

Decreasing Anxieties in Women Undergoing Mammography

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Abstract

Few studies have evaluated interventions to decrease a woman's anxiety awaiting or undergoing mammography. Focused on Quantum PNEI, this paper reports a review of most common complementary and alternative therapies and their implementation aimed to reduce anxiety in women waiting or undergoing mammography. The goal is lighten the psychological burden of the mammography experience as well make positioning easier. Further considerations are made about the practice of meditation among the medical and paramedical staff to promote awareness.

Keywords: Mammography; Anxiety; Complementary and alternative therapies

Discussion

As stated by the father of the modern breast imaging and forger of the concept of senology Charles Gros, "mammography doesn't allow anything but perfection". Unquestionably, the first step toward perfection is the reaching of the quality in all its aspects. According to the Japanese philosophy, quality can be achieved by Kairyo and Kaizen steps, starting with technological and structural innovation, which presupposes major investments, followed by the effort for continuous improvement. This concept is applicable to healthcare, even more in the field of breast care, where innovation is crucial.

Within the framework of structural innovation, great relevance is given to the health facility environment, an important element able to influence the mood of women awaiting or undergoing a diagnostic test. It's well known that the environment humanization can positively influence the perception of quality as well as initiatives such as knitting therapy can represent a good palliative [1], however even more crucial are other factors represented by behavior and attitude of health professionals.

A key point in the mammography quality is represented by the mammographer-patient relationship quality, not so easy to achieve in the short time in which mammographer must face woman's mood while he's encroaching her "intimate zone" (the 6 to 18 inches space surrounding a person which they regard as psychologically theirs, usually reserved for close friends, partner, children and close family members depending on the individual, social and cultural status, according to the Hall's proxemics theory) [2].

Such set of factors can increase the level of anxiety in woman, making even difficult the test performance. Hence the need for effective, easy to implement solutions to manage the anxiety, which doesn't presuppose investments: the Kaizen steps.

Nowadays ever more frequently we hear talking about holistic approach. Holistic approach is based on the recognition of psycho neuroendocrine immunology (PNEI), which refers to the study of interactions between behavioral, neural, endocrine and immune adaptation processes. PNEI defines the disease as "an alteration of balance and communication between the nervous, endocrine and immune systems". This balance is necessary for the body to respond properly to stressful stimuli of physical, chemical or psychic nature and it is maintained by homeostatic mechanisms that allow adaptation and survival of the organism [3-5]. The mind-body-spirit model that accompanies the PNEI supports an integral vision of the human being (both at biological and psychological level as well in complex processes

of interchange with the environment to which it belongs), which can no longer be seen just from a theoretical eco-systemic standpoint, but even through the mental and spiritual energy theories. This new branch of science shows that the mind and brain activity is the body's defense front line against disease, aging and death, aligning toward health and wellness. Recent investigations give unquestionable evidence of the mind-brain-body interactions happening at molecular, cellular and body level, which can impact on health and quality of life, whose interrelation fully embraces the quantum physics concepts.

Moreover, the PNEI recognizes emotions, mood and stressful events as risk factors for various diseases, as they generate a response on the hypothalamus-pituitary-adrenal axis which can cause a predominance of the sympathetic or parasympathetic vegetative nervous system, marking alterations that seem to be the main predisposing factors.

Quantum physics introduced an innovative concept, called "entanglement", defining the representation of reality at subatomic level as a "whole" unified, characterized by fields of energy and information. The entanglement provides a link between the PNEI vision of human being, healthcare and quantum processes, creating a new field of research and clinical application called Quantum PNEI (PNEI Q), which assumes that every biological, biochemical, physiological and hormonal interaction is implicit in quantum processes related to consciousness and intentionality. These processes influence the mind-body-energy unit, more specifically the neuro-endocrine-immune system, contributing to the salutogenesis (when in a full functionality condition) or to the onset of disease (when in a malfunction condition). This new vision opens the door to new therapeutic methods based on an integrated approach and characterized by combining conventional treatments to alternative therapies and anti-stress disciplines.

Hundreds of studies have shown that the practice of complementary and alternative medicines (CAM) like meditation, aromatherapy, color therapy and music therapy can influence the PNEI axis, producing therapeutic effects.

