

## RESEARCH ARTICLE

# Health Locus of Control in Indonesian Women with Breast Cancer: a Comparison with Healthy Women

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### Abstract

The aims of this study were to assess whether Indonesian women with breast cancer have a higher external health locus of control (HLC) than healthy women, and to explore the association between HLC and symptoms of anxiety and depression. In this study, 120 consecutive women with breast cancer were recruited at the outpatient surgical oncology clinic at the Hasan Sadikin Hospital in Bandung. One hundred and twenty two healthy women were recruited from the Bandung area as controls. A standard demographic form, Form C of the Multidimensional Health Locus of Control, as well as the Hospital Anxiety and Depression Scale and patients' medical records were used. Data were analyzed using descriptive statistics, t-test, Pearson's correlation, MANOVA and multiple linear regressions. Women with breast cancer had higher scores on all external HLC subscales, i.e. chance, doctor, powerful others and God, and lower internal HLC compared to healthy women. High God LHC scores were associated with a high level of anxiety ( $\beta=0.21$ ,  $p<0.05$ ), whereas none of the HLC subscales were associated with depression. Our results suggest that women with breast cancer tend to have high external HLC, while healthy women tend to have high internal HLC. A strong belief in an external source of control, i.e. God, might be negatively associated with patient emotional adjustment. Further research is needed to give an insight into the direction of this association.

**Keywords:** Health locus of control - anxiety - depression - breast cancer - Indonesia

*Asian Pac J Cancer Prev*, **15** (21), 9191-9197

### Introduction

Breast cancer is a serious health condition among women worldwide. In 2008, approximately 1.38 million new cases were diagnosed and approximately 458,000 deaths were recorded both in developed and developing countries (Ferlay et al., 2010). Receiving a breast cancer diagnosis is a life threatening negative event and potentially causes considerable psychological problems. Affected women are faced with multiple stressors throughout their illness trajectory, such as having a biopsy, awaiting diagnosis, having surgery, experiencing treatment side effects, anticipating the possibility of cancer metastasizing, coping with financial, family and social problems and facing the risk of recurrence and/or death. A previous comparative study found that women with breast cancer experienced more psychological problems than healthy women (Pan et al., 2013). The most prevalent psychological problems among women with breast cancer are anxiety and depression, with reported prevalences of 21.1% to 53% (Montazeri et al., 2001; Zabora et al., 2001; Osborne et al., 2003; So et al., 2010; Dastan and

Buzlu, 2011; Abu-Helalah et al., 2014), and 4.5% to 37% (Massie et al., 2011; Nazlican et al., 2012; Zainal et al., 2013), respectively.

Locus of control (LOC) has been suggested as a potential predictor of a better adjustment to cancer (Watson et al., 1990; Bettencourt et al., 2008). The concept of LOC derives from Rotter's social learning theory and is defined as a person's belief about the location of controlling forces in their life, either internal or external (Rotter, 1966). In particular, Wallston, Wallston, Kaplan, & Maides (1976) developed the Health Locus of Control (HLC) concept to examine an individual's generalized expectations about where the control over his or her health resides. Individuals with an internal HLC believe that what happens to their health condition results from their own actions, whereas individuals with an external HLC believe that their health condition is controlled by external forces, such as chance, doctors, powerful others and God (Wallston et al., 1999).

For several years, studies on HLC have focused on internal HLC, recognized as the most logical HLC dimension related to better health outcomes and emotional

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adjustment (O'Hea et al., 2009). However, results have been mixed. For example, a study among cancer and chronic pain patients found that lower internal HLC predicted higher depression (Arraras et al., 2002). On the other hand, a study among breast cancer patients did not find any direct relationship between HLC and depression and anxiety (Naus et al., 2005). Until now, studies in the Indonesian population have also produced mixed results (Iskandarsyah, 2004; Wahyuningtyas, 2009).

