter-individual variation in patients' responses regarding their preferences as to whether relatives should be present: 40–78% wanted to be told the bad news while their relatives were present, but 10–81% wanted to be alone (12,14,18,20,22,27,28). Very few patients (0–17.5%) desired the presence of other health professionals (12,18,22,28). Physicians should be trusted by and familiar to their patients (11,12,21,25,31,32), should turn off their beepers to avoid interruptions (11,32) and should greet the patient and family members politely before beginning the consultation (11,32).

Table 1. Patient preferences with regard to communication of bad news

Author	Year	Journal	Country	Sample	Method	Results	Components of patient preferences	Items of patient preferences	Factors associated with patient preferences
Cassileth et al. <sup>13</sup>	1980	Ann Intern Med	USA	256	Questionnaire (Information Styles Questionnaire: 12-item)	Cancer sites Lung 12% Breast 24% Gynaecologic 6% Head and neck 4% Haematologic 22% Gastrointestinal 9% Other 22%	Questionnaire	Want to know what all possible side-effects: 98% Want to know what the treatment will accomplish: 98% Want to know whether or not the disease is cancer: 98% Want to know the chances of a cure: 96% Want to know whether all parts of the body are involved: 95% Want to know what the treatment will do inside their body: 95% Want to know what their day-to-day progress is: 93% Want to know whether the disease is inherited or contagious: 91% Want to know how effective the treatment has been for other patients: 93% Want to know examples of cases in which the treatment has been effective: 91% Want to know examples of cases in which the treatment has not been effective: 77%	Wanting detailed information: Age (younger > older) Race (white > black) Education (higher > lower) Wanting to participate in treatment decisions: Age (younger > older) Education (higher > lower) Wanting as much information as possible: Age (younger > older)
Lind et al. <sup>14</sup>	1989	J Clin Oncol	USA	55	Semi-structured interview	Breast 35% Lung 15% Colorectal 11% Prostate 9% Other 29%	Semi-structured interview	Want to be told honestly: 2/3 Want to be told everything: 4/5 Want to be told as much as is necessary: 1/5 Want to know the effect of the physician: <1/2 Want to be told gently, without excessive negativism: 1/3 Want to be told with others: <1/10 Want the sense of personal tragedy that many feel taken seriously and not trivialized: many patients	Wanting detailed information: Age (younger > older) Race (white > black) Education (higher > lower) Wanting as much information as possible: Age (younger > older)
Peteet et al. <sup>15</sup>	1991	J Fam Pract	USA	32	Semi-structured interview	Breast 16% Lung 16% Haematologic 28% Gastrointestinal 16% Testicular/ovarian 13%	Semi-structured interview	Want to be given information: 47% Want to be told to sustain hope: 19% Want to be told with compassion and caring: 16% Want to be told with a supportive person present: 13% Want to be told without additional information: 6% Want to be told not to sustain hope: 6% Want to be told without privacy: 3% Want to be told without support available: 6%	Wanting detailed information: Age (younger > older) Race (white > black) Education (higher > lower) Wanting to participate in treatment decisions: Age (younger > older) Education (higher > lower) Wanting as much information as possible: Age (younger > older)

Continued

Table 1. Continued

Author	Year	Journal	Country	Sample N	Cancer sites	Method	Results	Components of patient preferences	Items of patient preferences	Factors associated with patient preferences
Sardell and Iriewell <sup>16</sup>	1993	Cancer	USA	56	Breast 25% Colorectal 21% Lung 4% Other 50%	Questionnaire (57-item)	Highest rating Want to be told patient will receive the most up-to-date treatment: 98% Want to be told patient's pain will be controlled: 95% Want physician to insist that he/she will not abandon patient: 93% Want to be told all medical information: 91% Want to be told there are many treatments that slow/stop cancer: 91% Want to be told that other physicians will be called in: 89% Want offer to be patient's resource for all questions: 89% Want to be guided to medical research about the cancer: 89% Want to be told all treatment options: 88% Want it to be stated that physician needs patient help to help patient: 86%	1. Physician behaviors reflecting positive emotional support 2. Communications that deflect the impact of the diagnosis limited or delayed 3. Physician communication is limited or delayed 4. Communication of medical information relevant to the treatment	Want to be told everything: 95% Want to know specific medical name of illness: 99% Want to know all possible treatments: 99% Want to know all possible side-effects of treatments: 99% Want to know exactly how treatment works to treat illness: 99% Want to know whether or not the disease is cancer: 98% Want to know what week by week progress is: 98% Want to know the chances of a cure: 97%	Want to be told face-to-face: 77% Want to be told with family member: 57% Want to be told with other health professional: 13% Want to be alone to hear diagnosis: 38% Want to be given all information: 78% Want to discuss life expectancy: 57% Want to talk about influences on daily functioning: 63%
Fallowfield et al. <sup>17</sup>	1995	Psychooncology	UK	101	Gestational trophoblastic disease 29% Testis 20% Breast 11% Colorectal 7% Ovary 6% Lung 5% Bladder 5% Other 17%	Questionnaire (Cassileth's Information Needs: 12-item, by Cassileth et al. 1980)				
Butow et al. <sup>18</sup>	1996	Cancer	Australia	144	Breast 39% Melanoma 61%	Questionnaire				

