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EDITORIAL

Non-communicable diseases and the preventive role of physical activity and exercise

Syed Shakil Ur Rehman

According to the World Health Organization (WHO), worldwide 41 million deaths occur per year due to non-communicable diseases (NCDs), constituting 71% of all deaths globally. Nearly 77 percent of all NCD-related deaths occur in low- and middle-income countries. It is estimated that 15 million premature deaths occur in low- and middle-income countries, which is 85% of all premature deaths worldwide. Approximately 80% of premature deaths throughout the world are caused by NCDs, such as cardiovascular diseases (17.9 million), cancers (9.3 million), respiratory diseases (4.1 million), and diabetes (1.5 million).(1)

In addition to genetic factors, physiological factors, environmental factors, and behavioral factors all play a role in NCDs. Following tobacco use, physical inactivity is the second biggest risk factor for NCDs, followed by alcohol consumption, and an unhealthy diet, both of which increase the risk of death from NCDs. Insufficient physical activity contributes to 1.6 million premature deaths annually and is associated with increased chronic disease risk. Exercise and increased physical activity are associated with a lower risk of NCDs. It is evident from the literature that the incorporation of regular PA and exercise into one's lifestyle will lower the risk and mortality for NCDs, making it an ideal preventive measure.(2) Taking part in physical activity or exercising can prevent diseases as well as improve longevity.(3)

To maintain cardiovascular fitness, respiratory fitness, muscle strength, and endurance for normal functioning without disability or limitation, it is imperative that all healthy populations follow a regular physical activity program throughout their lifetime. According to the American College of Sports Medicine (ACSM), healthy adults aged 18–65 years should engage in a moderate-intensity aerobic physical activity program for 30 minutes, five days per week, or a vigorous-intensity aerobic activity program for 20 minutes 3 days/week. An additional recommendation for adults includes at least 2 days/week of activities that improve or maintain muscle endurance and strength.(4) Physical activity and exercise have been scientifically proven to improve the quality of life and reduce the risk and mortality rate for NCDs in the sedentary population through their multi-systemic positive effects on the human body.(5)

Pakistan is a developing country in the third world and faces many challenges because of its growing population and the prevalence, incidence, and mortality of chronic diseases. There is a need to increase awareness among the community about physical activity and exercise as well as other risk factors such as smoking and eating unhealthy food. It is crucial to develop NCD prevention strategies that emphasize exercise and physical activity programs in accordance with ACSM recommendations. In addition, it is recommended to create and enhance the number of public parks, playgrounds, and fitness centers throughout the country.

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RESEARCH ARTICLE

Association of depression and disability with health related quality of life in patients with rheumatoid arthritis

Saira Jahan[1], Humna Tabassum[1], Yusra Meer[1], Saiqa Manzoor[1], Aroosa Tariq[1], Fizah Mahnoor Khan[1]

ABSTRACT

Background: Rheumatoid arthritis (RA) is a chronic progressive autoimmune disorder with frequent psychological comorbidities. Depression is also associated with increased functional disability in RA patients.

Objective: To determine the association of depression and disability with health related quality of life in patients with rheumatoid arthritis.

Methods: A cross sectional study was conducted in which 143 patients having rheumatoid arthritis were taken from the Islamabad rheumatology centers during period of 1st August 2019 to 30th January 2020 using non probability purposive sampling technique. All the diagnosed patients of Rheumatoid arthritis both male and female between age 35 and 60 were included in this study whereas patients with any other comorbidity were excluded. Chi square test was applied to determine the association. Data was analyzed using SPSS 21.

Results: In this study level of disability as measured by health assessment questionnaire disability index (HAQ-DI) out of 143 patients, (48.95%) patients experienced mild disability, 58 (40.55%) and 15(10.48%) patients presented with moderate and severe disability respectively. Results of severity of depression as measured by beck depression inventory scale (BDI) were: 23(16.1%) patients had mild depression, 22 (15.4%) patients had moderate depression, and 15 (10.4%) patients had severe depression. Association of disability and depression with health related quality of life (HRQOL) was significant with $p<0.05$.

Conclusion: It is concluded that there is significant association of disability and depression with health related quality of life among patients with rheumatoid arthritis.

Key words: Depression, Disability, Health related quality of life (HRQoL), Rheumatoid arthritis.

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Introduction:

Rheumatoid arthritis (RA) is a long term, ongoing, inflammatory autoimmune disorder that has an adverse effect on patient's body and mental health(1,2). Rheumatoid arthritis is a symmetrical arthritis influencing two or more small and big synovial joints. It particularly involves joints of wrist, hands, feet, shoulder, hip and knee. Optic irritation and lung nodules are extra articular representation in chronic cases of RA.(3) In up to 90% of patients with RA, early diagnosis and treatment can prevent or significantly decrease the progression of joint deterioration, preventing severe disability.(4) The occurrence of RA is associated with reproductive hormones, life style, genetics and environmental factors. A considerable effect on working disability and joint pain is due to joint destruction which is an outcome of RA.(5)

Epidemiological researches outlined the prevalence of RA in various European, American, Asian and Australian populations that varies from 0.2 to 1.0%. Prevalence of RA outlined in Pakistan is1.0 to 0.2%.(6)

Rheumatoid arthritis usually causes an inability to do everyday tasks, a switch in family roles, difficulty in performing occupational tasks, more economic load, community reliance and decreased fun tasks and consequently, may have considerable impact on quality of life.(2) Rheumatoid arthritis influences both body and psychosocial aspects of health related quality of life (HRQOL).(7) HRQoL is subgroup of quality of life (QoL) and constitutes the physical, mental and community zones of health. HRQoL constitutes those zones of a person's health that may be manageable to the treatment protocols.(8)

Younger patients of RA have more chances of

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developing depression than older as frequency of depression is remarkably linked to age.(9) In patients of RA, gender is a risk factor for depression. A Taiwanese study described that in RA diagnosed patients, women are at higher risk of developing depression than men.(10) Some factors like disease severity, a decreased response to arthritis treatment and relapse are associated with the development of depression and anxiety.(11)

Disability is the major outcome of RA and has remarkable effects on activities of daily living and work life.(12) Excessive mental disturbance is developed by the physical and functional stressors of RA. Mental stress, depression and anxiety are very common among patients with RA.(13)

Health related quality of life (HRQoL) of patients with RA is significantly affected by substantial physical and mental disturbances. Normally HRQoL indicates any health illness that reduces patient's body capacities and abilities to work in different communities and roles of life as well as daily activities and psychological health. There are six groups linked with individual's general HRQoL; biological and mental condition, disease activity, working abilities, overall health awareness, qualities of patients and environmental features.(14) A multivariate analysis showed that male gender, antidepressant use, and a higher health assessment questionnaire (HAQ) score were all significantly linked with an elevated risk of depression in RA patients, which is currently underdiagnosed and poorly managed.(15) This study was conducted with the aim to determine the association of depression and disability with health related quality of life in patients with rheumatoid arthritis.

Methods:

The cross sectional study was conducted from August 2019 to January 2020. Non-probability purposive sampling technique was used. Sample size was calculated by using epitool keeping the confidence interval 95%, assumed population standard deviation was taken as 12.2 and acceptable error 2, upon calculation 143 sample size was obtained.(16) Data was collected from Bilal Hospital Rawalpindi and Islamabad Rheumatology centre. Patients were selected on the basis of inclusion and exclusion criteria. Our inclusion criteria was both genders (Male and Female), age 30 to 60 years and diagnosed cases of rheumatoid arthritis was enrolled in this study. The present study did not consider patients with history of other current primary inflammatory joint disease, any other systemic or psychological illness, current infection and disability due to other comorbidities. A written informed consent were taken from the participants and were also ensured that the study has no emotional and physical harm given to them and that all data collected was recorded with their identity protected and confidentially kept and not disclosed to anyone. We used 3 tools i.e.; HAQ-DI (17) which is used to evaluate the physical activity in RA patients and the Beck depression inventory scale 2 (BDI-II) was used for assessing level of depression; where 0 to 9 score depicts that patient is not depressed, 10-18 indicate mild to moderate, 19–29 indicates moderate-severe and 30–63 indicates severe depression, higher score indicate greater depressive severity.(18) HRQoL was evaluated by using SF-36 which has 36 items, categorized into 8 domains and total score is obtained between the range from 0-100, of which 0 represents poor HRQoL and 100 represents highest score of good HRQoL.(19) The study was based on personal interviews with patients at local tertiary care facilities with the approval from ethical review committee of Riphah College of Rehabilitation and Allied Health sciences, Riphah International University, Islamabad (RIPHAH/RCRS/REC/Letter-00630). For descriptive analysis frequency, percentages and mean with standard deviation was used. Normality was check by shapiro-wilk test. Data was found normally distributed. Chi square test was applied to determine the association of disability and depression with health related quality of life in rheumatoid arthritis patients. P values < 0.05 was considered as significant.

