Causal attributions to epidemiological risk factors and their associations to later psychological adjustment among Japanese breast cancer patients

**Shino Oba · Naoyoshi Takatsuka · Chisato Nagata ·
Yasuko Nagao · Satoru Yamamoto · Chiken Shibuya ·
Yoshitomo Kashiki · Hiroyuki Shimizu**

Abstract

Goals The objective of this study was to evaluate the causal attributions for breast cancer and their association with the subsequent psychological adjustment.

Materials and methods Sixty-three Japanese patients newly diagnosed with breast cancer were asked by an interviewer about risk factors and explanations for the etiology of breast cancer using a four-point scale. The General Health Questionnaire (GHQ-28) and the Center for Epidemiologic Studies Depression Scale (CES-D) were administered about 2 months later to measure psychological adjustment to the illness. The relationship between each causal attribution and measure of psychological adjustment was assessed with the Spearman rank correlation after adjusting for potential confounders (age, marital status, cancer stage at diagnosis, time between the day of diagnosis and follow-up, and physical symptoms at the follow-up).

Main results Attributions to several explanations, including "stress" and "personal characteristics," were positively associated with the GHQ-28 measures. Of the attributions to risk factors, "body size" was significantly inversely ($r=-0.29$) associated and "never having children" was insignificantly and highly inversely ($r=-0.77$) associated with the GHQ-28 measures, indicating better adjustment to the illness. On the other hand, the attribution to "tobacco" was significantly and positively associated with the GHQ-28 measures ($r=0.34$), indicating that the attributions antagonized adjustment to the illness.

Conclusion The current study indicates that forming causal attributions influences the adjustment to the illness in Japanese breast cancer patients and attributions to certain risk factors for breast cancer may contribute to better adjustment.

Keywords Causal attributions ·
Epidemiological risk factors · Psychological adjustment ·
Japanese breast cancer patients

S. Oba (✉)
Department of Prevention for Lifestyle-related Diseases,
Graduate School of Medicine, Gifu University,
1-1 Yanagido,
Gifu, Gifu 501-1194, Japan
e-mail: obas@gifu-u.ac.jp

N. Takatsuka · C. Nagata · H. Shimizu
Department of Epidemiology and Preventive Medicine,
Graduate School of Medicine, Gifu University,
1-1 Yanagido,
Gifu, Gifu 501-1194, Japan

Y. Nagao · S. Yamamoto · C. Shibuya · Y. Kashiki
Gihoku General Hospital,
1187-3 Takatomi, Yamagata,
Gifu 501-2105, Japan

Y. Kashiki
School of Dentistry, Asahi University,
1851 Hozumi,
Mizuho, Gifu 501-0296, Japan

H. Shimizu
Sakihai Institute,
8-1 Koganemachi,
Gifu, Gifu 500-8842, Japan

Introduction

In Japan, it is common for physicians to withhold information about cancer diagnoses from patients [18, 27, 32], but that is not the case with breast cancer because it generally has a relatively good prognosis. The information has the potential to assist patients who are coping with the illness and has a positive impact on their quality of life.

Furthermore, with the information, patients may have a better clinical outcome [1, 24, 29, 36]. Breast cancer patients who are informed of their diagnosis may begin to think about the cause of their cancer. With the progress of research in breast cancer prevention, information on breast cancer risk factors is well-documented and patients may try to correlate the risk factors with their own circumstances.

Other studies, on the other hand, have provided consistent reports from patients that God's will, stress, the environment, chance, and injury or physical abuse to the breast are the causes of breast cancer; however, these causes are not generally accepted as the established breast cancer risk factors [2, 19, 26, 31, 33, 35]. Several studies have indicated that forming causal attributions or self-blame decreases psychological adjustment to the illness among breast and cervical cancer patients [6, 7, 9, 17, 33]. Other studies have reported that none of the attributions formed among breast cancer patients was associated with depression or overall adjustment to the illness [19, 35]

We hypothesized that causal attributions to each risk factor have a different influence on an individual's psychological adjustment to the illness. The major motivation for studying risk factors has been disease prevention; however, the study of risk factors relative to the formation of causal attributions may lead to other findings. In the current study, we investigated the formation of causal attributions to risk factors and other explanations and prospectively evaluated the relationship between causal attributions and psychological adjustment to the illness among Japanese breast cancer patients.