Meredith et al. <sup>19</sup>	1996	Br Med J	UK	250	Stomach or oesophagus 9% Colorectal 14% Lung 34% Breast 23% Cervix 4% Ovary 4% Bladder 7% Prostate 6%	Semi-structured interview	Want to be given all information: 79% Want to know whether illness is cancer: 96% Want to know specific medical name of illness: 76% Want to know what week by week progress is: 90% Want to know chances of cure: 91% Want to know all possible treatments: 86% Want to know all possible side-effects of treatment: 94% Want to know how treatment works to treat illness: 79%	Wanting as much information as possible: Income (average > deprived)
Kim and Alvi <sup>20</sup>	1999	Laryngoscope	USA	16	Head and neck 100%	Questionnaire (41-item)	Want physician to tell bad news without touch or hug: 75% Want to be alone to hear diagnosis: 81% Want to have a warning sign: 56%	
Parker et al. <sup>21</sup>	2001	J Clin Oncol	USA	351	Breast 30% Gastrointestinal 31% Gynaecologic 17% Urologic 22%	Questionnaire (The Measure of Patients' Preferences: 47-item)	Highest rating [Mean(SD), range; 1-5] Want physician to be up to date on research: 4.72(0.49) Want to be told best treatment option: 4.70(0.57) Want physician to take time to answer all patient's questions completely: 4.66(0.56) Want physician to be honest about severity of patient's condition: 4.61(0.64) Want to feel confident about physician's competence and skill: 4.59(0.55) Want to be given enough time to ask all of patient's questions: 4.57(0.63) Want to be given news in a clear, simple language: 4.56(0.70) Want physician to tell patient the news directly: 4.56(0.62) Want physician to inform patient of all treatment options: 4.55(0.65) Want physician to give patient full attention: 4.53(0.68)	1. Content: Gender (female > male), Education (higher > lower) 2. Emotional support: Gender (female > male) 3. Facilitation: Age (younger > older) Education (higher > lower)
							1. Content: what and how much information is told, 13 items, total variance = 33.4%, alpha coefficient = 0.92 2. Support: emotional support during the interaction, 12 items, total variance = 10.7%, alpha coefficient = 0.90 3. Facilitation: setting and context variables, 7 items, total variance = 6.3%, alpha coefficient = 0.70	

Continued

Table 1. Continued

Author	Year	Journal	Country	Sample	Method	Results	Items of patient preferences	Factors associated with patient preferences
Schofield et al. <sup>22</sup>	2001	Ann Oncol	Australia	N = 131 Cancer sites: Melanoma 100%	Questionnaire (32-item, by Butow et al. 1996)	Components of patient preferences 1. Information 2. Social support	<p>Want to be given all information about diagnosis: 69%</p> <p>Want to be given information about life expectancy: 61%</p> <p>Want to be given information about influence on daily functioning: 62%</p> <p>Want to be given all information about treatment: 81%</p> <p>Want to talk about treatment decision immediately after diagnosis: 63%</p> <p>Want to be told with someone patient would have liked to be present to hear diagnosis</p> <p>Spouse/partner: 44%</p> <p>Other relative: 9%</p> <p>Nurse: 0%</p> <p>Social worker: 0%</p> <p>No one: 47%</p> <p>Most important communication feature</p> <p>Want physician to prepare patient for possibility of diagnosis of cancer: 12%</p> <p>Want physician to use the word 'cancer': 32%</p> <p>Want a familiar physician to convey the bad news: 32%</p> <p>Want physician to inform of diagnosis without delay: 41%</p> <p>Want to be told face-to-face: 62%</p> <p>Want to be told in private: 39%</p> <p>Want to be told the diagnosis with someone wanted by the patient to be present: 25%</p> <p>Want to be given all information: 26%</p> <p>Want physician to offer to help tell others of diagnosis: 5%</p> <p>Want to be given opportunities for questions after diagnosis: 28%</p> <p>Want to be given extra written information: 14%</p> <p>Want to be given information about life expectancy: 15%</p> <p>Want to be given all information about treatment: 15%</p> <p>Want to be given all treatment options: 25%</p> <p>Want to participate in decisions regarding treatment: 19%</p> <p>Want to be told about cancer support services: 4%</p> <p>Want physician to be supportive: 26%</p> <p>Want to be given hope/reassurance: 22%</p>	<p>Factors associated with patient preferences</p>

Want to be given all information: 87%  
 Want to know the specific medical name of the cancer: 88.7%  
 Want to know whether or not the disease is cancer: 98.1%  
 Want to know what the week-to-week progress is during treatment: 90.8%  
 Want to know the chances of cure: 95.4%  
 Want to know all possible side-effects of treatment: 97.1%  
 Want to know how the treatment works to treat the illness: 91.9%

Questionnaire (Cassileth's Information Needs: 12-item, by Cassileth et al. 1980)

- Breast 25%
- Gastrointestinal/colorectal 18%
- Haematological 8%
- Lung 7%
- Gynaecological 6%
- Urological 6%
- Skin 3%
- CNS 3%
- Head and neck 2%
- Unknown primary 7%
- Other 14%

2131

UK

2001 Br J Cancer

Jenkins et al.<sup>23</sup>

Diagnosis  
 Want to know medical name of the cancer: 54%  
 Want to know degree of malignancy: 33%  
 Want to know extent of metastasis 35%  
 Prognosis  
 Want to know chance of survival: 27%  
 Want to know expected length of survival: 30%  
 Diagnosis [Mean(SD), range; 1-5]  
 Want physician to inform patient: 4.13(0.85)  
 Want physician to inform family: 3.71(0.99) ( $t = 7.15, P < 0.0001$ )  
 Want physician to inform patient prior to informing family: 3.72(0.96)  
 Want physician to inform family prior to informing patient: 3.08(0.96) ( $t = 7.98, P < 0.0001$ )  
 Prognosis [Mean(SD), range; 1-5]  
 Want physician to inform patient: 3.97(0.90)  
 Want physician to inform family: 3.69(0.97) ( $t = 4.45, P < 0.0001$ )  
 Want physician to inform patient prior to informing family: 3.74(0.98)  
 Want physician to inform family prior to informing patient: 2.97(0.94) ( $t = 8.07, P < 0.0001$ )

Semi-structured interview

- Haematological 19%
- Breast 16%
- Nasopharyngeal 10%
- Hepatoma 10%
- Colorectal 9%
- Lung 8%
- Gastric 7%
- Head and neck 6%
- Cervical 3%
- Primary unknown 3%
- Others 9%

364 (Taiwanese)