Results:

Out of 143 patients 106 (74.1%) were female and 37 (25.9%) were males. The mean age of participants was 43.15±9.53 years as shown in table 1. The role limitation due to physical and emotional problem in patients with rheumatoid arthritis has been shown in table 2. It was found that 40 (27.97%) patients had no depression73 (51.04%) patients presented with mild to moderate depression, whereas 20 (13.98%) and 4 (2.79%) patients presented with moderate to severe and severe depression respectively, chi square test was used to determine the association between depression with health related quality of life and a significant difference was found between depression and HRQoL among RA patient with p value <0.01. Level of disability as measured by health assessment questionnaire disability index (HAQ-DI) as shown in Table 3 was as follow: Out of 143 patients, 70 (48.95%) participants' experienced mild disability, 58 (40.55%) patients had moderate and

15(10.48%) patients experienced severe disability. In order to determine the association between disability and HRQoL chi square test was used and a significant difference with P value 0.03.

Table 1: Baseline demographic characteristics

Variable	Mean ± SD	n (%)
Age (years)	43.15±9.53	
Gender		
Male		37 (25.9%)
Female		104 (74.1%)

Table 2: Frequency (%) of role limitation due to physical and emotional problem in patients with rheumatoid arthritis

	Role limitation due to physical problems n (%)	Role limitation due to emotional problem n (%)
Poor	44 (30.8%)	42 (29.4)
Fair	30 (21.0%)	28 (19.6%)
Good	49 (34.3%)	10 (7.0%)
Very good	16 (11.2%)	49 (34.3%)
Excellent	4 (2.8%)	14 (9.7%)

Table 3: Distribution of depression, disability and health related quality of life (HRQol)

Variable		n (%)
Health related quality of life	Poor physical functioning	18(12.5%)
	Fair physical functioning	38(26.5%)
	Good physical functioning	39(27.2%)
	Very good physical functioning	43(30.06%)
	Excellent physical functioning	5(3.45)
Depression	No depression	40 (27.97%)
	Mild to moderate	73 (51.04%)
	Moderate to severe	20 (13.98%)
	Severe	4 (2.79%)
Disability	Mild	70 (48.95%)
	Moderate	58 (40.55%)
	Severe	15 (10.48%)

Discussion:

This study has investigated the association of disability and depression with health related quality of life in patients with rheumatoid arthritis. HRQOL is significantly affected by level of depression and severity of disability. Results had shown that patients who were physically active were less prone to develop disability and depression. In our study majority of the patients had mild disability and with mild to moderate depression. Both disability and depression had adverse effects on HRQoL.

Rupp et al conducted a research in 2006, to determine the relationship between disability and health related quality of life in association with radiographic damage, disease severity, pain and depression. Data was collected from 307 patients among whom 71% were females and their mean of age was 51.1years (SD 13.4). The study explored that there is a close relationship between disabilities, health related quality of life and depression. Pain is an essential component of disability and physical health while depression is an essential component of mental health. Depression is associated with disability that support the result of present study.(20)

L Bazzichi et al conducted a research in 2005 to assess the impact of disability and depression on health related quality of life in rheumatoid arthritis patient. Sample of study was n=92. 61.4(SD ±12.7) years was the mean age of rheumatoid arthritis patient, among which majority were female .Mean score of HAQ was 1.12.On contrast between male and female MOS SF-36 Scores showed that female had decreased level of physical functioning, emotional well-being and energy. There is a remarkable association between depression and health related quality of life.(21) Our results had shown that patients who were physically active were less prone to develop disability and depression. Research conducted by Tander B et al in 2008 to evaluate health related quality of life and depression in rheumatoid arthritis patients. All the patients were between the age of 24 and 56 years. 39.85±6.59 years were the calculated mean and standard deviation of their age. Study had shown the negative association between the total score of SF-36 with the total score of BDI. This study has reported that depression has negative effect on health related quality of life of patients with rheumatoid arthritis.(22)

Shim E J et al studied the quality of life in patients with rheumatoid arthritis in June 2018, the study shows that pain has negative relation with physical disability and depression which as a result decrease health related quality of life HRQOL. Physical disability and depression decreases quality of life.(23) Our study results have revealed that about majority of the R.A patients had shown association with depression. It had seen that depression and disability was positively associated with HRQoL.

A study was directed by Katchamart et al., including 464 patients, 59 ± 11.4 years was the calculated mean of patients age, among which 85% were female. Functional disability score (HAQ-DI) was mild (0.50).The mean and standard deviation of depression

was recorded as 3.83 ± 3.11. The study showed that depression is only the element that has a negative impact on general health score.(24) Patients with rheumatoid arthritis suffer from depression and disability which ultimately lead to reduced health related quality of life. So, our results are same as previous studies.

A study with sample size n=102 was performed in Lahore in 2015 to assess the degree of depression and its association with disease activity. Beck depression inventory scale questionnaire had been used to assess the level of depression while health assessment questionnaire (HAQ-DI) and DAS-28 questionnaire were used to evaluate disease activity of rheumatoid arthritis. Results revealed that majority of the patients with rheumatoid arthritis had mild depressive symptoms while a few patients had shown moderate to severe depressive symptoms. Our study had shown the same result. Intensity of these symptoms was positively associated with disease activity. It had been shown that patients with depression were more prone to develop disability. Depression had adverse effect on patient's social life resulting in increased burden of disease among patients with rheumatoid arthritis.(25) Limitation was related to sample size and time duration of study. In order to determine the association, information related to other clinical menifestations with the levels of inflammatory markers could have been more beneficial. Fitness experts must encourage patients to exercise regularly to reduce the element of disability. A vast study should be done to evaluate the mechanism of association of disability and depression with health related quality of life alongwith inflammatory biomarkers in rheumatoid arthritis patients.

Conclusion:

It is concluded that there is a significant association between depression and disability with health related quality of life among patients with rheumatoid arthritis. Depressed patients with RA have increased level of functional disability and poor health related quality of life.

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Conflict of interest: None

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RESEARCH ARTICLE

Effects of Active Cycle of Breathing Techniques on quality of life in patients with Chronic Bronchitis

Haroon Mansha[1], Sajid Rashid[1], Muhammad Usman Khalid[1], Rehan Ramzan Khan[1], Muhammad Hassan[1], Hayatullah Khalid[1]

ABSTRACT

Background: In patients with a range of respiratory disorders such as chronic bronchitis, , active cycle of breathing techniques which includes cycle of breathing control, thoracic expansion exercises and forced expiratory technique (FET), appears to have beneficial effects.

Objectives: To determine the effectiveness of active cycle of breathing techniques with conventional medicine among chronic bronchitis patients.

Methods: A quasi-interventional study was conducted in a physiotherapy department of 600 bedded Ibne Siena Hospital of Multan, from August 2020 to July 2021 with 26 patients in the experimental group who followed the pharmacological and active cycle breathing techniques treatment while the 26 patients in control group patients received the basic routine pharmacological treatment only. Patients were assessed through the help of the Saint George Respiratory Questionnaire (SGRQ) from baseline to 3 months in both groups.

Results: Baseline treatment showed mean SGRQ total score was 26.53±27.39 in the control group and 20.0±20.27 ($p<0.33$) in the experimental group. Assessment after 3 months showed mean SGRQ total score was 14.50±12.26 in control group and 8.11±10.32 ($p<0.04$) in experimental group.

Conclusion: Active cycle of breathing techniques was more effective with conventional medicine among chronic bronchitis patients in comparison with patients with medicine alone. Significant differences was observed in symptoms, activity, impact, and total SGRQ scores of the experimental group.