Materials and methods

Study participants

This study was conducted in the Department of Breast Surgery at a general hospital in Gifu, Japan. The subjects of the current study were a part of our previously reported case–control study, and the participation rate was estimated at about 70% [23]. The participants' ages ranged from 25 to 77 years. Newly diagnosed breast cancer patients were histopathologically confirmed, and those who were admitted to the hospital for surgery were invited to participate in the study. Eligible subjects were given information about the study, and only those who agreed to participate and completed the informed consent form were registered for the study. This study was approved by the institutional review board of Gifu University Graduate School of Medicine.

Study procedure

During the hospital admission of study participants, one nurse, hired and trained for the current study, conducted a personal interview with each participant regarding causal attributions. The interviews were conducted in the hospital after surgery, and the time between the diagnosis and the interview ranged from 8 to 88 days with 83% of the participants having the interview within 30 days. At the same time as the interview, a self-administered questionnaire was used to collect information on each participant's sociodemographics and other characteristics such as marital status, number of children, smoking status, alcohol consumption, employment status, religion, medical history, family history of mammary gland disease, age at onset of menstruation, and pre/postmenopausal status. Dispositional optimism as a personality trait was also measured by using a questionnaire developed by Scheier and Carver [28]. For each participant, cancer stage at diagnosis was identified from a review of medical records. About 2 months after the initial interview, the psychological state of each participant was measured by the use of a follow-up questionnaire, which was mailed to each participant. Inclusion in the current study was based on the availability of complete data for all of the measures noted above. As a result, 63 women were included in the study.

Measures of causal attributions

The interviewer first asked each participant if she had ever thought about the reason that she had breast cancer. Next, the interviewer went through the list including risk factors and other conventional or common explanations for breast cancer and asked the participant whether she thought any of the items were the cause of her illness. The interviewer prompted the participant to answer based on a four-point scale ranging from 1 ("do not think so") to 4 ("strongly think so"). The selected breast cancer risk factors were as follows: "heredity," "never having children," "alcohol consumption," "body size," and "issues regarding past child delivery or menstruation" [3, 4, 8, 15, 20, 25]. Also, we included the following items as risk factors, even though their reported association with breast cancer development is relatively weak or the findings across studies are inconsistent: "never breast-feeding," "dietary habit," "tobacco," and "exposure to chemical substances" [3, 5, 10, 13, 34]. The selected conventional or common explanations for the breast cancer were "stress," "personal characteristics," "chance," "occupation," "physical fragility," "fate," "medication," "God's will," "air pollution," and "blow to the breast or breast injury."

Psychological adjustment

To measure psychological adjustment to the illness at the follow-up, we employed two sets of questionnaires: the General Health Questionnaire (GHQ-28) [22] and the Center for Epidemiologic Studies Depression Scale (CES-D) [11]. The GHQ-28 is a self-administered questionnaire originally

designed to detect current diagnosable psychiatric disorders. With four separate scores based on subscales ranging from 0 to 21, it measures the identifiable elements of distress: somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. For each element, the higher the score, the greater the severity of that element. The CES-D is a self-reporting scale designed to measure depressive symptomatology during the past week. It consists of 20 questions with scores ranging from 0 to 60. On the CES-D, higher scores indicate the existence of more symptoms of depression. Among the 63 participants who filled in the questionnaires at the follow-up, some left several items blank, which made it impossible to obtain the score of each measure for these participants; therefore, participants with missing scores were excluded from each analysis. The numbers of participants included in the analysis of the scores for the GHQ-28 was as follows: 59 for somatic symptoms, 59 for anxiety and insomnia, 63 for social dysfunction, and 60 for severe depression. For the analysis of the CES-D score, 53 participants were included. At the follow-up, we also measured the perceived degree of physical discomfort from nausea, pain, mobility, and bowel pattern, which might act as a confounder, by using a symptom distress scale developed by McCorkle and Young [21].

Statistical analysis

The mean and standard deviation (SD) for each causal attribution were calculated. We also determined the prevalence of each attribution from the percentage of participants who gave it a high score [3–4]. The relationship between each causal attribution and measure of psychological state was assessed by using the Spearman rank correlation. To consider the possible confounding effect of age, marital status, cancer stage at diagnosis, time between the day of diagnosis and follow-up day, and physical symptoms at the follow-up were partially adjusted in the correlation analysis.

