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RESEARCH ARTICLE

KNOWLEDGE, CHARACTERISTICS, WORK SITES OF HEALTH PRACTITIONERS FOR CHEST PHYSIOTHERAPY IN PATIENTS WITH COVID-19, IN KHARTOUM, SUDAN

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Abstract

Background and objective: COVID-19 was first identified in December 2019. The outbreak of coronavirus disease 2019 (COVID-19) was declared a pandemic by the World Health Organization Emergency Committee and originated in the Hubei Province of the People's Republic of China, and on March 11, 2020. This study aims to describe the characteristics and work locations of health practitioners who apply chest physiotherapy for coronavirus patients and the extent and types of complications for coronavirus patients in Jabra and universal isolation centers in Khartoum.
Methods: A total of 109 participants from Jabra and universal isolation centers in Khartoum completed a questionnaire based survey on the Knowledge and practices and outcome of Physiotherapy for COVID-19 patients. The questionnaire was self-administrated and distributed by personal contact. Convenient sampling method was used for data collection and the distributions of responses were presented as frequencies and percentages.
Results: Total 109 individuals participated in this study; females (56%) were more than males. 28.4% worked in isolation center for 3 -6 months while 23.9% were worked for 6-9 months. 33% from physiotherapists received patients aged 40-50 years old, while 23.95 received patients aged more than 60 years old. The intensive care unit was the most common site for chest physiotherapy (41.3%). Complications to isolation center patients occur as stated by 59.6% and the most common complications mentioned were shortness of breath (37.6%), followed by repeated chest infections (22.9%). Chest physiotherapy is very important for COVID-19 patients in isolation center as stated by (53.2%).
Conclusion: As overall, COVID-19 presents challenges to inpatient care and participants know that physiotherapists play a fundamental role throughout help patients to prevent very serious complications and patient hospitalization. Physiotherapist in hospitals must be well-oriented regarding specific care to both provide the best patient care and reduce infection risk.
Keywords: Chest Physiotherapy, Health Practitioners, Khartoum, COVID-19, Knowledge.

INTRODUCTION

COVID-19 was first identified in December 2019. The outbreak of coronavirus disease 2019 (COVID-19) was declared a pandemic by the World Health Organization Emergency Committee and originated in the Hubei Province of the People's Republic of China, and on March 11, 2020[1]. Investigations are ongoing as to how this virus spread[2]. COVID-19 symptoms include fever, cough, shortness of breath or difficulty breathing, nausea or vomiting and congestion or runny nose. COVID-19 can lead to death[3]. Prevention involves coughing into the bend of your elbow, frequent hand washing, wearing a cloth face covering if you can't practice physical distancing and staying home when you are sick[4,5]. Physiotherapists are professionals working in primary and tertiary care who play a fundamental role in multi-professional teams providing rehabilitation interventions and ventilatory support during the acute illness phase[6,7,8].

This research describes practices and the different actions adopted by the Rehabilitation Service in isolation centers in Khartoum to face the challenges in containing and treating the spread of COVID-19[9-12]. So, this study was done to raise the awareness of the community regarding chest physiotherapy and exercises to reduce complications in young people and adults to improve daily activities and productivity. Most patients have no exudation during acute period of COVID-19, and as such, chest physiotherapy may not be recommended and procedures such as pursed-lip breathing, diaphragmatic breathing, and bronchial hygiene/lung re-expansion techniques are contra-indicated during this stage, and priority to use of a mechanical ventilator[13-15].

Chest physiotherapy used to relieve dyspnea and depression and anxiety for those with exudation and mild to moderate symptoms[6-15]. There are no studies reporting on the use of chest physiotherapy during the acute stage aside from a recommendation based on anecdotal evidence[15]. Patients may lose spontaneous breathing during chest physiotherapy under mechanical ventilation and predispose the patients to develop ventilator-associated pneumonia and lung collapse, so chest physiotherapy used to reduce the length of stay in ICU and mechanical ventilator and prevent ventilator-associated pneumonia[15]. In addition, high-frequency chest wall oscillation for incubated patients resulted in decreased lung collapse on days 2 and 3, increased dry sputum weight and PaO2 on day 3, and culture positivity on day 3 (16). Patient who received 11 sessions of physical therapy every 2h for 12h over his 48 h stay in the ICU, arterial oxygen level improved, with radiographic resolution of infiltration[16]. Techniques recommended in patients who are on a ventilator include airway clearance techniques, endotracheal suctioning, lung maneuver recruitment, and change in posture. The airway clearance techniques recommended include manual and/or ventilator hyperinflation, percussion and vibration, positioning, active cycle of breathing, positive expiratory pressure (PEP), and mechanical insuflation-ensufflation[17].

