

The impact of Laughter Yoga on the Stress of Cancer Patients before Chemotherapy

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Abstract

Background: Getting cancer is accompanied by considerable stress for the sufferer, and the cited stress has destructive effects on Chemotherapy treatment process. Therefore the current research deals with the effect of yoga laughter on the stress of patients with cancer before chemotherapy.

Methods: In this research, as the first step, 37 cancer sufferers, who had been hospitalized in Shohada Tajrish Hospital (Behnam Daneshpoor Charity Organization) and had the requirements for being taken as research samples, were selected for data collection. The mentioned patients were classified randomly in experiment and control groups. Collected data were analyzed by the multi-variable covariance analysis test

Results: The results show there is a meaningful difference in the stress average before and after interference in the test group ($p < 0.05$).

Conclusion: Laughter yoga can decrease the stress in cancer sufferers before chemotherapy.

Keywords: Laughter yoga; stress; cancer; chemotherapy

Introduction

As a social phenomenon, cancer disturbs daily functions and social activities of the sufferer, and alters his or her abilities to fulfill their normal roles and responsibilities, so that it creates some new roles. The nature of the new-born roles may cause a feeling of inefficiency and social isolation in the sufferer [1]. In fact after cancer is diagnosed, the patient will be hit by a crisis, his self-confidence will be at stake, his individual relationships will be disturbed due to uncertainty about future, the previous adaptation mechanisms will seem insufficient, and being hospitalized repeatedly, the patient will be flooded with solitude [2]. A set of all above-mentioned factors lead into psychological stress in the patient [3]. Cancer is a prevailing, chronic, non-infectious disease [6]. The exact reason of this phenomenon is unknown, but genetic and exterior factors like viruses and cancerous chemicals are likely to be influential [7]. Taking anti-cancer medicines and chemotherapy are some treatments for tumors, though they can be mixed with operation and radiotherapy. Chemotherapy is very effective in treating tumors, and the effect is increasing nowadays by implementing newly-discovered anti-tumor medicines. Conducted studies indicate

that cancer is the second cause of Americans' death after cardiovascular diseases. As an effective treatment for increasing life-expectancy in the patients, chemotherapy has a significant role [8]. Research shows that the patients get stressed before chemotherapy, and it causes body resistance against treatment and disturbs the process. Having done a set of tests about breast cancerous cells, researchers have found out that the protein created after stress helps the cancerous cells continue living, getting adapted and resisting against the treatment.

Research has shown that immune system is effective in controlling and healing cancer, and on the other hand, a weakening immune system raises the potentials to develop various types of cancer. Stress has been discussed as a suppressing factor of the immune system, so there's a possibility of cancerous cell growth after stress. Research has shown that stressed people are more likely to develop breast cancer [1]. Therefore looking for suitable methods of stress reduction seems necessary. One of non-medical ways of stress reduction is laughing and being in delightful environments. Laughter is a positive sensation, and seems to be a useful and healthy way to overcome stress. Decreasing stress-making hormones floating in blood, laughter removes the effects of stress. Nowadays there is evidence indicating that being humorous and exposed to funny stimulants can have a positive influence on the side-effects of some specific diseases [9].

Laughter is an emotional reaction influencing human's individual and social life. It enjoys features that distinguish it from other humane emotional reactions. Happiness increases Cortisol hormone and boosts body immunity against diseases. Laughter creates a balance in the chemicals and hormones of the body [4]. Lidi maintains: Fun and laughter decrease red globule sedimentation level and increase natural killer-cells' activity, reduce cortisol and blastogene lymphocytes and boosts monoglobin A as well [10]. Fri (1971) declares that laughter strengthens the immune system, facilitates phagocytosis process in the immune system and also helps the body to fight against infections. Dogan believes that biological functions of laughing and crying cause biochemical changes in the body and reduces the tension made by painful emotions like fear and anger. Tears and nasal discharge during laughing and crying contain humorous, steroids and toxins accumulated in the body during tension. Either laughing and crying increase Coolamine production in blood [11].