Keywords: ACBT, breathing exercise, COPD, pulmonary rehabilitation, quality of life

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Introduction:

Individuals with chronic lung illness who have excess bronchial secretions are frequently prescribed to employ airway clearance procedures on a daily basis.(1) Clearing secretions and improving alveolar ventilation are the goals of these procedures including chronic bronchitis patients.(2) Conventional chest physiotherapy, which includes gravity-assisted drainage positions, percussion, vibrations, and coughing, has been the traditional airway clearance method for those individuals among chronic bronchitis patients.(3) The prevalence of chronic bronchitis is 3.6% (95% CI: 3.1-4.0%) in Pakistan.(4) The active cycle of breathing techniques (ACBT) is an airway clearance treatment that can be done with or without an assistant and has been demonstrated to be more successful than traditional chest physiotherapy in terms of weight and rate of sputum expectorated. Because of the increased incidence of chronic bronchitis, active cycle of breathing techniques has gotten a lot of attention. Similarly, pharmaceutical therapies such as bronchodilators are often administered for chronic bronchitis patients in outpatient departments and pulmonology units.(5)

The active cycle of breathing technique (ACBT) is a technique for mobilizing and clearing excess pulmonary secretions from the periphery of the lungs without obstructing airflow. It's a combination of thoracic expansion exercises, breathing control, and forced expiratory technique (FET) and FET is the combination of forced expiration with an open glottis and intervals of breathing control. The ACBT also help in improving breathing or ventilation, reduce chest infection and loosen secretions of the lungs.(6) ACBT consists of three main phases.(7) First one is breathing

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control, second is deep breathing exercises and third one is huffing or also known as forced expiratory technique (FET). We can add manual chest techniques along with ACBT according to patient condition that can create a more complex and beneficial plan for the improvement and removal of secretions of the lungs. When using ACBT on a patient, he/she is asked to take six deep breaths. Instructions will be given to the patient: your one hand should rest on your abdomen and keep your shoulders at ease to downward position. As you breathe in and out feel your stomach rise and fall accordingly. Repeat this around three to four times, if the patient feels comfortable then it is advised to follow-up back or repeat breathing control cycle. Inspiratory hold should be performed by holding air in the lungs for three seconds at the end of the inspiration and deep breathing exercises are introduced for assistance in peripheral airways to reach mucus plugs present in chest cavity.(8, 9)

Huffing then helps moving the sputum from the small lung airways to the larger lung airways and after that, the coughing is encouraged to remove secretions. Thus coughing alone does not help much removing secretions from terminal airways, excluding the larger inspiration. Repeat this whole process to clean sputum from the end of terminal parts of chest/lungs. The patient can also do ACBT in sitting, lying and side lying positions.(8, 10-12)

Indication of ACBT includes post-surgical pain that can be rib fracture, chronic increase in production of sputum for example in chronic bronchitis and cystic fibrosis.(10, 13) Acute conditions can also be included, reduced lung volumes, continuous secretion production, bronchitis, atelectasis, chronic respiratory muscle weakness, bronchiectasis, mechanical ventilation and asthma.(14)

A quasi-experimental study with 30 participants was conducted to determine the efficiency of autogenic drainage over the ACBT in clearing the airway in chronic bronchitis. The study found no significant difference between the effects of autogenic drainage and the ACBT on mucus clearance and dyspnea levels. Depending on the patient's and therapist's preferences, both airway clearance approaches can be employed effectively in Chronic Bronchitis.(15) In another randomized controlled trial, 500 plus patients were included in the studies that were hospitalized with chronic obstructive pulmonary disease including chronic bronchitis. Patients received manual chest physiotherapy, for airway clearance. The Saint George Respiratory Questionnaire showed that manual chest physiotherapy may have therapeutic value to subgroups of COPD patients in specific circumstances.(16) Another study with thirty COPD (acute) numbers of patients was allocated in autogenic drainage and active cycle techniques for the period of exactly twenty day after the group randomization. The ACBT showed effective results in increasing the flow-rate of peak expiration, arterial-oxygenation, forced vital capacity, and exercise tolerance. In autogenic drainage, increased level of saturation of oxygen were significantly higher as compared to active cycle breathing method.(17) A study based on the reviews of the available evidences in COPD patients included chronic bronchitis patients receiving different airway-clearance-techniques to find out their significance. 26 articles in the study showed that active-breathing-technique such as ACBTs can be effective in the treatment of COPD including chronic bronchitis patients.(18) In COPD patients, a study was undertaken to see how ACBT is compared to autogenic drainage approach. By using a simple random sample procedure, 30 patients with moderate chronic obstructive lung disease aged 50 to 90 years were chosen and screened according to inclusion criteria. ACBT was found to be more effective in comparison with the other interventions.(19)

There is less high quality research literature available for the comparison of effects of Active Cycle of Breathing Technique with conventional medicine in chronic bronchitis patients alone. So the objective of this study was to find out the effectiveness of active cycle of breathing techniques with conventional medicine among chronic bronchitis patients.

Methods:

A quasi-interventional study was conducted in a physiotherapy department of 600 bedded Ibne Siena Hospital Multan, from august 2020 to July 2021 with 26 patients in experimental group followed the pharmacological and active cycle breathing techniques treatment while the 26 patients in control group patients received the basic routine pharmacological treatment only. Ethical approval PSB/511/2020/MCPM was obtained from ethical committee of Multan College of Physiotherapy, Multan. Inform consent was also taken from the participants.

Age of the participants was between 50 to 80 years old, Stage II COPD patients with no smoking history or 1 pack / week were included. Patient with severe respiratory complications, uncontrolled cardiac and

arterial hypertensive conditions, any active malignancy present, coronary cardiac problems and compromised physical performances due to any musculoskeletal impairment were excluded from the study.

Patients were assessed through the help of Saint George respiratory Questionnaire (SGRQ) which is disease-specific instrument designed to measure impact on overall health, daily life, and perceived well-being in patients with obstructive airways disease. Scaling includes Part 1: (Symptoms) frequency & severity with 1, 3 or 12-month recall (best performance with 3- and 12-month recall) Part 2: (Activity and Impacts) Activities that cause or are limited by breathlessness; Impact components (social functioning, psychological disturbances resulting from airways disease) refer to current state as the recall. Validity include significant correlations between total score and presence of cough, sputum, and wheeze. Data was collected from baseline to 3 months in control and experimental groups for chronic bronchitis patients.(20) Sample size was calculated through sample size calculator. Convenience sampling technique was used. 52 patients were divided into 2 groups, 26 patients received the basic routine pharmacological treatment with no physiotherapy intervention and home plan in control group and 26 patients in experimental group followed the pharmacological and active cycle breathing techniques treatment. Both groups were assessed through the help of Saint George respiratory Questionnaire from baseline to 3 months. Experimental group were taught active cycle breathing techniques and given it as a home plan for at least 2 times a day. Post data was collected after 3 months. The data was analyzed through SPSS version 21 and Independent t test was applied.

Results:

52 patients were recruited in the study with 26 patients/participants in the control group and 26 patients/participants in the interventional groups.

Table 1 showing mean age and gender distribution in control and experimental groups with percentages

		Control group (Mean±SD)	Experimental group (Mean±SD)
Age (Years)		55.19±4.56	52.19±6.34
Gender	**Male**	14(53.8%)	21(80.8%)
	Female	12(46.2%)	5(19.2%)

Table 2: showing mean results of pre and post SGRQ symptoms, activity, impact and total score in control and experimental groups by applying Independent t test

SGRQ	Control group mean±SD	Experimental group mean±SD	*p*-Value
Pre SGRQ symptoms	31.19±24.75	37.0±29.11	0.44
Post SGRQ symptoms	26.03±24.38	14.11±17.60	0.04
Pre SGRQ activity	39.76±28.78	47.23±33.31	0.39
Post SGRQ activity	25.11±22.69	13.96±17.08	0.05
Pre SGRQ impact	30.50±24.45	34.80±25.64	0.53
Post SGRQ impact	25.50±22.35	13.26±16.54	0.02
Pre Total SGRQ Score	26.53±27.39	20.0±20.27	0.33
Post Total SGRQ Score	14.50±12.26	8.11±10.32	0.04

Table 3: showing within group analysis results of pre and post SGRQ symptoms, activity, and impact by applying paired t test

Variable	Study Group	Pre Values mean±SD	Post Values mean±SD	*p*-value
SGRQ symptoms	**Experimental group**	37.0±29.11	14.11±17.60	0.001
	Control group	31.19±24.75	26.03±24.38	0.133
SGRQ activity	**Experimental group**	47.23±33.31	13.96±17.08	<0.001
	Control group	39.76±28.78	25.11±22.69	0.028
SGRQ impact	**Experimental group**	34.80±25.64	13.26±16.54	0.002
	Control group	30.50±24.45	25.50±22.35	0.413
Total SGRQ	**Experimental group**	20.0±20.27	8.11±10.32	0.004
	Control group	26.53±27.39	14.50±12.26	0.005

Assessment after 3 months showed mean SGRQ symptoms of 26.03±24.38 in control group and 14.11±17.60 ($p<0.04$) in experimental groups, mean SGRQ activity of 25.11±22.69 in control group and 13.96±17.08 ($p<0.05$) in experimental group, mean SGRQ impact of 25.50±22.35 in control group 13.26±16.54 ($p<0.02$) in experimental group while mean SGRQ total score was 14.50±12.26 in control group and 8.11±10.32 ($p<0.04$) in experimental group. Differences within groups from baseline to 3 months are shown in Table 2. Table 3 showed within group analysis results of pre and post mean SGRQ symptoms of 5.15±16.92 ($p<0.413$), pre and post mean SGRQ activity of 14.65±32.11 ($p<0.28$), pre and post mean SGRQ impact of 5.00±30.63 ($p<0.02$) and pre and post mean SGRQ total score was 12.03±19.75 ($p<0.05$) in control group. pre and post mean SGRQ symptoms of 22.88±32.00 ($p<0.001$), pre and post mean SGRQ activity of 33.26±37.03 ($p<0.000$), pre and post mean SGRQ impact of 21.53±32.52 ($p<0.02$) and pre and post mean SGRQ total score was 11.88±19.00 ($p<0.04$) in experimental group.

