

Critical Care Management of Lung Fibrosis, Review Article

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ABSTRACT

Pulmonary fibrosis or lung fibrosis have been one of the major complications associated with the lungs that lead to deprived quality of life and increased suffering in individuals who stop. It leads an individual towards inability to involve in daily activities as well as sustain complications such as severe cuffs and shortness of breath which often leads to life-threatening condition if proper treatment and management procedures are not incorporated. It has also been found that due to the COVID-19 pandemic, the risk of sustaining pulmonary fibrosis in patients has increased which has led to increased complications and deprived health. Focusing on this evidence, the following research aims on evaluating critical care management and treatment procedures identified and acknowledged within the healthcare setting against pulmonary fibrosis or lung fibrosis. Critical care management must focus on limiting the progression of the condition, ensuring better lung functioning and health as well as improving quality of life.

Concentrating on the rising issue, the following research study conducted a literature review using evidence from 5 selected articles and journals. The evidence obtained from the articles highlights that anti-fibrotic therapy such as Pirfenidone, pulmonary rehabilitation, and physical activity sustains the potential role of managing and enhancing health and quality of life in suffering patients. Apart from these identified management procedures, there is a vast range of strategies that can be incorporated into daily life by the patients to sustain better recovery from the condition and lead a healthy life with minimal risk of progression and prognosis of the condition.

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Introduction and Background

Lung fibrosis or pulmonary fibrosis is considered to be a lung infection that occurs when the tissues within the wall of the lung sustain severe damage and mutilation. The tissues further become stiff and thickened which develops a state of inappropriate lung functioning and exchange of gas when the condition of pulmonary fibrosis exacerbation it leads to shortness of breath and several other complications with impact the quality of life [1]. Idiopathic pulmonary fibrosis is considered to be one of the most common types of pulmonary fibrosis which is considered to be a major progressive pauci-immune fibrotic condition. The condition functions by disrupting the function of the lungs and developing severe complications for the suffering individual [2]. Evidence has highlighted the fact that approximately 100,000 individuals are suffering from pulmonary fibrosis process within the premises of the United States. Each year the United States witnesses 30,000 to 40,000 reporting and diagnostic cases of pulmonary fibrosis. The worldwide statistics highlight that every 13 to 20 individuals in a population of 1,00,000 witnesses the prevalence of pulmonary fibrosis [3].

Idiopathic pulmonary fibrosis noon to develop a state that sustains an irreversible loss of its function associated with fibrosis which highlights symptoms such as dyspnoea or severe cough associated with shortness of breath. It has been found that despite advanced treatment and management procedures, different therapies possess the potential role in decreasing the progression and prognosis of the

condition and restoring the quality of life in the suffering individual [4]. The condition has developed into a major socioeconomic burden for different nations throughout the world which thus needed significant research to highlight the proper management protocols in terms of critical care for the patients. The Following recent will focus on reviewing different literature articles available in databases in order to analyze and evaluate information on critical care management fibrosis throughout the world. The research will be conducted based on a systematic review of articles and a set of journals and articles will be reviewed based on their findings and contribution to the research topic.

Aim and Objective

The aim of the research study is to analyze and evaluate the significant range of critical care management procedures against pulmonary or Lung fibrosis. The research study intends to use significant information and data provided by articles in relation to the management procedures used against idiopathic pulmonary fibrosis.

Objective 1: based on the aim objective one focuses on analyzing different management strategies available in terms of critical care for patients suffering from idiopathic pulmonary fibrosis.

Objective 2: to analyze and evaluate the impact of these management strategies on idiopathic pulmonary fibrosis as well

as enhancing the quality of life in suffering individuals.

Based on the aim and objectives of the research study, a research question has been developed which will be used in order to conduct a systematic literature review and connect significant evidence. Research Question: What are the critical care management strategies that can be used in order to limit the progression of pulmonary fibrosis and enhance the quality of life?

Literature Review

The recent evidence available throughout the world highlights the necessary need of involving critical care management strategies against the rising issue of pulmonary fibrosis. It has been found that pulmonary fibrosis has been considered one of the major burdens of the globe, but after the COVID-19 pandemic, the burden of the illness on the official economic and public health set has increased in association with COVID-19 infection. It has been found that both pulmonary fibrosis as well as COVID-19 infection has a negative impact on the lung which leads to the severity of the conditions such as the inability of the lungs to function or shortness of breath [5].

Evidence also highlights that pulmonary fibrosis is one of the chief complications developed due to COVID-19 infection suffering individuals. Also, current evidence highlights that Post COVID Pulmonary Fibrosis is developing as a chief clinical complication in today's world followed by SARS-CoV-2 infection. Several researchers have been conducting research that provided pieces of evidence that patients sustained who sustained COVID-19 infection are more likely to develop pulmonary fibrosis even after sustaining recovery from the condition in the longer run [6]. Focusing on the current evidence, it is thus necessary that significant critical care management strategies are acknowledged and implemented within the healthcare sector throughout the world in order to manage and improve the condition of pulmonary fibrosis and associated quality of life.