Wallston and Wallston (1982) have suggested that in medical situations where only a little personal control is possible, patients are more likely to be reliant on external sources of control, such as doctors or powerful others (e.g. family), than on internal sources. Evidence from previous studies found different HLC orientations between healthy persons and physically ill persons. Healthy college or adult samples tended to have a higher internal HLC and a lower external HLC, whereas chronically ill patients (e.g. chronic obstructive pulmonary disease, hypertension and cancer) tended to have higher external HLC (Wallston and Wallston, 1981). High external HLC among chronically ill patients may have advantages for their emotional adjustment, as patients who do not try to control their condition, may be able to minimize their level of frustration. For example, a study among cancer chemotherapy patients who received progressive muscle relaxation and/or biofeedback training to alleviate the side effects of treatment found that patients with a high external HLC showed greater improvement on measures such as pulse rate, blood pressure and depression than patients with a high internal HLC (Burish et al., 1984).

Luszczynska and Schwarzer (2005) have suggested that culture and religion might affect the average level of HLC scores and that some dimensions might play a more prominent role in some cultures. They speculated for example, that internal HLC might be associated with better health behaviors in countries that are individualistic than in countries that are collectivistic (Hofstede, 2001; Luszczynska and Schwarzer, 2005). A study about cultural variation in HLC among Caucasian, Asian and Afro-Caribbean women found that Asian women had higher scores on chance and powerful others HLC than other groups. Moreover among Asian women, being highly religious seemed to explain some of their higher scores (Wrightson and Wardle, 1997). Indonesian people are known to be highly influenced by their religion in relation to their health and illness behavior (Rahmah et al., 2008; Yuniarti et al., 2010). Thus, it is relevant to consider Indonesian patients' views in the context of their belief that God is a source of control over their health condition.

To the best of our knowledge, only a few systematic studies have been conducted in Indonesia evaluating HLC and its association with psychological problems, such as anxiety and depression. None of these studies included God as a perceived source of control over a person's health condition. Therefore, the aims of the present study were: (a) to assess whether Indonesian women with breast cancer have a higher external HLC than Indonesian healthy women, and (b) to explore the association of HLC and anxiety and depressive symptoms.

## Materials and Methods

### *Study design and participants*

This study used a cross-sectional design. One hundred and twenty consecutive women with breast cancer were recruited at the outpatient surgical oncology clinic at Hasan Sadikin Hospital (HSH), Bandung in two phases. The first group of 50 patients was recruited between April-June 2010; the second group of 70 patients was recruited between June-October 2011, due to logistical reasons. Eligible patients were aged over 18 years, had a first diagnosis of breast cancer, were able to provide informed consent, had no psychiatric treatment history, and had an adequate command of the Indonesian language. As HSH is a referral hospital for patients with government insurance for poor people, the majority of patients were middle to low socio-economic status. The healthy group was recruited from a selected area in Bandung (i.e. Maleer urban village). This area was chosen because the women's socio-demographic characteristics were similar to the patient group and also for pragmatic reasons. We consecutively included 122 healthy women between February and March 2012. Population registration records were used to select the healthy women sample. Women were eligible if they were aged over 18 years, were free of chronic disease, were able to provide informed consent, and had an adequate command of the Indonesian language.

### *Measurements*

The study included a socio-demographic status form and measures of HLC, anxiety and depression symptoms. For this study, a self-report form was developed to obtain participants' socio-demographic data on age, marital status, insurance status, education level, employment status and religion. The patients' medical status, including type of cancer, time since diagnosis, stage of cancer and type of treatment was obtained via a medical chart review from HSH.

The C form of the Multidimensional Health Locus of Control (MHLC) scales (Wallston et al., 1994) was used to assess participants' feelings of control over their illness or disease. It was designed as a generic medical-condition-specific measurement of locus of control that could easily be adapted for use with any medical condition. It consists of one Internal scale and three External scales: (1) chance, (2) doctors, and (3) powerful others. In this study, the word 'condition' was substituted with 'cancer' for the patients and 'health condition' for the healthy women. This instrument consists of 18 items using a 6-point Likert format, ranging from 1='strongly disagree' to 6='strongly agree'. A higher score is indicative of a stronger belief in that type of control. In conjunction with the MHLC scales, we used the God Locus of Health Control Scale (GLHC) (Wallston et al., 1999) to assess individuals' beliefs about God's control over their health. The scale has the same format as the MHLC. After obtaining the written permission of the authors, we prepared the Indonesian version of the MHLC scales through the forward- and back-translation method. Firstly, the first author of this paper translated the questionnaire from English to Indonesian,

and then a Native American who speaks the Indonesian language fluently translated it back into English. Secondly, a linguist compared the original English version and the back-translation of the questionnaire to assess the significance of any discrepancies. After discussing any possible discrepancies, consensus was achieved and the Indonesian version of the MHLC scales was finalized. The Cronbach's alpha for each subscale of the Indonesian version of the MHLC in the current sample is as follows: internal HLC=0.62, doctors HLC=0.60, powerful others HLC=0.48, chance=0.56 and God HLC=0.77). For content validity, the items within both scales were scrutinized by three psychologists, who agreed that the items were valid.