Active cycle of breathing techniques was more effective with conventional medicine among chronic bronchitis patients in comparison with patients with medicine alone. Significant difference was observed in SGRQ Activity, SGRQ impact, and SGRQ total scores of the intervention group.

Discussion:

In individuals with airway problems, active cycle of breathing technique is a common intervention. Previous researches has shown that pulmonary rehabilitation can help COPD patients improve their endurance and reduce their problems. Nonetheless, there are limited high quality studies on the impact of active cycle of breathing technique in improving patient quality of life.

Both groups were similar at the start of the trial in terms of age. However, there was a significant improvement in the experimental group in comparison to the control group in terms of SGRQ total score, indicating that active cycle of breathing technique with standard medical/pharmacological treatment has more effective results in better symptoms, activity, impact and total score, when compared with medical/pharmacological treatment alone. The findings are also supportive or in line with previous researches that it has been found that active cycle of breathing technique can help chronic bronchitis patients improve their functional status.(21, 22)

In the terms of physical performances by the evaluation through st. George respiratory Questionnaire. According to Baumann, 2012 effective outcomes were present between control/experimental

groups in 6 minute walk test distance showed +59 m and 95% of CI 28 to 89 m, work load was ranged from +7.4 - Watt and 95% of CI0. 5 - 13.4 Watt and Saint George's Respiratory Questionnaire p>0.005 while our study shows the p value 0.04 for total SGRQ score(23)

Another study of 100 patients with chronic obstructive pulmonary disease, active cycle of breathing technique showed significant results in the short-term improvement of sputum viscosity, quality of life and cost effectiveness.(24)

Better results can be gained with the same regime including more motivated patient with long duration of follow-up.

Conclusion:

Active cycle of breathing techniques was more effective with conventional medicine among chronic bronchitis patients in comparison with patients with medicine alone. Significant differences were observed in SGRQ symptoms, SGRQ activity, SGRQ impact, and total SGRQ scores of the group with conventional medicine combined with active cycle of breathing techniques.

Disclaimer: The study is part of thesis project of t-DPT submitted to university of health sciences Lahore.

Conflict of interest: Signatory of ethical approval is also a co-author in the paper and research supervisor appointed by University of Health Sciences, Lahore. The signatory was not involved in the ethical approval process and evaluation.

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Authors Contribution:

Mansha H: Design of the work and acquisition of data

Rashid S: Drafting the work and revising it critically for important intellectual content

Khalid MU: Data Analysis

Khan RR: Data Collection

Hassan M: Interpretation of data

Khalid H: Literature review collection and drafting

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RESEARCH ARTICLE

Frequency of urinary incontinence among pregnant women: A cross-sectional survey

Hina Javed[1], Nasir Khan[1], Syeda Aatika Gilani[1], Anam Javed[1], Mahrukh Kubra[1], Hassan Mansoor[1]

ABSTRACT

Background: Pregnancy is a well-known risk factor for urinary incontinence (UI), which occurs because of pregnancy-induced physiological and anatomical changes that can result in weak pelvic floor muscles.

Objective: To determine the frequency of urinary incontinence among pregnant women.

Methods: Hospital based cross-sectional study was conducted among 300 pregnant women, aged between 18 to 45 years, following antenatal care at the Federal Government Polyclinic Hospital Islamabad between July 2021 and October 2021. Revised Urinary Incontinence Scale (RUIS) was used as outcome measure. Data were analyzed using SPSS.

Results: Out of 300 the pregnant women, 64.7% had urinary incontinence and only 35.3% did not have urinary incontinence. The frequency of urinary incontinence in first, second and third trimester was 4%, 20% and 76%, respectively. In primigravida and multigravida, the frequency of urinary incontinence was 38% and 62%, respectively.

Conclusion: Urinary incontinence is more common in third trimester, especially multigravida women aged between 25-31 years.

Keywords: Disease severity, Parity, Pregnancy, Urinary incontinence.

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Introduction:

Certain factors contribute to the weakness of the pelvic muscles. The weakness of these muscles, coupled with other factors, give rise to a very serious and common health problem. The studies of specific health problems undertaken by analyzing different patterns to find the root causes that induce these health issues are known as epidemiological studies.(1) Urinary incontinence (UI) is a hygienic issue that is not very helpful for the patient's social life and thus, is both physiological and psychological in nature. This disorder affects the urinary functions in two different ways namely: 1) Stress Urinary Incontinence (STI) that is a condition in which involuntary and uncontrolled urinary loss is induced during everyday activities because of the pressure on the pelvic muscles; and 2) Urge Urinary Incontinence (UUI) that causes an unconscious loss of urine because of the bladder being filled up. There is an uncontrollable and desperate urge to urinate, but the system starts leaking urine prior to excreting the fluid by being allowed by the consciousness. Both conditions also co-exist and are termed as Mixed Incontinence.(2)

Due to hormonal effect, various physiological and structural changes are induced in a female's body during pregnancy. The bladder is irritated as a response to the ascended weight of the uterine. This added weight causes it to swell, and the additional size squeezes the bladder by resting upon it. Furthermore, the pelvic support function also undergoes a structural conversion. Therefore the urinary tract starts functioning abnormally.(3) As mentioned earlier, weakened muscles of the pelvis system induce Urinary Incontinence. The fetus expands in size and becomes heavier, causing the pelvic floor to stretch. Pelvic floor muscles are weakened because of this stretch. These muscles are a combination of connective tissues and fibers such as pubococcygeus, iliococcygeus, coccygeus and puborectalis. The same connecting tissue wraps the vagina and the rectum. This group of muscles also provides foundational support to the intestines and the pelvic organs such as the bladder, uterus, and the rectum. Strengthening of these muscles is vital for the control of UI.(4) An injury to the tissue

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around the vagina and the rectum is termed as perineal damage. Perineal damage is another factor that leads to Urinary Incontinence in pregnant women.(5) Vaginal deliveries encourage perineal damage that makes them more vulnerable to UI. A cesarian section prevents perineal damage and studies exhibit that the probability in women undergoing this sort of a process are less likely to have these issues.(6) Other contributing factors include the age, BMI, smoking habits and multiple pregnancies.(7) Arnold Kegel, a gynecologist renowned by Kegel exercises also known as Kegel perineometer. The latter is a non-surgical treatment for UI. Such exercises used to strengthen the Pelvic muscles are known as PFME (pelvic floor muscle exercises). Due to the sensitivity of the surgeries, PFME is usually the first line of intervention irrespective of the stage of the pregnancy or postpartum period.(8)

Several studies have reported higher prevalence of UI among pregnant females. For example, Hsu Yuan Ting et al (2020) performed a cross sectional survey to find out urinary incontinence in pregnant ladies in Southern Brazil. They stated that frequency of urinary continence was high in third trimester as compared to first and second.(9) Abey Bekele et al in North West Ethiopia (2016) performed cross sectional survey to determine urinary incontinence among pregnant women following antenatal care at university of Gondar Hospital. They took sample size of 422 pregnant women. They concluded that there was strong relation of urinary incontinence with previous history of episiotomy, constipation, maternal BMI and respiratory problems.(10) Umaira Yaqoob et al in 2019 determine the frequency of urinary incontinence and its associated risk factors in pregnant population through cross sectional survey .They took sample size of 399 pregnant women of third trimester. They found out that one third of study group was affected by urinary incontinence.(11) Sadiya Sharif et al (2017) in Pakistan , performed a cross sectional survey to determine the frequency of Urinary Incontinence in Pregnant Multigravida from Second Trimester up to the Delivery. He took 706 sample size. According to the study, there was 51.1% of urinary incontinence in multigravida and there was no urinary incontinence in 48.8% multigravida and more urinary incontinence was found in second trimester.(12) DE Oliveira et al. (2013) conducted a cross sectional survey in Brazil, to determine the urinary incontinence in pregnant women and its relation with socio-demographic variables and quality of life. They took 495 pregnant women as sample size. Out of 495 women, 352(71%) of pregnant women were having urinary incontinence during the last four weeks of pregnancy and negatively affecting quality of life.(13) B. Sangsawang et al. in 2013 conducted a study where otal of 534 articles were identified and 28 of them met eligibility criteria and are reported on here. The mean prevalence of SUI during pregnancy was 41 % (18.6-60 %) and increased with gestational age.(14) Heidi F. A. et al. in 2020 Conducted study on Four hundred seven women who were eligible for data analysis. The prevalence of UI rises from 55.1% in the first to 70.1% in the third trimester, with an overall prevalence of 66.8%.(15)

As shown by numerous studies and research, UI is an utterly serious but at the same time, a frequent disorder. Lack of literature from low-income countries such as Pakistan acts a major hurdle in creating awareness to cope up with the disease burden. It does not only has psychological impact on an individual but also hinders the patient from discussing it with a relative or consulting a physician. The purpose of this research study was to determine the frequency of urinary incontinence in pregnant women. This will ultimately assist future researchers in formulating and evaluating strategies to lessen the treatment cost.