For certain risk factors, we restricted the analysis to the participants who were eligible to be discussed. The attribution to "never having children" was analyzed only among nulliparous participants, and that to "occupation" was analyzed only among participants who had a full-time or part-time job. The attribution to "heredity" was analyzed only among participants who reported a family history of mammary gland disease. The attribution to "alcohol consumption" was analyzed only among participants who reported drinking at least once a week. All the statistical analyses were performed with SAS software (SAS Institute, Cary, NC, USA).

Results

The baseline characteristics of the study participants are summarized in Table 1. Of the participants, 60% answered

Table 1 Baseline characteristics of Japanese women diagnosed with breast cancer

Variable	$n=63$	
Age, in years (median, SD)	51.5	12.0
BMI (mean, SD)	23.1	3.0
BMI=23 kg/m^2 or over (n, %)	29	46.0
Cancer grade at diagnosis (n, %)		
I	31	49.2
II	25	39.7
III	7	11.1
Currently married (n, %)	50	79.4
Employment status (n, %)		
Full-time employed	28	44.4
Part-time employed	14	22.2
Not employed	21	33.3
Education from elementary school, in years (mean, SD)	12	2.3
Religion (n, %)		
Buddhism	27	42.9
Christianity	3	4.8
Other religions	3	4.8
Nothing particular	30	47.6
Cigarette smoking status (n, %)		
Never being smokers	54	85.7
Current smokers	4	6.4
Past smokers	5	7.9
Alcohol intake, once a week or more (n, %)	12	19.1
Have family history of mammary gland disease (n, %)	13	20.6
Age menstruation started, in years (mean, SD)	13.3	1.6
Never had children (n, %)	10	15.9
Ever had breast-feeding more than 1 month (n, %)	49	77.8
Postmenopausal (n, %)	35	55.6

yes to the question: "Have you ever thought about why you have this illness?" Table 2 presents the mean score of each causal attribution for breast cancer in descending order with the percentage of participants who attributed their illness to each factor. Of the attributions to breast cancer risk factors, "never having children" obtained the highest score. The attributions to "diet" and "heredity" received the second- and third-highest scores, respectively. The attribution to "tobacco" had the lowest mean score, but, when we conducted a subsidiary analysis including only the participants who were current or past smokers, the score increased (mean=2.44, SD=0.88), and 44% of them attributed their illness to this factor.

The relationship between causal attributions and psychological state at the follow-up is shown in Table 3. Of the attributions to breast cancer risk factors, "body size" was significantly inversely correlated with the measure of anxiety and insomnia and with the measure of social dysfunction on the GHQ-28. Although there was a lack of statistical significance, "body size" was also inversely associated with the measure on the CES-D. Because obesity was reported as a risk factor for breast cancer in postmenopausal women

Table 2 Causal attributions to risk and non-risk factors among Japanese breast cancer patients, in ranking order

	Mean	SD	% Answered "strongly think so" (3 or 4)
Risk factors			
Never having children[a]	2.90	1.20	70
Dietary habit	2.57	1.13	57
Heredity[b]	2.23	1.30	46
Alcohol consumption[c]	1.83	1.03	25
Never breast-feeding	1.79	1.11	16
Issues regarding past child delivery or menstruation	1.56	0.89	21
Body size	1.48	0.95	16
Exposure to chemical substance	1.38	0.66	10
Tobacco	1.27	0.68	10
Conventional/common explanations			
Stress	3.00	1.20	70
Chance	2.70	1.16	59
Fate	2.59	1.19	56
Occupation[d]	2.31	1.28	43
Physical fragility	2.19	1.15	41
Personality traits	2.16	1.19	35
Medication	1.56	0.93	21
God's will	1.49	0.88	16
Air pollution	1.48	0.82	14
Had blow to the breast or got hurt the breast	1.25	0.76	10

[a] Among those who had no children ($n=10$).
[b] Among those who reported family history of mammary gland disease ($n=13$).
[c] Among those who reported alcohol intake once a week or more ($n=12$).
[d] Among those who had full-time or part-time job ($n=42$).