In order to measure anxiety and depression symptoms, the Hospital Anxiety and Depression Scale (HADS) was included (Zigmond and Snaith, 1983). This scale has been known to be an effective screening measure for symptoms of anxiety and depression in a medical population (Ibbotson et al., 1994; Herrmann, 1997). It is a 14-item self-report measure that has two subscales; the HADS-A subscale consists of 7 items to measure anxiety, and the HADS-D subscale consists of 7 items to measure depressive symptoms. Respondents are asked to indicate which of 4 options (rated 3-0) best describe their feelings during the previous week. The scores range from 0 to 21 on each subscale, a higher score indicating higher anxiety and depression. The Indonesian version of the HADS has been linguistically validated by the MAPI Institute.

#### *Procedures*

The Indonesian Medical Ethical Committee and the Board of Directors of HSH approved the study material and procedure concerning patient participation for compliance with the ethical guidelines. This study was also approved by the Head of Maleer urban village. For women with breast cancer sample, a member of the administrative staff of the surgical oncology clinic identified and approached eligible patients during a regularly scheduled consultation and reported those who consented to a research assistant arranging an appointment during their next visit. Data collection was conducted by 10 Master's students in clinical psychology who had been trained as research assistants and who were supervised by two clinical psychologists. The research assistants provided the patients with further information about the study, instructions on how to fill in the questionnaires and a survey packet. The packet included a letter that described the study, an informed consent form, the socio-demographic form, the MHLC scales and the HADS. Participants completed the questionnaires in the waiting room while they were waiting for their consultation with the physicians for their treatment. There were seven illiterate participants in this study. In these cases, the research assistants read the questionnaires aloud and helped the participants to fill in the questionnaires.

For the healthy sample, data collection was conducted by two Community Association staff members. They identified eligible women, approached them personally to join the study, and arranged an appointment at their home. The Community Association staff provided the participants

with a survey packet consisting of written information about the study purpose, the socio-demographic form and the MHLC scales. First, participants were asked to read the information about the study and the questionnaire instructions. Afterwards they were asked to fill in the socio-demographic form and the MHLC scales. Each participant received a small gift for their participation.

#### *Data analysis*

For data analysis, we used the IBM® SPSS® Statistics version 20. Descriptive statistics were used to describe participants' demographic and clinical characteristics. Differences in demographic characteristics between women with breast cancer and healthy women were analyzed by t-tests. To explore the association between demographic and clinical characteristics and MHLC scores, Pearson's correlation coefficients were performed for continuous variables and t-test analyses were performed for the categorical variables. Marital status (married vs other), education level (junior high school or lower education vs senior high school or higher), employment status (housewife/unemployed vs. other), health insurance status, stage of cancer (stage 1 or 2 vs stage 3 or 4), treatment type (Mastectomy vs no mastectomy, Radiotherapy vs. no radiotherapy and Chemotherapy vs. no chemotherapy), and family history of cancer were treated as dichotomous variables. Multivariate analysis of variance (MANOVA) was used to evaluate differences between women with breast cancer and healthy women on MHLC subscales scores. Multiple linear regression analyses were conducted to test the association between anxiety and depression and MHLC scores. We analyzed anxiety and depression as the dependent variables and Internal, Chance, Doctors, Powerful others and God subscale scores as the independent variables.

## **Results**

#### *Demographic and clinical characteristics*

Women with breast cancer ranged in age from 28 to 66 years (M=45.52, SD=8.04), and the healthy women ranged in age from 20 to 80 years (M=45.14, SD=12.60). The difference in age between the two groups was not significant. The groups were also comparable regarding their marital status, education level and employment status. The groups were significantly different in relation to insurance status; the majority of women with breast cancer had health insurance whereas only a minority of healthy women did. A summary of the demographic and relevant clinical characteristics of the participants is presented in Table 1.

