European Journal of Humanities and Educational Advancements (EJHEA)
Available Online at: https://www.scholarzest.com
Vol. 3 No. 2, February 2022
ISSN: 2660-5589

DESCRIPTION OF THE CHARACTERISTICS OF RESPONDENTS ON KNOWLEDGE OF COVID-19 LUNG REHABILITATION IN ASTHMA GROUP AND DIABETES MELLITUS GROUP

Elizabeth Ari Setyarini[(1)], FX Widiantoro[(2)], Ahmad Samsudin[(3)]
STIKes Santo Borromeus Bandung
easetyarini40@gmail.com

Article history:
Received December 11th 2021
Accepted: January 14th 2022
Published: February 24th 2022

Abstract:
The Covid-19 pandemic has become a frightening specter for humans on this earth. The death rate in Indonesia due to the Covid-19 pandemic ranks 7th in the world. Therefore, there is a need for effective treatment in preventing mortality with strict health protocols and pulmonary rehabilitation programs. The purpose of this study was to identify the characteristics of respondents regarding knowledge of Covid-19 pulmonary rehabilitation. Rehabilitation is an important factor in restoring respiratory tract conditions as part of an effective clinical intervention so that it can improve dyspnea symptoms, reduce anxiety, reduce complications, minimize disability, maintain function, and improve quality of life. Descriptive quantitative research method , the number of samples is 103 people in the Asthma Group and Diabetes Mellitus Group. The results showed that the average age of the respondents was 54.31, more than half of the respondents were male, less than half of the respondents had high school education, less than half of the respondents were housewives, less than half of the respondents had hypertension, some of them had hypertension. Most of the respondents had never confirmed Covid-19, more than half of the respondents were not used to taking warm baths, most of the respondents had a habit of sunbathing, most of the respondents had 4-6 hours of sleep. The results of the study showed that almost all respondents had never received information about Covid-19 pulmonary rehabilitation. The recommendations in this study need to be increased by educating the public on the importance of Covid-19 Lung Rehabilitation.

Keywords: Pandemic, Covid-19, Pulmonary Rehabilitation, education.

A. INTRODUCTION

Indonesia ranks seventh in the world with the highest death rate due to Covid-19 (*World Health Organization* (WHO), 2021). The degree of respiratory distress varies greatly in COVID-19 patients. World data from 205 countries show that 8.2% of Covid-19 patients experience progressive respiratory failure similar to *acute respiratory distress syndrome* (ARDS) which will lead to death (Yang et al., 2020). Proper handling of people with Covid -19 is very important to prevent death, one of which is a pulmonary rehabilitation program.

Covid -19 patients require pulmonary rehabilitation to improve prognosis, organ function, and quality of life. Pulmonary rehabilitation consists of respiratory muscle exercises, effective coughing, how to expel droplets, and rehabilitation of motion and abdominal muscles (Cassela et al., 2020). Rehabilitation is an important factor in general recovery and respiratory health as part of an effective clinical intervention (Dorland et al., 2010). The goals of pulmonary rehabilitation in people with Covid -19 are to improve dyspnea symptoms, reduce anxiety, reduce complications, minimize disability, maintain function, and improve quality of life (Zhao, et al., 2020). The results of previous studies show the benefits of pulmonary rehabilitation programs that can increase the patient's physical capacity which affects the improvement of quality of life (Basuki & Setiawan, 2014). The study of Yang et al., (2020) reported that pulmonary rehabilitation proved to be very effective and beneficial in patients with Covid -19. Pulmonary rehabilitation is possible and effective in the recovery of people infected with the Covid -19 virus (Zampogna, et al., 2021).

