International Journal of Medical Science and Clinical Invention 8(6): 5463-5468, 2021
DOI:10.18535/ijmsci/v8i06.06
e-ISSN:2348-991X, p-ISSN: 2454-9576

Research Article,

Association of Physical Activity and Quality Of Life among Cancer Patients

Bhavna Anand[1], Ruchika Kalra[2], Shubh Shree[3], Himani Chauhan[4], Harshita Sharma[5]

[1,2,3] Amity Institute of physiotherapy, Amity University, Noida, Uttar Pradesh
[4] Dharamshila Naryana Super Speciality Hospital, Delhi
[5] MAX Super Speciality Hospital, Delhi
Email Address: **banand@amity.edu**

Abstract:

Background: Cancer is one of the lifestyle diseases which in years have multiplied the patients into numbers in every country and on the graph in inclination depending on the factors of our lifestyle and genetic mutation leading to this disease. Studies have proved that effect of cancer is more on the quality of life for the patient in all aspects of his or her life.

Objectives: The objective of the study was to find the relationship between quality of life and physical activity in the cancer patients.

Search Methods: Survey questionnaire was given by google forms where the Quality-of-life questionnaire with the FACT- G form for physical activity.

Selection criteria: The criteria were males and females of 40 years and above patients with the cancer in any stage and able to understand English.

Data collection and analysis: There were 63 patients as sample for study, proceeded with the consent of 40 years and above with different types and stages of cancers. The analysis created the relation of cancer to depending upon the stage of it and associating the physical activity with quality of life.

Main Results: The statistical analytical tool for finding correlation was Pearson correlation coefficient creating labelling the QOL at X value and FACT-G at Y value creating the positive correlation in the study with the value of is 0.7563.

Authors' conclusions: Authors came with the conclusion that there is correlation between quality of life and physical activity and are directly proportional as one value decrease so as in other and vice-versa.

Keywords: Cancer, FACT-G, Quality of life, physical activity.

Introduction:

In a history of the diseases which was the least in worldwide, but in the last few decade have stepped on as the major life-threatening disease known as cancer [1]. Cancer an abnormal cell growth which is uncontrollable forming a tissue as lump, tumour, lesion, mass, and nodule [2]. The cell division is normal when it comes to growth and death of cell, but in instance of cancer it is a growth which is occurring because of mutations [3] and leading to severe complications proceeding with decline in age and even mortality depending on the type and cancer stage [4]. The incidence of cancer patient is 94.1 per 1lac in men and 103.6 per 1lac in women in India. According to the Indian Council of Medical Research (ICMR) statistics 17.3 lakh new cases are likely to have by 2020 in which 1 in 29 females have breast cancer and 1 in 68 males have lung cancer topping the list [5]. Complication arises not when the emergence of normal cell turning into cancerous cell but due to the inadequate power of immunity to work and kill those cells [6]. According to the classifications there are various types of cancer that are in hundreds in number. Staging is defined by TNM classification determining the type, extent of cancer to the body [7]. This initiates the treatment that is followed with chemotherapy, surgery,

radiotherapy, immunotherapy, stem cell transplant and hormone therapy [8].

Quality of life is the measure that is highly impacted by the treatment of cancer leading disruptions in life [9]. Life expectancy is increased with advancement in the treatment but have affected the quality of life. But measuring quality of life for cancer patients is necessary ongoing of treatment and after completion of treatment as presents the mental, physical, and social wellness present in patient and progress is measured [10]. To upgrade quality of life there are various sources to initiate with to overcome the complications of the treatment and improve wellness, so as some studies presents that interaction of physical activity plays a wide role in activation of the human body in normal life so an in case of cancer patients [11]. Physical activity is the foremost important factor that plays a role of activation encouraging the patient to initiate with a day, such as in case of cancer leading a patient being dependent on others for activities of daily living due to weakness [12].

Every determinant's utilised for the measurements for physical activity and quality of life there are numerous scales that are reliable. Validation quality of life questionnaire developed by Indian society with following guidelines of EORTC having ten factors containing psychological, self-adequacy, physical well-being, confidence external support, pain, mobility, optimism, belief, interpersonal relationship, self-sufficiency, and independency are taken with 38 sub description within it. A four-point Likert scale is used to score the questionnaire in direct and reverse scoring technique [13].

The other questionnaire quantifying the status of physical activeness among cancer patients named as functional assessment of cancer therapy- general fact {FACT-G} a 27-item scale with a scoring of 0 to 4 which combines the symptoms and concerns within each scale. It assesses the four domains of an individual like physical, social/emotional, and functional impacts on cancer patient that was inclusive of other variants specially for cancer patients existing with the physical, emotional, and functional impacts on cancer patient [14].

