



## Alexithymia and Breast Cancer Surgery: A Systematic Review

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### Authors' contributions

*This work was carried out in collaboration between all authors. All authors designed the study, wrote the protocol and wrote the first draft of the manuscript. Authors DDB, SM and MC managed the literature searches. All authors wrote, read and approved the final manuscript.*

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## ABSTRACT

The term alexithymia is a complex multidimensional construct that literally means “no words for mood”. There are two kind of alexithymia: primary and secondary or otherwise called trait and state alexithymia. There is still an unresolved debate about the nature of alexithymia as a trait or a state. The etiology of alexithymia has not been completely determined because of the numerous factors influencing its development. Alexithymia has been observed among patients with a variety of psychiatric disorders and medical conditions. The aim of this systematic review was to review studies investigating the correlations between alexithymia, depression and anxiety in breast cancer surgery women. Literature search was conducted in January, 2016. PubMed and Scopus databases were used to find studies for inclusion in the systematic review. Correlations between alexithymia, depression and anxiety evidenced that alexithymia may be considered a stable personality trait and an important factor to the development of anxiety symptoms. However, limitations of these studies must be considered and further investigations are needed.

*Keywords: Alexithymia; breast cancer; surgery; women; state; trait; anxiety; depression.*

## 1. INTRODUCTION

The term Alexithymia, which literally means “no words for mood”, was introduced by Sifneos during the early 1970s [1]. Alexithymia is a complex multidimensional construct characterized by the following features: 1. difficulty identifying and describing subjective feelings; 2. difficulty distinguishing between feelings and bodily sensations of emotional arousal; 3. constricted imaginal capacities; 4. an externally oriented cognitive style [2]. A “classic” alexithymic subject is mainly focused on somatic sensations or symptoms and cannot give a word to emotions. In a case observed by one of the authors, a patient with irritable bowel syndrome described an emotion without recognizing it (“rage” in this occasion) as follows: “...When my boss scolded me for my carelessness without a true reason, I felt an huge muscular tension, my heartbeat was accelerated and I started to sweat as an adolescent! Obviously, I experienced, as usual in these occasions, spasms and abdominal pain. I cannot explain what it was happened to me, but these sensations are boring”).

Bagby and Taylor [2] suggested that there may be two kinds of alexithymia, “primary alexithymia” which is an enduring psychological trait that does not alter over time, and “secondary alexithymia” which is state-dependent and disappears after the evoking stressful situation has changed. These two manifestations of alexithymia are otherwise called “trait” or “state” alexithymia.

There is still an unresolved debate about the nature of alexithymia as a trait or a state. Attempting to resolve that debate, a number of authors started to distinguish absolute (alexithymia scores may change across time because of symptoms changes) from relative (alexithymia scores have similar rank orders over time) stability [3,4,5].

The etiology of alexithymia has not been completely determined. Numerous authors reported a number of factors influencing the alexithymia development such as genetic factors [6,7], social environments, cultural factors, stressful situations, early childhood trauma, abuse, or neglect [8,9,10]. Recent studies revealed how alexithymia may overlap with other constructs such as autism spectrum disorders [11,12], emotional intelligence, emotional awareness and empathy deficits [13,14]. To date there are three neurobiological hypothesis of alexithymia, represented by lack of integration of inter-hemispheric communication [15], dysfunction of the right hemisphere and dysregulation of the prefrontal cortex and regions of the anterior areas during the evaluation of emotional stimuli. Moreover, a neurological damage may be, in some cases, the cause of a secondary alexithymia [16,17].

Alexithymia has been observed among patients with a variety of psychiatric disorders and medical conditions [18]. Authors reported correlations between alexithymia and depression

[4,8,19,20], schizophrenia and schizophrenia spectrum disorders [21,22], obsessive-compulsive disorders [23] anxiety disorders (panic disorder [24,25,26], post traumatic stress disorder [27,28], somatoform disorders [29], eating disorders [30,31], alcohol and drug abuse or dependence [32,33,34], body image disorder [35,36,37] and problematic gambling [38,39]. Among medical conditions, high prevalence of alexithymia has been found in essential hypertension [40], gastrointestinal diseases [41,42,43], kidney transplantation and hemodialysis patients [44]. Few immune studies found that alexithymia was associated with poorer immune status [45]. Moreover, some authors suggested alexithymia as a possible vulnerability factor for medical and psychiatric disorders [46,47] and may be associated with increased mortality for any cause and suicide [48,49,50,51].