The pulmonary rehabilitation program consists of airway clearance, breathing and positioning exercises, aerobic exercise, muscle strengthening and joint flexibility, ultraviolet (UV), and *Low Frequency Neuromuscular Electrical Stimulation* (NMES) therapy (Zen, et al., 2020). The results of previous studies reported that chest physiotherapy such as postural drainage*, clapping*, effective coughing and deep breathing have been shown to help expel secretions and breathe more effectively (Hadi et al., 2020). The De Colores breathing technique is significantly effective in improving

lung function based on peak expiratory flow (APE) indicators (Tapo & Bile, 2021). The head elevation position of 60° can prevent aspiration, reduce the incidence of VAP (*Ventilator associated pneumonia*), increase alveolar expansion and tidal volume, chest expansion, PaO2 and PaCo2 homeostasis, reduce oxygen consumption and work of the respiratory system (Hassankhani et al., 2017). Aerobic exercise has an effect on increasing *Vo2max* in people after Covid -19 (Hasibuan et al., 2021). ActiveROM exercise significantly increases muscle strength in adults (*p-value* =0.000) (Ananda, 2017). Joint flexibility exercises also significantly increased joint flexibility after *Range of Motion* (ROM) exercise (*p-value* = 0.000). ROM exercises regularly and continuously can increase the flexibility of the knee joint (Uli et al., 2019). Ultraviolet (UV) therapy has been reported to be effective in reducing the spread of the Covid -19 virus in the body (Rohman, et al., 2021).therapy *Low Frequency Neuromuscular Electrical Stimulation* is effective in improving muscle coordination, and synergistic distribution of contractions of surrounding muscles (Priatna et al., 2014). Deep breathing exercises are effective in improving pulmonary ventilation function and oxygen saturation (*p value* = 0.00) (Philip et al., 2021). All pulmonary rehabilitation exercises are very effective in improving the function of the respiratory system. People with Covid -19 and have comorbidities need to know about pulmonary rehabilitation programs to deal with problems in the respiratory system.

This research is important because it is very useful for people with Covid -19, especially for those who are or will be undergoing the recovery process so that complications do not occur to a worse direction or even cause death. Public awareness of the importance of pulmonary rehabilitation is still very minimal, this will have an impact on the increasing incidence of Covid-19 deaths in Indonesia. The formulation of the problem that can be raised is how the characteristics of respondents regarding knowledge of Covid-19 pulmonary rehabilitation are. The purpose of the study was to identify the characteristics of respondents regarding knowledge of Covid-19 pulmonary rehabilitation.

B. LITERATURE REVIEW

1. Definition of Pulmonary

Rehabilitation Pulmonary rehabilitation (RP) is a comprehensive intervention based on a thorough assessment followed by therapy tailored to the patient's needs consisting of*exercise*, education and behavioral changes to improve the physical condition of patients with respiratory diseases (Spuit et al., 2013; Wang et al., 2020).

2. Purpose

The pulmonary rehabilitation program is carried out to improve lung capacity and quality of life of people with Covid -19. RP targets to treat symptoms, prevent decreased function of the airways and other organ systems, help wean mechanical ventilation, relieve anxiety, reduce complications, minimize disability, maintain function and improve quality of life (Palinggi, 2019; IKKRI Collegium, 2020; Tresnasari, Dharmanika, 2020; Wang et al., 2020).

3. Recommendations for Pulmonary Rehabilitation Program Exercise

a) Hospitals

Recommendations for pulmonary rehabilitation in Covid -19 patients during hospitalization. Recommendations are grouped based on the degree of disease symptoms, namely mild, moderate, and severe (Zhao et al., 2020) :

1) Rehabilitation in Patients with Mild Symptoms

Patients should be given education about the explanation of the disease and the therapeutic process. Suggestions for rest, a balanced diet, and quitting smoking. Also given physical exercise activity and psychological intervention (Zeng et al., 2020).

2) Rehabilitation in Patients with Moderate Symptoms

Primary pulmonary rehabilitation interventions for patients with moderate symptoms include airway clearance, respiratory control, physical activity, and exercise (Zeng et al., 2020).