Objective of the study:

With ongoing treatment of cancer patient does not lose the organ or receive treatment with an expectation to increase life expectancy but lose the confidence in himself/herself leading to diminished quality of life as well as less motivation which decrease physical activity. The aim for study was to analyse the corelation between physical activity and quality of life using two different scale in cancer patients.

Methodology:

Source of collection of Data: The study would be conducted in cancer patients which are present in large number in the multi-speciality hospital. Questionnaire link in google forms were allocated with the patient and then data collection, tabulation analysis and interpretation were done.

Sample size: The size was as per the availability of patient during this pandemic.

Study design: Quantitative research design is used with a close end questionnaire that has a Likert type four-point rating scale with few items scored in a reverse order to make the questionnaire unidirectional.

Selection Criteria:

1. *Inclusion Criteria*
   - Middle age group people after 40 years [15]
   - Both men and women with cancer [5]
   - Stage I to stage IV cancer patient [16]
   - Ability to understand.
2. *Exclusion criteria*
   - Below age of 40years
   - No children are considered.
   - One who are incapable to understand English.

- ✓ *Independent variable:* Height, Weight
- ✓ *Dependent variable:* Age, gender, stage of cancer

Sampling method: Probability sampling where every member of the population has an equal chance.

Procedure:

The questionnaires of the scale were given to all patients via google form with an attached consent form in it and briefing of project was given to the patient.

Observation of data analysis:

Data collection for 63 cancer patients were based on inclusion and exclusion criteria. Out of these 38 were males and 25 were females, with grades of I to IV cancer. Data had been accumulated and scrutinized with the help of statistical tools. The test utilized for the data interpretation was "Pearson correlation" to determine out linear coalition between two variables. The overall patient response collected is 63 of different type of cancer with high prevalence of lung cancer

(26.9%), breast cancer (20.5%), oral cancer (17.4%), head and neck cancer (11.2%). Scale which was used in our calculation had four components in FACT-G containing 7 questions in physical, social, functional well-being and 6 questions in emotional well-being. The maximum scoring for each question were 28, indicating their high physical, social, emotional, and functional well-being. But the scoring process includes reverse item with subtraction of 4 with the item response and summation of individual score, followed by multiplying with 7 and dividing by number of items answered. Data were presented as mean and standard deviation as statistically significant.

Results:

Demographics:

- ✓ A total of sixty-three individual were included in the study.
- ✓ The mean age of participants is 52.01.
- ✓ The sample included 38 males and 25 females.

All stages of cancer were included with 34.9% of stage I, 33.33% of stage II, 28.6% of stage III, and 3.2% of stage IV.

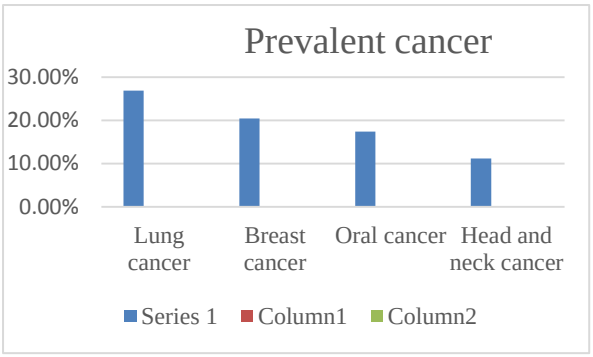

Figure 1: Showing most prevalent stages of cancer and high occurrence cancer in the study population.

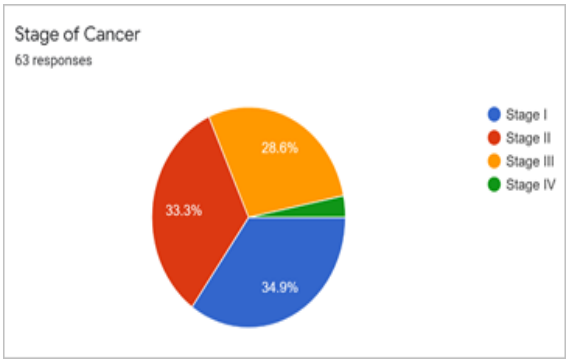

Figure 2: Showing most prevalent stages of cancer the study population.