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Regarding the aromatherapy, it is based upon the use of volatile ingredients extracted from aromatic plants and medicinal products. Among our five senses, smell is the most intimately tied to emotions and connected to the memory, thus explaining the strong evocative power of odors. Actually some essences produce a significant effect on both emotional and psychic balance, able to relieve anxiety, sadness and the harmful effects of stress [6-9].

When stimulated by an aroma, the nerve endings in the nostrils send a message to the limbic system (which presides over the memory and emotions) and to the hypothalamus (which regulates the hormonal system) [7].

Some particular moods, such as anxiety and fear, can be modulated by the use of specific essences, whose inhalation is able to produce emotional well-being, calm and relaxation [10-12]. These include lavender (*Lavandula angustifolia*), [6] Damascus rose (*Rosa Damascena*) and sandalwood (*Santalum album*), but especially bergamot essence (*Citrus bergamia*), for its regulatory action on blood pressure as well on the heart rate [13-16].

The underlying hypothesis of color therapy is that the visible spectrum colors act as activators or inhibitors of complex physiological processes, biochemical and biological brain [17-19] as the synthesis of certain neurohormones, especially melatonin and the serotonin [20]. Many studies have confirmed that some brain areas are light-sensitive, responding in different ways to different visible light spectrum wavelengths. The mechanism is based on both the hypothalamus, the pituitary and the pineal glands stimulation generated by the transmission of electromagnetic fields through retinohypothalamic tract.

Among the colors of the visible spectrum, green represents the harmony because of its neutrality compared to the solar spectrum fulcrum [21]. Its application brings benefits in terms of anxiety reduction and calm induction, by providing stability and physical and mental balance [22].

Regarding the music, from the tribal one to the Gregorian chants of the Middle Ages, from the eastern one to Vivaldi's compositions, it has always had an extraordinary effect on men: now we know that it's able to stimulate production of endorphins, which have a beneficial effect on mood as well on psychological well-being [23-29].

Traditionally, in music therapy people use to repeat mantras: these are not only phonetic expression, but a set of precise vibrations whose proper repetition allows the mind to get rid of anxiety and negative thoughts. It has been shown that the sound of mantras, as well as that of singing bowls, reduces the weight of the intrapsychic environmental stress, which is transmitted from the hypothalamus to the heart through the sympathetic system.

Many studies have shown that when the brain is subjected to pulses of a certain frequency it tends to tune, showing at the electroencephalogram a clear correlation between the brain waves of the subject and the external stimuli, due to a phenomenon called "frequency response". E.g. if the subject's brain activity is encountered in the band of beta waves (waking state), after stimulation with a frequency of 8 Hz it tends to change forward the received stimulus, moving to a characteristic relaxation state of the alpha waves [30,31].

One wonders whether the effects of these holistic therapies can be achieved even during the short time of a diagnostic test or a treatment or during the awaiting, to take advantage of them in the anxiety management of the women involved in both breast diagnostic and

therapeutic pathways. It is clear that we cannot expect that women sing a mantra or make vibrate singing bowls in the waiting rooms, but for instance we can diffuse appropriate music, as well as appropriate light and essences. Moreover, of course, an already started humanization process upstream is needed, as services organizing principle, as well as a prerequisite for a spaces design that respects the women's emotional state.

In a recent study carried out on groups of women waiting for mammograms, music with scientific pitch, with middle C tuned to 256 Hz (a multiple of 8 Hz frequency, the same of the singing bowls, Schumann Resonance and the limit between alpha and theta waves) it was spread, associated with the spread of essence of bergamot and green light in environments "humanized" with reference to colors, furnishing and decoration. All the above strategies have been differently implemented in several facilities, with a great appreciation of the patients, evidenced by the results of the Likert scale-based questionnaire administered at the end of the test [32].

Conclusion

The results seem to suggest that the effects of this multisensorial holistic approach produced a substantial reduction of the emotional tension, influencing positively the "risk of pain" and making the experience more tolerable, both factors which play an important role in the improvement of the adherence rate in screening programs [33]. Meditation was not covered in this study, since outside of a structured oncological patient-oriented mindfulness project we cannot expect that a woman waiting for a test (as well as for a therapy) learn to meditate, nor that she does it in the public space of waiting rooms. The practice of meditation should rather be targeted to the medical and paramedical staff: easy to learn, it takes few minutes before to start the work session to promote awareness of what we are doing, on own feelings and own mental activity [34-36], to avoid to frustrate any good intention with wrong gestures and words.

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