Methodology

The research study will be conducted using the view article procedure as a method to conduct research and proceed toward a precise conclusion. A review article is also known by the term literature review which focuses on using vision and data available on previously published articles and journals on similar topic research topics it focuses on conducting a survey and literature search in order to identify and select significant articles related to the research topic and collect shreds of evidence available in relation to the research question proposed [7]. It provides an overview of the available pieces of information based on significant themes and does not present any new or original results within the study.

Literature Search

In order to conduct a literature review, a set of appropriate and effective literature articles and journals needs to be identified and selected. With an aim to identify and select significant and appropriate research articles, a literature search has been conducted based on different procedures and criteria involved in a search strategy [8]. One of the initial steps of conducting a literature search is identifying keywords from the research question. Focusing on the research question the keywords that have been used in the following research include "pulmonary fibrosis", "lungs fibrosis" or "idiopathic pulmonary fibrosis", "nursing management", "critical care", "care management", and "treatment". These key terms will be used to conduct a literature search in electronic databases which includes PubMed, Medline, or Google Scholar. In order to conduct a precise and accurate literature search Boolean operators will be used in between the key terms and will be arranged to make the search limit precise and short. The Boolean operators that will be used include "AND", "NOT" and "OR".

Inclusion and Exclusion Criteria

After completion of the literature search, using keywords and Boolean operators, the identified literature articles will be created in the study using inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Articles that are published in the English language will be included	Articles published in different languages apart from the English language will be excluded
Articles published between the years 2017 to 2023 will be included	Articles published before 2017 will be excluded in order to involve the latest evidence.
Articles that provide access to the full research paper will be included	Articles with access to only abstract will be excluded
Articles that are relevant to the research question and the selected topic will be included	Articles that do not address the research question will be excluded

Finding

After conducting the literature search, 5 different pieces of literature have been identified and selected with significantly meet the inclusion and exclusion criteria. In order to extract and evaluate information and data available on these research articles a data extraction table has been developed. The data extraction table will help in identifying and arranging the significant information involved in the research articles in relation to the research question. The extraction criteria based on which the research articles has been selected and incorporated in the study include the aim of the study the methodology used participants involved as well as the findings obtained by the researchers.

Data Extraction

Sl. No.	Author	Aim	Methodology	Participants	Findings
1	George, Wells, & Jenkins, (2020).	The aim of the study is to assess the potential impact of anti-fibrotic therapy against pulmonary fibrosis along with COVID-19.	Systematic review	Patients suffering from pulmonary fibrosis along with COVID-19 infection.	Study findings highlighted that anti-fibrotic therapies have a potential role in preventing the infection of COVID-19 as well as the risk of the development of idiopathic pulmonary fibrosis in COVID-19 patients.
2	Zanoni et al., (2019)	The aim of the study is to assess the role of Mesenchymal Stem Cells (MSCs) based therapy in patients suffering from radiation-induced lung fibrosis.	Literature analysis	Patients with radiation-induced lung fibrosis	MSCs-based Therapy has a significant impact on treating different inflammatory lung diseases along with idiopathic pulmonary fibrosis but it lacks significant evidence based on the safety and effectiveness of the therapy.
3	Quinn, Wisse, & Manns, (2019)	The aim of the study is to analyze the clinical course of idiopathic pulmonary fibrosis as well as highlight the significant care management procedures against the illness.	Systematically literature review	Patients suffering from idiopathic pulmonary fibrosis and associated deprived quality of life	The study finding of the study highlights that care management of pulmonary fibrosis includes different factors such as patient-centric care, multidisciplinary as well as different treatment and management procedures. Anti-fibrotic therapies as well as pulmonary rehabilitation have been considered beneficial management procedures.
4	Lancaster et al., (2017)	The aim of the research study is to evaluate the significance of Pirfenidone as a potential therapy for the management and treatment of idiopathic pulmonary fibrosis.	Review of randomized control clinical trials studies.	Patients suffering from idiopathic pulmonary fibrosis administered with Pirfenidone	Pirfenidone serves as a significant medically approved therapy that has been evaluated using randomized control clinical trials in order to analyze its impact on enhancing lung function, increasing progressive outcomes as well as decreasing the risk of mortality for longer term
5	Senanayake et al., (2018)	Analyze and evaluate the range of methods that can be used in order to manage idiopathic pulmonary fibrosis as well as enhance the quality of life in patients	Semi-structured interview	50 patients suffering from idiopathic pulmonary fibrosis aged above 18 years.	It was identified from the research study that patients need to be provided with significant information in order to encourage and motivate them to initiate healthy lives style as well as take active participation in different strategies which includes physical activity.

Discussion

The data extraction table provided the study with a significant set of evidence that highlights the critical care management procedures that need to be implemented in order to manage pulmonary fibrosis and enhance the quality of life in individuals. In order to evaluate the evidence obtained through data extraction thematic analysis has been performed as a data analysis method. Thematic analysis provides researchers with the ability to analyze identify and interpreted patterns or themes from the qualitative a descriptive evidence available. The information obtained from the selected five different research articles has been distributed in themes based on the nature of the information and the effectiveness of the management procedures within the target population [9].

