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Effect Of Wenger's Protocol Along With Diaphragmatic Breathing Exercise In Subjects Of Chronic Bedridden Patients.

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INTRODUCTION

Such patients are called chronic bedridden patients who are confined to bed either due to multiple medical reasons for six months or more continuously. The reasons responsible for such a state may vary and could be innumerable, such as serious illness, disability, surgery, or even neurological disorders like stroke and multiple sclerosis. In such condition, their experience impacts the bedridden patients' and their family members' physical and psychological health who take care of them.

Physical Implications:

A number of physical health complications can result from chronic bedrest. The more immediate of these include the development of pressure ulcers, more colloquially known as bedsores, which develop as a result of sustained pressure applied on the skin that inhibits blood flow to the location. Such sores can be painful and lead to major infections if not managed properly. Preventive measures would include frequent turning and special mattresses that do not allow pressure points on the body to form.

Another major concern is muscle atrophy because, through the lack of movement, the muscles weaken. This may impact a patient's ability to walk or move independently and have an effect on their functional level. Due to this, it becomes very difficult to obtain independence when they start to rehabilitate. This can further develop stiffness in the joints and contractures in the joints, which reduce the range of motion, making it difficult during physical therapy.

Moreover, long-term immobility is the main reason for the risk of developing deep vein thrombosis in bedridden patients. This mostly results in a critical condition called pulmonary embolism. Therefore, healthcare professionals commonly recommend exercises that improve blood flow, even on the bed, and pressure application by compression devices.

Psychological Implications:

This has a very huge effect on the psychology of a chronic bedridden patient. Many times, they usually feel isolated, depressed, and anxious because they cannot be involved in any activity or any form of social intercourse. The loss of autonomy and control over one's life occurs at a very fast pace, thus bringing down one's self-esteem and identity.

These psychological aspects are of great significance, and the role of caregivers towards these is huge. Providing them emotional support, communicating with their near and dear ones, and giving them mental stimulation in the form of books, music, or television can improve their mood and disposition. Guidance in the form of counseling or therapy can also be undertaken.

Social and Economic Implications:

In most cases, chronic bedridden patients require assistance with daily activities: bathing, eating, and going to the bathroom. Therefore, they will naturally need a strong support network in place, usually consisting of family or professional caregivers. Sometimes caregivers bear so much burden that it can lead to physical and emotional stress, sometimes referred to as caregiver burnout.

Economically, taking care of a bedridden patient can be very costly. It means money spent on treatment, adaptive equipment, and physical therapy. It also includes potential loss of income for family members to enable them to reduce their work hours or stop working altogether to take good care of the patient.

One has to understand the complexity of the bedridden chronically ill if one is to assure continuous care. It may call for intervention from not just physicians and nurses but also a physical therapist or even mental health professionals to achieve an all-rounded kind of attention. The quality of life can be greatly enhanced for bedridden patients, which would impact them physically and also help their emotional and psychological being with a more holistic approach to treatment.

The Wenger Protocol for Hospital Bedridden Patients.

The Wenger Protocol is an approach that deals with a comprehensive way of tackling chronic hospitalized bedridden patients as recovering patients with psychological, social, and economic problems. The framework is health oriented and put broader scope in a multidisciplinary approach and hence offers a comprehensive approach in the physical, psychological, social, and economic lives of the patients with the aim of improving better living and quality of life for the patient and the caretakers at large. Below, we explain briefly the major components of the Wenger's Protocol.

1. Comprehensive Assessment:

Central to Wenger's Protocol is a comprehensive evaluation of the patient's medical history, physical condition, psychological state, and social needs. This preparatory work will bring into sharp focus the following special risks and challenges, inter alia:

Medical conditions: identification of the actual medical conditions giving rise to.

- Physical Condition: Assess muscle power, joint mobilities, risk for pressure sores, and deep-vein thrombosis.

- PsychoSocial Condition: Determine the mental state of the patient if he/she is free from depression, anxiety, or loneliness.

- Resources: Identify the family, the help-giving system, and people or units in the society who can extend care and help.

2. Preventive Care:

Wenger's Protocol utilizes prevention strategies that would reduce the chances of physiological complications of immobility following prolonged bedrest:

- Prevention of Pressure Ulcers: Arrange for development and adherence to a schedule for the repositioning of the patient, specialized pressure-reducing mattresses and cushions to reduce the pressure against vulnerable areas.

- Physical activity: Stimulating exercises promoting passive and active ROM exercise helps maintain muscle strength and functionality of the joint even when formal physical therapy is not possible.

- Prevention of DVT: Compression stockings or devices improve circulation and decrease the tendency of blood to clot.

3. Psychosocial Support:

Knowing that bedrest is often psychologically painful, the Wenger Protocol includes ways to help mental well-being, such as:

- Emotional Support: Caregivers who were trained will be able to read the subtle cues of emotional suffering from their patients and know what to do.

