

# Measurement of Pessimism: Hopelessness Scale in Healthy Study Subjects, and in Patients with Benign Breast Disease and Breast Cancer: A Prospective Case–Control Study in Finland

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**Abstract.** *Background:* A hopeful attitude is important for psychological well being, and hopelessness is associated with various chronic illnesses, including cancer. To the Authors' knowledge, the associations between hopelessness and the risk of breast cancer (BC) are rarely considered together in a prospective study. *Materials and Methods:* In an extension of the Kuopio Breast Cancer Study, 115 women with breast symptoms were evaluated for hopelessness before any diagnostic procedures were carried out. *Results:* The clinical examination and biopsy showed BC in 34 patients, benign breast disease (BBD) in 53 patients, while 28 individuals were shown to be healthy study subjects (HSS). There was a trend for the BBD and BC group to report clearer hopelessness (18.9% and 20.6%, grade III hopelessness, respectively) than the patients in the HSS group (10.7%, grade III hopelessness). However, the mean sum of the hopelessness score for HSS, BBD and BC groups differed only slightly in other grades. There was a trend for the HSS, BBD and BC groups to 'understage' hopelessness. In the HSS group, no study subjects who reported grade III/IV hopelessness by the self-rating method (SRM) vs. 4/28 (14.3%) subjects of the HSS group reported grade III/IV hopelessness by the examiners rating method (ERM). In the BBD group 7/53 (13.2%) subjects reported grade III/IV hopelessness by the SRM vs. 12/53 (22.7%) subjects of the BBD group by the ERM. In the BC group, 2/34 (5.9%) subjects reported grade III/IV hopelessness by SRM vs. 8/34 (23.5%) subjects of the BC group by the ERM. *Conclusion:* The results of this study show that patients with BC and BBD are at risk for hopelessness.

In 1974, Aaron Beck and his co-workers (1) introduced hopelessness as a personality feature characterized by negative emotions, unrealistic negative attitude toward the future and loss of pleasure in life. The hopelessness concept has been studied in different research settings and hopelessness has been found to have a negative impact on subjective well being and physical outcome (2-6). In the general population, the prevalence of hopelessness appears to be higher for men than women, and less educated, divorced, rural and fairly poor men have high hopelessness score (5). Because breast cancer (BC) is a hormone-responsive neoplasm and one with great psychological impact, it has been the most extensively investigated tumour for possible psychological variables associated with risk and survival (7). Hormonal factors, such as early age at menarche, later age at menopause, later age at first full-term pregnancy and hormone replacement therapy, are known to be the main risk factors for sporadic BC (8). In addition, life-style factors, such as obesity, smoking, alcohol consumption and lack of physical activity, appear to contribute to the increased risk for this malignancy, although the results concerning such factors are inconsistent (8-14). Psychological factors, such as stressful and adverse life events, are widely thought to play a role in the etiology of BC (15-34). To the Authors' knowledge, the associations between hopelessness as given by the hopelessness scale (HS) and the risk of BC are rarely considered together, and therefore this was a prospective study to examine the role of HS in women with breast symptoms referred by physicians to the Kuopio University Hospital (Finland).

## Patients and Methods

The Kuopio Breast Cancer Study was a multidisciplinary cooperative project conducted by different departments of the University of Kuopio and Kuopio University Hospital, and included all women who were referred to the hospital for breast examination between April 1990 and December 1995. The Kuopio Breast Cancer Study followed the protocol of the International Collaborative Study of Breast and Colorectal Cancer coordinated by the European Institute of Oncology in Milan, and was initiated as a SEARCH program of the International Agency for

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Table I. Characteristics of the study participants. Results are shown for the patients with breast cancer (BC), for those with benign breast disease (BBD) and for the healthy study participants (HSS).

