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Is virtual reality program is effective in reducing anxiety in post mastectomy among breast cancer patient?

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Abstract
Background: The aim of the current study was to evaluate the effect of virtual reality program in reducing anxiety in post mastectomy patients. Virtual reality (VR) equipment is used as interactive simulation created with computer hardware and software to present users with opportunities to engage in environments that appears to be and feels similar to the objects and events. VR uses interactive stimulation that acts by responding to the patient moment such that the patient can interact with the virtual environment while performing functional activities. HADS is used to assess anxiety and depression in patients. In order to measure the severity of symptoms such as anxiety and depression in non-psychiatric patients HADS has been developed
Objective: The objective of the study is to implement VR program on post mastectomy patients and to evaluate the effect of virtual reality on anxiety in MRM patients using HADS
Materials and Methods: Participants were recruited from Pravara Rural Hospital from surgery in patient department. The participants included were between age group 40-70 years.
Result: HADS scale among 30 participants showed result as highly significant with post 20-30% of difference within 1 week. The pre intervention mean average score and standard deviation for HADS was 18.8±1.71**.** And the post intervention after 1 week the mean average and the standard deviation for HADS was 13.63±2.45**.** And the 't' value for pre intervention and post intervention was 6.80 and p value is >2.5.
Conclusion: The study concluded that VR program is helpful in reducing anxiety in post mastectomy patient.

Keywords: virtual reality, HADS, anxiety

Introduction

Cancer can be defined as disease characterized by uncontrolled growth and spread of abnormal cell. Breast cancer has negative impression on health related quality of life on Cardio vascular disease and depression. Cardio vascular disease is the primary cause of late morbidity and death in cancer patients, and the risk is greater than the risk of tumor recurrence. There are various studies that have been studied that anxiety and depression are very common in cancer patient that effect there quality of life. Some studies have been reported that the change in their diet after treatment can have some positive changes which will revert after some years to unhealthy dietary habits. This will make them encourage and to change their dietary lifestyle in breast cancer patient [1]. There is improvement in standard of living. And this may be due to increase in the income of developing countries; there is increase in incidence of breast cancer. The incidence of breast cancer has increased may be due to longer life, higher exposure to risk factors, eating more fatty food, obesity, and lower pregnancy rates [2] A positive family history, undergoing menarche at an early age, nulliparity, ageing and a late first pregnancy are the high-risk factors that are associated with this condition [3]. Breast cancer is a world-wide problem affecting more than 1.2 million women every year which is a major cause of morbidity and mortality in developing and developed countries [3, 4]. About 18.1 million new cancer cases (17.0 million excluding non-melanoma skin cancer) and 9.6 million cancer deaths (9.5 million excluding non-melanoma skin Cancer) in 2018. In male and female, lung cancer is the most commonly diagnosed cancer (11.6% of the total cases) and this has become leading cause of cancer death (18.4% of the total cancer deaths, followed by female breast cancer (11.6%), prostate cancer (7.1%), and colorectal cancer (6.1%) for incidence and colorectal cancer (9.2%), stomach cancer (8.2%), and liver cancer (8.2%) for mortality [6].

The major public health problem in the other developed countries and United States is Cancer. In United States about one in four deaths are caused due to cancer [2].

The genesis of breast cancer remains unclear. There are controversial evidences that remain unclear, even though evidence suggests that there are factors that are related to life-style, such as alcohol intake or dietary intake, or exposure to various forms of stressors that are associated with mammary tumor genesis. There is interpretation regarding the existing data which suggests that the number of stressful life-events do not predict vulnerability regarding the development of breast cancer or survival from it. There is certain level of stress that appears to protect from malignancies. The risk factor for breast cancer is closely associated with psychological factors such as alcohol consumption and dietary fats [7].

The treatment such as chemotherapy and radiation also has some other risk factor such as overweight, hypertension, diabetes, dyslipidemia and smoking enhance the CVD risk [1]. The main reason for psychological stress may be due to

incomplete/inadequate information on prognosis. There are studies done that suggest that chemotherapy is independently linked with risk of anxiety and depression in patient with breast cancer. Due to higher unmet needs for psychological support there might be increase in levels of depression scores [4]. Stressors have a major influence on a person's mood, sense of well-being, behavior and health [5]. Emotional distress after diagnosis of cancer is common. Doubts and fears about the future and physical symptoms or functional losses resulting from the disease or its treatment are a few of the precipitating factors. Accumulation of these difficulties may lead many patients to conclude that stress is caused by their cancer experience may lead to recurrence or progression of their disease [6]. In this study anxiety and depression was measured by Hospital Anxiety and Depression Scale (HADS) are used to assessed anxiety and depression in patients. In order to measure the severity of symptoms such as anxiety and depression in non-psychiatric patients HADS has been developed. Yoga is considered one of the most effective treatments in MRM patients. It emphasize on the practice of breathing techniques, physical postures, and meditation. Yoga is aimed towards increasing mastery of the body and breath to achieve mastery of the mind, with the ultimate goal of developing deeper spiritual awareness and connection [9].
Due to advancement in virtual reality (VR) it can be used for treatment in reducing anxiety in MRM patient. VR Is defined as the use of interactive simulation created with computer hardware and software to present users with opportunities to engage in environments that appears to be and feels similar to the objects and events. VR uses interactive stimulation that acts by responding to the patient's moment such that the patient can interact with the virtual environment while performing functional activities. It helps by creating an exercise environment in which the patient can increase the frequency of practice, duration and intensity of exercise. With these attributes virtual reality can significantly improve the range of motion, patient's body function, increase the muscle strength as well as influence the patient's personal factors such as increased motivation and confidence [7].
In order to create interactive, motivating environment in which feedback is manipulated and practice intensity can be created in order to individualize treatment in order to retrain movement in patients virtual reality has been effectively used. Adding computerized VR can enhance motor learning activities by providing three dimensional spatial correspondences. It creates degree of movement in real world and on computer screen. The positive feedback can be systematically and consistently manipulated and enhanced in order to create individualized motor learning approach. The representation allows for guidance of patient and it allows visual feedback. This helps to explore therapeutic intervention by exercising VR in environment [8].