[23], we additionally conducted a correlation analysis of the attribution to "body size" and psychological measures among the participants who were postmenopausal and whose body mass index (BMI) was 23 kg/m^2 or over, a reported optimal cut-off point for obesity among the Japanese population ($n=18$) [14]. The result did not alter that obtained from the original analysis (data not shown). The attribution to "tobacco" was significantly positively correlated with the measure of anxiety and insomnia ($r=0.34$, $p=0.01$) and the measure of severe depression ($r=0.31$, $p=0.02$) on the GHQ-28. The attribution to "never having children" showed a nonsignificant but relatively consistent inverse association across the psychological measures. Of the conventional or common explanations for breast cancer, the attribution to "stress," "occupation," "physical fragility," and "personal characteristics" were significantly positively correlated with some of the measures on the GHQ-28 and CES-D. Only the attribution to "fate" showed a significant inverse correlation with the psychological measure on the GHQ-28 of the attribution to the conventional or common explanations. We found that the level of education obtained by the participants varied according to employment status, but an additional adjustment for education in years and a stratified analysis with employment status did not alter the original result (data not shown). We also conducted an additional analysis adjusting for dispositional optimism, but the result did not alter our original findings either (data not shown).

Discussion

The attribution to a breast cancer risk factor, "body size," significantly decreased the level of distress measures, indicating better psychological adjustment to the illness. The attribution to "never having children" also seemed to result in consistently better adjustment. An insignificant but relatively consistent inverse correlation pattern was observed between other breast cancer risk factors and the score on the CES-D as well; the attributions to five out of nine evaluated breast cancer risk factors showed an inverse correlation, indicating better psychological adjustment to the illness. The finding suggests that causal attributions to some breast cancer risk factors are likely to help patients adjust psychologically to the illness, although it has frequently been indicated in previous studies that forming causal attributions, mostly to non-risk factors, was associated with worsening psychological adjustment to the illness [6, 7, 9, 33]. Similar to the results from a current study, those from a recent study about health behavior among breast cancer patients indicated that patients who attributed their illness to certain breast cancer risk factors later modified their behaviors appropriately in response to the attributions, indicating better behavioral adjustment to the illness [26].

The attribution to "tobacco" was associated with anxiety and insomnia on the GHQ-28, suggesting that the attribution worsened the adjustment. It is widely known that

Table 3 Spearman rank correlation between causal attributions and later psychological adjustment, partially adjusted for confounding variables among Japanese breast cancer patients

	GHQ-28				CES-D
	Somatic symptoms ($n=59$)	Anxiety and insomnia ($n=59$)	Social dysfunction ($n=63$)	Severe depression ($n=60$)	Total score ($n=53$)
Causal attributions: risk factors					
Never having children[a]	−0.56	−0.77	−0.54	0.52	−0.21
Dietary habit	0.18	0.22	0.12	0.09	−0.01
Heredity[b]	0.27	0.44	0.62	−0.03	−0.57
Alcohol consumption[c]	0.38	0.34	0.12	−0.26	−0.95
Never breast-feeding	−0.01	0.13	0.15	0.13	0.10
Issues regarding past child delivery or menstruation	0.08	0.06	0.05	0.07	0.06
Body size	0.08	−0.28*	−0.29*	−0.07	−0.27
Exposure to chemical substance	0.15	0.17	0.20	0.13	0.04
Tobacco	0.00	0.34*	0.21	0.31*	0.02
Causal attributions: conventional/common explanations					
Stress	0.26	0.35**	0.15	0.31**	0.12
Chance	0.10	−0.07	−0.05	0.13	0.10
Fate	−0.27*	0.10	0.12	0.25	0.11
Occupation[d]	0.10	0.53**	0.29	0.60**	0.48**
Physical fragility	0.33*	0.23	0.07	0.24	0.16
Personal characteristics	0.37**	0.26	0.06	0.41**	0.19
Medication	0.26	0.07	−0.03	−0.03	−0.06
God's will	−0.02	−0.13	−0.16	0.03	−0.16
Air pollution	0.15	0.18	−0.01	0.14	0.06
Had blow to the breast or got hurt the breast	0.05	−0.07	0.03	−0.04	−0.07

The adjusted variables are age, marital status symptom distress scale, length in days from diagnosis, and cancer stage.

[a] Among those who had no children.

[b] Among those who reported the family history of mammary gland disease.

[c] Among those who reported alcohol intake was once a week or more.