Variable	HSS (n=28)	BBD (n=53)	BC (n=34)	p-Value
Age (mean, years)	45.7	47.6	51.6	0.12
Height (mean, cm)	160.8	162.3	164.4	0.75
Body weight (mean, kg)	68.3	67.8	72.5	0.25
Age at menarche (mean, years)	13.4	13.4	13.4	0.99
Age at birth of I child (mean, years)	25.0	25.0	25.2	0.92
Age at menopause (mean, years)	50.0	48.9	47.9	0.53
No. of children (mean)	2.5	2.4	2.6	0.27
Parity	23 (82%)	44 (83%)	31 (91%)	0.50
Breast feeding (mean, months)	3.9	3.4	3.6	0.77
Use of oral contraceptives	18 (64%)	25 (47%)	13 (38%)	0.12
HRT	14 (50%)	36 (68%)	27 (79%)	0.44
Premenopausal	18 (64%)	28 (53%)	13 (38%)	0.10
Postmenopausal	10 (36%)	25 (47%)	21 (62%)	0.12
History of previous BBD	10 (36%)	22 (42%)	18 (53%)	0.37
Family history of BC	5 (18%)	5 (9%)	1 (3%)	0.21
Use of alcohol	13 (46%)	31 (58%)	21 (62%)	0.44
Smoking	10 (36%)	21 (40%)	15 (44%)	0.80

HRT: Use of hormonal replacement therapy.

Research on Cancer. The collaborative study is based on the assumption that BC and colorectal cancer may have common risk factors. Study centers for the Breast Cancer Study are situated in Canada, Finland, Greece, Ireland, Italy, Russia, Slovakia, Spain and Switzerland (35). The study participants showed BC symptoms (a lump in the breast or in the axilla, pain in the breast, bleeding from the nipple, nipple discharge and/or skin dimpling), or an abnormality of the breast and the indications for referral in this study were in line with our previous investigations in a Breast Cancer Diagnostic unit in Finland (36).

This case-control study was an extension of the Kuopio Breast Cancer Study (37, 38) and was approved by the Joint Committee of the University of Kuopio and Kuopio University Hospital. A women referred from January 1991 to June 1992 were included. Participation was based on written consent. One hundred and fifteen women participated and were interviewed (to determine the level of emotional depression) by a psychiatrist (P.O.) before any diagnostic procedures, so neither the interviewer nor the patient knew the diagnosis at the time of the interview. The interviews were recorded and the ratings were completed before the final diagnosis. The clinical examination, mammography and biopsy showed BC in 34 (29.6%) patients, benign breast disease (BBD) in 53 (46.1%) patients and 28 (23.4) patients with healthy study subjects (HSS) (Table I).

*Hopelessness scale (HS).* The questionnaire items measuring hopelessness in the self-rating method (SRM) were ‘My future seems dark to me’ (true or false), ‘I don’t expect to get what I really want’ (true or false), ‘The future seems uncertain and vague to me’ (true or false), ‘Difficulties are piling up so that I cannot overcome them’ (1=no/few, 2=sometimes, 3=often, 4=almost always) and ‘Feelings of hopelessness’ (1=no/few, 2=sometimes, 3=often, 4=almost always). The hopelessness characteristics in the examiners rating method (ERM) were assessed before any diagnostic procedures for the HSS, BBD and BC groups on a four point scale: grade I indicating no or little hopelessness; grade II, some hopelessness; grade III, clear hopelessness and grade IV, high hopelessness characteristics.

*Statistical analysis.* Significance of the results was calculated with the SPSS/PC statistical package (SPSS Inc., Chicago, IL, USA). Correlations and differences between the study groups (BC, BBD and HSS groups) were measured with the two-sided Chi-square test and non-parametric Kruskal-Wallis variance analyses. Results were considered statistically significant at a *p*-value <0.05.

## Results

The mean age of the BC patients was 51.5 years. The corresponding figure for the patients with BBD was 47.5 years and for the HSS group 45.7 years. Although the patients in the BC group were older than those in the BBD or HSS groups, the age difference was not statistically significant (*p*=0.12). The majority of the patients (85/115, 74%) were married or living in a steady relationship. The patients with BC were significantly (*p*=0.03) wealthier than the patients with BBD and HSS, as estimated by the combined gross income of both spouses. The groups differed only slightly from each other as to the factors of the reproductive life of the women (Table I).