Methodology

Source of Data: Data will be collected from Pravara Rural Hospital from surgery in patients department.

Method of collection of Data

Type of Data: primary data collected from principal investigator
Study Design: experimental study
Sample size: 30
Sampling Method: Convenient sampling.
Study Duration: 1 week
Equipments to be used:

- Vision VR ™ itek ™.
- Cell phone

Materials to be used

- Consent form.
- Data collection sheet.
- Recording Sheet.
- Pen.
- Pencil.
- Cell phone
- Vision VR ™ itek ™.

Procedure

The Institutional Ethical Committee of Dr. A.P.J Abdul Kalam College of physiotherapy has approved the study (PIMS/CPT/IEC/2018/565). There were 30 participants selected from surgery in patients department. The Participants were screened and after finding suitability according to the inclusion and exclusion criteria, they were requested to participate in the study. The inclusion criteria were 1.Patient who are willing to participate in the study 2.Patient who are between the age group 40-70 years3.Patient who have undergone MRM 3.Patient with unilateral MRM.
And the exclusion criteria were 1.Individual with cognitive disorder 2.Individual with past history of cardio respiratory distress 3.Individual with past history of neuromuscular disorder. They were explained about the study and the intervention. The participants were briefly explained about the nature of the study, duration of intervention and the intervention being used was explained in the language best understood by the participants. They were encouraged to clarify the queries regarding the study if any. An informed written consent form, approved by ethical committee was obtained from all participants. The demographic data was obtained and the detailed assessment was done. All the participants were assessed with the hospital anxiety and distress scale. Then the participants were asked to be in comfortable position whether in seating or in supine position. Then the virtual reality equipment was applied to patient for 10 minutes on day 1. Then they were asked to remove it if they feel any discomfort like headache or dizziness. And then gradually the duration was increased upto 30 minutes. With the help of VR equipment the intervention tried to help them to lower down there anxiety level. Virtual reality is device created with computer hardware and software which gives the opportunities to engage in environment that appears to be and feel similar to real world objects and event. This made the patient to feel about the real world and reduce their anxiety and depression. The VR training was given every day for one week for 30 minutes and there was communication done with patients during the program making them comfortable and not feeling discomfort. Then the anxiety and depression was assessed using HADS.


Fig 1&2: Application of virtual reality.

Fig 3: Vision Vr [Tm] Itek[tm] Equipment.

Result

Hospital Anxiety Depression Scale

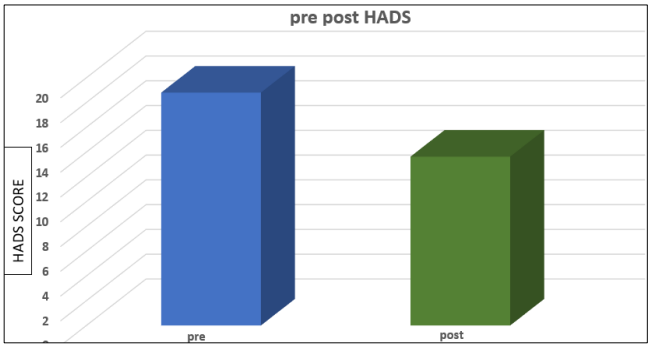
The HADS item contains 14 items and each item had been answered by the patient on four points (0-3) response category so the possible score ranged from 0 to 21 for anxiety and 0 to 21 for depression. Were 0-7 is normal range; a score of 8 to 10 will be borderline case and above that 11-21 is abnormal case with high anxiety and depression level.

The pre intervention mean average score and standard deviation for HADS was 18.8 ± 1.71**.** The post intervention after 1 week, the mean average score and standard deviations for these participants was 13.63 ± 2.45.

The value of 't' for pre intervention to post intervention was 18.19. p<0.0001 statistically it is highly significant. It shows that virtual reality equipment is highly effective after 1 week of intervention in reducing the anxiety level in breast cancer patient after doing modified radical mastectomy. The interpretation was done according to pre and post intervention HOSPITAL ANXIETY DEPRESSION SCALE (HADS).