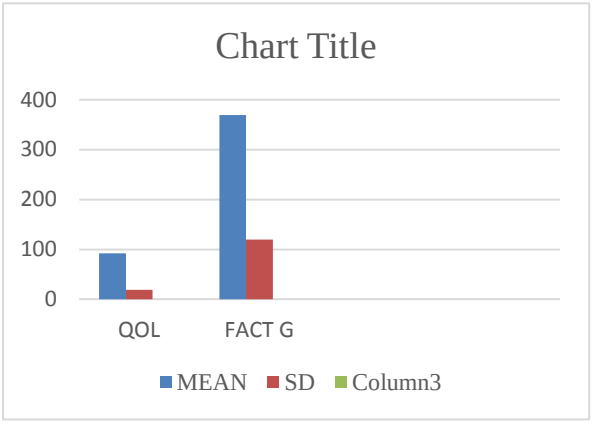

Figure3: Showing mean and standard deviation of both the scales (QOL & FACT-G)

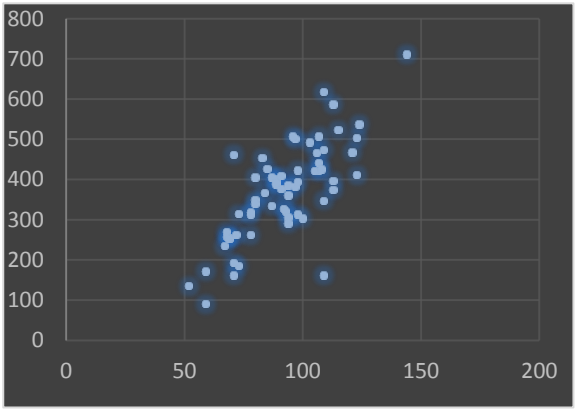

Figure 4: Showing positive correlation between physical activity and quality of life among cancer patients. There is a strong positive correlation, which means that high X variable (QOL) scores go with high Y(FACT-G) variable scores.

	Σ	Mean	Σ(X-Mx)2 = SSx =
X value	5804	92.127	21520.984
Y value	23264.667	369.28	888505.768

The present study revealing that the FACT-G value decreases with an increase in the disease state of the person and so is QOL as there is significant difference seen. The mean value of FACT-G (Y) score is 369.28, while QOL (X) has a value of 92.12. The standard deviation calculated for SDX = 18.63 and for SDY = 119.71. And the covariance for 'x' and 'y' (COVxy) = 1686.79. Pearson coefficient value we get is 0.7563, which shows a positive c o In a history of the diseases which was the least in worldwide, but in the last few decade have stepped on as the major life-threatening disease known as cancer [1]. Cancer an abnormal cell growth which is uncontrollable forming a tissue as lump, tumour, lesion, mass, and nodule [2]. The cell division is normal when it comes to growth and death of cell, but in instance of cancer it is a growth which is occurring because of mutations [3] and leading to severe complications proceeding with decline in age and even mortality depending on the type and cancer stage [4]. The incidence of cancer patient is 94.1 per 1lac in men and 103.6 per 1lac in women in India. According to the Indian Council of Medical Research (ICMR) statistics 17.3 lakh new cases are likely to have by 2020 in which 1 in 29 females have breast cancer and 1 in 68 males have lung cancer topping the list [5]. Complication arises not when the emergence of normal cell turning into cancerous cell but due to the inadequate power of immunity to work and kill those cells [6]. According to the classifications there are various types of cancer that are in hundreds in number. Staging is defined by TNM classification determining the type, extent of cancer to the body [7]. This initiates the treatment that is followed with chemotherapy, surgery, radiotherapy, immunotherapy, stem cell transplant and hormone therapy [8].

Quality of life is the measure that is highly impacted by the treatment of cancer leading disruptions in life [9]. Life expectancy is increased with advancement in the treatment but have affected the quality of life. But measuring quality of life for cancer patients is necessary ongoing of treatment and after completion of treatment as presents the mental, physical, and social wellness present in patient and progress is measured [10]. To upgrade quality of life there are various sources to initiate with to overcome the complications of the treatment and improve wellness, so as some studies presents that interaction of physical activity plays a wide role in activation of the human body in normal life so an in case of cancer patients [11]. Physical activity is the foremost important factor that plays a role of activation encouraging the patient to initiate with a day, such as in case of cancer leading a patient being dependent on others for activities of daily living due to weakness [12].

Every determinant's utilised for the measurements for physical activity and quality of life there are numerous scales that are reliable. Validation quality of life questionnaire developed by Indian society with following guidelines of EORTC having ten factors containing psychological, self-adequacy, physical well-being, confidence external support, pain, mobility, optimism, belief, interpersonal relationship, self-sufficiency, and independency are taken with 38 sub description within it. A four-point Likert scale is used to score the questionnaire in direct and reverse scoring technique [13].

