

## Effectiveness of Active Movements with Breathing Exercises Improves the Quality of Life in Cancer Patients – A Case Study

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### ABSTRACT

**Objective:** Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body. Cancerous tumors may also be called malignant tumors. Many cancers form solid tumors, but cancers of the blood, such as leukemia.

**Method:** A case study design was designed to show the physiotherapy programmes which includes active movement, Breathing Exercise in Relaxation Technique in the procedure to improve the Quality of life of patient.

**Outcome Measures:** WHO-QOL BREF TECHNIQUE was followed.

**Conclusion** Data was collected at the 1<sup>st</sup> day visit of treatment and after the completion on physiotherapeutic intervention has improved the quality of life in Cancer haematology patient.

**KEYWORDS:** Cancer, Physiotherapy, Exercise, Strength training

### ARTICLE DETAILS

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### INTRODUCTION

Cancer is the second leading cause of premature deaths in India. Around 14% of deaths throughout the world in cancer. In India it is estimated that there are approximately 2-2.5 million cases of cancer in India of any given point and around each year 6,50,000. New Cases been detected.<sup>1</sup> The four most frequent cancer in India which are mainly in males are blood cancer, mouth or pharynx, lower respiratory tract.<sup>2</sup>

About 70% of cancer patients reports fatigue complaints during and after chemotherapy and or radiotherapy. During and after their medical treatment, they also seek therapies to enhance their quantity of life [QOL]. Recent epidemiological reports state that exercise may be one of the most important lifestyle interventions for cancer patients.<sup>3</sup>

Cancer and its treatment are often associated with adverse physical side effects including muscular atrophy, decreased muscle strength, and reduced aerobic capacity. These side effects may contribute to the development of cancer related fatigue.<sup>4</sup> even years after the treatment fatigue is still and to do the daily need activity is a problem for up to 30% of cancer survivor and has a great impact on the patient quantity of life.<sup>5</sup>

Exercise with active movements and breathing exercises in relaxation techniques in advancing as one of the primary intervention that may have important implication in enhancing physical function. Improving quality of life, becoming an integral part of the support group process and improving the odds for survival.<sup>6</sup> Exercises reduce the risk of cancer recurrence and mortality. Exercise consistently demonstrates beneficial effect on a wide variety of quality of life, outcomes regardless of the specific intensity, duration and method of exercise prescription, cancer site.<sup>7</sup>

Evidences now and based on the previous article or journal studies now suggest that the ability to perform physical tasks in daily life in determine by a threshold level of muscular strength and that the physiotherapy led exercise in clinically effective and can help cancer patient improve their quality of the life regardless of the type and stage of their diseases.<sup>8</sup> Strength training by the help of the patient into the form of phase stage to structural section in cancer patient would seem to be a potent physiological intervention for regarding and regaining lost muscles and improving muscle quantity and as a result improving the overall quality of life.<sup>9</sup>

Inclusion of physiotherapy led exercise within cancer pathway can reduce and prevent disability. Relaxation

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technique has been used for palliation of uncomfortable symptoms mental support and self-control of patient with cancer. Patients also preferably choose non-pharmacological method for management of problem over pharmacological method.<sup>10</sup>

Cognitive behavioral coping therapy (CBT) strategies are also be recommended as an adjuvant to analgesics medicines. It is a psycho-social intervention that aims to improve mental health. CBT focuses on challenging and changing unhelpful cognitive distortion and behaviors improving emotion regulation and the development of personal coping strategies that target solving current problems.<sup>11</sup>

Active movements or free movements exercise with the form of aerobic exercise relaxation technique managing for the problems of pain and fatigue among cancer patient can help a lot to improve their quality of life. After sedentary chemotherapy the fatigue will leads to prolonged bed rest of the patient having hematology cancer to overcome the situation and regaining back to the patient to the normal daily living with the help of physiotherapy programmes such as active movement, breathing exercise in relaxation technique shows an improvement in patient condition.<sup>12</sup>

Blood cancers are also called haematological cancer. Haematological is the branch of medicine concerned with the study, diagnosis, treatment and prevention of diseases related to the blood including cancer of the blood “Cancer is a diseases in which abnormal cells or mass of tissue the growth of which exceeds and is un coordinate with that of normal tissue and it persists in the same excessive manner after cessation of stimuli which evoked the change”.<sup>13</sup>

Chemotherapy in the word meaning drug treatment is the use of any drug to treat any diseases. But to most people, the word chemotherapy means drugs used for cancer treatment. It’s often shortened to “chemo” surgery and radiation therapy remove, kill or damage surgery in a certain area, but chemo can work throughout the whole body.<sup>14</sup>

So, this case study with Active Movements with breathing Exercise technique is carried out to see the effect of physiotherapy programmes such as to increases the survival rates of the patient and increase in quality of life improvement in Cancer haematology patient. Aim of the study to find out the effectiveness of active movement with breathing exercise on quality of the life improvements in cancer haematology patient following chemotherapy.