3) Rehabilitation in Patients with Severe Symptoms

In patients with severe and critical symptoms, pulmonary rehabilitation is only carried out when the patient is in a stable condition, where the respiratory rate is 40 x/min, oxygen saturation 90%, systolic pressure 90 and 180 mmHg, mean arterial pressure 65 and 110 mmHg, heart rate 40 and 120 x/minute, and temperature 38.5°C. Pulmonary rehabilitation is given in the form of position management, such as a head angle of 60° from the bed, prone position in acute respiratory distress syndrome (ARDS) patients for 12 hours or less. Then given early mobilization and respiratory management, such as sputum expulsion, administration of high frequency chest wall oscillations, and oscillatory *positive expiratory pressure* (OPEP) (Zhao et al., 2020).

b) Home (Independent Isolation)

Pulmonary rehabilitation programs are carried out by patients at home, both in the self-isolation phase and the healing phase. Pulmonary rehabilitation in the form of exercises as follows:

1) Breathing exercises to reduce shortness of breath
2) Expiratory exercises and sputum excretion to clear the airways
3) Respiratory muscle training with *stretching, strengthening, and endurance*
4) Light aerobic exercise by walking
5) Upper and lower extremity muscle resistance exercises

These exercises are intended to increase lung capacity and oxygen in the blood, stretch muscles to make them more flexible, increase joint range of motion and muscle strength, and improve muscle endurance and fitness. Exercise must be supported by appropriate nutrition (Aytur et al., 2020).

4. Benefits

Pulmonary rehabilitation can provide benefits for Covid -19 patients who are currently being treated, or who have been discharged from the hospital and are at home. The benefits of pulmonary rehabilitation include increasing exercise tolerance, quality of life, and function of respiratory muscles and muscles in the radius, ulna, humerus. In addition, it is also useful in reducing morbidity, the incidence of hospitalization, duration of stay, and complications related to anxiety and depression (Yang et al., 2020). Pulmonary rehabilitation on lung function, quality of life, mobility, and psychology of elderly Covid-19 patients, concluded that pulmonary rehabilitation can significantly improve lung function, namely the first second forced expiratory volume (VEP1), forced vital capacity (KVP), FEP1 value. /KVP, *diffusing capacity for carbon monoxide* (DLCO), and a 6-minute walk test. In addition, it can improve quality of life and reduce anxiety.

5. Pulmonary Rehabilitation Programs in Various Countries

In Milan, Italy, the rehabilitation of Covid-19 patients has been carried out since the beginning of their entry, during quarantine, and after leaving the hospital via telemedicine. When the patient is being treated, rehabilitation interventions are carried out in the*prone position*, active and passive mobilization. In pulmonary rehabilitation, telemedicine is useful for monitoring online and offline exercise and activity, and can monitor oxygen saturation and cardiovascular parameters (Iannaccone et al., 2020). In Turkey, rehabilitation recommendations are made as early as possible, during acute and post-acute symptoms. Rehabilitation is carried out individually, so the rehabilitation program for one patient may differ from one another. However, evaluation with pulmonary function testing and cardiopulmonary testing is not recommended. Rehabilitation is accompanied by nutrition and psychosocial therapy (Aytur et al., 2020). The rehabilitation guidelines carried out consist of:

a) Actions with aerosol risk are not performed, such as bronchial techniques and *postural drainage*
b) in asymptomatic and mild patients at home, given exercise activities such as walking in place and moving joints
c) In moderately symptomatic patients, rehabilitation can be started when the condition is stable, namely no fever, reduced shortness of breath, respiratory rate <30 x/minute, oxygen saturation >90%, and the program is made individually
d) In critical patients, rehabilitation will be started if they are in a stable condition
e) It is not recommended that ARDS patients be given pulmonary rehabilitation, except for *range of motion* (ROM) exercise and management of secretions.