- Social Interaction: Talking with caregivers, family, and friends by phone, by video call, or in person to prevent loneliness.

Mental Stimulation: Allowing access to books, music, games, and other entertainment that will enable the patient to rework his way emotionally and cognitively.

4. Caregiver Support:

The presence of caregivers in the case of chronically bedridden patients is essential, and the Wenger's Protocol includes that caregivers need support too:

- Education and Training: Educate the caregivers about how to handle patients and what care they need, nutrition, and the technical management of different medical equipment.

- Respite Care: advising the family member to take intervals for a break by arranging for respite care from respite services to avoid them from being on the edge and keeping themselves fit and mentally healthy.

- Support Groups: providing a chance to the family member to join some of the support groups in terms of sharing other's experiences, challenges, and survival skills

5. Economic Considerations:

The Wenger's Protocol recognizes that it leads to an economic burden on the family members taking care of these bedridden patients and advises on how to deal with this

- Financial Planning: Financial planning services will make it possible to enable families to understand issues on insurance coverage, government aid, or community resources that can be harnessed by the affected family to reduce the financial burden.

- Adaptive Equipment: Information or how to acquire needed adaptive equipment, like wheelchairs, adjustable hospital beds, and various mobility devices is available via grants and financial aid programs.

Application of the Wenger Protocol is a multidiscipline process. Aimed at improving life not only for the patients but also for the patients' caregivers, this protocol should go a long way in addressing the physical, psychological, social, and economic angles of care. The operationalization of this broad framework will now entail actually working in tandem with the healthcare professionals by caregivers and families to ensure the patient's needs are empathetically taken care of and effectively implemented. This way, outcomes can

be improved and a supportive framework can be provided to people experiencing chronic illness and immobility.

Yes, it is! Given below is the day-wise, week-long chart of Wenger's Protocol regarding physiotherapy on a chronic bed-ridden patient. It is a plan that focuses on slow and steady physical rehabilitation; gradual progression in mobility with an average level of general physical well-being through target exercise and therapies.

Day-wise, Week-long Breakup of Wenger's Physiotherapy Protocol

Day 1: Initial Assessment and Goal Setting

- Morning:

- Full physiotherapy assessment, ROM, power, and functional capacity.

- Identification of where limitations and points of pain are; develop realistic and measurable rehabilitation goals.

- Afternoon:

- Preparation of a physiotherapy treatment plan for the individual based on the findings of assessment with very clear exercises to be done and the number of times.

- Instruct patient/family on how to facilitate the exercises.

Day 2: Passive Range of Motion (ROM) Exercises

- Morning:

- Early morning, passive ROM exercises to prevent stiffness and maintain flexibility of the joints. The caregiver can smoothly take the patient's limb through available ranges.

- Lean more on the significant joints — both the shoulders and the minor ones of the elbows, wrists, hips, knees, and ankles.

- Afternoon:

- Perform deep breathing exercises. This enhances lung capacity, thereby helping to avoid respiratory complications.

Encourage the caregivers that those exercises are important, and the family is important to give support.

DAY 3: Active-Assisted Range of Motion Exercises

- Morning:

- Introduce active-assisted ROM exercises, in which the patient actively participates in the movement with the help of caregivers; this can be aided by straps or caregiver's support.

- The emphasis would be on encouraging the engagement and participation of the patient to build motivation.

- Afternoon:

- Advance to deep breathing exercises, to incorporate 'huffing' and coughing exercises to clear the lungs.

- Reassure and praise for a good exercise experience.

Day 4: Strengthening Exercises

- Morning:

- Start with gentle isometric strengthening exercises: patient is instructed to perform exercises to activate the muscle contraction with no joint movement.

- Examples: squeezing a soft ball, pressing palms together`

Progress to very light resistance activities and bands if the patient is ready and safe to progress.

Note for pain or discomfort; adjust as required.

Day 5: Intermediate Activities and Functional Movements

- Morning:

Introduce sitting at the edge of the bed as a progression towards functional movements.

- Assist in weight shifts and some passive trunk movements for a better experience of balance and core stability.

- Afternoon:

- Introduce basic functional exercises such as supine to sit up. Educate the caregivers on the right techniques when handling the patient to avoid harm.

- Encourage the patient using the guided imagery or others in the motivational form of encouragement.

Day 6: Mobility and Gait Training

- Morning:

If the patient's condition will permit, introduce transfers with assistance (e.g., bed to chair transfer).

Mobility aids the patient will be focused on the technique of walkers, canes, or wheelchairs to allow for safety and independence in mobility.

- Afternoon:

Gait training with supervision if the patient can stand or walk with support. Emphasize posture and balance.

Use of motivational techniques and positive reinforcement to promote continued progress.