[d] Among those who had full-time or part-time job.

*$p<0.05$; **$p<0.01$

tobacco has various adverse health effects, and the participants may have linked the attribution to self-blame; eight of ten participants who indicated the attribution were current or former smokers. The effort of tobacco control greatly contributes to public health by preventing various detrimental health problems. Preventing smoking may also reduce the psychological burden and enhance adjustment to the illness for people who develop breast cancer.

Previous studies reported a link between a nonwhite or minority background and the formation of nonscientific or rather religious explanations for the cause of the illness [2, 12, 16]. The attribution to God's will, however, was not common among Japanese participants in the current study in which about 40% of the participants considered themselves Buddhists and close to half of them reported having no specific religious belief. Further investigation of our data showed that religious background and psychological state were not associated with any causal attribution (data not shown).

There are several limitations to the current study. The sample size may not have been large enough for statistical analysis, especially for an analysis restricted to certain participants. Ten participants had to be excluded from the analysis involving the CES-D score because their questionnaires were incomplete. Our follow-up time may not have been long enough to measure the psychological adjustment of the participants. It was reported that, even a year or longer after mastectomy, the patients were still suffering from distress, depression, or anxiety caused by the surgery [30]. Two previous studies of causal attributions among breast cancer patients assessed the relationship between the time of the diagnosis and the time of adjustment to the illness and obtained inconsistent results; one study reported a higher level of psychological coping with a longer period after the diagnosis [31], and the other study showed no correlation between time and each measure of coping [33]. Moreover, it is possible that each participant's innate personality acted as a determinant of

causal attributions on the one hand and influenced the measures of later psychological adjustment on the other hand. However, our additional adjustment for optimistic personality did not alter the results; still, other personality types may need to be considered.

Despite the limitations, the findings of the current study present valuable information on causal attributions of Japanese breast cancer patients. The formation of several causal attributions increased distress and depression, but the causal attributions to certain breast cancer risk factors showed potential beneficial effects on later psychological state, suggesting a better adjustment to the illness. The findings suggest that further studies would be valuable to confirm the potential benefits of forming causal attributions to risk factors.