6. Pulmonary Rehabilitation Program in Indonesia

Pulmonary rehabilitation of patients after Covid -19 in Indonesia is not much different from other countries. When acute and hospitalized, pulmonary rehabilitation in the form of breathing exercises, positioning, sensory stimulation, and mobilization. After recovery, long-term rehabilitation can be carried out with breathing exercises, aerobics, daily activities, cognitive*, muscle strengthening exercises*, and *balancing muscle tone*. Pulmonary and physical rehabilitation with nutritional support and psychotherapy (Nugraha et al., 2020).

7. Pulmonary Rehabilitation Program Considerations The

selection of a rehabilitation program must be based on considerations of clinical symptoms, general conditions, comorbid diseases, laboratory and radiological results, and possible contraindications to the type of exercise chosen. Rehabilitation programs can include a combination of aerobic resistance training, muscle strength, balance, and flexibility (Yang et al., 2020).

8. Protocol in People With Covid-19

The pulmonary rehabilitation program protocol based on the *International Classification Of Functioning Disability And Health* (ICF) is designed for Covid-19 patients based on the patient's diagnosis, functional status, and rehabilitation needs (Zen et al., 2020):

a) The environment and setting, measurement, and rehabilitation principles

of the WHO-FICs work chart states that rehabilitation services for Covid-19 can be carried out in hospitals, special rehabilitation institutions and communities (primary health services). The scope of rehabilitation services includes: preventive-health promotion, therapeutic, palliative according to patient needs.

b) Pulmonary Rehabilitation

1) Intensive rehabilitation exercise

Clinical manifestations of Covid -19 in general are respiratory disorders with pulmonary consolidation and airway obstruction due to accumulation of secretions (Qiu et al., 2011). Various kinds of Pulmonary Rehabilitation techniques such as thoracic mobilization, airway clearance exercises, breathing exercises are applied to Covid-19 patients so that they can improve their respiratory function.

2) Scheduling of rehabilitation interventions for

critically ill patients, rehabilitation therapy is carried out when vital signs are stable and monitored during the implementation of rehabilitation services. The rehabilitation doctor and the rehabilitation team should communicate with fellow doctors and other health workers where rehabilitation services are carried out. Evaluation of the safety of rehabilitation therapy when services are carried out and avoiding the *iatrogenic* of rehabilitation therapy (Balas, et al., 2014).

3) exercises Need for airway

clearance in patients can be done with postural drainage, and manual therapy (eg vibration, *clapping*). Manual therapy should consider the fluid adequacy of the patient which can affect the viscosity of the sputum. Chest physiotherapy can make it easier to loosen and remove accumulated secretions that are stuck in the airway. The

results showed that there was a significant effect of chest physiotherapy on airway clearance (P *Value* 0.001) (Hariyanti, 2018). Chest physiotherapy measures such as postural drainage*, clapping*, effective coughing exercises and deep breathing exercises have been shown to help in removing secretions and breathing more effectively (Hadi et al., 2020).

4) Positioning the patient

Patients with shortness of breath, cough, and other symptoms may be given a sitting or semi-sitting position. This position can increase diaphragmatic activity, improve ventilation/perfusion of the lungs, increase *tidal volume*, improve *peak cough flow rate,* and reduce shortness of breath. Nursing actions that can be taken to help improve breathing and oxygen saturation are head elevation settings. Head elevation is a lying position with the head of the bed elevated at various heights in the bed position without maneuvering the neck and lower extremities. The body position is in a straight position without any flexion, extension and rotation (Ribeiro, 2016).

5) Breathing exercises

Control breathing, diaphragmatic breathing significantly improves *work of breathing*, reducing patient panic due to shortness of breath. One form of breathing exercise that can be used is the *monacors breathing exercise.* This breathing exercise model was developed by Tapo (2017) using several *De Colores breathing techniques.* The findings of the study showed that there was a significant change in lung function based on the peak expiratory flow (APE) indicator (Tapo & Bile 2021).