#### *Association between demographic and clinical characteristics and health locus of control*

Level of education was associated with internal and chance HLC in both sample groups, women with breast cancer who had junior high school or lower education had higher chance HLC scores ( $t=3.67$ ,  $p=0.001$ ), and healthy women who had junior high school or lower education had lower internal HLC ( $t=-3.02$ ,  $p=0.003$ )

and higher chance HLC ( $t=3.03, p=0.003$ ). In women with breast cancer, time since diagnosis was significantly negatively correlated with God LHC scores ( $r=-0.23, p<0.05$ ). No other demographic or clinical characteristic was significantly associated with HLC.

**Table 1. Demographic and Clinical Characteristics of Study Participants**

Variable		Breast Cancer Patients n (%)	Healthy Women n (%)
Age (M±SD)		45.52 ± 8.04	45.14 ± 12.60
Marital Status	Married	101 (84%)	100 (82%)
	Single	2 (2%)	3 (2%)
	Widowed	17 (14%)	19 (16%)
Education	None	10 (8%)	0 (0%)
	Elementary school	59 (49%)	44 (36%)
	Junior high school	24 (20 %)	31 (25%)
	Senior high school	21 (18 %)	39 (32 %)
	College or university	6 (5%)	8 (7%)
Employment	Housewife/unemployed	88 (73%)	101 (83%)
	Laborer/irregular job	25 (21%)	4 (3%)
	Private employee	2 (2%)	14 (12%)
	Government officer	5 (4%)	3 (2%)
Religion	Islam	120 (100%)	122 (100%)
	Others	0 (0%)	0 (0%)
Health insurance	Yes	112 (93%)	23 (19%)
	No	8 (7%)	99 (81%)
	Months since diagnosis (M±SD)	21.5 ± 20.3	Na
Stage of cancer	1	3 (3%)	Na
	2	54 (45%)	Na
	3	46 (38%)	Na
	4	17 (14%)	Na
Treatment	Mastectomy	67 (56%)	Na
	Chemotherapy	99 (83%)	Na
	Radiotherapy	28 (23%)	Na
Family history of breast cancer	Yes	30 (25%)	Na
	No	90 (75%)	Na

**Table 2. Means, Standard Deviations, Range and MANOVA Results of Breast Cancer Patients and Healthy Women on the MHLC Scales and the HADS Scores**

Measure	Breast Cancer patients (n=120)			Healthy Women (n=122)			df	F	p-value
	Mean	SD	Min-Max	Mean	SD	Min-Max			
Internal	25.16	4.24	13-34	26.3	4.56	13-36	1	4.088	<0.05
Chance	25.03	3.91	15-31	20.28	5.46	8-30	1	60.532	<0.01
Doctor	15.08	1.93	4-18	13.07	2.75	6-18	1	42.798	<0.01
Powerful others	11.98	2.54	6-17	9.24	2.9	3-18	1	61.487	<0.01
God	27.76	4.13	12-36	21.6	6.78	9-35	1	72.593	<0.01
HAD-A	8.13	3.62	0-19	-	-	-			
HAD-D	6.59	3.69	0-15	-	-	-			

\*HAD-A: Hospital Anxiety and Depression-Anxiety subscale score; HAD-D: Hospital Anxiety and Depression-Depression subscale score

**Table 3. Correlations of the MHLC Scales, Anxiety and Depression**

Measure	Breast Cancer patients					Healthy Women				
	1	2	3	4	5	1	2	3	4	5
Internal (1)	-	0.34**	0.23*	0.18*	0.22*	-	0.09	0.37**	0.01	0.01
Chance (2)	0.34**	-	0.12	0.43**	0.39**	0.09	-	0.11	0.20*	0.43**
Doctor (3)	0.23*	0.12	-	-0.01	0.13	0.37**	0.11	-	0.05	0.08
Powerful others (4)	0.18*	0.43**	-0.01	-	0.25**	0.01	0.20*	0.05	-	0.35**
God (5)	0.22*	0.39**	0.13	0.25**	-	0.01	0.43**	0.08	0.35**	-
HAD-A	0.09	0.14	-0.014	0.19*	0.23*	-	-	-	-	-
HAD-D	0.02	0.15	-0.01	0.14	0.12	-	-	-	-	-