USA

2004 Psychooncology

Tang and Lee<sup>24</sup>

Continued



Table 1. Continued

Author	Year	Journal	Country	Sample	Cancer sites	Method	Results	Components of patient preferences	Items of patient preferences	Factors associated with patient preferences
Davison et al. <sup>25</sup>	2004	BJU Int	Canada	87	Prostate 100%	Questionnaire (The Measure of Patients' Preferences, by Parker et al. 2001)	<p>1. Content: what and how much information is told, 17 items, total variance = 34.4%</p> <p>2. Support: emotional support during the interaction, 10 items, total variance = 14.0%</p> <p>3. Facilitation: setting and context variables, 5 items, total variance = 6.5%</p>	<p>1. Content: what and how much information is told, 17 items, total variance = 34.4%</p> <p>2. Support: emotional support during the interaction, 10 items, total variance = 14.0%</p> <p>3. Facilitation: setting and context variables, 5 items, total variance = 6.5%</p>	<p>Highest rating [Mean(SD), range: 1-5] Want physician to be honest about severity of my condition: 4.70(0.57)</p> <p>Want physician to tell patient best treatment option: 4.67(0.68)</p> <p>Want physician to be up to date on research: 4.55(0.62)</p> <p>Want physician to disclose all treatment options: 4.54(0.68)</p> <p>Want physician to tell patient the prognosis: 4.54(0.70)</p> <p>Want physician to tell patient how the patient's condition may affect the patient's daily functioning: 4.52(0.82)</p> <p>Want physician to describe all treatment options in detail: 4.47(0.86)</p> <p>Want physician to take time to answer all questions completely: 4.45(0.66)</p> <p>Want physician to set aside enough time to ask all questions about cancer and treatments: 4.43(0.77)</p> <p>Want to feel confident about physician's technical competence and skill: 4.41(0.62)</p> <p>Want physician to tell news directly: 4.41(0.76)</p> <p>Want physician to wait until all test results are in before giving news: 4.34(0.93)</p> <p>Want to be given detailed information about results of medical tests: 4.20(0.90)</p> <p>Want physician to give patient full attention: 4.17(1.04)</p> <p>Want physician to give a lot of information about patient's cancer: 4.14(0.89)</p> <p>Want to be given information about experimental therapies: 4.08(0.92)</p>	<p>Highest rating [Mean(SD), range: 1-5] Want physician to be honest about severity of my condition: 4.70(0.57)</p> <p>Want physician to tell patient best treatment option: 4.67(0.68)</p> <p>Want physician to be up to date on research: 4.55(0.62)</p> <p>Want physician to disclose all treatment options: 4.54(0.68)</p> <p>Want physician to tell patient the prognosis: 4.54(0.70)</p> <p>Want physician to tell patient how the patient's condition may affect the patient's daily functioning: 4.52(0.82)</p> <p>Want physician to describe all treatment options in detail: 4.47(0.86)</p> <p>Want physician to take time to answer all questions completely: 4.45(0.66)</p> <p>Want physician to set aside enough time to ask all questions about cancer and treatments: 4.43(0.77)</p> <p>Want to feel confident about physician's technical competence and skill: 4.41(0.62)</p> <p>Want physician to tell news directly: 4.41(0.76)</p> <p>Want physician to wait until all test results are in before giving news: 4.34(0.93)</p> <p>Want to be given detailed information about results of medical tests: 4.20(0.90)</p> <p>Want physician to give patient full attention: 4.17(1.04)</p> <p>Want physician to give a lot of information about patient's cancer: 4.14(0.89)</p> <p>Want to be given information about experimental therapies: 4.08(0.92)</p>
Randall and Wearn <sup>26</sup>	2005	Palliat Med	UK	15	Leukemia 40% Lymphoma 60%	Semi-structured interview	<p>1. Characteristics of the person giving the bad news</p> <p>2. Amount of time available to the patient</p> <p>3. Type of information given and the language used</p> <p>4. Ongoing process of having a serious illness</p> <p>5. Support: when the news is received and throughout the illness</p> <p>6. Physical setting in which the news is given</p>	<p>1. Characteristics of the person giving the bad news</p> <p>2. Amount of time available to the patient</p> <p>3. Type of information given and the language used</p> <p>4. Ongoing process of having a serious illness</p> <p>5. Support: when the news is received and throughout the illness</p> <p>6. Physical setting in which the news is given</p>	<p>1. Characteristics of the person giving the bad news</p> <p>2. Amount of time available to the patient</p> <p>3. Type of information given and the language used</p> <p>4. Ongoing process of having a serious illness</p> <p>5. Support: when the news is received and throughout the illness</p> <p>6. Physical setting in which the news is given</p>	<p>1. Characteristics of the person giving the bad news</p> <p>2. Amount of time available to the patient</p> <p>3. Type of information given and the language used</p> <p>4. Ongoing process of having a serious illness</p> <p>5. Support: when the news is received and throughout the illness</p> <p>6. Physical setting in which the news is given</p>

Fujimori et al. <sup>11</sup>	2005	Psychooncology	Japan	49	Lung 31% Gastrointestinal 31% Breast 14% Head and neck 12% Malignant lymphoma 10% Leukemia 1% Oncologists 14%	In-depth interview	<ol style="list-style-type: none"> <li>Setting: providing a comfortable environment and sufficient time</li> <li>Information given: discussing treatment and impact on daily activities</li> <li>Method of disclosure: facilitating patient understanding</li> <li>Emotional support: encouragement and allowing expression of emotions</li> </ol>	<p>Want to be told full details of patient's condition: 80%</p> <p>Want to be given any bad news: 57%</p> <p>Want to be told with family member: 40%</p> <p>Want to be told by family member: 2%</p> <p>Who communicates the diagnosis</p> <p>Want family physician to tell the diagnosis: 50%</p> <p>Want hospital physician to tell the diagnosis: 29%</p> <p>Want any physician to tell the diagnosis: 9%</p> <p>Want psychologist to tell the diagnosis: 3%</p> <p>Want nurse to tell the diagnosis: 0%</p> <p>Want social worker to tell the diagnosis: 0%</p> <p>Want family member to tell the diagnosis: 0%</p> <p>Want other person to tell the diagnosis: 9%</p> <p>Who present</p> <p>Want to be told with family member: 61%</p> <p>Want to be told with friend: 0%</p> <p>Want to be told alone: 10%</p> <p>Want to be told with other professionals: 3%</p> <p>Want to be told with other patients: 3%</p> <p>Indifferent: 23%</p> <p>Who participate in decisions regarding treatment</p> <p>Want to decide for oneself: 68%</p> <p>Want family member to decide: 49%</p> <p>Want only physician to decide: 21%</p>
Keating et al. <sup>27</sup>	2005	Chest	Ireland	207	Cancer or Alzheimer's disease	Interview		
Goncalves et al. <sup>28</sup>	2005	Palliat Med	Portugal	47	Unspecified cancer	Questionnaire		