6) Exercise

therapy Exercise therapy is one component of rehabilitation that can improve cardiorespiratory functional capacity; reduce the effect of long immobilization; indirectly contribute to the improvement of the overall organ system. Exercise therapy known today consists of aerobic exercise; muscle strengthening exercises; balance training; coordination exercise. The description of the exercise consists of the frequency-intensity-type-duration of the exercise as well as an evaluation that considers, the training load can be repeated-specificity that is included in the planning of the exercise therapy program according to the needs of the individual who will be given the exercise therapy program (Qiu *et al.,* 2011; Balas *et al.,*2014; Pengming *et al.,* 2014; Zeguang *et al.,* 2019; Rochester *et al.,* 2015; ACSM., 2019).

C. METHODS

Descriptive quantitative research methods and cross-sectional research design were used in this study to describe the characteristics of respondents regarding knowledge of Covid-19 pulmonary rehabilitation. The variables of this study were the characteristics of respondents regarding knowledge of pulmonary rehabilitation which included age, gender, education, occupation, chronic illness suffered, never/never been exposed to Covid-19, warm bathing habits, sunbathing habits, sleep frequency and never/never. obtain information about pulmonary rehabilitation.

The population in this study was 103 people in the Association for Asthma Awareness and Diabetes Gymnastics with an age range (34 – 77 years). The sampling technique used in this study is *probability sampling* , which is a sampling technique that provides equal opportunities/opportunities for each element or member of the population to be selected as samples. Type of saturated sampling technique. The data collection method that has been carried out in this study used a questionnaire containing 19 questions regarding Covid -19 pulmonary rehabilitation in adults in the form of multiple choice questions (a, b and c). Before being submitted to the respondents, the questionnaire has been tested for validity and reliability to 30 people outside of the respondents. The Pearson Product Moment r value as a benchmark to see the validity of the questionnaire, then calculated by the formula df = N-2, namely df = 30-2 = 28 . The significance level value is 95%, then r *Product Moment* 0.361 is said to be valid, under this provision it is declared invalid (Setiadi, 2013). The reliability test that has been used in this study uses the Alpha Cronbach formula in computer software, because the research instrument is in the form of a questionnaire and a graded scale with a value of 0.80, which is reliable.

Data processing methods used in this study, namely: *Editing* where the researcher has checked the completeness of the contents of the questionnaire after the answers are entered through the link that has been given. *Coding* by changing the form of data in the form of letters into data in the form of numbers. *Processing by* Data processing is done by entering data (data *entry*) from all the collected questionnaires into the *database*, then making a simple frequency distribution with the help of software. *Cleaning by means* of researchers checking the data that has been processed using computer software to ensure whether there are still missing data and the last is *tabulating* where researchers have made tables of statistical test results to simplify and provide clarity in interpreting statistical test results.

Analysis of data by conducting univariate analysis to identify respondent's characteristic data regarding knowledge of pulmonary rehabilitation which includes age, gender, education, occupation, chronic diseases suffered, ever/never exposed to Covid-19, warm bathing habits, sunbathing habits, sleep frequency and ever/never received information about pulmonary rehabilitation. Research Time July – October 2021

D. RESULTS

No.	Characteristics of Respondents	frequency	%
1.	Age (M,SD)	(54.31, 8.15)	
2.	Gender		
	a. Male	53	51.5
	b. Woman	50	49.5
3.	Education		
	a. Elementary School	8	7.8
	b. Junior High School	27	26.2
	c. High School	37	35.9
	d. College	31	30.1
4.	Job		
	a. Private employees	21	20.4
	b. Housewife	30	29.1
	c. Labor	9	8.7
	d. Traders/Entrepreneurs	19	18.4
	e. civil servants	14	13.7
	f. Retired	10	9.7
5.	Chronic illness		
	a. Hypertension	45	43.7
	b. Asthma	25	24.3
	c. Diabetes Mellitus	28	27.2
	d. Heart Disease	1	1.0
	e. Stroke	2	1.8
6.	Have you ever confirmed Covid-19		
	a. Yes	25	24.3
	b. Not	78	75.7
7.	The habit of taking a warm bath		
	a. Yes	43	41.7
	b. Not	60	58.3
8.	Sunbathing Habits		
	a. Yes	80	77,7
	b. Not	23	22,3
9.	Sleep duration		
	a. 4 – 6 hours	85	82.5
	b. 6 hours	18	17.5
10.	Have you ever confirmed Covid-19		
	a. Yes	10	9.7
	b. No	93	90.3

