

RESEARCH ARTICLE

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The Clinical Practice Adopted by Physiotherapists in Managing Head and Neck Cancer Subjects within the United Arab Emirates: A Survey

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Abstract

Background: Globally, cancer is one of the main causes of death. Nonetheless, the estimate for Middle Eastern countries is high and rising. Furthermore, there is a paucity of evidence on effective rehabilitation measures for treatment of cancer patients, particularly head and neck cancer patients. As a result, the purpose of this study is to enlist current physical therapy clinical practice adopted by physiotherapists for the assessment and treatment of patients with head and neck cancer in United Arab Emirates. **Methodology:** A total of 100 survey questionnaires were sent via e-mail to physical therapists across the United Arab Emirates 's oncology rehabilitation centers for this cross-sectional study. Physical therapists having a valid license and at least one year of experience treating patients with head and neck cancer were included in the study. The collected responses were analyzed using descriptive statistics. **Results:** The total questionnaires generated a response rate of 56% of the targeted population. A percentage of 67% of the survey marked "Always or Frequently" by more than 50% of responders. Components aiming at the musculoskeletal system in both assessment and management were used more than those targeting the cardiopulmonary system. Functional capacity and Quality of Life measures were not given as much attention however 50% of responders reported using the Fatigue and Severity Scale (FSS). Mobilization was notably marked in management, especially Upper Extremity Training which was utilized by 86.4% of responders. Educational tips components all ranged around 40-60% except for Breathing Exercise which peaked at 85.7% of the responders. **Discussion and Conclusion:** Assessment measures predominantly focused on functional impairment measures of the upper limb, including functions related to mandible, tongue, mouth opening, and neck movement. Treatment patterns on the other hand predominantly centred on functionally related exercises as upper limb training, breathing exercises, and facial muscle exercise.

Keywords: Cancer Rehabilitation- functional capacity- head and neck cancer- impairment measures

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Introduction

Cancer is defined as a group of distinct diseases characterized by the uncontrolled growth of abnormal cell in the body. Cancer ranks amongst the leading causes of death worldwide (Bray et al., 2021). Global calculations reported that the total number of occurrences for cancer was 18.1 million and 9.6 million deaths registered for the year of 2018, making it a critical health matter (Ferlay et al., 2018). According to the International Agency for Research on Cancer (IARC), 1 in 5 men and 1 in 6 women worldwide develop cancer during their lifetime, and 1 in 8 men and 1 in 11 women die from the disease (Davies et al., 2006; Sung et al., 2021).

The predominance of malignancy cases within the Middle East is nevertheless high and increasing. The ascent of cancer as a leading cause of death is partly due to a significant reduction in stroke and coronary heart disease mortality rates in many countries including the United Arab Emirates (UAE) as compared to cancer mortality rates. Whereas in 2017 only, the number of deaths from cancer equalled to 955 (517 in males, 438 in females) and accounted for 10.82% of all deaths irrespective of nationality, type of cancer or gender. Despite advances in both prevention and treatment options, the cancer burden remains to rise globally, fuelled by an ageing population and increasing lifestyle-related risk factors (Bray et al., 2021; Wardle et al., 2015).

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Head and neck cancers cause a significant global disease burden, with about 500,000 new cases and 300 000 deaths expected each year (Torre et al., 2012). The majority of cases are caused by established high-risk exposures such as tobacco and alcohol, oncogenic viruses (human papillomavirus [HPV] or Epstein Barr virus [EBV]), and chemical contaminants (eg, chromium, nickel, and radium) (Torre et al., 2012; Pezzuto et al., 2015; Kim et al., 2010). Tobacco use is especially dangerous, whilst it is attributable to nearly 70% of all cases worldwide (Hashibe et al., 2009). The Global Burden of Disease (GBD) study estimated 890,000 new head and neck cancers (HNCs) worldwide in 2017, representing 5.3% of all cancers (Global burden of disease cancer collaboration et al., 2019). Among them, lip and oral cavity cancers were the most frequent, followed by larynx cancers. In terms of mortality, 507,000 deaths due to HNCs occurred, representing 5.3% of all cancer deaths (Auperin et al., 2020).

As the result of the escalating number of cancer cases reported in United Arab Emirates in the past decades, the Ministry of Health and Prevention launched the Cancer Screening initiative (2015), intending to improve the detection rates of the most prevalent types of cancers in the early stages to enhance the effectiveness of treatment. The action is in line with the United Arab Emirates government's 2021 vision of achieving a world-class health-care system by emphasizing the importance of preventive medicine and reducing cancer rates as well as lifestyle-related diseases like diabetes and cardiovascular disease to ensure that United Arab Emirates citizens live longer healthier lives (Auperin et al., 2020; Nair et al., 2018).