Day 7: Review, Feedback, and Progress Assessment

- Morning:

- Sit down with the patient and his/her caregivers to have a full review of the patient for the week.

- Re-assessment of physical capabilities, challenges, and successes made.

- Afternoon:

- The physiotherapy plan is adjusted and made purposive to the capability and goals of the patient according to feedback and progress.

- Frame a schedule for the next week to ensure continuity with physiotherapy.

Gradual rehabilitation is started with the aim of following the stages of Wenger's Physiotherapy Protocol, in consideration of the idiosyncrasy of the patients who remain chronically bedridden. Each day builds on the previous one in terms of activities, so that gradually more and more engagement, participation, and mobility are ensured with safety, support from the caregivers, and gradually assessment of unfolding outcomes to corroborate their progress. Assessment, feedback, and adjustments at regular intervals keep the approach patient-centered to ensure improvement in physical function and better quality of life.

Diaphragmatic Breathing:

Diaphragmatic breathing is a process of breathing that focuses on the diaphragm, a very large muscle located at the bottom of your lungs. This breathing exercise is designed to accomplish deeper breathing while promoting more complete exhalation, hence possibly improving oxygen intake and eventually leading to

relaxation. Indications for diaphragmatic breathing include those patients with a history of respiratory diseases, anxiety disorders, or chronic illnesses, and bedridden patients.

Objectives and Advantages of Diaphragmatic Breathing

1. Increased Lung Capacity: Opening up the diaphragm allows more air to be taken into the lungs with each breath, improving gaseous exchange.

2. Improved Oxygenation: This can enhance the overall oxygenation of blood, thereby improving cellular functions and hence, augmenting energy levels.

3. Lower Respiratory Rate: As one masters the process of diaphragmatic breathing, the rate of respiration decreases, which tends to induce relaxation and reduce feelings of anxiety or panic.

4. Deepened Relaxation: Deep breathing may activate the body's relaxation response to counteract stress and thereby improve mental health.

5. Less Tension: The diaphragm, when brought into action, is capable of reducing tension in the chest and shoulder areas, which are most disturbed by shallow and rapid breathing patterns.

6. Posture and Core Stability Support: Diaphragmatic breathing can help in the improvement of posture and core stability in those patients who are bedridden or have very poor mobility.

Methods of Performing Diaphragmatic Breathing

Step-by-Step Instructions

1. Position:

a. Lie on your back with your knees bent.

b. Sit upright in a chair.

You can keep your knees elevated and supported by a pillow if you are lying down.

2. Positioning of Hands:

- Place one on the top of the chest and another on the abdomen. This helps in being aware of the breathing pattern.

3. Inhale:

- Inhale slowly through your nose, allowing your abdomen to rise while keeping your chest still. The diaphragm contracts and descends downward, drawing air into the lungs.

- First, fill up your lower lungs as much as you can by making the abdominal area visibly expand outward.

4. Exhale:

Exhale slowly through pursed lips as if you were blowing a candle, or through your nose. As you exhale, allow your belly to drop as the air is released from your body. In this phase, engage the abdominal muscles to help push residual air out of your lungs.

5. Maintain the Rhythm:

Perform this breathing exercise for 5 to 10 minutes, focusing on deep and slow breaths.

- Make your exhalation more extended than your inhalation to bring on relaxation. For example, inhale for 4 counts and exhale for 6-8 counts.

6. Practice Frequently:

Inscribe diaphragmatic breathing into simple rudiments of your daily routine—for example, during waking up, at work breaks, or before sleep, for a few minutes at a time.

- Feel the Movement: Focus on abdominaL movement, not chest movement, to further strengthen diaphragmatic action.

- Create a Calm Environment: Find an quiet, comfortable practice space to enhance relaxation and attention.

- Use Visualization: Envision the diaphragm moving down to create space for air in the lungs, which enhances perception of breath.

- Add on Relaxation Techniques: Use diaphragmatic breathing in conjunction with other relaxation methods, such as progressive muscle relaxation or mindfulness.

- Modify for Bedridden Patients: For bedridden patients, have them attempt this in a supported position where they are comfortable enough to focus on their breathing.

Conclusion

Diaphragmatic breathing is one such useful technique that enables improvement in respiratory functions, the reduction of stress, and the betterment of overall well-being. It brings about more oxygenation, relaxation, and control over breathing. The practice can bring permanent benefits, especially to patients who have a respiratory disorder or are bedridden chronically. Its inclusion in many rehabilitation programs will contribute much to betterment in physical and mental health.