11.	Responden's level of knowlwdge (M,SD)	(12,32 . 3,62)

Based on the frequency distribution above, it is known that the average age of the respondents is 54.31, more than half of the respondents (n=53; 51.5%) are male. less than half of the respondents (n=37; 35.9%) had high school education, less than half of the respondents (n=30; 29.1%) were housewives. The results showed that less than half of the respondents (n=45; 43.7%) had hypertension, most of the respondents (n=78; 75.7%) had never confirmed Covid-19, more than half of the respondents (n=60 ; 58.3%) are not used to taking warm baths. The results showed that most of the respondents (n=80; 77.7%) had the habit of sunbathing, most of the respondents (n=85; 82.5%) had 4-6 hours of sleep. The results showed that almost all respondents (n=93; 90.3%) had never received information about Covid-19 pulmonary rehabilitation and responden's level of knowledge was good 12,32 from a maximum value of 19.

DISCUSSION

The results of the study showed that knowledge data about COVID-19 pulmonary rehabilitation was good, because the average value was 12.32 from a maximum value of 19. This study is contrary to previous research which reported that the level of knowledge about medical rehabilitation in long Covid-19 was still low. (Tjie and Tania, 2021). The difference in the results of these two studies is influenced by age and sources of information. In a previous study (Tjie and Tania, 2021) the majority of respondents were in early adulthood, while in this study they were in early adulthood. Age can affect a person's perception and mindset (Firmansyah, 2014). With increasing age, the perception and mindset will develop so that the knowledge gained will increase as well (Monintja, 2015). Sources of information will also affect the knowledge of respondents. The results of previous studies (Tjie and Tania, 2021) also reported that 66.7% had received information about Covid-19 medical rehabilitation, while this study was 9.7% of respondents. A person can have knowledge not only from school, but information can be obtained from various sources from online and print media (Notoatmodjo 2017). Sources of information are not only obtained through formal education but from non-formal sources (Notoatmodjo, 2017). Advances in technology provide various kinds of information in the mass media and the internet, so that someone can easily find new information. This new information can affect a person's knowledge of new information and provide the basis for the formation of new knowledge (Notoatmodjo, 2017).

Another factor that can affect this research is the level of education. The results of this study indicate that the majority of respondents have high school education and college. This opinion is also in accordance with the results of previous research that the level of education is closely related to a person's level of knowledge (Maiharti, 2012). The higher a person's education level, the more knowledge he has (Maiharti, 2012). Sources of information can have an influence on knowledge where a person will receive a cognitive foundation to form knowledge. The more sources of information, the more knowledge is obtained (Carolina et al., 2016). Sources of health information can be obtained through various means such as counseling, health education and training, mass media, electronic media, and others (Notoatmodjo, 2017).

E. CLOSING

1. Conclusion

Based on the characteristics of the respondents, it can be said that the average age of the respondents is 54.31, more than half of the respondents are male. less than half of the respondents have a high school education, less than half of the respondents work as housewives. The results of the study obtained data that less than half of the respondents had hypertension, most of the respondents had never confirmed Covid-19, more than half of the respondents were not used to taking warm baths. The results showed that most of the respondents had the habit of sunbathing, most of the respondents had 4-6 hours of sleep. The results of the study showed that almost all respondents had never received information about Covid-19 pulmonary rehabilitation.

2. Recommendations

Need to improve education to the public on the importance of Covid-19 pulmonary rehabilitation.