A way of laughter is laughter yoga, innovated by Cataria (1995) in India. Laughter yoga is the only way enabling people to laugh heartily without getting involved in logical thinking. This method puts wisdom and logic aside as natural laughter obstacles. The reason the Cataria named his innovative method as laughter yoga was he had mixed the respiratory exercises of yoga – called paranayama- into laughter exercises. The former exercises are very strong and effective, and they have been being applied for thousands of years to influence humane body, psyche and emotions in a positive manner. Based on yoga philosophy, our life is due to a flow of universal energy into our bodies via breathing. This is called Yaprama vital energy. As a result of stress and negative tensions, our respiration gets irregular and shallow, and this disturbs the flow of energy in our bodies [5].

It should be noted that the studies on this domain have examined laughter effects using the mentioned methods and with variables save for stress, and all of this studies have regarded the long-term effects of laughter, while the short-term effects of laughter on the stress in patients with cancer is being dealt with in the current research, using laughter yoga. Therefore in this study, the

researcher is seeking for the answer to this question if laughter yoga is effective on cancer-sufferers stress before Chemotherapy.

Methodology

Statistic population of the research was patients hospitalized in Shohada-tajrish hospital for chemotherapy in the period of May to August 2013. For sampling, those qualified patients were selected as testes, who were randomly placed in experiment and control groups. The minimum population of sample for both control and experiment group is 15 in experimental studies [15]. According to the plan of study which was based on unequal control group, and the fact that researchers had initially selected 25 samples to avoid sample drop, 2 samples in experiment group and 11 in control group being omitted from the sample list in pre-test due to leaving the hospital, moving to other clinics or lacking interest for taking part in the research, there ultimately remained 23 samples in experiment group and 14 samples in control group.

Semi-experimental method of research has been used in this research, and the plan of study is based on unequal control group, in which the effect of laughter yoga on the stress before chemotherapy was considered.

Measuring Tools

Stress measuring questionnaire: Questionnaire QSC-R23 was used in this research to measure stress (the questionnaire is attached). This questionnaire was specially related to specific diseases and evaluates psychological stress in cancer sufferers. It included 23 articles, showing daily-life potential stress in all perspectives. The answers to the questions included two parts: in the first part, the article under discussion wasn't true about the answering person (zero degree), and in the second part, his conditions were in conformity to the specifications in the article. If the second part was selected, then the answer should have determined the degree to which the subject matter of that article was affecting him/her. This degree can be positioned on a scale of 1 (very small problem) to 5 (very serious problem). Questionnaire articles were divided into 5 equal scales, including psych-physical complaints, fears, information defects, daily-life limitations and social conflicts. QSC was first formed in Germany after passing different phases, namely exact interviews, examining the initial versions of the questionnaire and measuring their validity and constancy by Herchbach. Cronbach's Alpha method of analysis was implemented to estimate tools constancy in the research.

Method of conduction

First. QSC-R23 questionnaire was given to the patients accompanied by exact and complete explanations about it, and they were asked to fill it out in the researcher's presence. In case that patients were unable to fill out the forms, the researcher took responsibility himself. Having the forms filled out in both control and experiments groups, laughter yoga was done to the experiment group by a trainer for 20 to 30 minutes while the researcher was there. The members as a group were exposed to independent variable as far as possible. After that, the testes in both groups were asked to fill out the questionnaire again. Having conducted the research, laughter yoga was done to the control group as well as a matter of moral principles. To describe

the samples, descriptive statistic methods such as mean and deviation were used, and the multi-variable covariance analysis test was applied to examine the research hypothesis.

Results

Sample population data is presented in this part separately for control and experimental groups. Table 1 shows distribution of samples in terms of groups, education and genders. According to the data in table 2, there is a meaningful difference between the pre-test average and the post-test average, however, in control group there is no difference between them. Pre-test / post-test subtraction of the groups was compared by Multivariate Analysis of Covariance (MANCOVA) to examine meaningfulness of group differences (control and experiment) in sub-scales of stress scale pre-test. Finally, the results of multivariate covariance analysis between variables in both experimental and control groups are shown in table 3 in which there is no meaningful difference in Psych-physical complaints, Information defects and Total stress score.

Discussion

Findings show that the interference was effective in making a meaningful difference in three sub-scales of psych-physical complaints, fear, information defect and total score of stress in the two groups. It indicates that laughter yoga reduces stress in cancer sufferers before chemotherapy.