HAD-A: Hospital Anxiety and Depression-Anxiety subscale score; HAD-D: Hospital Anxiety and Depression-Depression subscale score; \*Correlation is significant at the 0.05 level (2-tailed); \*\*Correlation is significant at the 0.01 level (2-tailed)

*Health locus of control in breast cancer patients and healthy women*

Table 2 shows the means, standard deviations, range and MANOVA results of women with breast cancer and healthy women on the MHLC scales and the HADS scores, whereas table 3 shows Pearson’s coefficient correlations of the MHLC subscales. There were significant differences in HLC orientations between women with breast cancer and healthy women. Women with breast cancer had significantly lower scores on internal HLC ( $F=4.09, p<0.05$ ), higher chance HLC ( $F=60.53, p<0.01$ ), higher doctors HLC ( $F=42.80, p<0.01$ ), higher powerful other HLC ( $F=61.49, p<0.01$ ), and higher God LHC ( $F=72.59, p<0.01$ ) than healthy women.

*Association between health locus of control, anxiety and depression*

Table 4 shows multivariate linear regression analyses results evaluating the association between HLC, anxiety and depression adjusted for patients’ education level. God LHC was found to be the only HLC orientation associated with anxiety ( $\beta=0.21, p<0.05$ ). No significant associations with depressive symptoms were found.

**Table 4. Standardized betas of Multivariate Linear Regression Analyses Evaluating HLC, Anxiety and Depression**

	HADS-A	HADS-D
Internal HLC	0.06	-0.05
Chance HLC	-0.01	0.04
Doctor HLC	-0.18	-0.02
Powerful others HLC	0.13	0.09
God HLC	0.21*	0.07

\*HAD-A: Hospital Anxiety and Depression-Anxiety subscale score; HAD-D: Hospital Anxiety and Depression-Depression subscale score; \*p< 0.05 corrected for educational level

## Discussion

The present study is among the first to explore HLC among women with breast cancer and healthy women in the Indonesian population. Women with breast cancer had higher external HLC (chance, doctors, powerful others and God) and lower internal HLC than healthy women. God LHC was the only HLC belief that explained a significant amount of the variance of anxiety, whereas none of HLC orientations was related to depressive symptoms. Several associations between patients' characteristics and HLC were found. A strong belief that God has control over their cancer was more common in patients with shorter time since diagnosis. Education level was related to a high chance HLC in both women with breast cancer and healthy women.

The findings of the current study show that women with breast cancer tend to attribute their illness to external sources of control, namely: physicians, significant others, chance and God. On the other hand, healthy women tend to have high internal HLC which indicates that they believe their health condition resulted from their own behaviors and capabilities. This finding is in line with what has been found in the previous Western literature suggesting that high beliefs in external sources of control is common in chronically ill patients and breast cancer patients (Wallston and Wallston, 1982; Bremer et al., 1997; Bourjolly, 1999), whereas healthy people are more likely to have an internal health locus control (Wallston and & Wallston, 1981). One possible explanation for this finding is related to the nature of cancer and its treatment process. The perceived uncontrollable nature of cancer and the uncertainty of treatment outcomes might reduce patients' beliefs in personal control over their illness. In addition, the majority of patients involved in the current study are in an advanced stage of cancer requiring long-term cancer treatment. This situation may lead to an increased belief in external forces among patients, i.e. the doctor, powerful others (e.g. family members), chance and God in the determination of their health condition.