REFERENCES

1. Aditya, HA, & Arum Pratiwi, SK (2021). Analysis of Nurses' Knowledge About the Use of Personal Protective Equipment (PPE) Specifically to Handle Coronavirus Disease 19 (Covid 19) Patients at Sebelas Maret University Hospital in 2020 (Doctoral dissertation, Muhammadiyah University Surakarta).
2. Aytur Yk, Koseoglu Bf, Taskiran Oo, Ordu-Gokkaya Nk, Delialioglu Su et al. Pulmonary Rehabilitation Principles In Sars-Cov-2 Infection (Covid-19): A Guideline For The Acute And Subacute Rehabilitation. Turk J Phys Med Rehab 2020;66(2):104-120. Doi: 10.5606/Tftrd.2020.6444
3. Bile, RL, & Tapo, YBO (2021). Health Sports Program Training for Physical Fitness Maintenance for High School Students During the Covid-19 Pandemic. *Journal of Abdimas Ilmiah Citra Bakti*, *2*(1), 41-49.
4. Dorland Wa, Newman. 2010. Dorland Medical Dictionary 31st Edition. Jakarta: Medical Book Publisher Egc. P. 702, 1003.

5. Fadilatul Syam, P., & Hadi, I. (2020). *Application of Chest Physiotherapy to Improve Airway Clearance in Bronchial Asthma Patients* (Doctoral Dissertation, Poltekkes Kemenkes Kendari).
6. Firmansyah, I. The relationship between knowledge and preparedness behavior in dealing with floods and landslides in adolescents aged 15-18 years at Al-Hasan Kemiri High School, Panti District, Jember Regency. Jember University Nursing Science Study Program; 2014.
7. Hariyanti, R. (2018). Effect of Chest Physiotherapy on the Effectiveness of Clearing the Airway of Patients with Bronchial Asthma at the Sumberglagah Leprosy Hospital, Mojokerto.
8. Hasibuan, S., Fardi, A., Pitnawati, P., & Soniawan, V. (2021). The Effect of Aerobic Gymnastics on Increasing Vo2max in Participants in the Studio Nachatib Gymnastics Studio in the New Normal Period. Journal of the Patriots, 3(3), 272-283. Https://Doi.Org/10.24036/Patriot.V3i3.781
9. Hidayat, Abdul Aziz Alimul. (2013). *Nursing research methods and techniques. data analysis.* Jakarta: Salemba Medika
10. Liu K, Zhang W, Yang Y, Zhang J, Li Y, Chen Y. Respiratory Rehabilitation in Elderly Patients With Covid-19: A Randomized Controlled Study. Complementary Therapies In Clinical Practice. 2020; 39:101166. Https://Doi.Org/10.1016/J.Ctcp.2020.101166 Magfirah Bakti
11. , P., & Tahir, R. (2020). Effect of Chest Physiotherapy on Airway Clearance in Bronchial Asthma Clients (Doctoral Dissertation, Poltekkes Kemenkes Kendari).
12. Maiharti. The Relationship between Knowledge Level, Education and Income with the Use of Contraceptive Methods in EFA in Jenu Subdistrict and Jatirogo Subdistrict, Tuban Regency [Thesis]. Surabaya.: State University of Surabaya; 2012.
13. Moekijat. (1998). Job Analysis. CV Mandar Maju
14. Monintja, T. (2015). The Relationship Between Individual Characteristics, Knowledge and Attitudes With PSN DHF Actions in the Malalayang I Village Community, Malalayang District, Manado City. Sam Ratulangi University Manado, Vol. 5, p. 503–519.
15. Notoatmodjo, S. (2014). *Health Research Methodology*. Jakarta: Rineka Cipta
16. Nugraha B, Wahyuni Lk, Laswati H, Kusumastuti P, Tulaar Abm Et Al. Covid-19 Pandemic In Indonesia: Situation And Challenges Of Rehabilitation Medicine In Indonesia. Acta Med Indonesia - Indonesia J Intern Med. 2020;52:299-305.