Continued

Table 1. Continued

Author	Year	Journal	Country	Sample N	Cancer sites	Method	Results	Components of patient preferences	Items of patient preferences	Factors associated with patient preferences
Tang et al. <sup>29</sup>	2006	Cancer Invest	Taiwan	617	Lung 30% Colorectal 10% Haematological malignancies 9% Hepatitis 8% Head and neck 7%	In-person interview			Diagnosis [Mean(SD), range; 1-5] Want physician to inform patient: 3.20(1.50) Want physician to inform family: 3.05(1.49) Want physician to inform patient prior to informing family: 3.61(1.01) Want physician to inform family prior to informing patient: 3.41(1.00) Prognosis [Mean(SD), range; 1-5] Want physician to inform patient: 3.11(1.48) Want physician to inform family: 2.99(1.47) Want physician to inform patient prior to informing family: 3.58(1.03) Want physician to inform family prior to informing patient: 3.41(1.00) Want to be given all information: 87% Decision-making Want to decide for self: 2% Want to listen to physician and decide for self: 20% Want to decide collaboratively: 39% Want physician to listen to patient and decide: 24% Want physician to make all decisions: 15%	Information needs: none Preferences for physician: none Decision-making (decision for self): Age [younger > older(60 or over)]
Cox et al. <sup>30</sup>	2006	Eur J Oncol Nurs	UK	394	Breast 49% Colorectal 34% Gynaecological 17%	Questionnaire			Information needs: none Preferences for physician: none Decision-making (decision for self): Age [younger > older(60 or over)]	Information needs: none Preferences for physician: none Decision-making (decision for self): Age [younger > older(60 or over)]
Chiu et al. <sup>31</sup>	2006	Support Care Cancer	Singapore	200	Breast 27% Gastrointestinal 24% Gynaecologic 4% Head and neck 14% Urologic 3% Liver 6% Others 6%	Questionnaire (The Measure of Patients' Preferences, by Parker et al. 2001)	1. Content and facilitation: what and how much information is told, and setting and context variables, 26 items 2. Support: emotional support during the interaction, 7 items	Highest rating [Mean(SD) range; 1-5] Want to be given detailed information about test results: 4.27(0.87) Want to be told in person: 4.26(0.79) Want to feel confident about physician's skill: 4.26(0.79) Want physician to tell best treatment option: 4.24(0.88) Want physician to describe treatment options in detail: 4.19(0.88) Want physician to tell news directly: 4.16(0.92) Want physician to give patient full attention: 4.11(0.89) Want physician to be honest about severity of patient's condition: 4.11(0.98) Want physician to tell how the condition may affect daily functioning: 4.11(0.96) Want physician to tell the prognosis: 4.10(0.95)	Content and facilitation: none Support: gender (female > male)	

Fujimori et al. <sup>1,2</sup>	2007 Psychooncology Japan	529	Digestive 35% Breast 24% Head and neck 21% Lung 20%	Questionnaire (70-item)	<p>1. Method of disclosure of bad news: how delivered bad news, 21 items, variance explained = 9.81, <math>\alpha</math> coefficient = 0.93</p> <p>2. Provision of emotional support: supportive aspects, including offering comfort and support to patients and families, 17 items, variance explained = 7.77, <math>\alpha</math> coefficient = 0.88</p> <p>3. Provision of additional information: discussing disease, treatment, and impact on daily activity, 15 items, variance explained = 5.17, <math>\alpha</math> coefficient = 0.82</p> <p>4. Setting: where and when the news was conveyed and provision of a comfortable environment and sufficient time, 17 items, variance explained = 10.23, <math>\alpha</math> coefficient = 0.77</p>	<p>Highest rating [Mean(SD), range, 1-5]</p> <p>Want physician to tell the treatment plan: 4.53(0.58), 97%</p> <p>Want physician to assume responsibility for patient care until the end: 4.51(0.59), 97%</p> <p>Want physician to answer patient's questions: 4.49(0.52), 99%</p> <p>Want physician to tell about the latest treatment: 4.49(0.63), 96%</p> <p>Want physician to break bad news in a way that is easy to understand: 4.43(0.54), 98%</p> <p>Want physician to tell all treatment options: 4.42(0.69), 93%</p> <p>Want physician to explain the status of illness: 4.40(0.56), 97%</p> <p>Want physician to break bad news honestly: 4.35(0.58), 97%</p> <p>Want physician to tell what patient can hope for: 4.35(0.58), 92%</p> <p>Want physician to explain until patient is satisfied: 4.34(0.63), 94%</p>	<p>Telling about your life expectancy Marital status (married &gt; unmarried) Helplessness/hopelessness (lower &gt; higher) Education (higher &gt; lower) Breaking bad news in a matter-of-fact manner Age (older &gt; younger) Education (higher &gt; lower) Fatalism (higher &gt; lower) Anxious (lower &gt; higher) Recurrence or metastasis (presence &gt; absence) Breaking bad news step-by-step Fighting spirit (higher &gt; lower) Education (lower &gt; higher) Employment status (unemployed &gt; employed) Avoidance (higher &gt; lower) Number of bad news items received (more &gt; less) Breaking bad news before it is definite Avoidance (higher &gt; lower) Education (higher &gt; lower) Breast cancer (no &gt; yes) Talking in a decisive tone of voice Gender (male &gt; female) Fatalism (higher &gt; lower) Education (lower &gt; higher)</p>
Fujimori et al. <sup>3,2</sup>	2007 Psychooncology Japan	529	Digestive 35% Breast 24% Head and neck 21% Lung 20%	Questionnaire (The Measure of Patients' Preferences, by Parker et al. 2001)	<p>1. Emotional support: supportive aspects, including offering comfort and support to patients and families, 9 items, total variance = 14.5%, <math>\alpha</math> coefficient = 0.90</p> <p>2. Medical information: discussing disease and treatment, 10 items, total variance = 11.8%, <math>\alpha</math> coefficient = 0.91</p> <p>3. Clear explanation: how the news was conveyed, 8 items, total variance = 11.5%, <math>\alpha</math> coefficient = 0.89</p> <p>4. Encouraging question-asking: allowing patient to ask questions and taking sufficient consultation time to answer patient questions completely, 9 items, total variance = 9.9%, <math>\alpha</math> coefficient = 0.91</p> <p>5. Setting: where and when the news was conveyed, including privacy and having the physician's full attention, 5 items, total variance = 6.8%, <math>\alpha</math> coefficient = 0.83</p>	<p>Highest rating [Mean(SD), range, 1-5]</p> <p>Want to be told in person: 4.23(0.81)</p> <p>Want physician to tell best treatment option: 4.14(0.77)</p> <p>Want physician to tell he/she will do everything to cure patient's cancer: 4.14(0.81)</p> <p>Want to feel confident about physician's skill: 4.03(0.70)</p> <p>Want to be given news in a clear, simple language: 4.02(0.77)</p> <p>Want to be given detailed information about test results: 4.00(0.77)</p> <p>Want physician to be up to date on research: 3.99(0.82)</p> <p>Want physician to be honest about patient's condition: 3.90(0.75)</p> <p>Want physician really to listen to patient: 3.84(0.84)</p> <p>Want physician to make patient feel comfortable about asking questions: 3.79(0.84)</p> <p>1. Emotional support Gender (female &gt; male) Fighting spirit (higher &gt; lower) Anxious (higher &gt; lower) Distress (higher &gt; lower) 2. Medical information Age (younger &gt; older) Gender (female &gt; male) Education (higher &gt; lower) Fighting spirit (higher &gt; lower) Anxious (higher &gt; lower) 3. Clear explanation Age (younger &gt; older) Gender (female &gt; male) Education (higher &gt; lower) Fighting spirit (higher &gt; lower) Anxious (higher &gt; lower) 4. Encouraging question-asking Age (younger &gt; older) Gender (female &gt; male) Education (higher &gt; lower) Recurrence or metastasis (without &gt; with) Fighting spirit (higher &gt; lower) Anxious (higher &gt; lower) 5. Setting Gender (female &gt; male) Education (higher &gt; lower) Fighting spirit (higher &gt; lower) Anxious (higher &gt; lower)</p>	