Methods:

A cross-sectional observational study was conducted in Polyclinic Hospital Islamabad from July 2021 to October 2021. A convenient sample of 300 pregnant women, with age range of 18 to 45 years, was taken using non-probability convenient sampling. Females who refused to participate, not meeting the age range, female diagnosed with urogenital disease, diabetes and other co-morbidities were excluded from the study.

The frequency of urinary incontinence among pregnant females was assessed using Revised Urinary Incontinence (RUIS) that has a Cronbach alpha value of 0.91. The questionnaire consists of 5 questions with Likert scoring. The score ranged from 0- 16, where less than 4 indicated no UI, 4- 8 is considered mild UI, 9-12 for moderate UI and 13 or above showed severe UI.[24] Data was taken from the pregnant women after informed consent from them. Ethical permission (No. FGPC.1/12/2021/ethical committee) was taken from the ethical research committee of Bashir Paramedical Institute Islamabad and Federal Government polyclinic Hospital Islamabad.

Data were analyzed through Statistical Analysis

Software (SPSS version25). Descriptive data was summarized using frequencies and percentages. Cross-tabulation was done to compare frequency between trimesters, age, and parity. Chi-square test was used to report the significant results.

Results:

Out of 300 pregnant females, 26 (8.7%) pregnant women were in first trimester, 68 (22.7%) in second trimester and 206 (68.7%) in third trimester. 140 (46.7%) women were primigravida and 160 (53.3%) were multigravida. Out of total participants, 92 (30.7%) pregnant women had moderate urinary incontinence. Overall scoring of RUIS by the participants is shown in table 1.

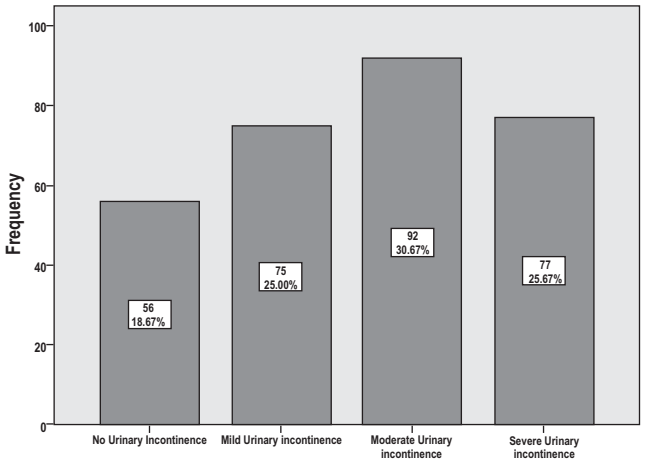

Figure 1: Frequency of urinary incontinence during pregnancy

Table 1: Revised urinary incontinence scale

Revised Urinary Incontinence Scale	Scale	N	%
How often do you experience urinary leakage?	Never I do not leak urine	52	17.3
	Less than once a month	57	19
	A few times a month	69	23
	A few times a week	78	26
	Everyday	44	14.7
How much urine leakage you lose each time?	No, I do not leak urine	50	16.7
	Drops	50	16.7
	Small splashes	52	17.3
	More	148	49.3
How much are you bothered by urine leakage related to feeling of urgency?	Not at all	74	24.7
	Slightly	24	8
	Moderately	44	14.7
	Greatly	158	52.7
How much are you bothered by urine leakage related to physical activity?	Not at all	100	33.3
	Slightly	66	22
	Moderately	54	18
	Greatly	80	26.7
How much are you bothered by small amount of urine leakage (drops)?	Not at all	68	22.7
	Slightly	79	26.3
	Moderately	75	25
	Greatly	78	26

There were 158 pregnant women in age group of 25-31, out of which 26(16.5%) had no UI and 132(83.5%) had UI. Chi-square test analysis showed that frequency of urinary incontinence was significantly associated with trimester of pregnancy (p-value <0.001). In first trimester, 26 (8.66%) out of 300 women were experiencing UI that increased to 68(22.66%) in second trimester and 206(68.66%) in third trimester. 134(83.75%) out of 160 multigravida pregnant females were experiencing UI. (Table 2).

Table : Cross-tabulation of independent variables with revised urinary incontinence scale

Variable		Revised Urinary Incontinence Scale N (%)					*p*-value
		No UI	Mild UI	Moderate UI	Severe UI	Total	
Age of pregnant women	18-24	15(19.7%)	15(19.7%)	26(34.2%)	20(26.3%)	76	0.26
	25-31	26(16.5%)	37(23.4%)	50(31.6%)	45(28.5%)	158	
	32-45	15(22.7%)	23(34.8%)	16(24.2%)	12(18.2%)	66	
Trimester of pregnancy	1st	14(53.8%)	5(19.2%)	5(19.2%)	2(7.7%)	26	<0.001*
	2nd	15(22.1%)	12(17.6%)	15(22.1%)	26(38.2%)	68	
	3rd	27(13.1%)	58(28.2%)	72(35%)	49(23.8%)	206	
Gravidity	Primigravida	30(21.4%)	33(23.6%)	43(30.7%)	34(24.3%)	140	0.69
	Multigravida	26(16.3%)	42(26.3%)	49(30.6%)	43(26/9%)	160	

UI= urinary incontinence, * <0.001= significant

Discussion:

A convenient sample of 300 pregnant women, with age range of 18 to 45 years, was assessed to find out the frequency of urinary incontinence among pregnant females. Almost half of the pregnant women had urinary incontinence during pregnancy and its frequency was higher during the third trimester, particularly in the age group ranging 25-31 years and higher parity.

Several studies have been conducted so far to determine the frequency of urinary incontinence in pregnant women.(16-19) A study conducted by Sharif et al in Pakistan concluded that urinary incontinence was frequent in pregnancy, and it was more common in second trimester and in most of the multigravida women.(12) While our study interpreted that urinary incontinence was more prevalent in 3rd trimester. The result was supported by another study done in 2020 by Ting et al. that concluded that urinary incontinence prevailing in pregnant women was higher in third trimester. This difference needs to be addressed by assessing urinary incontinence with an objective measure such as 7-day diary or the number of perineal pads used per week and a standardized pad test.(9) Our study also examined high prevalence in multigravida women and in age group of 25-31 years of pregnant women. Outcomes of another study done by Wesne et al. in Norway were synonymous to our study which described that UI occurred more in 3rd trimester and in multigravida women. They also explained the same thing that urinary incontinence occurs in later stages and increases with number of conceptions.(20)

The study emphasizes although pregnancy is a physiological process but the frequency of urinary incontinence among pregnant females is huge. This ultimately increases the disease burden. Pelvic floor muscle assessment during routine antenatal visits can be beneficial to pregnant females for the management of urinary incontinence. However, hesitation of women to share their data about incontinence, hygiene, and lack of availability of resources to obtained equally between trimesters limit the study to generalize the results. Further studies should be carried out to overcome the limitation and identify risk factors to provide awareness about this serious issue.

Conclusions

In conclusion, almost half of the pregnant women experience urinary incontinence during pregnancy and its frequency is higher during the third trimester, particularly in the age group ranging 25-31 years and higher parity.

Disclaimer: This paper is based on the thesis titled

"Frequency of urinary incontinence among pregnant females in Islamabad".

Conflict of Interest: None to declare

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Participant's consent: The consent of the participant was taken prior to the inclusion in the study.

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RESEARCH ARTICLE

Intensity and level of disability of neck pain among undergraduate physical therapy students: A Cross Sectional Study

Shabana Rahim[1], Muhammad Hafeez[2], Nosheen Rao[1], Muhammad Waqas Ghauri[1], Faleha Farhan[1]

ABSTRACT

Background: Neck pain is characterized by pain in the posterior-inferior part of the occiput and neck pain is become increasingly common in individuals.

Objective: To find out the intensity and level of disability of neck pain among undergraduate physical therapy students of Agile Institute of Rehabilitation Sciences, because medical students are at high-risk group of developing neck pain.

Methods: It was a cross-sectional study. We included 145 students with neck pain, from 1st year to final year, both male and female in age 18-30 years. The data was collected by using convenience sampling technique. The pain was measured using Numeric Pain Rating Scale (NPRS), and Neck Disability Index (NDI) to classify the severity of disability of their neck. The data was entered in SPSS version 25 for analysis. The frequency tables and graphs were used to represent the results.