### Case Description

50 years old male patient with symptoms showing severe fatigue, night sweat, weight loss and consulted in general hospital in Trivandrum and they referred to Regional cancer center September 2017 and diagnosed by active myeloid leukemia.

The following pharmacological treatment was prescribed by oncologist such as cytarabine (cytosine arabinoside or ara-c), Daunorubicin, corticosteroid drugs, vidaza ( azacitidine), Dacogen(decitabine), antibiotics, drugs known as growth

factor such as filgrastim (neupogen) are also given to increases the white blood cell count after chemo.

After one and half year of successful treatment he was fulfilled with that treatment .on 2019april and he reported severe fatigue, weakness, loss of appetite and an intentional weight loss he referred back again with the hospital and reviewed by oncologist increases the drug dose because of severe fatigue of the patient and referred to physiotherapist to improve the quality of life of the patient

### Vital Signs

Blood pressure – 110/70 mm hg, Heart rate -68bpm, Respiratory rate-18bpm [at rest], Total count-8,000/cm, Hb-8gm/dl, Platelets count over 50,000/cm. This case study in based on home based physiotherapy treatment also he is in under the treatment in regional cancer center

### Procedure

The physiotherapy programs which includes active movement, Breathing Exercise in Relaxation Technique in the procedure to improve the Quality of life of patient.

The outcomes of the Result before this technique and after one Month of the treatment technique and after one month of the treatment technique in analyzed and recorded with the help of WHO–Bre Qol Technique Outcomes Measure.<sup>15</sup>

The patient received 15 physical therapy session in 4 weeks with the study period of 30 days on April -17 to May -18 in 2019 alternate days in a week’s [Monday, Wednesday, Friday].

Exercise therapy technique consisted of active movement of all the joints of both upper and lower limbs and having relaxation technique of breathing exercise. Totally 30 minutes for a single session 15 minutes for relaxation technique and 15 minutes for active movements exercises.<sup>16</sup> The main aim to reduce fatigue and increases the vital capacity and relieving from the anxiety, depression and stress from the patient and improves the quality of the life by these methods. Initially 5 repetition for the active movement and breathing exercise with an interval of both combining laterally it was gradually increased into 7 and then laterally 10. Another aim is to transforming the patient into phase stage to structural stage.

### PHYSIOTHERAPY PROGRAMMES

Active exercise involves the physical effort exerted into muscular activity. This exercise can include active range of motion where you move your muscles through therapeutic movement

Active range of motion exercises are to increases or maintain flexibility on their own. They require no assistance to perform simple movement such as arm circle or flexing of figure. Active free exercises can also be done by the patient’s own muscular effort without the assistance or resistance of any external force other than gravity. Active movements which included Assisted and Free exercise

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## Assisted Exercise

If the strength or the coordination of the muscle is insufficient to perform an activity the external force is utilized to compensate the lack. The muscle has the strength or endurance but is not sufficient to perform an activity or control in action. Increases the strength, power and the endurance of the muscle. Increases the blood circulation and venous return to the joint and muscle. If reminds the coordinated movement of the joint and muscle.<sup>17</sup>

## Free Exercise

These are the exercises which are performed by the patient himself without any assistance and resistance by the external force expects the gravity. There will not be any of the manual or mechanical assistance or resistance given in this type of exercise. It is much more useful for the home program schedule. There are two type of free exercise. Localized and General body

**Localized:** The localized free exercise are planned and formed to perform to improve one particular joint range or to increases the strength power and endurance of the one group or particular muscles. Exercise to knee joint and free exercise to shoulder flexors.<sup>18</sup>

**General Body:** These types of free exercise are formed to increases the joint range in multi joints or to increases the strength of many group or the total body muscle. Relaxed walking: Characterization of the free exercises there will be some goal to achieve in the exercise program, but not spoiling the perfect and anatomical range movement. Bending and touching the great toe with the middle figure. Here the goal is set to touch the toe.<sup>19</sup>

## Relaxation Technique Using Breathing Exercise

If the muscles are free from tension or rest are said to be relaxed. Whole or total body relaxation:-Can be done by positioning the person in some resting position normally during the lying position only the postural tone of the muscles

will be less. It would be done in Supine, Half, Prone, or side lying position.