Continued

Table 1. Continued

Author	Year	Journal	Country	Sample N	Cancer sites	Method	Results	Items of patient preferences	Factors associated with patient preferences
Azu et al. <sup>33</sup>	2007	Ann. J Surg	USA	691	Breast 100%	Questionnaire	Components of patient preferences	Items of patient preferences	Factors associated with patient preferences
								<p>No preference for the gender of physician disclosing the diagnosis: 90%</p> <p>Want physician to give patient full attention: 73%</p> <p>Want physician to maintain eye contact: 66%</p> <p>Want to be asked how much information patient would like to know: 59%</p> <p>Want physician to allow enough time to ask questions: 84%</p> <p>Want primary physician to tell bad news: —</p> <p>Want to be told with family members: —</p> <p>Want to be told in person: —</p>	
Deschepper et al. <sup>34</sup>	2008	Patient Educ Couns	Belgium	17	Lung 24% Prostate 18% Other 58%	In-depth interview		<p>Want physician in a slow-paced manner gradually</p> <p>Want physician to tell information</p> <p>Want physician to tailor to patient's emotional responses</p> <p>Want physician to be honest</p> <p>Want to be given hope</p>	

Table 2. Patient preferences for communication of bad news

Component	Articles
Setting	11, 12, 21, 25, 26, 31, 32
Manner of communicating bad news	11, 12, 26, 32
What and how much information to provide	11, 12, 16, 21, 22, 25, 26, 31, 32
Emotional support	11, 12, 16, 21, 22, 25, 26, 31, 32
Encouraging question-asking	32
The amount of time available to the patient	26
Communications that deflect the impact of the diagnosis	16
Information is not limited or delayed	16

#### MANNER OF COMMUNICATING BAD NEWS

Four articles identified this component, which deals with how physicians should communicate bad news to their patients during consultations (11,12,26,32). Most patients preferred that their physicians communicate the bad news clearly (11,12,18,22,31,32) and honestly (11,14,32), in a manner that facilitates each patient's full understanding; this includes choosing words carefully, avoiding medical jargon, showing actual X-ray films and laboratory data, and providing written explanations as needed (11,12,21,22,25,26,31,32).

#### WHAT AND HOW MUCH INFORMATION TO BE PROVIDED

Nine articles identified what and how much information is to be provided, which refers to the nature and the amount of the information provided by physicians during consultations in which bad news is communicated (11,12,16,21,22,25,26, 31,32), as a component. Four relatively early studies reported that almost all patients (96–98%) wanted to be told whether their illness was cancer (13,17,19,23). Ten studies showed that many patients (57–95%) wished to receive all the information available, both good and bad (14,16–19,22,23,25, 27,30). Four studies reported that most patients wanted to know about their chance of a cure (91–97%) and how effective the treatment of their cancer was (79–98%) (13,17, 19,23). However, four studies suggested that a lower percentage of patients (27–61%) wished to discuss their life expectancy (12,18,22,24). Furthermore, 12 studies showed that patients wanted to receive information regarding their treatment, e.g. information regarding all available treatment options, the recommended treatment option, the latest treatment and research, the future treatment plan, and adverse effects and risks of treatment (11–13,16,19,21–23,25, 26,31,32) as well as information regarding the impact of their disease and treatment on their daily activities, e.g. work, food, life-style, rehabilitation and social resources (11,12,18,21,22,25,31,32). Four studies showed whose decision patients preferred was adopted regarding their treatment: the patient, the patient's family, the patient's physician

or collaboration (11,12,28,30), but their results were inconsistent.

#### EMOTIONAL SUPPORT

Nine articles identified emotional support, which refers to the supportive aspects of communication and includes offering comfort and support to patients, as a component (11,12,16,21,22,25,28,31,32). When communicating bad news, patients desired that physicians considered the patients' and family members' feelings by imagining themselves in their patient's situation (11,12), speaking gently and softly (11,12,14,15,26), talking in a way that inspires hope (11,12,15,22) and without touching or hugging (12,20). After communicating the bad news, patients desired that physicians used supportive expressions to relieve the patients' emotional distress, allowed the patient to express their feelings and reassured them (12,21,22,25,31,32). Telling the patient not to abandon hope until the end was also considered valuable by patients (11,12,16).