Contrasting data are available regarding the correlations between alexithymia and prognosis of patients in medical, psychiatric, or behavioral treatments. Poorer outcome has been reported for the treatment of anxiety and somatoform disorders [52], depression [53], alcoholism [54], functional gastrointestinal disorders [55]. Some studies reported beneficial effects of alexithymia on surgical treatment outcomes [56,57,58].

For women, breast cancer is the one cause of death due to cancer [59]. Treatments required for the disease, could alter the physical integrity and bodily image of women and can led patients to develop psychological disorders [60] mainly anxiety and mood disorders [61]. The prevalence of alexithymia in cancer patients has been reported to be about 8-fold greater than in the general population of Italy [62,63]. Pain perception was found to be closely related to alexithymia, maladaptative coping and negative affect [64]. Tulipani et al. demonstrated that cancer patients who did not received psychological treatment, both pain and alexithymia scores were higher than patients received psychological intervention group. Porcelli et al. [65] reported that psychological intervention in cancer patients didn't alter the relative stability of alexithymia, but altered the absolute stability of the construct. This study confirmed the relative stability of alexithymia and that the lack of absolute stability of the construct was influenced by psychological intervention in cancer patients.

Some authors hypothesized that alexithymia could be a risk factor for breast and uterine

carcinoma [66,67], but it also might be a psychological consequence of stress and suffering [68]. Two studies investigated the association of affect dysregulation with neoplastic colonic disease, but they provided inconsistent results [69,70]. As a significant correlation has been found between alexithymia and some lymphocyte clusters as well as some inflammatory markers (such as C-Reactive Protein, CRP, and cytokines), one may hypothesize that alexithymia seems to favor the development of breast cancer (and other forms of cancers) through influence on the immune system, dysbalancing the cytokine network toward an increase of proinflammatory ones, generating a chronic tissue inflammation (even if often subclinical) that may contribute to cancer development [71]. However, proven data are lacking and further studies are needed.

There are several methodologies to assess the alexithymia construct: self reported questionnaires and diagnostic interview. However, the self reported questionnaires represents the most used methodologies for alexithymia assessments. Among these, the 20-items Toronto Alexithymia Scale (TAS) is the most used self-rating scale in the large majority of the studies [72]. The TAS-20 consists of 20 items and has a three-factor structure: Factor 1 assesses capacity to identify feelings and to distinguish between feelings and bodily sensations of emotional arousal (difficulty in identifying feelings [DIF]); Factor 2 reflects inability to communicate feelings to other people (difficulty in describing feelings [DDF]); and Factor 3 assesses externally-oriented thinking (EOT). the Schalling-Sifneos Personality Scales (SSPS) the Bermond-Vorst Alexithymia Questionnaire (BVAQ) [73] and the Minnesota Multiphasic Personality Inventory Alexithymia Scale (MMPI-A) [74] are the most used self reported scales. Among the most widely used diagnostic interviews we have: the Beth Israel Hospital Psychosomatic Questionnaire (BIQ) [1], the Toronto Structured Interview for Alexithymia (TSIA) [75] and the Diagnostic Criteria for Psychosomatic Research (DCPR) [76]. New assessments are represented by the Rorschach Alexithymia Scale (RAS) [77] and the California Q-Set Alexithymia Prototype (CAQ-AP).

## 2. MATERIALS AND METHODS

### 2.1 Literature Search

A literature search was conducted in January, 2016. PubMed and Scopus databases were used

to find studies for inclusion in the systematic review. Keywords used for the search were: alexithymia, toronto alexithymia scale, breast cancer and breast cancer patients. In each search, keywords were used together with logical operators: “and”, “in”. Keywords used in the literature selection criteria are summarized in Table 1.