Results: In this study 145 participants were included, out of all 108(74.5%) were females and 37(25.5%) were males, with mean age 24.75±5.25 years. This study shows that 74(51.0%) participants had mild pain, 61(42.1%) had moderate pain and 10(6.9%) participants had worse pain. The categories of NDI were mild among 85.5%, 8.3 % were in moderate and 6.2% were in sever disability category.

Conclusion: Undergraduate physical therapy students have mild pain and disability according to NPRS and NDI respectively.

Keywords: Neck pain, Neck Disability Index, Numeric Pain Rating scale, Undergraduate, Physical Therapy students

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Introduction:

Neck pain is pain that occurs below the head and above the shoulder area (bounded anteriorly by the lower edge of the mandible, posteriorly by nuchal lines, and inferiorly by imaginary lines flowing through the first thoracic vertebrae).(1) Neck discomfort affects the posterior-inferior section of the occiput, the dorsal region of the neck, the shoulders, and the upper brachium. It's linked to a limitation of neck movement as well as trigger points in the cervical muscles. It is associated with the restriction of neck movement and also with trigger point formation in cervical muscles.(2)

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Neck pain has become increasingly common in families and individuals (ranges between 0.4% to 86.8%).(3) In high-income nations and in metropolitan areas, prevalence is high among women, with 16.7 to 75.1% of the population as a whole having the condition.(4) The connecting part between the head and the trunk is the neck which provides a degree of freedom for neck movement.(5) In anatomical terminology, neck is also known as "column "and "cervical Region".(6) The above regions consist of the following components such as muscles, cervical vertebrae, trachea, esophagus, thyroid, parathyroid gland, neural structures, and vascular structure.(7) Atlas and axis of the cervical spine show atypical behavior due to their configuration. Flexion, extension, side flexion, and turning motions are the next spinal movements that occur at the cervical spine. The C1 and C2 vertebrae are where the turning movement primarily occurs. Long-term cervical spine bending compromises the following structures: the shoulder, scapula, and thoracic spine, which results in lower cervical spine extension deformity and upper segment flexion deformity. The overuse of the muscles causes muscular imbalances.(8)

When the posture of the shoulder becomes rounded then it changes the rotational axis of the shoulder joint and this changes the mechanical stability of the brachium from the muscles of the neck, shoulder, and pectoral region. The over-worked upper quadrant muscles generate tear in the deltoid muscle which causes shoulder impaction, inflammation of tendons, bursa, muscle weakness, and stretch weakness of upper quadrant muscles.(9) Students often adopt this posture when they are reading, watching TV, biking, driving, and using a laptop, computer, or smartphone.(10) Sustained sitting posture can lead to a change in the angle of the head and can over-stress the posterior muscles with the change of angle of the head which can change whole biomechanics of the neck, chest, and shoulder. The normal angle of the head over the neck increases which is directly proportional to the curvature of the cervical spine. The normal angle of head available in literature when load 10-12 lb. is 0^{o}, 27 lb. 15^{o}, 40 lb. 30^{o}, 49 lb. 45^{o}, and 60 lb. causing 60^{o} tilting of the head.(11) One of the studies showed that workers highly exposed to both physical and psychosocial workplace risk factors were more likely to report symptoms of upper extremity musculoskeletal disorders than workers highly exposed to one or the other workplace.(12)

Among the musculoskeletal disorders, the neck pain in elderly population is 38%, in young range from 6% to 22 % while lifetime prevalence is 14.2 to 71 %. The problems related to the musculoskeletal region related to the work consist of health problems in numerous developed countries because they report a high number of lost days and compensatory work of workers and cost of disability.(13) Literature shows that intensity of neck pain and level of disability was high among undergraduate students because students are at more risk due to prolonged sitting posture(14), resulting in greater angle of neck and trunk. There is a need to develop preventive strategies and decrease the burden of neck pain among medical students. As there is no local study available on neck pain among undergraduate physical therapy students upto our knowledge hence the aim of study was to find out the intensity and level of disability of neck pain among undergraduate physical therapy students. The results can be used to decrease the burden of disease among students and also to plan the cost effective treatment strategies.

Methods:

It was a cross-sectional study. The data was collected from the Agile Institute of Rehabilitation Sciences Bahawalpur. Undergraduate students from 1st year to final year both male and female of age 18-30 years were included. It was completed within 4 months (from 26 October 26 February 2021) after the approval from Institutional Review Board (IRB No. AIRS/IRC/S-05). The sample size was 145, calculated with a margin of error with respect to numerical listed below, the sample size "n" and error "E" chance is calculated as, N is population size (245 was our population size),and Z(c/100) is the critical value for the confidence level c. N= 145 (sample size).(15)

$$X = Z(c/100)2r(100-r)$$

$$N = Nx/((N-1)E2+x)$$

$$E = Sqrt[(N-n)x/n(N-1)]$$

The data was collected by using a convenient sampling technique on undergraduate students with neck pain. Mechanical factors (such as poor sitting posture, sitting on stool and chair without arm rest and backrest and poor ergonomics of classroom) were included only. The exclusion criteria of the current study included students with a history of Trauma/ surgery of neck region within 1-month, cervical radiculopathy, whiplash injury, neck fracture, systemic diseases include osteomyelitis, osteoporosis, osteoarthritis, degenerative disk disease, and other non-mechanical factors. The demographic data was gathered from the students such as previous history of neck surgery, systemic diseases such as DJDs and trauma from last 3 months. Outcome measuring tools of our study were the Numeric Pain Rating Scale (NPRS) and the Neck Disability Index (NDI). Test and retest repeatability were r = 0.96 and 0.95 respectively on NPRS. Reliability: for Chronic pain, r=0.94-0.99 and for acute pain was r=0.81-0.83.(16) Participants score their pain on the numeric pain rating scale from 0 to 10, where 0 is no pain and 10 is the worst pain. Their neck disability index was then utilized to categorize the degree of their neck disability. Ten sections, five in each, make up the NDI. Then their NDI was determined using the criteria of mild, moderate, and severe. Mild, moderate, and severe were defined as being between 17 and 33. Neck Disability Index is a 10-item graded questionnaire (NDI), created from Oswestry low back index. It has test-retest reliability, with good predictive value (Pearson's r = 0.89, p. 05).(17)

For analysis, the data was entered into SPSS version 25. The data were represented using frequency charts, tables, and graphs for the descriptive representation of the mean age, BMI, and pain. The rights of research

participants were protected, and the norms and regulations were observed when performing the study. Only scientific aims were pursued using the collected data. Everyone who took part provided written, informed consent. Data gathering and all information were kept private.

Results:

According to the findings, the current study included 37 males and 108 females between the ages of 18 and 30 years. Almost 141 students belonged to middle class and 4 belonged to lower class. The frequencies of BMI were: Underweight (12 Males, 30 Females), normal (16 Males, 60 Females), overweight (7 Males, 12 Females), and obese (7 Males, 12 Females). Around 68 out of 145 people had a history of illness. (Table No: 1)

Table No: 1 Demographic Details of Participants

Demographic Data	Categories	Frequency (N=145)	Percentage
Gender	Male	37	25.5
	Female	108	74.5
Age Groups	17-20	53	36.5
	21-24	84	57.9
	25-28	8	5.6
Socioeconomic Status	Middle Class	141	97.2
	Lower Class	4	2.8
Body Mass Index (BMI)	Under Weight (16-18.5)	12M*, 30F*	28.96
	Normal (18.5-24.5)	16M, 60F	52.41
	Over Weight (25-30)	7M, 12F	13.10
	Obese (> 30)	2M, 6F	5.51
Previous History	Yes	68	46.9
	No	77	53.1

*M = Males, F= Females

According to NPRS findings, neck pain was more prevalent among female students as compared to male students. The sleeping pattern disturbance was higher in females 50.92%, as compared to males 37.83% as per self-structured questionnaire.