In line with previous research (Watson et al., 1990; Cvengros et al., 2005; Naus et al., 2005), our results indicate that a HLC among women with breast cancer is not necessarily associated with emotional adjustment. Only high God HLC was related to higher level of anxiety. This result is in concordance with a previous study among Rheumatoid Arthritis and Systemic Sclerosis patients that found high God HLC was associated with poor emotional adjustment (Wallston et al., 1999). Levenson (1981) interpreted chance HLC as a belief in an unordered and random nature of the world, whereas powerful others HLC was interpreted as a belief in the basic order and predictability of the world giving potential control over one's life outcomes. Although we did not find any significant relationship between a strong belief in doctors and powerful others HLC and patients' emotional adjustment, we did find that patients who attributed their health condition to God (which could also be considered to be an unpredictable source of control), was associated with a higher anxiety level. Another explanation might be related to individual's coping style, whereas a great belief

in God's over one's health can be considered as a form of emotion-focused coping strategy. Previous study among Chinese Breast Cancer Patients found that emotion-focused coping style was associated with higher anxiety and depressive symptoms level (Wang et al., 2012).

In the current study, several associations between HLC orientations and patients' demographic characteristics were found. The God HLC showed a modest negative association with time since diagnosis. This finding indicates that newly diagnosed patients are more likely to attribute control over their illness to God than other patients. A review study about religion and coping with serious medical illness suggested that when people become physically ill they tend to rely on religious belief and practice which may reduce the sense of helplessness and maintain hope (Koenig et al., 2001). In addition, we found a strong association between education and chance and internal HLC. Lower educated patients tended to have a stronger belief in chance than higher educated patients, whereas lower educated healthy women tended to have lower internal and higher chance HLC than higher educated healthy women. These findings are in concordance with previous studies from Western and Eastern countries (Wallston and & Wallston, 1981; Morowatisharifabad et al., 2010). In contrast to a study by Wallston et al, (1999) that found God HLC was negatively correlated with level of education, our results suggest that both women with breast cancer and healthy women have a high God LHC regardless of their level of education.

This current study has several limitations. First, the design is cross-sectional; therefore we could not evaluate the causality between HLC, anxiety and depression. Second, the Indonesian version of the MHLC scales used in the current study has not yet been validated in an Indonesian population. We found suboptimal Cronbach's alpha values in several subscales. Issues regarding to the reliability of the translation of the MHLC has not only occurred in the Indonesian version, but also in the Chinese version of the MHLC that found suboptimal Cronbach's alpha values in several subscales (internal HLC=0.52, doctors HLC=0.51, powerful others HLC=0.44 and chance HLC=0.66) (Ip and Martin, 2006). Theoretically, Cronbach's alpha is related to the test length; therefore, the poor alpha value in the Powerful others subscales may be attributed to the small number of items in the subscales (n=3). The finding that the 6-item subscales have also suboptimal alpha value may be attributed to cultural factors. The research assistants reported that some patients interpreted Chance HLC items as statements about their destiny or fate. For example, the Indonesian term for fate is 'nasib', which refers to something that has been determined by God for each individual and no one else knows about it. Consequently, differences in understanding may have led to the variability of participants' responses. Schmitt (1996) argues that there is no sacred level of acceptable level of alpha and in certain cases measures with low levels of alpha may still useful for the interpretation. Nunnally (1967) stated that in the early stages of research, the reliability coefficients of 0.60 or 0.50 may be considered sufficient. Nevertheless, we suggest that our results should be interpreted with caution

and a full validation study of the Indonesian version of the MHLC scales is highly recommended before future research is undertaken.

In conclusion, Indonesian women with breast cancer tend to have high external HLC attributing control of their illness to their doctors, to powerful others, to chance, and to God. On the other hand, healthy women tend to have high internal HLC over their health condition. Our findings suggest that believing that an external source of control, i.e. God, controls the course of one's breast cancer may be associated with poorer emotional adjustment in Indonesian breast cancer patients. Interviews or longitudinal studies might give an insight into the direction of this association.

The implication of the current study findings for clinical practice is that knowledge on patients' HLC can help cancer care professionals' to presume patients' emotional adjustment problem during their illness trajectory. Another implication is that assessing patient's HLC can help tailor psychological support to their specific needs.

## Acknowledgements

The authors would like to thank Dr. Ken Wallston for his permission to translate and use the MHLC scales. They would also like to thank all participants, the staff of the surgical oncology clinic Hasan Sadikin Hospital and the research assistants for their generous participation in this study. Mr. James Holmboe and Dr. Anne de la Croix are greatly acknowledged for their contribution in the translation process. Aulia Iskandarsyah has received a PhD scholarship from the Directorate General of Higher Education of Indonesia.

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