*The distribution of the HS.* The distribution of the mean sum of the HS in the four separate categories, for the healthy study participants (HSS), for those with benign breast disease (BBD) and for patients with breast cancer (BC) are shown in Figure 1. There was a trend for the BC group to report clearer hopelessness (20.6%, grade III) than the patients in the BBD group (18.9%, grade III) and in the HSS group (10.7%, grade III). However, the mean sum of the HS for HSS, BBD and BC groups differed only slightly in grade I, grade II and grade IV (Figure 1).

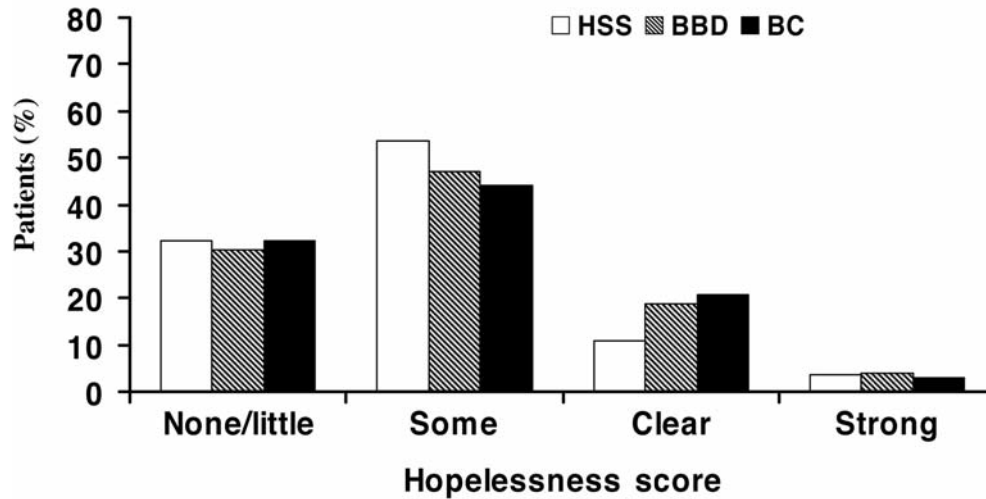


Figure 1. The distribution of the mean sum of the hopelessness scores in four separate categories, for the healthy study participants (HSS), for those with benign breast disease (BBD) and for patients with breast cancer (BC).

Table II. The distribution of the hopelessness scores in four separate categories by the self-rating method (SRM) and by the examiners-rating method (ERM).

Hopelessness score	HSS		BBD		BC	
	SRM	ERM	SRM	ERM	SRM	ERM
I (None/Little)	11/28 (39.3%)	9/28 (32.1%)	17/53 (32.1%)	16/53 (30.2%)	15/34 (44.1%)	11/34 (32.4%)
II (Some)	17/28 (60.7%)	15/28 (53.6%)	28/53 (52.8%)	25/53 (47.1%)	16/34 (47.1%)	15/34 (44.1%)
III (Clear)	-	3/28 (10.7%)	7/53 (13.2%)	10/53 (18.9%)	2/34 (5.9%)	7/34 (20.6%)
IV (Strong)	-	1/28 (3.6%)	-	2/53 (3.8%)	-	1/34 (2.9%)

*The SRM and the ERM of the HS.* The distribution of the HS in the four separate categories by the study patients (by SRM) and by the examiners (ERM) are shown in Table II. There was a trend for the HSS, BBD and BC groups to ‘understage’ hopelessness. In the HSS group, no study subjects reported grade III/IV hopelessness by the SRM vs. 4/28 (14.3%) subjects of the HSS group, reported as having grade III/IV hopelessness by the ERM. In the BBD group, 7/53 (13.2%) subjects reported grade III/IV hopelessness by the SRM vs. 12/53 (22.7%) subjects of the BBD group, reported as having grade III/IV hopelessness by the ERM. In the BC group, 2/34 (5.9%) subjects reported as having grade III/IV hopelessness by the SRM vs. 8/34 (23.5%) subjects of the BC group, reported as having grade III/IV hopelessness by the ERM.