The other questionnaire quantifying the status of physical activeness among cancer patients named as functional assessment of cancer therapy- general fact {FACT-G} a 27-item scale with a scoring of 0 to 4 which combines the symptoms and concerns within each scale. It assesses the four domains of an individual like physical, social/emotional, and functional impacts on cancer patient that was inclusive of other variants specially for cancer patients existing with the physical, emotional, and functional impacts on cancer patient [14].

Discussion:

This study aimed that there is an association of quality of life and physical activity in the cancer patients.

There are studies present that there is the connection linking cancer and quality of life as all the distinct category of cancer have different types of complications to manage with, which indirectly jab human body to be in a situation of altered quality of life [17-18]. In this study there were inclusion of the genders dealing maximum with their commonest cancers as shown in the graphs above that were lung and breast cancer in male and female respectively depending on the selective sample size.

The quality of life is also diminished by the effect of staging in the cancer [19]. There are theories that have proved effect that is increased in the stage of number directly proportional to the longer and painful the treatment and decreased life expectancy [20-21]. In this study a graph represented that the higher the stage of the cancer more affected the quality of life so as the physical activity.

The studies provide the relation of the cancer and physical activity proving the fact that better the physical activity less the risk of cancer is and if the development occurs less the pain and better the treatment with diminished life expectancy [22-23]. There are studies shown with evidence that more the physical activity with ongoing of treatment, fine the results are taken as a proof of improvement and decreased mortality rate [24-25]. In this study we found specific to the staging of cancer does have result on quality of life and physical activity. Where the patients that were in practice with physical activity tend to result in the better quality of life whether in the stage 3 of cancer. Hence better staying physically active improves all factors that are inculcated in the parameters of the quality of life that are physical, psychological, emotional, spiritual and so on.

Conclusion:

This study represents that there is a positive link between the quality of life and physical activity of the patient. When the cancer progresses the quality of life decreases as well as the physical activity decreases in the cancer patient and vice-versa. And as the physical functioning of the patient increases, the quality of life is enhanced.

Ethical Approval and Consent to participate: All the authors have equally participated for the writing of manuscript and survey collection and provides the ethical approval that this manuscript is not published in any other journal no ethical committee were involved for this manuscript.

Consent for publication: There was sample size in the manuscript and consent was taken from each patient.

Competing interests: No competing interests are there.

Funding: There is no funding involved for manuscript by authors.

Author's contributions: Participation for this article were equal in creating the article. Manuscript is verified and finalized by all the authors for publication process.

Acknowledgements: The authors really thankful to the patients for their precious time.

References:

[1] Peto, J. (2001). Cancer epidemiology in the last century and the next decade. Nature, 411(6835), 390-395.

[2] Roy, P. S., & Saikia, B. J. (2016). Cancer and cure: A critical analysis. Indian journal of cancer, 53(3), 441–442.

[3] Nordling, C. O. (1953). A new theory on the cancer-inducing mechanism. British journal of cancer, 7(1), 68.

[4] Armitage, P., & Doll, R. (2004). The age distribution of cancer and a multi-stage theory of carcinogenesis. International journal of epidemiology, 33(6), 1174-1179.

[5] Mathur, P., Sathishkumar, K., Chaturvedi, M., Das, P., Sudarshan, K. L., Santhappan, S., Nallasamy, V., John, A., Narasimhan, S., Roselind, F. S., & ICMR-NCDIR-NCRP Investigator Group (2020). Cancer Statistics, 2020: Report From National Cancer Registry Programme, India. JCO global oncology, 6, 1063–1075.

[6] Gonzalez, H., Hagerling, C., & Werb, Z. (2018). Roles of the immune system in cancer: from tumor initiation to metastatic progression. Genes & development, 32(19-20), 1267–1284.

[7] Brierley, J. D., Gospodarowicz, M. K., & Wittekind, C. (Eds.). (2017). TNM classification of malignant tumours. John Wiley & Sons.

[8] Siegel, R., DeSantis, C., Virgo, K., Stein, K., Mariotto, A., Smith, T., & Ward, E. (2012). Cancer treatment and survivorship statistics, 2012. CA: a cancer journal for clinicians, 62(4), 220-241.

[9] Nayak, M. G., George, A., Vidyasagar, M. S., Mathew, S., Nayak, S., Nayak, B. S., ... & Kamath, A. (2017). Quality of life among cancer patients. Indian journal of palliative care, 23(4), 445.

[10] Asthana, S., Bhatia, S., Dhoundiyal, R., Labani, S. P., Garg, R., & Bhatnagar, S. (2019). Quality of life and needs of the Indian advanced cancer patients receiving palliative careAssessment of the quality of life, problems, and needs of the advanced cancer patient receiving palliative care. Cancer Research, Statistics, and Treatment, 2(2), 138.