Table 1: Comparision of Average Value of Hospital Anxiety and Depression Scale**.**

Hads	Pre-intervention	Post-intervention
MEAN	18.8	13.633
SD	±1.710	± 2.456



Graph 1: Pre and Post hospital anxiety and depression scale.

Table 2: Data Presentation of HADS and 't' value and 'p' value.

Parameter	Pre (mean ±sd)	Post (mean ±sd)	T value	P value
HADS	18.8±1.71	13.63±2.456	6.80	>2.5

Table no: 1 and graph no: 1 represents demographic data of age group of 40-70 years of females. Females of age group 40-50 years include 12 participants, age group of 50-60 years includes 10 participants and age group of 60-70 years includes 8 participants.

Table no. 2 represents pre intervention and post intervention of mean average and standard deviation for HADS. In pre intervention mean and standard deviation was 18.8 ± 1.71**.** In post intervention after 1 week, the mean and standard deviations was 13.63 ± 2.45.

Table no: 2 and graph no: 2 represent the mean baseline value by using HADS. In which the pre intervention mean was 18.8 with standard deviation ±1.71 and the post intervention after one week, there was mean 13.63 with standard deviation ± 2.456 respectively, where the p value is >2.5 and t value is 6.80 which shows there is significant difference observed.

Discussion

The study evaluated that effectiveness of virtual reality in reducing anxiety in patients after modified radical mastectomy. This study was done In Pravara Instituent of Medical Science in surgery department. About 30 female participants were included in study. The study design was done by convenient sampling method.

Hospital anxiety depression scale was used to assess the anxiety level. HADS consists of 14 components and each item had been answered by the patient on four points (0-3) response category so the possible score ranged from 0 to 21 for anxiety and 0 to 21 for depression. Were 0-7 is normal range, a score of 8 to 10 will be borderline case and above that 11-21 is abnormal case with high anxiety and depression level is the outcome measure of the study.

A computer simulated environment within which, people interact is described as VR. The user can experience the environment as if that individual was part of the world using aural, visual and haptic devices. The computer modifies the environment with the help of input devices that sense the user's motions and reactions being immersed within virtual world. Using the concept presence even though VR is collection of technological hardware, it is possible to describe Virtual reality in terms of human experience. VR is the medium on can experience presence of computer generated world. Table no: 1 and graph no: 1 represents demographic data of age group of 40-70 years of females. Females of age group 40-50 years include 12 participants, age group of 50-60 years includes 10 participants and age group of 60-70

years includes 8 participants.

Table no. 2 represents pre intervention and post intervention of mean average and standard deviation for HADS. In pre intervention mean and standard deviation was 18.8 ± 1.71**.** In post intervention after 1 week, the mean and standard deviations was 13.63 ± 2.45.

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Conclusion

The study concluded that virtual reality program is effective in reducing anxiety in post mastectomy among breast cancer patient.

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Reference

1. Dominic NA, Arasoo VJ, Botross NP, Riad A, Biding C, Ramadas A. Changes in Health-Related Quality of Life and Psychosocial Well-being of Breast Cancer Survivors: Findings from a Group-Based Intervention Program in Malaysia. Asian Pacific journal of cancer prevention: APJCP. 2018; 19(7):1809.
2. Ghoncheh M, Momenimovahed Z, Salehiniya H. Epidemiology, incidence and mortality of breast cancer in Asia. Asian Pac J Cancer Prev. 2016; 17(S3):47-52.
3. Kulkarni N, Mahajan AA, Khatri SM. A randomized controlled trial of the effectiveness of aerobic training for patients with breast cancer undergoing radiotherapy. Journal of the Association of Chartered Physiotherapists in Women's Health. 2013; 113:42-50.
4. Mallath MK, Taylor DG, Badwe RA, Rath GK, Shanta V, Pramesh CS, *et al*. The growing burden of cancer in India: epidemiology and social context. The Lancet Oncology. 2014; 15(6):e205-12.
5. Schneiderman N, Ironson G, Siegel SD. Stress and health: psychological, behavioral, and biological determinants. Annu. Rev. Clin. Psychol. 2005; 1:607-28.
6. Carlson LE, Ursuliak Z, Goodey E, Angen M, Speca M. The effects of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients: 6-month follow-up.Supportive care in Cancer. 2001; 9(2):112-23.
7. Chen Y, Fanchiang HD, Howard A. Effectiveness of Virtual Reality in Children with Cerebral Palsy: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Physical therapy. 2017; 98(1):63-77.
8. Merians AS, Jack D, Boian R, Tremaine M, Burdea GC, Adamovich SV, *et al*. Virtual reality–augmented rehabilitation for patients following stroke. Physical therapy. 2002; 82(9):898-915.
9. Moadel AB, Shah C, Wyli -Rosett J, Harris MS, Patel SR, Hall CB, *et al*. Randomized controlled trial of yoga among a multiethnic sample of breast cancer patients: effects on quality of life. Journal of Clinical Oncology. 2007; 25(28):4387-95.