METHODOLOGY

Participants- the study included 30 participants, both male and female of age group 30-50 years who were screened for chronic bedridden for greater than 1-3 months and reported their total dependence. Subjects were already advised for physiotherapy by the physician. The participants were excluded if they had any other geriatric patients. Informed consent was taken from subjects. Subjects who fulfilled the inclusion criteria were assigned into two groups by simple random sampling technique. The randomization was blinded and the participants were also told not to be discuss among themselves regarding the treatment the received. The total study duration was for 1 year.

Initial Assessment: A pre-treatment Barthel Index score for functional assessment and FIM

Intervention: The total duration of the study was 2 weeks .with 2 treatment sessions on an alternative day.

Group A (Experimental Group) included 15 subjects and were given

This, then, outlines what appears to be a sort of rehabilitation or exercise program, which enhances the functional capabilities of patients, especially those convalescing from illness or injury. Here's a rundown of its key components.

14-Step Wenger Program

1. Step 1: Activities of Daily Living

- Exercises that shall be performed shall be in passive range-of-motion to the upper and lower extremities.

- Activities include basic self-care tasks such as feeding and personal hygiene.

2. Step 2: Activities of Daily Living

- The patient will perform active range of motion exercises.

- Tasks will include washing hands and teeth brushing.

3. Step 3: Activities of Daily Living

- Continue active range of motion exercises.

- Introduce simple craft activities to develop fine motor skills.

4. Step 4: Activities of Daily Living

- Passive and active range of motion exercises are carried out.

- Emphasis on completion of craft activities.

5. Step 5: Activities of Daily Living

- Carry out the previous exercises.

- Start complex tasks such as wood projects.

6. Step 6: Activities of Daily Living

- Continue with all the previous activities.

- Introduce walking as exercise.

7. Phase 7: Activities of Daily Living

- Begin hammering projects to develop strength and coordination.

8. Phase 8: Activities of Daily Living

- Continue with all previous exercises and activities.

9. Phase 9: Activities of Daily Living

- Continue to develop the skills with more complex activities.

10. Step 10: Activities of Daily Living

- Continue all projects/exercises as introduced in Steps 2 through 9.

11. Step 11: Activities of Daily Living

- Progress mobility and strength exercises.

12. Step 12: Activities of Daily Living

- Continue with all projects and exercises to date.

13. Step 13: Activities of Daily Living

- Consolidate activities learned in Steps 1 through 12.

14. Step 14: Activities of Daily Living

- Projects finalised, patient to be made comfortable with his ability.

The course has a progressive nature from passive to active involvement in day-to-day activities to foster independence in doing everyday things and enhancing physical potentials. All the processes are interlinked and at every stage, the patient will be given adequate practice to develop the competence and confidence needed for the performance of daily living activities

Diaphragmatic Breathing

Diaphragmatic breathing can be exercised using different techniques that aim to maximize lung capacity, create relaxation, and improve general health. The following are steps for how to do diaphragmatic breathing and variations on this technique

Basic Diaphragmatic Breathing Technique

1. Positioning:

Lieg down: On your back on the floor either on a yoga mat or on the bed, with the knees bent or straight. Alternatively, you can sit in a chair with your back straight and feet flat on the floor.

- Hand Positioning: Place one hand on your chest, and another on your stomach. This is so that you may feel the rising and falling of your diaphragm.

2. Inhalation:

- Inhale: Inhale through your nose deep into your belly, while keeping your chest relatively still. As you inhale, your diaphragm descends, making your belly rise. The hand on your chest should not move.

3. Holding Your Breath Optional:

- Hold: If you can, hold your breath for a count of 2-5 seconds, allowing the air to fill your lungs completely.

4. Exhaling:

- Outbreath: Slowly breathe out through your mouth (or nose) such that your abdominal muscles catch the air slightly. As you breathe out, let your abdomen drop, trying to keep the hand on your chest as still as possible.

5. Repeat:

- Hold: Do this for 5-10 minutes. Be concerned with a slow rhythm, rather than forcing air in or out.

6. Awareness: Be aware of your breathing pattern, making sure to have deep and relaxed breaths. If your mind wanders, gently bring it back to your breath.

Advanced Techniques

Once you are comfortable with the basic form of diaphragmatic breathing, the following advanced techniques can be used:

1. 4-7-8 Breathing:

- Inhale for 4 seconds: Inhale deeply through your nose for a count of 4 seconds.

- Hold for 7 seconds: Hold for a count of 7 seconds.

- Exhale for 8 seconds: Slowly breathe out through your mouth for a count of 8 seconds. The breathing technique facilitates relaxation and can often even help to reduce anxiety.

2. Diaphragmatic Breathing with Visualization:

- Visualise Expansion: On the intake of breath, visualise the lungs filling with air, and the abdomen swelling. Imagine your diaphragm moving downwards and creating space within your body. This can enhance the mindfulness element while one performs the practice.

3. Counting Breaths:

- Count Inhalations/Exhalations: At each inhale/exhale, count to five, then reverse the count and proceed. This would keep the concentration intact and avoid distraction.