**Mental Relaxation:-**It plays the main role while treating the patient and to render the good service. In helps to reduces the psychological fear to diseases and mentally supporting the patient from their illness and back to the normal life. Health counseling may be effective and help to gain the confidence of the patient.<sup>20</sup>

## Breathing Exercise

Breathing exercise is designed to retain the muscles of respiration and improve or.re-distribute ventilation, lesson the weak of breathing and improve gas exchange and oxygenation. Deep breathing exercise encourages full oxygen exchange that is the beneficial trade of incoming oxygen for outgoing Carbon dioxide. It can slow the heart beat and lower or stabilize blood pressure.<sup>21</sup>

## Diaphragmatic Breathing Exercise

Patient can be caught breathing control by correct use of the diaphragm and relaxation of accessory muscle. Diaphragmatic breathing exercise to improve the efficiency of ventilation, decreases the work of breathing improves gas exchange and oxygenation. Procedure:-Place your hands on the rectus abdominis below the anterior coastal margin. Ask the patient to breathe in slowly and deeply through the nose.<sup>22</sup>

## Data Analysis

The data analysis is done by the outcome Measures of WHO-Qol Bref Technique, because it is easy-to-use short to perform and inexpensive. WHO'S initiative to develop a quality of life assessment arise for number of reason to include measures of the impact of disease and impairments on daily activities and behavior perceived health measures disability / functional status measures. The WHO-QOL-BRFF is therefore based on a four – domain structure. (Physical health, Psychological, Environment, Social Relationship)

**Table 1: Pretest data of WHO–Bre Qol Technique Outcomes Measure.**

	Equation for computing domain scores	Raw Score	Transformed Score	
			4 – 20	0 – 100
Domain 1	$(6-Q3) + (6 - Q4) + Q10 + Q15 + Q16 + Q17 + Q18$ $= (6-2) + (6-3) + 2 + 2+ 3 + 2 + 2$ $= 4 + 3 + 2 + 2 + 3 + 2 + 2$	18	10	38
Domain 2	$Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26)$ $= 1 + 1+1+ 2+ 2+ (6-4)$ $= 1 + 1 + 1 + 2 + 2 + 2$	9	6	13
Domain 3	$Q 20 + Q21 + Q22$ $= 2 + 3 + 3$	8	11	44
Domain 4	$Q8 + Q9 + Q12 + Q13 + Q14 + Q23 +Q24 + Q25$ $= 1 + 2 + 4 + 3 + 2 + 3 + 3 +3 +4$	22	11	44

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**Table 2: Pretest data of WHO–Bre Qol Technique Outcomes Measure**

	Equation for computing domain scores	Raw Score	Reformed Score	
			4 – 20	0 – 100
Domain 1	$(6-Q3) + (6 - Q4) + Q10 + Q15 + Q16 + Q17 + Q18$ $= (6-3) + (6-3) + 3 + 3+ 4 + 3 + 3$ $= 3 + 3 + 3 + 3 + 4 + 3 + 3$	22	13	56
Domain 2	$Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26)$ $= 3 + 2+3+ 3+ 3 + (6-3)$	17	11	44
Domain 3	$Q 20 + Q21 + Q22$ $= 3 + 3 + 4$	10	13	56
Domain 4	$Q8 + Q9 + Q12 + Q13 + Q14 + Q23 +Q24 + Q25$ $=3 + 3 + 4 + 3 + 3 + 4 + 3+4$	27	14	63

## DISCUSSION

The present case study examined that the effect of active movement with breathing exercises on quality of the life improvement in cancer haematology patient. Haematology patient often complains of fatigue and reduced physical performance. It was hypothesized that there is effect of Active movement with breathing exercise on quality of the life improvement Improves in cancer hematology patient.<sup>23</sup> After analysis of the obtained data, finding supports the case study hypothesis. The WHO-QOL BREF contains four domains physical health, psychological, social relationship and environment. The self-reported questionnaire is the most common instrument in physical activity records, because it is easy –to-use, short to perform and in expensive. Many cancer patient undergoing treatment have severe fatigue and depression. Being physically active can counter this negative effect and give patient more energy, which can be used to keep a healthy immune system and ward of cancer recurrence.<sup>24</sup> Finally the current study has shown that active movements with breathing exercises improved the quality of life in cancer patient.

## CONCLUSION

This case is to be reported to achieve treatment as a combination of effectiveness of active movements with breathing exercises improves the quality of life in cancer hematology patient following chemotherapy. Data was collected at the 1<sup>st</sup> day visit of treatment and after the completion on physiotherapeutic intervention has improved the quality of life in Cancer hematology patient.

## APPROVAL AND ACKNOWLEDGMENT

The research was registered and approved in White Memorial College of Physiotherapy, Attoor, Kanyakumari Dist, Tamil nadu, India Informed consent was obtained from the participant before the inception of the study. All ethical procedure was undertaken in compliance to the principles of declaration of Helsinki. This research work was fully self-funded.

## CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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