This study aims to describe the characteristics and work locations of health practitioners who apply chest physiotherapy for coronavirus patients and the extent and types of complications for coronavirus patients in Jabra and universal isolation centers in Khartoum.

METHODS

A total of 109 participants from Jabra and universal isolation centers in Khartoum completed a questionnaire based survey on the Knowledge and practices and outcome of Physiotherapy for COVID-19 patients. The questionnaire was self-administrated and distributed by personal contact. Convenient sampling method was used for data collection and the distributions of responses were presented as frequencies and percentages.

Ethical consideration

It was sought from the research technical and ethical committee at the faculty of Medicine. The participants' privacy and confidentiality were maintained.

RESULTS

Total 109 individuals participated in this study; females were 56%.The commonest age group was found to be 30-35 (35.8%), followed by 25-30 (27.5%). Regarding the importance of chest physiotherapy, (53.2%) said it is very important, while (38.5%) said it is somewhat important (Table 1). Total 45% were doctors, followed by nurses (33%) regarding the occupation of participants. Total 49.5% participants experienced 5-10 years while 33.9% experienced less than 5 years. Total 28.4% health practitioners working in the isolation centers for 3-6 months, and 23.9% worked between 6-9 months (Table 1). Total 33% from patients presenting to isolation center aged 40-45 years old and 23.9% aged more than 60 years old. Total 49.5% from patients received chest physiotherapy were in ICU and 14.7% were in HDU (Table 2).

Table 1: Socio-demographic characteristics of the study population (n=394).

Variables	Character	Percent
Sex	Male	44
	Female	56
Age	25-30	27.5
	30-35	35.8
	35-40	20
	Above 40	16.7
Occupation	Doctors	45
	Pharmacist	22
	Nurse	33
Years of practice	< 5 years	33.9
	5 – 10 years	49.5
	>10 years	16.6
Periods of working in isolation center	3- 6 months	28.4
	6- 9 months	23.9
	9- 12 months	25
	More than 12 months	22.7
Importance of chest physiotherapy	Important	53.2
	Somewhat important	38.5
	Not important	8.3

Table 2: Chest physiotherapy stage n (109).

Chest physiotherapy stage	Frequency (%)
ICU	54 (49.5)
HDU	16 (14.7)
After danger zone	27 (24.8)
All stages	12 (12)
Total	109 (100)

Total 67.9% patients suffered from complications after isolation period (Table 3). Total 67.9% from patients suffer from complications after isolation period while 32.1% didn't (Figure 1).

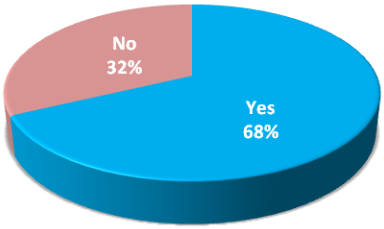

Figure 1: Presence of complications after the isolation period n (109).

The most common complications mentioned were shortness of breath (37.6%), followed by repeated chest infections (22.9%), low oxygen (14.7%), and 7.3% COPD (Table 3).

Table 3: Complications type that happen to patients after the isolation period, n (109).

Complication happened to patients after isolation period	Percent
Shortness of breath	37.6
Repeated chest infection	22.9
Low oxygen	14.7
COPD	7.3

Most common chest physiotherapy technique used was huffing or coughing stated by 30.3%, percussion (clapping) (23.9%), vibration (30.2%), and porn position type (15.6%) (Figure 2).