17. Nursalam. (2013). *Nursing Research Methodology: Practical Approach*: Jakarta: Salemba Medika.
18. Philip, K., & Hafizurrachman, M. (2021). The Effect Of Pursed Lips Breathing Exercises On The Oxygen Saturation Levels Of Patients With Chronic Obstructive Pulmonary Disease In Persahabatan Hospital, Jakarta. Kne Life Sciences, 35-64.
19. Qiu, ZY, Li, L., Chen, D. 2020. Research on rehabilitation guidelines using World Health Organization Family International Classifications: framework and approaches. *Chin J Rehabil Theory Pract*, 26(2):125– 135.
20. Rivera-Lillo G, Torres-Castro R, Fregonezi G, Vilaro J, Puppo H. Challenge For Rehabilitation After Hospitalization For Covid-19. Archives Of Physical Medicine And Rehabilitation 2020;101:1470-2.
21. Rochman, ML, Budiyarto, L., Al-Fikri, MI, Fa'i, K., Pramono, PBA, Pamungkas, RTA, ... & Saifuddin, S. (2021). Design And Implementation Of Sterilization Chamber With Ozone And Uv-C Light To Break The Transmission Of Covid-19. Urecol Journal. Part D: Applied Sciences, 1(1), 41-49.
22. Setiadi, TH, & Dzahabiyyah, TY (2021) Health Counseling for Post-Covid Medical Rehabilitation 19. Proceedings of SENPEN MAS, 647-654.
23. Sinarti, A., Elmiyati, D., Yulianto, D., Supriyanto, E., & Syam, F. Kian, Class III Nurse Students, Group III. (2020). "Analysis of Nursing Clinical Practices in Mechanical Ventilation Patients With Innovative Interventions Combination of Chest Physiotherapy and Coconut Elevation 60 With Hyperoxygen in Close Suction Process on Saturation Changes in the Intensive Care Unit (ICU) Room of Abdul Wahab Sjahranie Hospital".
24. Sugiyono. (2017). Research methods are quantitative, qualitative, and R&D. Bandung : Alfabeta, CV.
25. Suwaryo, PAW, & Yuwono, P. (2017). Factors that affect the level of community knowledge in mitigating natural disasters landslides. URECOL, 305-314.
26. Yang F, Liu N, Hu Jy, Wu Ll, Su Gs, Zhing Ns, Zheng Zg. Pulmonary Rehabilitation Guidelines In The Principle Of 4s For Patients Infected With 2019 Novel Coronavirus (2019-Ncov). Zhonghua Jie He He Hu Xi Za Zhi. 2020;43(3):180-182. Doi: 10.3760/Cma.J.Issn.1001-0939.2020.03.007.
27. Yang Ll, Yang T. Pulmonary Rehabilitation For Patients With Coronavirus Disease 2019 (Covid-19). Chronic Diseases And Translational Medicine. 2020; 6:79-86. Https://Doi.Org/10.1016/J.Cdtm.2020.05.002
28. Yunus, M., & Zakaria, S. (2021). Sources of Information Related to Public Knowledge about Covid-19. Journal of Nursing, 13(2), 337-342.
29. Zeng B, Chen D, Qiu Z, Zhang M. Expert Consensus On Protocol Of Rehabilitation For Covid-19 Patients Using Framework And Approaches Of Who International Family Classifications. Aging Medicine. 2020;3:82–94. Doi: 10.1002/Agm2.12120
30. Zhao Hm, Xie Yx, Wang C. Recommendations For Respiratory Rehabilitation In Adults With Coronavirus Disease 2019. Chinese Medical Journal. 2020;133(13):1595-1602. Doi: 10.1097/Cm9.0000000000000848
31. Iannaccone S, Castellazzi P, Tettamanti A, Houdayer E, Brugliera L Et Al. Role Of Rehabilitation Department For Adult Individuals With Covid-19