In addition, the following components were proposed: encouraging patients to ask questions (32), making a sufficient amount of time available to the patient (26), communicating in a manner that deflected the impact of the diagnosis and that did not limit or delay information (16).

#### FACTORS ASSOCIATED WITH PATIENT PREFERENCES FOR THE COMMUNICATION OF BAD NEWS

There were eight studies that among them explored a total of 24 demographic (e.g. age, gender, education), medical (e.g. stage of disease, recurrence) and psychological (e.g. anxiety, fighting spirit, distress) factors, and identified 12 factors that were associated with patient preferences for the communication of bad news (12,13,19,21,23,30–32).

Seven of these eight studies reported that age, gender and education were associated factors (12,13,21,23,30–32). Younger patients, female patients and more highly educated patients consistently desired to receive as much detailed information as possible and to receive emotional support. Younger and more highly educated patients also wanted to participate in decisions regarding their treatment. And two studies suggested that psychological states were associated with patient preferences: higher distress, anxiety and a fighting spirit were associated with wanting to receive as much detailed information as possible and to receive emotional support (12,32). One study suggested that having an average income was associated with wanting more information than having a low income was (19).

Cross-cultural differences were indicated by some patients' preferences. Only 30% or fewer of patients in Asian studies preferred to discuss life expectancy (12,24), whereas ~60% of patients in Western studies preferred to do so (18,22). While 78% of patients in Japan were found to prefer to be told with family members present (12), only 40% in Ireland (27), 53–57% in Australia (18,22) and 61% in Portugal

preferred to be told with family members present (28), and 81% of patients in the United States did not wish anyone else to be present when they received bad news (20). Other patient preferences were generally similar across cultures. In most studies, almost all of cancer patients placed a high value on their physicians' expertise and honesty in delivering detailed information about the diagnosis and treatment options and in answering their questions (11–23,25,26,31–34). Likewise, half of the studies reported that patients considered it important for physicians to give patients their full attention, provide them with emotional support and sustain their hope (11,12,14,15,21,22,25,26,31–34).

## DISCUSSION

The majority of the studies selected for inclusion in this review used descriptive evidence or qualitative methods to explore patient preferences with regard to the communication of bad news. Most were conducted in Western countries and used different measures to obtain information on patient preferences. However, the results provide some guidance with regard to physicians' attitudes and behaviours when communicating bad news.

Four commonly observed components of cancer patients' preferences were identified: setting, manner of communicating bad news, what and how much information was to be provided and emotional support (11,12,16,21,22,25,26,31,32). Cancer patients' preferences suggested that the elements of non-verbal communication, such as setting, manner and emotional support, are important to cancer patients when physicians communicate bad news to them. These four components of patients' preferences should be assessed before communicating bad news. Information regarding these components would be valuable to physicians, as it would enable them to provide cancer patients with information about their disease in a manner that best meets the patients' needs.

Marked cross-cultural differences were found with regard to some patients' preferences, for example, there was a wide variation with respect to having relatives present when receiving bad news (12,14,18,20,22,27,28) and desire to receive information regarding their life expectancy (12,18,22,24). In family-centred cultures, such as Japanese culture, patients preferred that relatives be present more than patients in Western cultures did, and comparatively fewer patients preferred to discuss life expectancy in Asian cultures. This preference regarding discussion of prognostic information may be related to a study on a good death conducted in Japan by Miyashita et al. (35) that 'unawareness of death' was one of the major contributors to a good death, which was very important in Japan.

The findings in this review also suggested a lack of evidence of factors associated with patients' preferences with regard to the communication of bad news. Nevertheless, the findings indicate that these preferences vary according to demographic and psychological variables but not according

to disease variables. Younger, female and more highly educated patients and patients with a higher level of distress, anxiety, fighting spirit or moderate-income consistently desired to receive as much detailed information as possible. A prompt sheet containing a list of questions designed to encourage patient inquiries during medical consultations might be a useful tool for such patients (36). Some studies showed that the use of such sheets was associated with an increase in the number of questions patients asked (37–39). Furthermore, younger, female and more educated patients and patients with a higher level of distress, anxiety or fighting spirit also valued receiving emotional support. Balancing hope and honesty is an important skill in physicians (40).

The findings in this review suggested that the results of these studies have the following implications for physician communication of bad news to patients:

- (i) Before consultations in which physicians plan to communicate bad news to a patient, they should spend sufficient time to discuss the disease with the patient and their relatives, and leave their beepers with another medical staff member, such as a nurse, to avoid interruptions.
- (ii) Physicians should communicate detailed information regarding bad news clearly and honestly, in a manner that facilitates patients' full understanding.
- (iii) When communicating bad news, physicians should consider the patients' and their relatives' feelings by imagining themselves in their patient's situation, speaking gently and softly, talking in a way that inspires hope, without touching or hugging the patient.
- (iv) After communicating bad news, physicians should use supportive expressions to relieve patients' emotional distress, should allow patients to express their feelings, should reassure patients and should sustain patients' hope.
- (v) Physicians should discuss information regarding treatment and the impact of the disease and treatment on daily activities with their patients.
- (vi) Younger, female and more educated patients as well as patients with higher level of distress or anxiety, and those with a fighting spirit were found to prefer to be given as much detailed information as possible and to receive emotional support. Patients with moderate-income desired more information than low-income patients. Physicians should ask patients about their own preferences because the existence of individual differences was reported in these studies.

Three limitations should be noted. First, almost all of the studies reviewed were descriptive, resulting in a low evidence level. Nevertheless, descriptive qualitative and quantitative research is integral to our understanding of these issues. The second limitation is a language bias, making it necessary to interpret reports from different linguistic areas cautiously. Lastly, since only research published in English was reviewed, studies in Asian countries may have been

missed. However, none of the literature references in the studies that were included in the review had been published in other languages.

Our recommendations for future research include studies to identify preferences with regard to the manner of communicating bad news, factors associated with patient preferences and cross-cultural differences by means of validated measures. Such studies would require a rigorous design to provide a strong basis for creating informative guidelines and intervention programmes for physicians and other health professionals concerned with the communication of bad news to patients. The results of this review provide a framework for devising intervention programmes to enhance physicians' communication skills, i.e. for teaching physicians how to communicate bad news in a manner that corresponds to an individual patient's preference. Such intervention programmes may benefit from being designed based on the framework identified in the present report.