Theme One- Anti-Fibrotic Therapies

Different studies conducted in the field of Healthcare have highlighted that anti-fibrotic therapy has been approved as one of the significant strategies to manage and prevent the risk of pulmonary fibrosis associated with the progression of idiopathic

pulmonary fibrosis It has been found that anti-fibrotic therapies using different drugs have been significantly showing potential impact on patients suffering from COVID 19 pandemic along with pulmonary fibrosis [10]. The management therapy functions effectively in preventing the progression of pulmonary fibrosis in patients who sustained COVID-19 infection and associated SARS-CoV-2 infection. Phase two trials of patients suffering from idiopathic pulmonary fibrosis provided significant insight and concepts regarding the use of anti-fibrotic therapies as a class of medication in suffering individuals [10].

The Phase Two trial was conducted using pirfenidone as an anti-inflammatory and anti-fibrotic oral agent that shows a significant impact on the treatment and management of located pulmonary fibrosis. The drug was initially approved as an antibiotic therapy in Europe in the year 2016 and further approved in the year 2014 by the USA Government [11]. Research studies conducted with primary involvement of patients suffering from idiopathic pulmonary fibrosis highlighted that placebo-controlled phase III trials which were randomized and multinational for Pirfenidone

provided improved outcomes for the patient. It was found that patients provided with the particular anti-fibrotic therapy witnessed reduced difficulty slowed progression and prognosis of the disease, enhanced as well as decreased risk of mortality [12].

Different researchers have also highlighted the more mode of action of Pirfenidone which helps in managing pulmonary fibrosis as well as enhance better outcome in suffering individual. The drug is known to get primarily metabolized within the patient's liver with the help of the cytochrome system [13]. It is necessary that when provided with this particular anti-fibrotic therapy, inhibitors such as fluvoxamine, amiodarone, and ciprofloxacin Must be repressed as these inhibitors reduce the metabolism of Pirfenidone [14]. The research evidence significantly provided a wide range of understanding in terms of the potential role of anti-fibrotic therapy for the management and treatment of pulmonary fibrosis and associated complications.

Theme -2 Physical Activity and Pulmonary Rehabilitation

Different studies have also provided evidence that highlights that patients often witnesses better health outcome and management of their condition when involved in physical exercise. Pulmonary fibrosis has been one of the complications in which patients reported better experiences when involved in physical exercise. The study conducted by Senanayake et al., (2018) [15], provided evidence that participants responded positively when involved in physical exercise. It was found that involving in physical activity along with others provided them with physical benefits as well as restored their mental in with the help of positive influence It provided them with the ability to breathe better as well as sustain physical strength to conduct their daily activity and stabilize the quality of life [16]. It was also found that often certain patients witnessed negative impacts of physical exercise due to increased demand for oxygen in several conditions. In such conditions, it was found that pulmonary rehabilitation ensured these patients with a stable opportunity to restore their breathing difficulty. Evidence throughout the literature provided by Quinn, Wisse, & Manns, (2019) [17], also highlights the efficacy and significance of pulmonary rehabilitation in patients suffering from shortness of breath due to pulmonary fibrosis and associated complications. It has been found that pulmonary rehabilitation is considered to be one of the prime critical care management strategies in case of permanent fibrosis as it provides significant knowledge and information to the patients regarding their health condition as well as the procedures they need to maintain to restore their health [18]. These instructive and educative sessions have been considered necessary management procedures which help maintain a healthy lifestyle to minimize the risk of progression as well as avoid any condition of life-threatening complications. Pulmonary rehabilitation programs have been identified as education programs Exercise sessions as well as training phases where patients are guided regarding their complications, the exercises they need to maintain as well as the activities they must conduct in conditions where they face shortness of breath [19]. Thus these findings from different research studies highlight the efficacy of pulmonary rehabilitation as well as physical exercise in a critical care management process for patients suffering from pulmonary fibrosis throughout the world.

Ethical Consideration

The research has been conducted focusing on a significant set of ethical considerations in order to maintain the ethical and legal standards of the study. As the study focuses on conducting secondary research, using literature evidence from different articles,

it has been ensured that plagiarism and copying information from other researchers' work has not been conducted. Information that has been used to support the research has been properly cited and referenced in order to provide recognition of the researcher's work.

Conclusion

To conclude the research study based on secondary evidence, it can be stated that the literature review highlighted the rising issue of pulmonary fibrosis as well as a complication associated with the COVID-19 pandemic. It has been found through the research that management of pulmonary fibrosis is a necessary aspect for every patient and thus proper strategies must be guided. After conducting data extraction and data analysis it has been found that anti-fibrotic therapy, physical exercise as well as pulmonary rehabilitation serve as chief management strategies that can be implemented in case of patients suffering from the condition. It will be necessary that further research is conducted based on primary research in order to evaluate and better understand the impact of these management procedures. As the research was focused on secondary evidence collected from different articles and journals, no original information or experiment was conducted. Focusing on which, primary research must be conducted in order to collect evidence from the patients and sustain original understanding and data in terms of the effectiveness of critical care management for pulmonary fibrosis.

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