Table No: 2 Numeric Pain Rating Scale

Numeric Pain Rating Scale	Frequency	Percentage
Mild	81	55.9
Moderate	57	39.3
Severe	7	4.8
Male	10	40
Female	65	60

The results of the current study showed that students with mild disability were 124(85.5%), with moderate disability were 12(8.3%), and with severe disability were 9(6.2 %). More females were having mild disability index as compared to males. (Table No: 3)

Table No: 3 Neck Disability Index And Gender

Neck Disability Index	Frequency	Male	Female
Mild	124	32	92
Moderate	12	1	11
Severe	9	4	5
Total	145	37	108

Discussion:

The result of present study concludes that 74(51.0%) participants were suffering from mild pain, 61(42.1%) were suffering from moderate pain and 10(6.9%) participants were suffering from worst pain on NPRS. And according to NDI findings 124(85.5%) participants were suffering from mild disability, 12(8.3%) participants were suffering from moderate pain and 9(6.2%) were suffering from severe disability due to neck pain. These findings are consistent with a studies conducted in multiple regions reporting higher prevalence of neck pain among Undergraduates students, i.e. 51.8% in Lahore, (15) 40.5% in China (18), 44.8% in Pakistan (19), 58.3% in India (20), 49.2% in Ethiopia (21) and 46% in the Thailand.(14)

This current study showed that neck pain is more prevalent in females as compared to males, similar to a study conducted in undergraduate students in University of Sargodha which stated that female students are more likely than male students to have neck pain, with 67% prevalence in females and 33% in men, confirming earlier evidence that gender is an important risk factor for neck pain.(22) It was also similar to a study conducted in Lahore where, mild to severe pain was found but it was due to electronic media usages such as cell phone, desktop computer, tablet, mechanical alignment of body, and other associated factors.(15) In contrast to our study, the study was conducted on students with age of 18-25 years in the department of medicine and health sciences in UTAR (Universiti Tanku Abdul Rehman Kampar Malaysia) in whom neck pain mostly occurred in 2nd-year students (35.9%).(23) In our study, pain was most commonly reported in the 2nd professional year students, compared to the survey of undergraduate medical students at UOS (the University of Sargodha), in whom neck pain was most common in 5th-year students (39.5%) because of their study hours. The possible reasons for these differences are mental and physical health, study hours, part time job and ergonomical factors related to their respective institute. According to their study, the students have more acute pain (64.5%) than chronic pain (35.5%).(24)

The disability rate of our study according to NDI is 85.5% (mild). In contrast with the study conducted by the physical therapy students of Peshawar in whom the frequency of neck pain was 84%. The major age group affected by neck pain was 20-30 years and 28% of students reported having neck pain belongs to final year. According to NDI, the results of neck pain on routine work such as sleeping pattern changes were reported in 23.3%, student's hindrances in using laptop reported in 16.5%, problem in computer work 14.5% and disturbance in driving was 17%. The disability rate according to NDI was 65.5% (mild).(25) In our study more females were having mild disability index as compared to males. The sleeping pattern disturbance was also higher in females than in males in contrast with the study of students of Riyadh. Persons having pain in the neck region had a greater disability rate than those having no pain. The cell phone usage was not significantly related to neck pain and disability rate but it significantly correlated with body alignment and head, neck, and body posture.(23, 26)

Some limitations of our study was that it was conducted in single setting only and didn't focus on associated factors including sleeping and study hours. It is recommended to conduct more advanced studies on this topic in Bahawalpur by using large sample size and a multi-centered approach by the involvement of students from across the district to check the intensity and level of disability of neck pain among students. There should be a proper assessment of neck pain and its prevention strategies among the students.

Conclusion:

According to the findings, undergraduate physical therapy students have mild pain and mild disability according to NPRS and NDI respectively.

Disclaimer: This study is a part of thesis project for the completion of graduation in doctor of physical therapy.

Conflict of Interest: None

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RESEARCH ARTICLE

Barriers to physical therapy practice in cancer patients: Cross-sectional study

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ABSTRACT

Background: High cancer prevalence has been reported in Pakistan while concerning the multidisciplinary management approach the substantial percentage of population needs physical rehabilitation facility. On individual basis physical therapists have reported certain hurdles and barriers in rehabilitating the cancer patients, however, there is no published evidence that highlights such barriers. Therefore, it is essential to recognize those barriers so that these could be managed and addressed effectively for future.

Objectives: The study aimed to determine the barriers to physical therapy practice among cancer.

Methods: The was a cross sectional survey and the total number of participants included in the study were 403. The sampling method used was non-probability convenience sampling technique. The duration of the study was 6 months. Study was conducted in these hospitals; CMH, NORI Cancer Hospital, Fauji Foundation, PIMS, Shifa International Hospital and Holy Family Hospital. Data was collected through semi structured questionnaire, Godin leisure-time exercise and ONS Fatigue Scale. The study included patients with all types of cancers, at any stage of cancer, with the age bracket 20-70 years.

Results: Most of the barriers to physical activity reported by patients were; weakness (87%), poor endurance (54%), financial issues (46%), numbness in hand and feet (45%), joint stiffness (36%), procrastination (7%), a lack of knowledge (6%), lack of motivation (6%), lack of priority (4%), lack of confidence (3%), safety issues (3%), time constraints (3%), and lack of support (2%).

Conclusion: The study concluded that the main barriers to physical therapy exercise treatment included physical symptoms and surplus attentiveness regarding exercise programs, financial constraints, and lack of knowledge, priority, motivation, confidence, support and safety issues.

Keywords: Barriers, Cancer, Physical Therapy, Physical Rehabilitation, Physiotherapy.

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Introduction

Cancer poses foremost cause of deaths globally. In addition, more than 70 % of the deaths from cancer are in developing and underdeveloped countries among which the most common cancers causing death include lung cancer which causes 1.69 million deaths each year, liver cancer causes 78,000 deaths, colorectal cancer causes 774,000 deaths, stomach cancer causes 754,000 deaths, whereas, breast cancer causes 571,000 death each year (1). In addition to this, by 2030, the amount of new cases of cancer is predicted to escalate to 23.6 million (2). In the last 25 years, a significant increase has been seen in the cases of different kinds of cancer. The most common cancer in females in Pakistan is breast cancer and lung cancer in the male population. According to multiple studies, 300,000 new cases of cancer have been reported throughout Pakistan till 2016. (3, 4)

Overall related to general physical therapy practice, physical rehabilitation in polio, and general MSK disorders physical therapy literature identified various valid barriers and these studies guides further research to overcome these barriers (5, 6). As known, physical therapy plays an important role in decreasing the rate of cancer mortality and disability. The purpose of physical therapy is to provide treatment, rehabilitation, prevent risks and maximize the potential of movement of a person. It limits disability, tries to make the patient independent and improves quality of life. In most parts of the country, physical therapy is not a common practice and cancer is mostly treated by oncologists and radiologists.

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Cancer leaves a person fatigued and exhausted. Patients have difficulty in managing their daily activities, physical work and inability to carry out exercises which leads to several problems, such as, contractures and stiffness in joints, bed sores, muscular atrophy because of staying in bed all the time and simple tasks like getting out of bed becomes difficult. Even though, cancer treatment has advanced significantly, for example, surgeries, hormone therapy or immune therapy, chemotherapy and radiotherapy; it leaves the patient debilitates and weary with limitation in physical activity during and after the treatment. The limitations include deconditioning, incontinence, lymphedema, nerve damage, pain and cancer-related fatigue. These problems can be managed conservatively with physical therapy. Even though, there are several advantages of physical therapy treatment, it is not a common practice in Pakistan. Previously in various patient populations the barriers into physical therapy practice have been recognized, while related to cancer population there have been no publicized evidence. While literature encourages identification of barriers to improve the quality care. Therefore the study will bridge this gap through recognizing and identifying the barriers of physical therapy practice in cancer physical rehabilitation. So, this study aimed to determine the barriers to physical therapy practice among cancer patients and to determine the relationship between fatigue and exercise tolerance among them.

Methods:

The study conducted was a cross sectional survey and the total number of participants included in the study were 403. Sample was calculated through Rao software sample size calculator in which margin of error was 5% with confidence interval 95% (estimated population 20,000) (7). The sampling method used was non-probability convenience sampling technique.

The targeted hospitals were NORI cancer Hospital, Fauji Foundation, PIMS, and Holy Family Hospital. Before conducting the research, consent was taken from the respondents. Ethical approval was obtained (Riphah/RCRS/REC/Letter00450). The study included patients with all types of cancers, at any stage of cancer with the age bracket from 20 to 70 years. Patients with additional comorbidities not due to cancer were excluded from the study (e.g. COPD, Renal failure, and ischemic heart disease). The duration of the study was 6 months (2018-2019).

For this study the questionnaire with consent form was given to the patients and study purpose was explained to the patients verbally and in written form. They were told that all the data collected from them will be encoded and used only for research purpose and they had right to withdraw anytime. Data was collected through semi structured questionnaire, ONS (oncology nursing society) fatigue scale which was used to find frequency of fatigue and Godin Leisure-Time Exercise questionnaire, which is a valid self-report measure of physical activity.

Data was analyzed using SPSS 21. Frequency and percentages of different variables were calculated. Bivariate analyses were conducted using the Spearman's correlation (due to non-normal data) with p value <0.05 significant.

Results :

Total 403 individuals with a current or past diagnosis of cancer completed the survey. The mean age of participants was 43.21±0.41 years. Details of participant demographics can be found in Table 1. 248 participants were females and 155 were male patients.