References

1. American Cancer Society (2007) Cancer facts & figures 2007. American Cancer Society, Atlanta
2. Baider L, Sarell M (1983) Perceptions and causal attributions of Israeli women with breast cancer concerning their illness: the effects of ethnicity and religiosity. Psychother Psychosom 39 (3):136–143
3. Brownson RC, Remington PL, Davis JR (eds) (1998) In: Chronic disease epidemiology and control. American public health association, Washington, DC
4. Carmichael AR (2006) Obesity and prognosis of breast cancer. Obes Rev 7(4):333–340
5. Collaborative Group on Hormonal Factors in Breast Cancer (2002) Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. Lancet 360(9328):187–195
6. Costanzo ES, Lutgendorf SK, Bradley SL, Rose SL, Anderson B (2005) Cancer attributions, distress, and health practices among gynecologic cancer survivors. Psychosom Med 67(6):972–980
7. Cousson-Gelie F, Irachabal S, Bruchon-Schweitzer M, Dilhuydy JM, Lakdja F (2005) Dimensions of cancer locus of control scale as predictors of psychological adjustment and survival in breast cancer patients. Psychol Rep 97(3):699–711
8. Ellison RC, Zhang Y, McLennan CE, Rothman KJ (2001) Exploring the relation of alcohol consumption to risk of breast cancer. Am J Epidemiol 154(8):740–747
9. Glinder JG, Compas BE (1999) Self-blame attributions in women with newly diagnosed breast cancer: a prospective study of psychological adjustment. Health Psychol 18(5):475–481
10. Hanf V, Gonder U (2005) Nutrition and primary prevention of breast cancer: foods, nutrients and breast cancer risk. Eur J Obstet Gynecol Reprod Biol 123(2):139–149
11. Hann D, Winter K, Jacobsen P (1999) Measurement of depressive symptoms in cancer patients: evaluation of the Center for Epidemiological Studies Depression Scale (CES-D). J Psychosom Res 46(5):437–443
12. Harwood A (ed) (1981) In: Ethnicity and medical care. Harvard University Press, Cambridge, MA
13. Jaga K, Dharmani C (2005) The epidemiology of pesticide exposure and cancer: a review. Rev Environ Health 20(1):15–38
14. Kawada T, Morihashi M, Ueda H, Sirato T (2007) Body mass index of 23 or more is a risk factor for hypertension and hyperlipidemia in Japanese workers. Percept Mot Skills 104(3 Pt 1):733–738
15. Kelsey JL, Gammon MD, John EM (1993) Reproductive factors and breast cancer. Epidemiol Rev 15(1):36–47
16. Kohli A, Dalal AK (1998) Culture as a factor in causal understanding of illness: a study of cancer patients. Psychol Dev Soc J 10(2):115–129
17. Kulik L, Kronfeld M (2005) Adjustment to breast cancer: the contribution of resources and causal attributions regarding the illness. Soc Work Health Care 41(2):37–57
18. Anonymous (1990) Patients' right to know in Japan. Lancet 336 (8726):1309–1310
19. Lavery JF, Clarke VA (1996) Causal attributions, coping strategies, and adjustment to breast cancer. Cancer Nurs 19(1):20–28
20. MacMahon B (2006) Epidemiology and the causes of breast cancer. Int J Cancer 118(10):2373–2378
21. McCorkle R, Young K (1978) Development of a symptom distress scale. Cancer Nurs 1(5):373–378
22. McDowell I, Newell C (1987) Measuring health: a guide to rating scales and questionnaires. Oxford University Press, New York
23. Nagata C, Matsubara T, Fujita H, Nagao Y, Shibuya C, Kashiki Y, Shimizu N (2005) Mammographic density and the risk of breast cancer in Japanese women. Br J Cancer 92(12):2102–2106
24. Okamura H, Yamamoto N, Watanabe T, Katsumata N, Takashima S, Adachi I, Kugaya A, Akechi T, Uchitomi Y (2000) Patients' understanding of their own disease and survival potential in patients with metastatic breast cancer. Breast Cancer Res Treat 61(2):145–150
25. Pharoah PD, Day NE, Duffy S, Easton DF, Ponder BA (1997) Family history and the risk of breast cancer: a systematic review and meta-analysis. Int J Cancer 71(5):800–809
26. Rabin C, Pinto B (2006) Cancer-related beliefs and health behavior change among breast cancer survivors and their first-degree relatives. Psychooncology 15(8):701–712
27. Ruhnke GW, Wilson SR, Akamatsu T, Kinoue T, Takashima Y, Goldstein MK, Koenig BA, Hornberger JC, Raffin TA (2000) Ethical decision making and patient autonomy: a comparison of physicians and patients in Japan and the United States. Chest 118 (4):1172–1182
28. Scheier MF, Carver CS (1985) Optimism, coping, and health: assessment and implications of generalized outcome expectancies. Health Psychol 4(3):219–247
29. Shimozuma K, Tominaga T, Hayashi K, Kondo J, Kosaki G (1991) Notification of cancer in breast cancer patients. Gan To Kagaku Ryoho 18(12):2147–2153
30. Silver R, Wortman C (1980) Coping with undesirable life events. In: Garber J, Seligman MEP (eds) Human helplessness. Academic, New York, pp 279–340
31. Stewart DE, Cheung AM, Duff S, Wong F, McQuestion M, Cheng T, Purdy L, Bunston T (2001) Attributions of cause and recurrence in long-term breast cancer survivors. Psychooncology 10(2):179–183

32. Tanida N (1994) Japanese attitudes towards truth disclosure in cancer. Scand J Soc Med 22(1):50–57

33. Taylor SE, Lichtman RR, Wood JV (1984) Attributions, beliefs about control, and adjustment to breast cancer. J Pers Soc Psychol 46(3):489–502

34. Terry PD, Rohan TE (2002) Cigarette smoking and the risk of breast cancer in women: a review of the literature. Cancer Epidemiol Biomarkers Prev 11(10 Pt 1):953–971

35. Timko C, Janoff-Bulman R (1985) Attributions, vulnerability, and psychological adjustment: the case of breast cancer. Health Psychol 4(6):521–544

36. Tsukuma H, Ajiki W, Ioka A, Oshima A, Research Group of Population-Based Cancer Registries of Japan (2006) Survival of cancer patients diagnosed between 1993 and 1996: a collaborative study of population-based cancer registries in Japan. Jpn J Clin Oncol 36(9):602–607