4. With Resistance:

- Resistance Bands: If one wants to improve this breathing practice even more, use a resistance band around the torso. As you inhale and exhale, the band will give slight resistance that helps in strengthening the diaphragm and intercostal muscles.

5. Adding Movement:

- Flow with Movement: Do some diaphragmatic breathing during light activities such as yoga or stretching. Coordinate your breaths with the actions of your body to create an even greater relaxation response, further increasing mindfulness.

6. Guided Breathing Exercises:

- Follow Apps or Recordings: You can find guided breathing apps or recordings which might walk you through most diaphragmatic breathing exercises. These are usually done to a background of soft music or natural sounds.

Tips to Successful Practice

- Practice regularly: Begin with the practice of diaphragmatic breathing daily, first for a short duration and gradually increasing as you get comfortable.

- Have a quiet environment: Find a quiet, comfortable place with minimal or no kind of disturbance.

- Patience: Be light with yourself; this, just like breathing, requires time to get in hand.

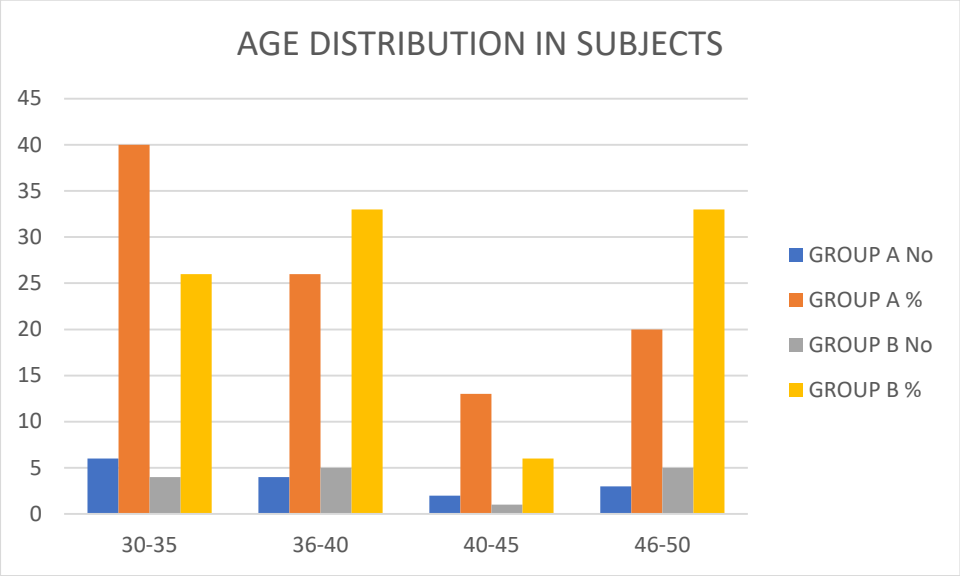
Practice Combined with Other Relaxation Exercises: Practice diaphragmatic breathing combined with other relaxation activities, such as meditation, mindfulness, or very light yoga.

- Listen to Your Body: If you begin to feel dizzy or light-headed, stop immediately. Just breathe normally, then go ahead to try to maintain a pace and comfort that will work for you.

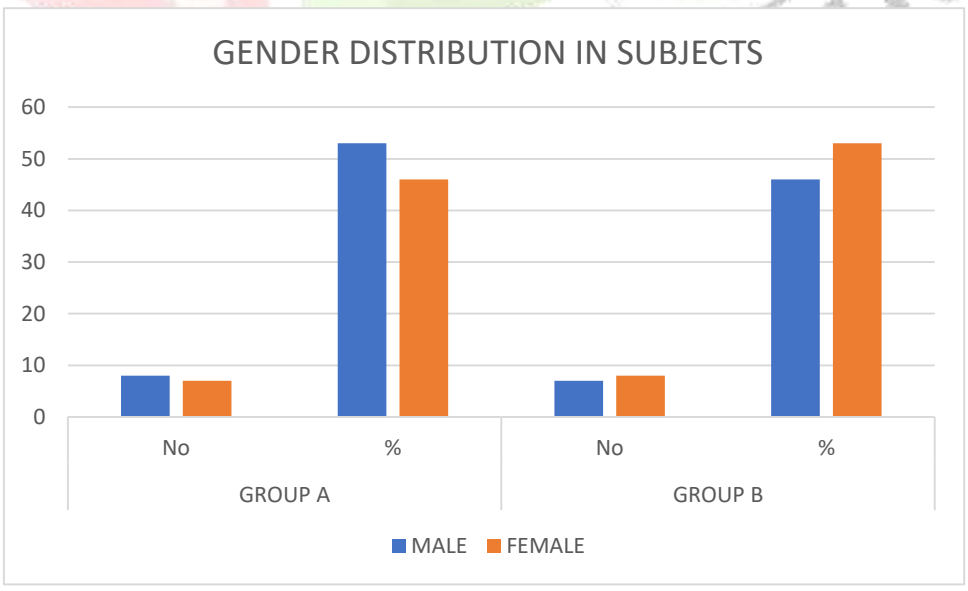
Diaphragmatic breathing is a multifaceted technique that offers some effective ways of body relaxation, respiration improvement, and enhancement of general well-being. Developing different techniques and bringing mindfulness into them, a person can relate with his breath more and use it as a tool in stress alleviation and many other health-related aspects.