Nair and colleagues reported in a study that oncology centers in the United Arab Emirates need to implement a comprehensive, multidimensional approach to identify and address cancer patients' supportive care needs (Nair et al., 2018). According to Guru et al., (2012) 18 the significance of physiotherapy in cancer rehabilitation, particularly in HNC patients, is underappreciated. In the Middle East, particularly in the United Arab Emirates, there is a scarcity of documentation of the current practices adopted by physiotherapists regarding treating head and neck surgery patients. Many effective health outcomes can be achieved by identifying and correcting current rehabilitation methods, such as enhanced ability to cope with disease symptoms, increased physiotherapist-patient communication, and better adherence to treatment regimens.

In this regard, the primary objective of this study is to develop and validate a survey questionnaire via literature review. The second objective is to evaluate physical therapists' clinical practice in treating and rehabilitating different cases of cancer among the United Arab Emirates population. This will eventually benefit medical professionals in better understanding and establishing rehabilitation programs for those with advanced cases.

Materials and Methods

Ethical considerations, registration of the study protocol and development of questionnaire

The survey was conducted in College of Health Sciences at the University of Sharjah between January 2021 and February 2021, and investigated physiotherapists practicing cancer rehabilitation in patients with head and neck cancer. Approval was taken from Research Ethics Committee, college of Health Sciences, University of Sharjah (REC-21-05-04-02-S). The survey questionnaire was developed utilizing the themes shortlisted via a comprehensive literature review. The 'Examining the current clinical practice implemented by physical therapists in the assessment and management of head and neck cancer patients.' questionnaire contained sixty-one questions, grouped into four main sections: impairment measures, functional exercise capacity measures, health related quality of life, treatment techniques -mobilization and educational topics. All questions were close ended. Six cardio-pulmonary physiotherapy experts were given the questionnaire for content validation (Content Validity Ratio, CVR=1). Responses to all the questions had to be reported on a Likert Scale: "Always," "Frequently," "Sometimes," "Rarely" and "Never."

Selection of participants

Licensed physiotherapists practicing or having work experience in treating head and neck cancer patients admitted in oncology wards in the United Arab Emirates were eligible to be included in the survey. Those having less than one-year experience in treating head and neck cancer patients were excluded.

Recruitment

Complete enumeration of physiotherapists working in oncology wards was done by listing the physiotherapists working in the hospital from the database of "Emirates Physiotherapy Society". The lists of both private and governmental hospitals were obtained. Each hospital was contacted to ascertain the number of physiotherapists working in the oncology ward. From the hospitals (both government and private) 100 physiotherapists were identified as working in oncology wards.

Administration of questionnaire

They received an email with a hyperlink to the questionnaire, a cover letter outlining the study's objective, and a consent form. The participants were asked to fill out the survey based on their prior or current clinical experiences in treating patients with head and neck cancer. The deadline for returning responses was two weeks from the date of mailing. Non-responders received a phone call and an email reminder after two weeks. The researchers waited another two weeks for responses before excluding those who did not respond from the study.

Statistical Analysis

Responses were numerically coded to allow for descriptive summaries and frequency analysis of the data using SPSS version 16. Frequency variables

Table 1. Impairment Measures

Impairment Measures	Always or Frequently (%)	Sometimes (%)	Rarely or Never (%)
Heart Rate	64.29	32.14	3.57
Respiratory Rate	71.43	25	3.57
Pulse Oximeter	64.29	28.57	7.14
Arterial Blood Gas Analysis	53.57	35.71	10.71
Oral Hygiene	50.00	17.86	32.14
Mouth Opening	89.29	10.71	0
Mandibular Movements	100	0	0
Tongue Movement	67.86	21.43	10.71
Swallowing Function	85.71	14.29	0
Speech Rate	57.14	21.43	21.43
Speech Quality	50.00	25	25
Neck Movement	96.43	0	3.57
Shoulder ROM	92.86	7.14	0
Physical Examination	82.14	17.86	0
Peripheral Muscle Strength	71.43	28.57	0
Chest X-Ray	35.71	39.29	25
Borg Scale	50.00	35.71	14.29
Face Pain Scale	53.57	46.43	0
Numeric Pain Rating Scale	89.29	10.71	0

Table 2. Functional Capacity Measures

Functional Capacity Measures	Always or Frequently (%)	Sometimes (%)	Rarely or Never (%)
2 Min. Walk Test	46.43	28.57	25
6 Min. Walk Test	32.14	25	42.86
Self-Paced Walk Test	46.43	32.14	21.43

regarding assessment, treatment, and education were merged to create three responses; “always or frequently”, “sometimes” and “rarely or never.”