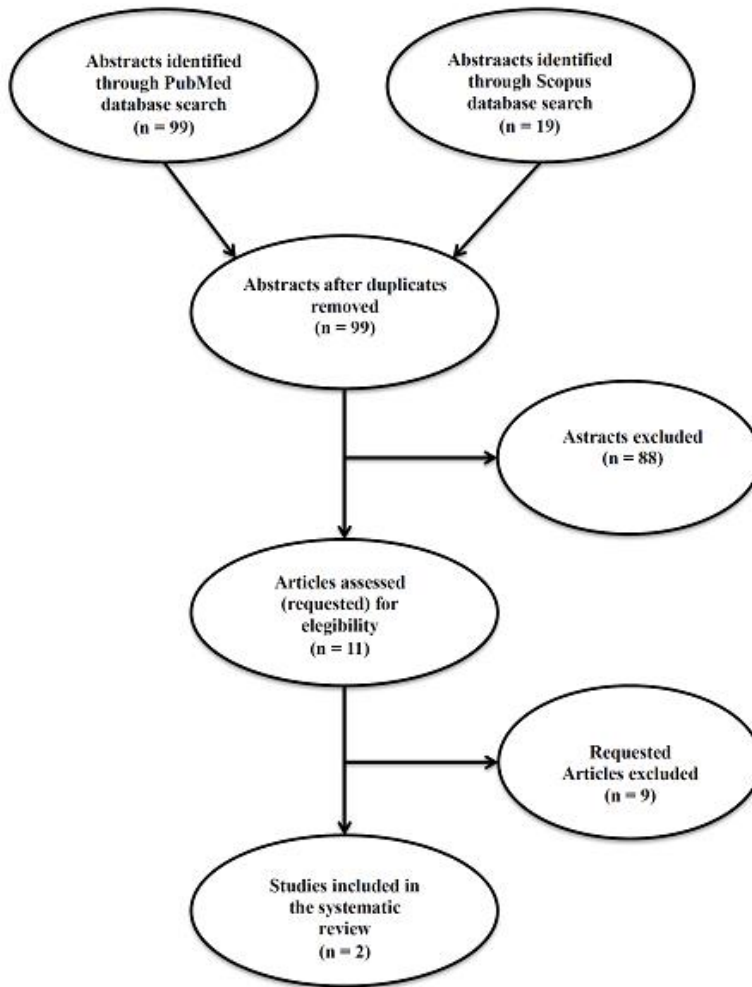
A total of ninety-nine (n = 99) articles were retrieved using PubMed and Scopus databases. Each study was required to meet all of the following criteria in order to be included in the systematic review: a) diagnosis of breast cancer; b) 20 items Toronto Alexithymia Scale scores; c) no current psychiatric treatment; d) no psychological interventions; e) breast cancer surgery; f) anxiety and depression scores. Two

(n = 2) potentially relevant studies were ultimately obtained (Fig. 1).

**Table 1. Keywords used in the literature selection criteria**

Keywords	Logical operators	Keywords
Alexithymia	And, in	Breast cancer
Toronto		Breast cancer
Alexithymia		patients
Scale		

SM and DDB screened each abstract and copies of any potentially relevant article were obtained. Other authors independently reviewed the articles and any disagreements in selecting the studies were resolved by discussion.



**Fig. 1. Flow chart of the systematic review**

**Table 2. Studies evaluating alexithymia, depression and anxiety in breast cancer surgery women**

<b>Authors</b>	<b>Year</b>	<b>Participants</b>	<b>Mean age</b>	<b>Type of surgery</b>	<b>Parameters studied</b>	<b>Time since surgery</b>	<b>Aim of the study</b>	<b>Main findings</b>
Mantani et al.	2007	n = 46 postsurgical ambulatory women with breast cancer	52.3±10.5	Mastectomy or lumpectomy	-SAS -SDS -FAD -TAS-20	Months elapsed after surgery 18.3±11.7	To explore how alexithymia and family functioning might affect anxiety and depression levels	Alexithymia is important for the development of anxiety symptoms and perceptions of inappropriate affective responsiveness among family members correlated with high degree of depression
Luminet et al.	2007	n = 122 breast cancer surgery women	56.2±10.3	Not reported	-HADS -TAS-20	The day before surgery and 6 months later	To examine stability for alexithymia factor scores	Correlations between alexithymia, depression and anxiety scores at baseline and follow-up evidenced a strong argument in favor of the relative stability alexithymia, as a stable personality trait rather than a state dependent phenomenon

*SAS: Zung self-rating anxiety scale, SDS: Zung self-rating depression scale, TAS-20: 20-item Toronto Alexithymia Scale, FAD: Family Assessment Device, HADS: Hospital Anxiety and Depression Scale*

### 3. DISCUSSION

There are only two ( $n = 2$ ) studies in literature meeting the selection criteria of the systematic review. Both of these studies correlate alexithymia, breast cancer surgery, depression and anxiety (Table 2).