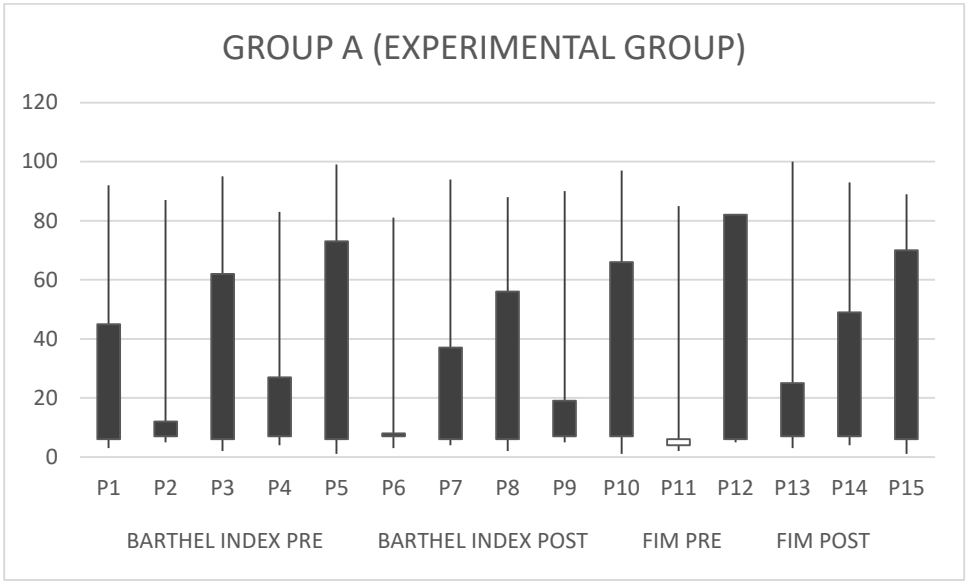
RESULTS

AGE DISTRIBUTION IN SUBJECTS					
S.No	Age in years	GROUP A		GROUP B	
		No	%	No	%
1	30-35	6	40	4	26
2	36-40	4	26	5	33
3	40-45	2	13	1	6
4	46-50	3	20	5	33
MEAN		3.75		3.75	
SD		1.479019946		1.639359631	
Chi-square statistic: 1.344 p-value: 0.719					

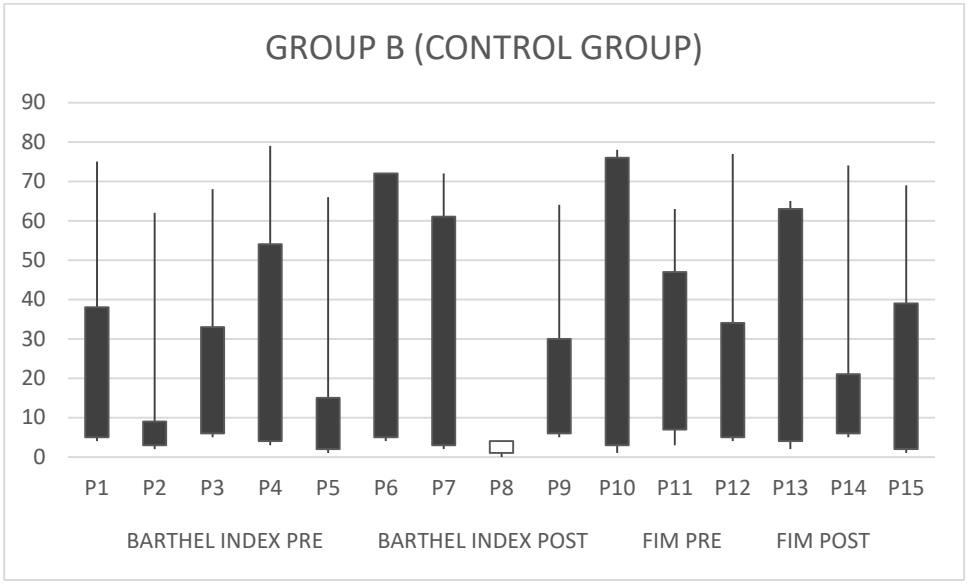


GENDER DISTRIBUTION IN SUBJECTS					
S.No	Gender	GROUP A		GROUP B	
		No	%	No	%
1	MALE	8	53	7	46
2	FEMALE	7	46	8	53
Chi-square statistic: 0.0 p-value: 1.0					