[11] Lugo, D., Pulido, A. L., Mihos, C. G., Issa, O., Cusnir, M., Horvath, S. A., & Santana, O. (2019). The effects of physical activity on cancer prevention, treatment and prognosis: A review of the literature. Complementary therapies in medicine, 44, 9-13.

[12] McTiernan, A., Friedenreich, C. M., Katzmarzyk, P. T., Powell, K. E., Macko, R.,

Buchner, D., & Piercy, K. L. (2019). Physical activity in cancer prevention and survival: a systematic review. Medicine and science in sports and exercise, 51(6), 1252.

[13] Vidhubala, E., Kannan, R. R., Mani, C. S., Karthikesh, K., Muthuvel, R., Surendran, V., & Premkumari, R. (2005). Validation of quality of life questionnaire for patients with cancer-Indian scenario. Indian journal of cancer, 42(3), 138.

[14] Yanez, B., Pearman, T., Lis, C. G., Beaumont, J. L., & Cella, D. (2013). The FACT-G7: a rapid version of the functional assessment of cancer therapy-general (FACT-G) for monitoring symptoms and concerns in oncology practice and research. Annals of oncology, 24(4), 1073-1078.

[15] Nolen, S. C., Evans, M. A., Fischer, A., Corrada, M. M., Kawas, C. H., & Bota, D. A. (2017). Cancer—incidence, prevalence and mortality in the oldest-old. A comprehensive review. Mechanisms of ageing and development, 164, 113-126.

[16] Luckett, T., King, M. T., Butow, P. N., Oguchi, M., Rankin, N., Price, M. A., ... & Heading, G. (2011). Choosing between the EORTC QLQ-C30 and FACT-G for measuring health-related quality of life in cancer clinical research: issues, evidence and recommendations. Annals of Oncology, 22(10), 2179-2190.

[17] de Vries, J., Bras, L., Sidorenkov, G., Festen, S., Steenbakkers, R. J., Langendijk, J. A., ... & Halmos, G. B. (2020). Frailty is associated with decline in health-related quality of life of patients treated for head and neck cancer. *Oral Oncology*, *111*, 105020.

[18] Williams, C. P., Miller-Sonet, E., Nipp, R. D., Kamal, A. H., Love, S., & Rocque, G. B. (2020). Importance of quality-of-life priorities and preferences surrounding treatment decision making in patients with cancer and oncology clinicians. Cancer, 126(15), 3534-3541.

[19] Groarke, A., Curtis, R., Skelton, J., & Groarke, J. M. (2020). Quality of life and adjustment in men with prostate cancer: Interplay of stress, threat and resilience. PloS one, 15(9), e0239469.

[20] Yung, R., Ray, R. M., Roth, J., Johnson, L., Warnick, G., Anderson, G. L., ... & Reding, K. W. (2020). The association of delay in curative intent treatment with survival among breast cancer patients: findings from the Women's Health Initiative. Breast cancer research and treatment, 1-11.

[21] Shin, H. J., Kim, M. S., Kho, B. G., Park, H. Y., Kim, T. O., Park, C. K., ... & Lim, S. C. (2020). Delayed diagnosis of lung cancer due to misdiagnosis as worsening of sarcoidosis: a case report. BMC pulmonary medicine, 20(1), 1-4.

[22] Rock, C. L., Thomson, C., Gansler, T., Gapstur, S. M., McCullough, M. L., Patel, A. V., ... & Doyle, C. (2020). American Cancer Society guideline for diet and physical activity for cancer prevention. CA: a cancer journal for clinicians, 70(4), 245-271.

[23] Dennett, A. M., Peiris, C. L., Shields, N., & Taylor, N. F. (2020). From cancer rehabilitation to recreation: a coordinated approach to increasing physical activity. Physical Therapy, 100(11), 2049-2059.

[24] Dempsey, P. C., Strain, T., Khaw, K. T., Wareham, N. J., Brage, S., & Wijndaele, K. (2020). Prospective associations of accelerometer-measured physical activity and sedentary time with incident cardiovascular disease, cancer, and all-cause mortality. Circulation, 141(13), 1113-1115.

[25] Cannioto, R. A., Hutson, A., Dighe, S., McCann, W., McCann, S. E., Zirpoli, G. R., & Ambrosone, C. B. (2021). Physical Activity Before, During, and After Chemotherapy for High-Risk Breast Cancer: Relationships With Survival. JNCI: Journal of the National Cancer Institute, 113(1), 54-63.