Mantani et al. [78] explored how alexithymia, family functioning and other factors could be related to anxiety and depression in forty six ( $n = 46$ ) outpatients, represented by women who had undergone surgery for breast cancer at least three months before the interview. High anxiety levels were significantly associated to high TAS-20 total score and to communication and affective responsiveness subscales of the Family Assessment Device (FAD). Depression levels were associated with much more variables: high TAS-20 total score, high scores on the communication, affective responsiveness, behavior control, and general functioning subscale scores of the FAD, and the presence of pain. Multiple regression analysis reported that only high TAS-20 total score and only high score on the affective responsiveness subscale of the FAD were correlated respectively with high degree of anxiety and high depression levels. In other words, alexithymia were important for the development of anxiety symptoms and perceptions of inappropriate affective responsiveness among family members correlated with high degree of depression.

Luminet et al. [79] evaluated one hundred and twenty two ( $n = 122$ ) women in acute (Time 1) and in chronic (Time 2) stress periods: the day before surgery and six months later. The aims of the study were to evaluate the relationship between alexithymia, depression and anxiety and to examine absolute and relative stability for the three components. Depression was positively correlated with both total and factors scores of alexithymia ("difficulty identifying feeling" (DIF), "externally oriented thinking" (EOT), and "difficulty describing feelings" (DDF)), both at baseline and at follow-up. Correlations between anxiety and total alexithymia scores were also significant. However, the relationship varied across factors. DIF was highly related to anxiety both at baseline and follow-up; DDF correlated to anxiety only at follow-up; correlations were not significant between anxiety and EOT. Concerning absolute stability changes in scores were reported from Time 1 to Time 2 only for anxiety and alexithymia. Decrease was found for anxiety. About alexithymia increased scores

were reported regarding total scores, the factors DIF and EOT, while DDF was completely stable. Changes were not significant for depression. Correlations between alexithymia, depression and anxiety scores at baseline and follow-up evidenced a strong argument in favor of the relative stability alexithymia.

Limitations of the studies investigated in this systematic review include: a) small sample sizes; b) not reported adjuvant therapy; c) unknown time elapsed since diagnosis and surgery; d) unknown breast cancer stages. Further studies in breast cancer surgery women should: a) identify risk factors for alexithymia; b) better understand the nature of alexithymia on the lack of emotional expression; c) identify possible correlations between alexithymia and adjuvant therapies; d) investigate relationships between alexithymia and quality of life; e) search correlations between alexithymia and breast cancer stage; f) find differences between patients receiving palliative treatment and those undergoing breast cancer surgery.

### 4. CONCLUSIONS

For women breast cancer is the one cause of death due to cancer. Alexithymia is hypothesized to be a risk factor for the development of breast cancer. The prevalence of alexithymia in cancer patients has been reported to be about 8-fold greater than in the general population of Italy. There are numerous factors influencing the development of the alexithymia. Recently many neuroimaging studies demonstrated dysfunction of the right hemisphere and dysregulation of the prefrontal cortex and regions of the anterior areas during the evaluation of emotional stimuli. The studies we investigated in this review report two findings: a) support the role of the alexithymia in the development of anxiety symptoms among family members correlated with high degree of depression; b) demonstrate the relative stability of alexithymia the day before surgery and after 6 months even if the construct were closely associated with the severity and improvement of cancer-related pain. Limitations of the studies investigated in this systematic review must be considered in further investigations.

However, on the basis of these studies and in the light of what has emerged from the present systematic review, it is possible to hypothesize that the prevention or the treatment of primary or secondary alexithymia may be beneficial to

reduce the incidence of breast cancer or alleviate the post-surgical complications [80,81]. No pharmacological therapies for alexithymia exist. Psychotherapy may be effective in some cases [82]. As pointed out by Vanheule et al. [83], "...alexithymic subjects should focus on distressing situations, starting from which a three-step logic can be deployed. During therapy, mental representations on difficult situations in patients' lives need to be constructed by (1) putting into words the chain of events that makes up the distressing situation; (2) making the patient's appraisal of the difficult situation explicit; and (3) addressing affective responses and discussing the patient's way of dealing with the difficult situation". This method may be applied to alexithymic women with at risk of or affected by breast cancer, but to date no studies have been conducted on this topic.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## DISCLOSURE

This manuscript was entirely funded by the authors, and no pharmaceutical companies were informed of or were involved in the review. All authors contributed to this review with equal efforts. The authors have no potential conflict of interest directly relevant to the contents of the manuscript.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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