GROUP A (EXPERIMENTAL GROUP)					
S.no	No of patients	BARTHEL INDEX		FIM	
		PRE	POST	PRE	POST
1	P1	45	92	3	6
2	P2	12	87	5	7
3	P3	62	95	2	6
4	P4	27	83	4	7
5	P5	73	99	1	6
6	P6	8	81	3	7
7	P7	37	94	4	6
8	P8	56	88	2	6
9	P9	19	90	5	7
10	P10	66	97	1	7
11	P11	4	85	2	6
12	P12	82	82	5	6
13	P13	25	100	3	7
14	P14	49	93	4	7
15	P15	70	89	1	6
MEAN		42.33	90.33	3	6.46
SD		24.68648	5.861361	1.414214	0.498888
T STATS		7.65		9.9	
P VALUE		2.29*10^-06		1.05*10^-07	



GROUP B (CONTROL GROUP)					
S.no	No of patients	BARTHEL INDEX		FIM	
		PRE	POST	PRE	POST
1	P1	38	75	4	5
2	P2	9	62	2	3
3	P3	33	68	5	6
4	P4	54	79	3	4
5	P5	15	66	1	2
6	P6	72	70	4	5
7	P7	61	72	2	3
8	P8	1	81	3	4
9	P9	30	64	5	6
10	P10	76	78	1	3
11	P11	47	63	3	7
12	P12	34	77	4	5
13	P13	63	65	2	4
14	P14	21	74	5	6
15	P15	39	69	1	2
MEAN		39.53	70.14	3	4.33
SD		21.89328	5.8554	1.414214	1.490712
T STATS		5.28		6.32	
P VALUE		0.00012		1.88*10^-05	

Barthel Index:
- Group A:
  - T-Statistic: 7.65
  - P-Value: 2.29e-06

- Group B:
  - T-Statistic: 5.28
  - P-Value: 0.00012

FIM (Functional Independence Measure):
- Group A:
  - T-Statistic: 9.90
  - P-Value: 1.05e-07

- Group B:
  - T-Statistic: 6.32
  - P-Value: 1.88e-05

Interpretation:
- Barthel Index Comparison:
  - Both groups show significant improvement from pre to post. However, Group A shows a higher t-statistic (7.65) compared to Group B (5.28), indicating a stronger effect or larger difference between pre and post values in Group A.

- FIM Comparison:
  - Both groups also show significant improvement in FIM scores. Group A again shows a higher t-statistic (9.90) compared to Group B (6.32), suggesting that the improvement in FIM scores is more pronounced in Group A.

DISCUSSION

The aim of the study was to evaluate the effect of Wenger's protocol combined with Diaphragmatic Breathing exercises among bedridden patients in a chronic condition. The results obtained from BI and FIM give interesting evidence to the effectiveness of the intervention.

Barthel Index Findings:

Both Group A and Group B had improved a lot on the Barthel Index, proving that both interventions have contributed to additional functional mobility for bedridden chronic patients. The T-statistic in group A was significantly higher, 7.65, compared to that of group B with 5.28, designating a more positive impact resulting from the combined approach of Wenger's protocol and Diaphragmatic Breathing exercises. This may imply that such intervention in combination allows for more substantial improvements in independence in daily activities among patients.

Notably, the P-values in both groups were very small: 2.29e-06 for Group A and 0.00012 for Group B. The improvements noted herein are thus certified to be of statistical significance and not at all likely to be a chance occurrence. Having a higher T-statistic value than in Group B, this implies that individuals under Wenger's protocol are likely to benefit from improved physiological and psychological results because of improved respiratory functions and heightened engagement in physical activity, critical elements for bedridden patients.

Results of Functional Independence Measure:

The FIM scores also showed major improvements for both groups. Again, Group A revealed a greater effect, with a T-statistic of 9.90 compared to 6.32 for Group B. The P-values, 1.05e-07 for Group A and 1.88e-05 for Group B, further underline the significance of these findings and prove that the improvements are relevant for functional independence, which is related to the quality of life of bedridden subjects.

Interpretation and Implications:

It suggests that Wenger's protocol has more potential, especially when combined with Diaphragmatic Breathing exercises, for eliciting pronounced improvement in physical functioning and independence for the chronic bedridden. Large differences in T-statistics between the two groups indicate that the specific techniques and frameworks employed in Group A are not oriented only toward cardiovascular and respiratory functions but may also promote holistic improvement in physical and mental engagement.