## CONCLUSION

This systematic literature review revealed that patient preferences with regard to communication of bad news have mainly been investigated in Western countries and that the studies used a variety of different measures to obtain information regarding patient preferences, although most reports contained mostly descriptive evidence. Our findings showed that patient preferences regarding the communication of bad news to them by physicians consist of four components: setting, manner of communicating bad news, what and how much information is provided and emotional support. Patient preferences were found to be associated with demographic factors. Younger patients, female patients and more highly educated patients consistently desired to receive as much detailed information as possible and to receive emotional support. This review also revealed that Asian patients prefer that relatives be present when receiving bad news more than do Western patients and that they prefer to discuss life expectancy less than Western patients.

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## Conflict of interest statement

None declared.

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# Psychosocial factors and survival after diagnosis of inoperable non-small cell lung cancer

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## Abstract

**Objective:** Although several previous studies have investigated the association between psychosocial factors and the survival of lung cancer patients, most previous studies were flawed by severe methodological limitations. The purpose of the present study was to use a rigorous study design to investigate the association between relevant psychosocial factors and survival after a diagnosis of inoperable non-small cell lung cancer (NSCLC).

**Methods:** The subjects were 122 consecutive newly diagnosed patients with inoperable NSCLC. Patients coping with cancer, psychological distress, clinical depression, and social support were evaluated after diagnosis but before treatment and 2 months later. After a 2-year follow-up period, 108 patients had died. The survival data were censored for the remaining 14 patients. The influence of psychosocial factors after diagnosis but before treatment on survival time was analyzed using a Cox regression, with adjustments for well-established (definite and/or possible) prognostic factors. The stability of the investigated psychosocial factors was also examined.

**Results:** None of the examined psychosocial factors significantly predicted survival time among the patients with inoperable NSCLC. Among the biomedical factors that were examined, advanced clinical stage, a high serum lactate dehydrogenase level, and not receiving chemotherapy were independently associated with shorter survival periods. Most of the psychosocial factors exhibited a moderate to high stability.

**Conclusions:** We found little convincing evidence that psychosocial factors after cancer diagnosis had a clinically relevant effect on the survival of inoperable patients with NSCLC. Copyright © 2008 John Wiley & Sons, Ltd.

**Keywords:** coping; social support; survival; cancer; oncology

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## Introduction

There is much interest in the association between the mind and body, and this is not exceptional in oncology settings, possibly because cancer is a potentially life-threatening disease and is often accompanied by major psychological distress. Actually, many professionals and the lay public believe that psychosocial factors play a major role in cancer onset and its progression [1,2]. On the other hand, although several previous studies have investigated the effects of psychosocial characteristics (including personality, coping, general psychological distress, depression, and social support) on survival, the influence of psychosocial factors on the survival of cancer patients remains controversial [1,3–5].

Lung cancer is the most common type of cancer and the most common cause of cancer-related death in the world [6,7]. In Japan, lung cancer is the

leading cause of death from cancer among men, and the incidence of lung cancer has been increasing in recent years [8]. In a study examining psychological distress and its relation to the site of cancer, primary lung cancer was strongly associated with psychological distress in cancer patients [9]. In addition, several previous studies have demonstrated that the highest prevalence of psychological distress was observed among patients with lung cancer [10,11]. Our previous study indicated that 19% of advanced lung cancer patients experienced diagnosable anxiety/depression between the time of diagnosis and initial treatment and that 35% of them continued to experience the same disorder for at least 6 months after diagnosis [12]. Thus, in general, psychological distress is highly prevalent among lung cancer patients; consequently, these psychosocial issues should not be neglected.

Several previous studies have investigated the association between lung cancer patient's psychosocial factors and survival. For example, Faller *et al.* reported a significant association between depressive coping/interviewer-rated emotional distress and a shorter survival period [13–15]. Nakahara *et al.* also demonstrated a significant association between mental state, as assessed using an egogram, and survival [16]. Other groups have reported significant associations between survival and depression [17], suicidal ideation [17], personality [18], psychosocial well-being [19], social support [19], and symptom distress [20], although some studies failed to clarify a significant influence of factors such as marital status [21], depression [15,22], social support [21], 24-h urinary cortisol level (used as an indicator of physiological or psychological stress) [23], self-reported psychological distress [13,14,20], and concerns [20]. On the other hand, most of these previous studies were flawed by severe methodological limitations, including a retrospective design [18,20], a short or unclear follow-up period (e.g. less than 1 year) [17,18], a small sample (e.g. less than 100 patients) [17,20], the lack of controls for well-established prognostic factors (especially because several biomedical factors have been identified as definite/possible prognostic factors among patients with non-small cell lung cancer (NSCLC) [24], and adjustments for these biomedical factors should be performed when evaluating other prognostic factors [25]) [13,14,18,20], and the assessment of variables after treatment (psychosocial factors should be evaluated at the same time as other biomedical factors, before treatment) [18,20]. In addition, none of the previous studies checked the stability of the investigated variables, although many psychosocial factors can change during the course of a patient's illness, and none of the studies simultaneously investigated a broad range of psychosocial factors, including diagnosable depression—known to be the most common psychiatric disorder, using a reliable measure, such as a structured clinical interview.

The purpose of the present study was to use a more rigorous study design to investigate the association between relevant psychosocial factors and patient survival after a diagnosis of inoperable NSCLC.

## Patients and methods

### Patients

The subjects were consecutive patients with NSCLC who had been newly diagnosed at the Thoracic Oncology Division, National Cancer Center Hospital East (NCCHE), Japan, between August 1996 and January 1998. Patients were

included in the study if they met all of the following criteria: (1) histologically or cytologically confirmed NSCLC; (2) diagnosis of unresectable cancer (clinical stage unresectable IIIA, IIIB, or IV); (3) informed of their lung cancer diagnosis; (4) a performance status (PS) of between 0 and 2, according to the Eastern Cooperative Oncology Group criteria; (5) follow-up care at the Thoracic Oncology Division of the NCCHE; (6) 18 years of age or older; (7) not too ill to participate in an interview or complete questionnaires; (8) absence of brain metastasis, as confirmed using brain CT or MRI; (9) ability to provide written consent; (10) absence of cognitive impairment, such as delirium or dementia (if a subject was suspected of having a cognitive impairment, cognitive function was evaluated using the Mini Mental State Examination (MMS); only subjects with an MMS score of 24 or more were allowed to participate in the study [26]); (11) no history of previous anticancer treatment within 5 years; and (12) no active concomitant cancer.