## Discussion

Hopelessness has been defined in many ways. In dictionaries, the word hopelessness has been defined as ‘to be without hope’, ‘having no grounds for hope’, and ‘despairing’. Hopelessness

means negative expectancies or loss of control in relation to the future, a sense of impossibility, the futility or passive acceptance of planning and achieving goals. The hopeless person has difficulties in concretizing their plans and realising alternative ways of resolving problems, or imagining that anyone could help them find a solution to their problem. When people feel hopeless, they do not care and appear to become indifferent to both their internal and external environment (39).

In the classification systems of ICD-10 (ICD-10 Classification of Mental and Behavioural Disorders, Clinical Descriptions and Diagnostic Guidelines) (40) and DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, American Psychiatric Association) (41), hopelessness has been described as a typical symptom of depressive disorders, such as sleep disturbances, loss of energy and feelings of guilt. In its most extreme form, hopelessness is manifested as mental illness, including feelings of depression and suicidal ideation (42). Dynamics of hopelessness as a trait have been described in cognitive-behavioural theory by Beck *et al.* (42), where hopelessness is considered to be an aetiological factor as

antecedent cause for the onset or maintenance of depression. Those persons for whom hopelessness is a trait characteristic have an increased risk for chronic hopelessness. Northouse *et al.* (43) suggested that hopelessness is a fairly stable trait which does not change over time.

A two-year follow-up study in Finland showed 11.4% prevalence of hopelessness, while after excluding self-reported mental disorders, the prevalence of hopelessness was still 7.8% in the general population (2). Hopelessness, independent of depression, is associated with the risk of mortality and incidence of myocardial infarction and cancer (4), the incidence of hypertension (5), and progression of metabolic syndrome (6). Kim *et al.* (44) evaluated the relationship between hopelessness (Beck hopelessness scale) and circulating lymphocytes using flow cytometry (CD3<sup>+</sup>, CD4<sup>+</sup>, CD8<sup>+</sup>, CD19<sup>+</sup>, CD56<sup>+</sup>). The 'hopeful' group of breast cancer patients showed significantly higher percentages and counts for CD8<sup>+</sup> T-cell and significantly lower ones for CD4<sup>+</sup> T-cell and CD19<sup>+</sup> B-cell, compared with the 'no-hope' group of BC patients. The authors concluded that a hopeful attitude may be associated with immunity in patients with BC, independent of depression and quality of life.

From the popular belief that psychological factors have a significant role in the carcinogenesis of the breast, derives the fact that study subjects with BC may be more prone than healthy subjects to report prior psychological problems, in an effort to explain their breast cancer. This could lead either to a false positive association between psychological factors and breast cancer risk or to the overestimation of true positive associations. Therefore, the current study was designed to reduce the recall bias; the reports on hopelessness factors were obtained from the study subjects who had BC symptoms, but had not yet been given a definitive diagnosis.

Although, there are no previous reports with this study design available for sufficient comparative evaluation and to examine the role of the HS in HSS, BBD and BC groups, some dynamics of hopelessness can be obtained. Northouse *et al.* (45) prospectively studied the psychological adjustment of couples to BBD and to BC measuring hopelessness a few days, and 60 days and 365 days after BBD and BC diagnosis and found no statistically significant change in the hopelessness of the spouses over time in either the BBD or BC group. Later, Northouse *et al.* (43) studied the adjustment patterns of couples to colon cancer measuring hopelessness three times: 7 days after the diagnosis (prior to surgery), 60 days after surgery, and one year after surgery. The concurrent stress and the high age of the spouse predicted a hopeless attitude at 1-year follow-up, but there was no statistically significant change in hopelessness during the first year after surgery.

One potential bias arises from age being a confounding factor, and some of the earlier studies have been criticized on such methodological grounds for limited controlling of age (46). In the present study, the BC group was 4.0 years and 5.9

years older than the BBD group and the HSS group, respectively. However, no statistically significant age difference between these groups was found in our study ( $p=0.12$ ).

In summary, the results of this study do not support a specific link between hopeless attitude characteristics in general and BC risk. However, the patients with BC and BBD tended to be at risk for hopelessness.

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