These findings underline the necessity of individual rehabilitation plans for bedridden patients and issue a call to vision for both physical therapists and health professionals for integrative approaches that include breath control and functional movement strategies. Moreover, it opens up avenues for future research investigating the mechanisms underlying these improvements and the long-term sustainability of such interventions.

This research clearly has brought forth irrefutable proof for Wenger's protocol combined with Diaphragmatic Breathing exercises in improving functional independence among bedridden patients. The large differences in outcome measures between the two groups underline the importance of comprehensive rehabilitative interventions, including both physical and respiratory components to bring about better outcomes in the patient population at risk. Further research should determine if these interventions are long-term and whether they apply to various patient demographics as a way of further validating these promising results.

Limitations

1. Sample Size and Generalizability: One prime weakness of the study could be the sample size utilized for intervention. A small sample size will definitely limit the generalizability of findings to the larger population of bedridden patients with chronic illnesses. Variations might occur in larger and more heterogeneous groups due to the differences in individuals' health conditions, age, or comorbidities.

2. Duration of Intervention: The duration of the intervention may also have an impact on the results. If the intervention was not done for a longer period, then such intervention would limit these benefits observed to a greater extent. A longer follow-up period might indicate the sustainability of improvements and any possible late effects of the interventions used.

3. External Factors Control: Many uncontrolled external factors may have influenced the outcome, like the baseline physical conditions of the patients, their psychological status, dietary factors, and environmental factors. These might hence confuse the results and create difficulty in isolating the effects strictly attributable to the interventions being studied.

4. Subject Mortality or Dropout: This could have happened in individuals who were unable to complete the trial owing to various illnesses or some other factors. This could, therefore, have biased the outcome, which thus comprises responder bias, favoring those subjects who tolerated the interventions better. Moreover, the dropout rates of the subjects also affect the analysis of overall effectiveness of the intervention.

5. Subjective Measurement Tools: Although the Barthel Index and the FIM are recognized tools in the measurement of functional independence, their subjective interpretation or variation in administration cannot be completely ruled out. There may have been differences in the interpretation of measures taken by the evaluators, which may have affected consistency in the data collected.

6. Potential Hawthorne Effect: As patients are aware of being under observation in this study, they might change their behavior because of the attention. Thus, the Hawthorne effect would lead to bias in the interventions' true effectiveness.

Recommendations

1. Larger Samples: The future studies should have bigger samples, as this can increase the statistical power of the study and generalize further to other demographics of bedridden chronically ill patients. This may also turn up different subgroups of the population under study.

2. Longitudinal Studies: One could add longitudinal studies to assess the long-term effects of Wenger's protocol with diaphragmatic breathing exercises. Such studies give insights into the sustainability of the improvements in function and quality of life by following up with patients over a longer time period.

3. Controlled Variables: So that there are less confounding variables for the future research studies, control should be kept on as many external variables as possible. It could include comprehensive baseline assessment of subjects and standardize their care and environmental factors during the intervention course.

4. Randomized Controlled Trials: Randomized controlled trials would be more effective in validating the effectiveness of the intervention, since RCTs avoids bias and increases reliability to the findings.

5. Diverse Measurement Tools: Further use of measurement tools on psychological and quality-of-life assessment might give the overall picture of the interventions' impacts on patients, since these factors so much affect functional independence.

6. Examiner Training: Standardization of training in the examiners who administer the Barthel Index and FIM may minimize variations due to subjectivity that creep into the results and provide a more uniform collection of data.

7. Search for mechanisms of action: Future studies could focus on exploring the underlying mechanisms for the positive effects seen with the interventions. In this way, how respiratory exercises might have an impact on functional mobility and independence will be understood better, thus developing more focused rehabilitation programs for bedridden patients.

Conclusion

The present study is an indication of the gross advantage accruable to the practice of Wenger's protocol combined with exercises of diaphragmatic breathing in bedridden chronic patients. While both intervention groups recorded impressive improvement in the analysis of functional independence using the Barthel Index and Functional Independence Measure, Group A, applying Wenger's protocol, however showed far better outcomes. T-statistics are higher, with larger differences, for Group A than for Group B, as shown in both the Barthel Index, with a T-statistic of 7.65, and the FIM, with a T-statistic of 9.90.

These findings underscore the efficacy of integrative rehabilitation approaches that include specific breathing techniques with the standard physical reconditioning/rehabilitation. The high P-values represent the statistical reliability of these improvements in both groups, thereby putting an exclamation mark on the increased efficacy of Wenger's protocol.

In summary, it is evident that individualized rehabilitation programs incorporating elements of diaphragmatic breathing are able to significantly enhance functional independence, and the patient's quality of life is improved, especially among bedridden patients. Future studies need to be designed to help ascertain long-term outcomes of such interventions, together with applicability on wide varieties of patients, for this rehabilitative approach to be more significantly accepted for its viability and potential general application.

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