DISCUSSION

To the best of our knowledge, this is one of the few studies in the scientific literature that investigates the knowledge, Characteristics, Work Sites of Health Practitioners for Chest Physiotherapy in Patients with COVID-19, in Khartoum. Physiotherapists are playing an important role in functional and respiratory rehabilitation of patients affected with COVID-19 by providing tele-rehabilitation services and carrying out outpatient physiotherapy during the pandemic[20]. Total 109 individuals participated in this study; females (56%) were more than males. The commonest age group was found to be 30-35 (35.8%), followed by 25-30 (27.5%). Regarding the occupation, (45%) were doctors, followed by nurses (33%). When compared to the previous studies, the results of this study convenient with them[17-20]. The commonest age group presenting to the isolation centers, (33%) said 40-50 years, followed by more than 60 years (23.9%). This result can be logical, in which these age groups are the most affected age groups according to the latest studies.

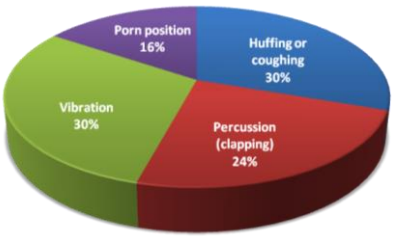

Figure 2: Chest physiotherapy technique.

Obtained data were not in concordance with literature data, which emphasize the real effectiveness of physiotherapy in respiratory patients admitted to the ICU for reducing their oxygen need[18]. Current finding inconsistent Letícia Marcelino Sotelo Dias *et al.*, finding[21], percussion used only in 1% patients while in current study used for 23.9%. Prone positioning used in 15.6% patients in current study while 90% in Letícia study. Cough used by 30.3% in current study and 75% in Letícia study. The importance of chest physiotherapy, only 8.3% stated that it is not important for COVID-19 patients, this is consistent to what found in previous studies "physiotherapists will be increasingly involved in the care of these patients, to improve pulmonary function, physical and psychological efficiency, and to restore a good patient quality of life"[22]. It was considered that the implementation of physiotherapy in the treatment of this category of patients can be considered an interesting therapeutic tool, which can be implemented after a thorough assessment of the abilities, needs, and co-morbidities of each patient. Coronavirus disease 2019, is pandemic has a respiratory complication after months of the initial illness. So, this study was done to raise the awareness of the community regarding chest physiotherapy and exercises to reduce complications in young people and adults to improve daily activities and productivity, despite there remains a lack of evidence about rehabilitation programs in patients with COVID-19[22]. In a previous study Loyola discussed the impact of COVID-19 in Mexico and suggests the different ways to prepare for future pandemics[23]. Mohammed *et al.*,[24] in their study discuss the different herbal formulation for COVID-19 treatment in Sudan. In an another study Islam *et al.*,[25] discussed COVID 19 impact in Bangladesh.

Limitation of study

Several limitations were found, the small number of participants, the impact on the quality of life (QOL) of patients with COVID-19 regardless of the time of discharge after hospitalization and recovery. The global assessment of the lung function during this study was not possible because this type of investigation was not allowed to be conducted on patients infected with SARS-CoV-2[19].

CONCLUSIONS AND RECOMMENDATIONS

As overall, COVID-19 is a new disease that presents challenges to inpatient care. Participants know that physiotherapy plays a fundamental role throughout

patient hospitalization and can help patients prevent very serious complications. However, the hospital physiotherapy team must be well-oriented regarding specific care to both reduce infection risk and provide the best patient care.

More studies are needed to investigate not only the impact that physiotherapy has on the clinical manifestation of the disease but also on effort capacity, muscle strength, and lung capacity.

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AUTHOR'S CONTRIBUTION

Elbadri ME: writing original draft, methodology. **Victor M:** research design, data collection. **Ibrahem R:** statistical analysis, conceptualization. **Azhari A:** editing, methodology. **Essam M:** methodology, investigation. **Saeed AA:** formal analysis, conceptualization. All the authors reviewed the results and approved the final version of the manuscript.

DATA AVAILABILITY

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

CONFLICT OF INTEREST

No conflict of interest associated with this work.

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