Table 3. Quality of Life Measures

Quality of Life Measures	Always or Frequently (%)	Sometimes (%)	Rarely or Never (%)
Hospital Anxiety and Depression Scale (HADS):	39.29	25	35.71
Short Form -36:	35.71	39.29	25
Fatigue and Severity Scale (FSS):	50	28.57	21.43
Oral Behaviour Checklist (OBC):	42.86	21.43	35.71
FACT- H&N Evaluates Health Related Quality of life:	35.71	35.71	28.57
Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30):	46.43	46.43	7.14
World Health Organization Quality of Life Questionnaire (WHOQOL):	39.29	21.43	39.29
Head and Neck Cancer Inventory (HNCI):	35.71	32.14	32.14
Head and Neck Performance Status Scale (HNPS):	35.71	39.29	25
Hospital Anxiety and Depression Scale (HADS):	39.29	25	35.71

Results

Response

Questionnaires were distributed to hospitals that provide cancer rehabilitation services across United Arab Emirates, targeting physiotherapists that work with head and neck cancer cases. 56% of the responses received fulfilled the inclusion criteria.

Assessment

Figures 1-3 and Tables 1-3 highlight and illustrate the percentages of various assessment measures practiced by

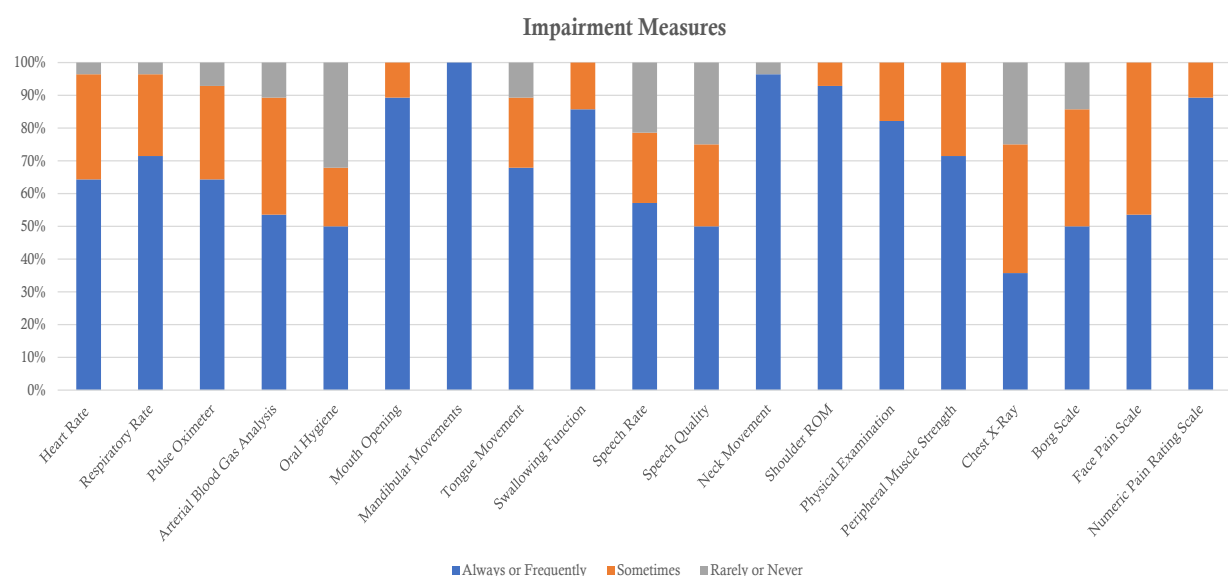


Figure 1. Impairment Measures

Table 4. Cardiopulmonary Treatment Techniques

Cardiopulmonary Treatment Techniques	Always or Frequently (%)	Sometimes (%)	Rarely or Never (%)
Humidification	25.00	50	25
Nebulization	17.86	60.71	21.43
Percussion	21.43	78.57	0
Vibration	25.00	53.57	21.43
Suctioning	32.14	53.57	14.29
Positioning	78.57	21.43	0
Breathing Exercises	96.43	3.57	0
Incentive Spirometer	96.43	3.57	0
Facilitation of Coughing	82.14	17.86	0

physical therapists at hospitals in United Arab Emirates providing cancer rehabilitation services to head and neck cancer cases.