The most common diagnosis was breast cancer (20%). Of the sample, a diagnosis of Stage I (9%) and Stage III (77%) cancer was most commonly identified. Almost the entire sample indicated that some type of treatment received and among them chemotherapy was (54.8%) highly reported.

Participants were asked about barriers to exercise during cancer treatment and the top was lack of energy (87%). Other barriers included were physical challenges, belief that it would make them feel worse, pain, numbness, and a lack of knowledge and awareness that they should be exercising. (Table 2.) Other side effects included were nausea (41.5%), depression (48.3%), anxiety (41.4%), limited joint movement (27.6%), The majority of participants (76.7%) indicated that these physical symptoms influenced their ability or desire to exercise. The global score of the Godin leisure-time exercise showed that 298(74%) cancer patients were insufficient active/sedentary, 103(26%) were moderately active and only 2 were active (0.5%). further results showed that people doing strenuous exercise on the daily basis were only 2(0.5%), those doing mild exercise were 44 (10.9%) and the remaining 357(88.5%) patients were not doing any exercise. Fatigue was seen in majority of the patients on ONS fatigue scale (table 3) There was a strong positive correlation ($r=0.81$, $p<0.05$) of fatigue with physical activity.

Table 1: Descriptive data details of study sample

Variables	n	%
Gender		
Male	155	38
Female	248	61
Total	403	100
Site of Cancer		
Breast CA	80	20
Blood CA	55	14
Bone CA	30	7
Brain CA	12	3
Abdominal	64	16
Viscera CA	31	8
Respiratory CA	30	7
Lymphoma CA	58	14
Reproductive CA		
Stage of Cancer		
1	35	9
2	20	5
3	311	77
4	27	7
5	10	3
Treatment received	221	54.8
Chemotherapy	156	38.7
Radiations	26	6.5
Surgery		

Table 2: Frequency (Percentage) of barriers

Variables	n(%) yes	n(%) No
Lack of knowledge	377(93)	26(6)
Lack of priority	388(96	15(3.7)
Lack of motivation	377(93)	26(6)
Lack of confidence	391(97)	12(2.9)
Lack of support	397(98)	6(2)
Safety issues	390(96.8)	13(3.2)
Procrastination	331(82.3)	72(17.7)
Financial issues	219(54.3)	184(45.6)
Time constraints	391(97)	12(2.9)
lack of energy/ weakness	355(88)	48(11.9)
Poor endurance	333(82.6)	70(17.3)
Joint stiffness	279(69.2)	124(30.7)
Numbness in hand/feet	294(72.9)	109(27)

Table : Frequency distribution of ONS Fatigue Scale

Variables	Frequency (n)				
	Not at all	A little bit	Somewhat	Quite a bit	Very much
I feel fatigued	52	13	23	22	293
I have trouble starting things because I am tired	112	37	23	32	199
How run -down did you feel on average?	100	47	28	115	103
How fatigued were you on average?	67	24	34	25	253
How much were you bothered by your fatigue on average?	62	21	36	28	256
To what degree did your fatigue interfere with your physical functioning?	65	19	32	30	257

Discussion:

To our knowledge this was the first study that has focused the physical therapy practice barriers among cancer patients. The current study findings revealed that majority of the sample consisted of females cancer patients. While the breast cancer was the most reported type of the cancer overall followed by blood, bone, and brain cancer etc. Cancer of abdominal organs was reported least. Moreover, the most reported stage of cancer reported was stage-III and least stage reported was stage-v, most common treatment identified was chemotherapy and least followed treatment was surgery. Considering the barriers in physical therapy practice the most common barrier reported was weakness followed by poor endurance, financial issues, numbness in hand and feet, joint stiffness, procrastination, a lack of knowledge, lack of motivation, lack of priority, lack of confidence, safety issues, time constraints, and lack of support. Furthermore, in the study fatigue found significantly positively correlated with physical activity in cancer patients.

The findings of the current study are comparable to existing literature such as previously high prevalence of breast cancer as found in our study has been reported by Akhtar Bibi et al (2020); despite the rising awareness of breast cancer in Pakistan (8). In our study most of the cases were of stage III because of significant improvement in patient outcomes in early stage as similarly reported by Saeed S. et al (2021); while least prevalent was stage 5 because of high mortality rate globally in later severe stages reported in a study conducted by Negotia S et al (2018) (9). In our study majority of the patient were on chemotherapy because previously reported that since the technological advancement in the chemotherapy and improved outcomes, the chemotherapy is being recommended as very initial line of treatment worldwide (10).

Considering the primary objective of the study related to the barriers in physical therapy practice weakness and poor endurance were found most common barriers. Similar findings were reported by Louise Brennan et al (2022) where generalized body weakness in response to disease and treatment and decreased aerobic capacity were found significant barriers in physical rehabilitation (11). However, some other results of current study are different form the study by Louise Brennan et al (2022) such as next most common barrier in the current study was financial issues but in the other study was more related to lack of awareness. This difference is explainable because of economical differences of the both study populations that in Pakistan very less percentage of people could enjoy free medical services for the health care (12).

In current study other common barriers identified were joint stiffness and numbness in hands and feet. Similar findings were declared by another study conducted by De Light KM et al (2019) where neuromuscular health issues found strongly associated barriers in overall management of cancer (13). However these findings might differ little as the study by De Light KM et al only consisted of breast cancer patients.

In current study fatigue faced by the cancer patients was found associated with physical activity which is integral part of physical rehabilitation. This findings further explains the findings of current study where weakness decreased endurance were found most common barriers. Moreover, matching findings have been discussed in various researches related to fatigue and physical activity in cancer patients such as study by J. Frikle et al (2020) where fatigue was found having negative effect on physical activity level in cancer patients.

The study provides basis to further explore the risks and barriers in specified cancer population and also guide further research to overcome these barriers in physical therapy. The study limits the risk factor analysis, and more strong statistical analysis to determine how much a certain barrier could affect the physical therapy and physical rehabilitation.

Conclusion:

The study concluded that the main barriers to physical exercise in patients undergoing cancer treatment were mainly health related issues, such as, weakness, poor endurance, fatigue, joint stiffness and numbness in hands and feet. Other barriers included financial constraints, lack of knowledge, priority, motivation, confidence, support and safety issues.

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Conflict of interest: None to Declare

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Ghous M: Concept & Design, data analysis, critical review
Kiyani SK: Data analysis & literature review
Kanwal M: Literature Review & article writing

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LETTER TO THE EDITOR

Autogenic and Reciprocal Inhibition Muscle Energy Techniques; which one of the two is more effective?

Sabah Afridi[1], Farah Afridi[2]

Musculoskeletal symptoms are commonly categorized as either contractile or non-contractile dysfunctions, with the former one related to symptoms arising from muscles and the latter one arising from joints and non-contractile periarticular tissues .(1) The most common technique used to treat contractile dysfunctions include muscle stretching, but is focused on addressing only the passive tone component of the muscle but not the active tone.(2) Nonetheless, more commonly, both active and passive tone components are involved in contractile dysfunctions and muscular disorders.(2) Muscle energy technique (MET) is a soft tissue mobilization technique that focuses on both the active as well as passive tone of the muscles and is not only effective in muscle shortening but muscle spasm and guarding as well (2-4), and for this reason research has shown muscle energy techniques to be more effective than static stretching in persons with acute and chronic musculoskeletal disorders such as neck pain, back pain and lateral epicondylitis.(2,4-6) Muscle energy techniques are of different types, and based on the mechanism of action can be categorized into two major categories, namely autogenic inhibition muscle energy technique and reciprocal inhibition muscle energy technique.(2-4) Even though muscle energy techniques are found to be more effective than static stretching, evidence is limited in terms of the comparison of autogenic and reciprocal inhibition muscle energy techniques. Only two studies have been found in the literature that have compared the effects of autogenic inhibition muscle energy technique as compared to reciprocal inhibition muscle energy technique, one focusing on pain, neck disability and range of motion (2) and the other one focusing on isometric muscle strength (4), and both of them have found autogenic inhibition muscle energy technique to be more effective than reciprocal inhibition muscle energy technique.(2,4) However, it is important to mention that both of the studies were carried out in patients with mechanical neck pain (2,4), and no such studies have been carried out in other regions or conditions till date. Moreover, the outcome measurement tools used in the studies were clinical and subjective tools such as numeric pain rating scale, neck disability index, goniometry and modified sphygmomanometer dynamometry (2, 4), and it is suggested that future studies should use more objective and physiological oriented tools such as pain pressure threshold (algometry) and electromyography (EMG). Furthermore, more studies are needed to establish the differences between autogenic inhibition muscle energy technique as compared to reciprocal inhibition muscle energy technique, focusing on other musculoskeletal disorders and body regions as well.

Keywords: autogenic inhibition, muscle energy technique, reciprocal inhibition

Disclaimer: None to declare.

Conflict of interest: None to declare.

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