This study was approved by the Institutional Review Board and the Ethics Committee of the National Cancer Center of Japan and was conducted in accordance with the Helsinki Declaration. Written informed consent was obtained from each subject before enrollment into this study.

### Assessment of psychosocial factors

We investigated each patient's coping with cancer, psychological distress, psychiatric disorders, and social support as potential psychosocial predictors of survival. These factors, other than the psychiatric disorders, were evaluated twice (after diagnosis but before treatment: baseline (T1), and 2 months after T1; T2) to check the stability of the factors. An assessment of psychiatric disorders was not conducted at T2 to avoid unnecessary increases of the patient's burden. The measures at baseline were investigated as potential prognostic factors.

### Coping with cancer

Each patient's coping with having cancer was measured using the Japanese version of the Mental Adjustment to Cancer (MAC) scale [27]. The MAC scale consists of five subscales. Our previous study revealed that the Japanese version of the MAC scale was valid and reliable [27]. Among the subscales, we used fighting spirit and helplessness/hopelessness, which were shown to be potential prognostic factors in a previous study [28].

### Psychological distress

Psychological distress was evaluated using the Profile of Mood States (POMS) [29]. The POMS is a 65-item self-rated scale for measuring mood

disturbance. The POMS is a widely used, reliable measure of emotional distress that has been validated in cancer patients and demonstrated to be reliable for Japanese people [30]. The Total Mood Disturbance (TMD) scale of the POMS, which is the sum of the emotional state subscales, was used. A higher TMD indicates greater emotional distress.

#### Psychiatric disorders

A trained psychiatrist (T.A.) conducted a Structured Clinical Interview based on the Diagnostic and Statistical Manual of Mental Disorders, 3rd edition-revised [31] to evaluate major depression and adjustment disorders in each patient. In addition, the patients were asked to complete the Hospital Anxiety and Depression scale (HADS) at baseline. The HADS is a 14-item self-reported questionnaire consisting of an anxiety and depression subscale; the total score can range from 0 to 42 [32]. Higher scores indicate more severe depression and anxiety. The Japanese version of the HADS was validated in a cancer population, and the optimal cutoff point for screening for adjustment disorder and major depressive disorder was 10/11 [33].

#### Social support

The patients' use of confidants (number of confidants and satisfaction with confidants) was used as an indicator of social support factors. This information was obtained in a structured interview, as described previously [34]. In the interview, the patients were asked the number of people they had confided in since being diagnosed with cancer and how satisfied they were with their interactions with these confidants. When the patients had not confided in anyone, they were asked about their degree of satisfaction in not having done so. The patients' responses ranged from 1 to 7: 1, 'very dissatisfied'; 2, 'fairly dissatisfied'; 3, 'slightly dissatisfied'; 4, 'neither'; 5, 'somewhat satisfied'; 6, 'fairly satisfied'; and 7, 'very satisfied'.

#### Sociodemographic and biomedical factors

Sociodemographic factors (age, gender, marital status, education, household size, and employment status) were investigated using a structured interview at baseline. PS (assessed using the Eastern Cooperative Oncology Group criteria) was also investigated at baseline. In addition, the patient was asked about weight loss during the previous 6 months during the baseline interview. Blood laboratory tests (albumin level, hemoglobin level, leukocyte count, platelet count, and lactate dehydrogenase (LDH) level) were performed at the time of cancer diagnosis. (These biological factors were

evaluated because they are definite/possible prognostic factors for NSCLC, as mentioned above.) Information on clinical stage and anticancer treatment were obtained from the patients' charts. Smoking status and alcohol consumption were not assessed in the study.

#### Statistical analysis

Survival was defined as the interval between the date of the pathological diagnosis of lung cancer and the date of death or the date of the last follow-up information for surviving patients. Survival was examined at 2 years after the study enrollment period. In addition to the psychosocial factors, sex, ECOG PS, disease stage, histology, albumin level, hemoglobin level, leukocyte count, platelet count, LDH level, weight loss, and the use of chemotherapy were analyzed. These factors include all the definite and/or possible prognostic factors of NSCLC other than biologic factors, such as oncogenes (e.g. ras, p53, etc.). All factors except for sex, treatment factors, clinical stage, and PS were treated as continuous variables (clinical stage and PS were treated as ordinal variables) [35]. The survival curves were estimated according to the Kaplan-Meier method. Because the Kaplan-Meier analysis indicated that there were a total of 108 events (deaths), up to approximately 11 covariates could be entered into the regression analysis for prognostic prediction [36]. We investigated the correlation among psychosocial factors; when a statistically significant correlation with a correlation coefficient of over 0.30 was observed, more clinically relevant factors were retained. Correlation coefficients of over 0.30 were obtained for the following pairs: helplessness/hopelessness and TMD, helplessness/hopelessness and HADS, and HADS and satisfaction with confidants. We prioritized TMD and satisfaction with confidants from a clinical point of view. Finally, a total of five psychosocial factors (fighting spirit, TMD, major depression, number of confidants, and satisfaction with confidants) were chosen for further investigation. Regarding biomedical factors, two definite prognostic factors (PS and disease stage) were compulsorily entered for adjustment [24]. As for other possibly relevant biomedical factors, we investigated the correlations among the factors and if a statistically significant correlation with a correlation coefficient over 0.30 was observed, more clinically relevant factors were retained. Correlation coefficients of over 0.30 were obtained for the following pairs: leukocyte count and platelet count, hemoglobin level and platelet count, hemoglobin level and albumin level, and platelet count and albumin level. We prioritized hemoglobin from clinical point of view. Finally, a total of six biomedical factors (PS, disease stage, histology, hemoglobin, serum LDH,