The result of this research is in line with silva [14], Chaya and crew [15], Marcon [16] and Beke [17], and contrarary to Omrani [18].

According to the research, stress increases cancerous cells activity to a meaningful extent, and caused the involved cells to resist against chemotherapy. Using a method to decrease the patient's stress is of a huge prominence.

In this study, the questionnaire QSC-R23 was applied as the measuring tool. It is strongly suggested that the study under the same title should be conducted using other tools, such as pulse and heart beat measuring in addition to self-reporting to undermine the effect of the samples on the result. Moreover, according to the role of laughter in reducing stress, hospitals had better be equipped with laughter rooms. Doctors and nurses must be trained to be on duty smiling, and finally, comedy shows should be played for the sufferers.

Conclusion

The findings of the research have shown that as a natural gift, laughter can reduce the stress in cancer sufferers before chemotherapy. Laughter plays an important role in reducing stress, which is done by Endorphin Secretion results in mental and physical relaxation. Chronic Stress impacts Limbic system and Hypothalamus continuously leads to Adrenaline secretion and causes disorder in immune system. Indeed, Laughter balances sympathetic and parasympathetic system moreover it plays as an anti-stress. Furthermore, laughter increases Endorphin in brain. Endorphins seems to be the most easily linked structure to morphine, Both function in the exhilaration and lessening of pain.

Illustrating this matter and according to study backgrounds, it can be noted that laughter not only creates good spirits in patients and the hospital staff, but also it can reduce the stress in patients

and improve the treatment process without any harmful side-effects by creating a happy environment at hospitals.

Examining the data brings us to conclusion that laughter has a significant effect on the spirits of patients and their stress.

Acknowledgment

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Conflict of Interest

The authors have no conflict of interest in this study.

Authors' Contribution

Shadi Farifteh designed and wrote this article and collected and analyzed the data, with the help of supervisor, Alireza Mohammadi Aria and advisor, Alireza Kiamanesh. All authors read and approved the final manuscript.

Tables

Table 1. Distribution of samples in terms of groups, education and genders

Group	Education	Abundance	percentage	Gender	Abundance	percentage
Experiment	Elementary	4	17.4	Male	9	39
	Mid-school	5	21.7			
	High-school	7	30.4	Female	14	61
	University	7	30.4			
	total	23	100	total	23	100
Control	Elementary	2	14.3	Male	5	35.7
	Mid-school	2	14.3			
	High-school	4	28.6	Female	9	64.3
	University	6	42.9			
	total	14	100	total	14	100
	Elementary	6	16.2	Male	14	37.8

	Mid-school	7	18.9			
Total	High-school	11	29.7	Female	23	62.2
	University	13	35.1			
	total	37	100	total	37	100

Table 2. Mean and Standard Deviation of studied variables for the pre-test and the post-test in each group

Variables	Pre-test / post-test	experiment group		Control group	
		Mean	SD	Mean	SD
Psych-physical complaints	Pre- test	1.7	1.3	1.5	0.9
	Post-test	1.1	1.1	1.5	1.1
Fear	Pre-test	2.4	1.2	2.8	1.5
	Post-test	1.7	1.6	2.7	1.8
Information defects	Pre-test	2.3	1.3	1.9	1.5
	Post-test	1.5	1.1	2	1.6
Daily-life limitations	Pre-test	2.5	1.2	2.5	1.2
	Post-test	2	1.3	2.4	1.4
Social conflicts	Pre-test	1	1.2	0.7	0.7
	Post-test	0.5	0.8	0.6	0.8
Total stress score	Pre-test	8.9	4.4	8.5	3.8
	Post-test	6.1	4.2	8.4	4.4

Table 3. The results of multivariate covariance analysis between variables in both experimental and control groups

Dependent variable	square	Freedom degree	Mean square	F	Significant
Psych- physical complaints	1.4	1	1.4	4.3	0.05
Fear	2.2	1	2.2	2.4	0.13
Information defects	3.7	1	3.7	6.9	0.01
Daily-life limitations	0.8	1	0.8	1.2	0.28

Social conflicts	0.4	1	0.4	1.5	0.23
Stress total score	29.8	1	29.8	4.9	0.03

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