Impairment Measures

More than 80% of the responders marked “always or

Table 5. Musculoskeletal Treatment Techniques

Musculoskeletal Treatment Techniques	Always or Frequently (%)	Sometimes (%)	Rarely or Never (%)
Mouth Opening	92.86	7.14	0
Jaw Movements	100	0	0
Tongue Exercises	64.29	14.29	21.43
Swallowing Exercises	82.14	14.29	3.57
Facial Muscle Exercises	82.14	10.71	7.14
Electrical Stimulation for Facial Muscles	85.71	10.71	3.57
Neck ROM	100	0	0
Shoulder ROM	100	0	0
Postural Correction	85.71	14.29	0
Mobilization	85.71	7.14	7.14

frequently” for the component impairment measures for patients. These included Mandibular Movements (n = 28 [100%]), Neck Movement (n = 27 [96.4%]), Shoulder

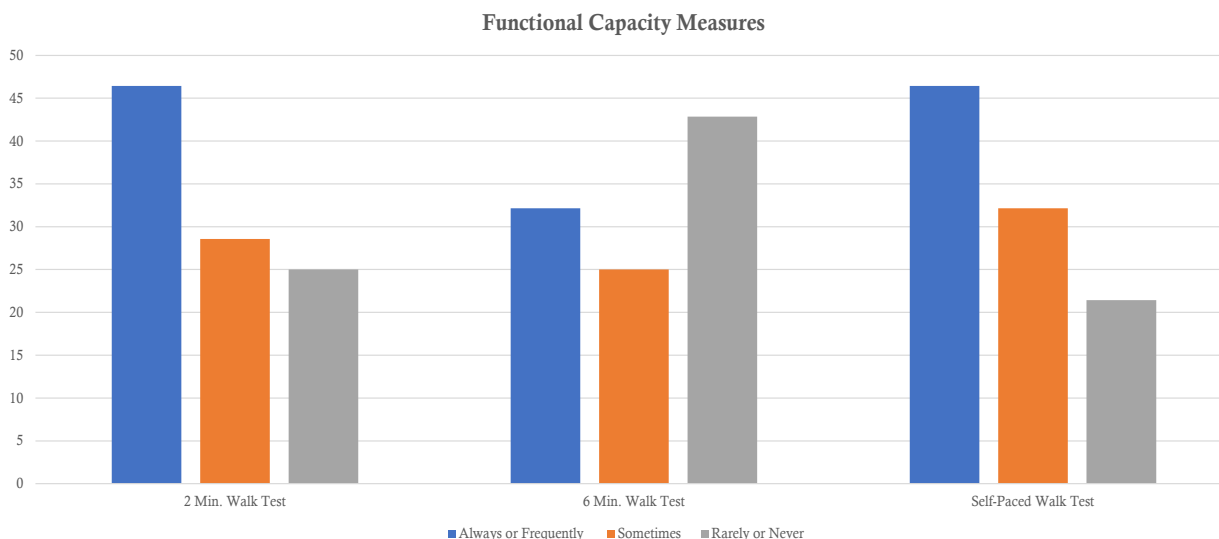


Figure 2. Functional Capacity Measures

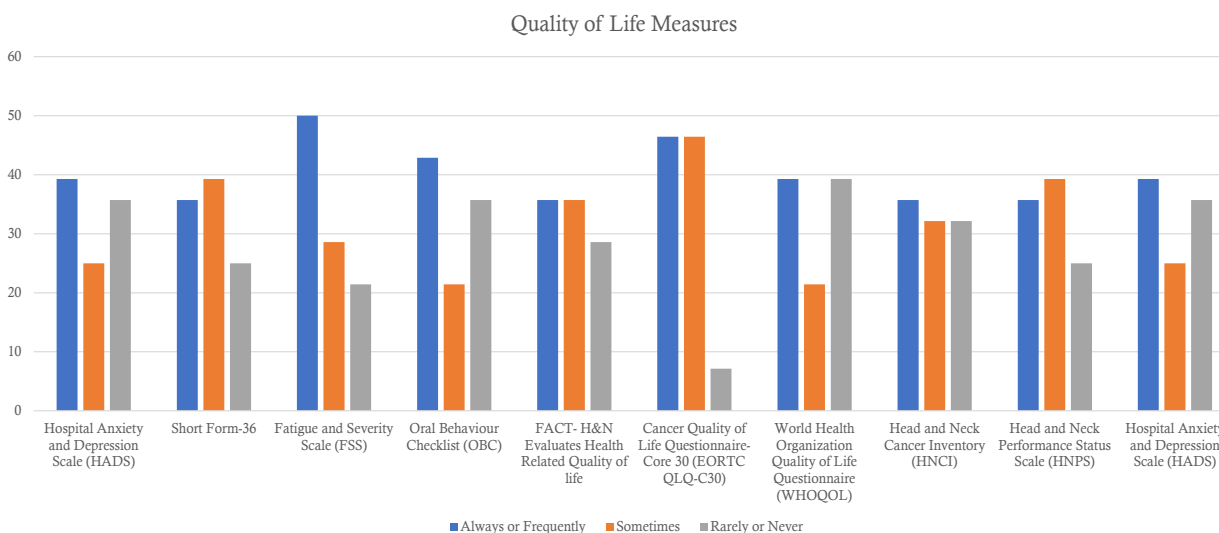


Figure 3. Quality of Life Measures

Cardiopulmonary Treatment Techniques

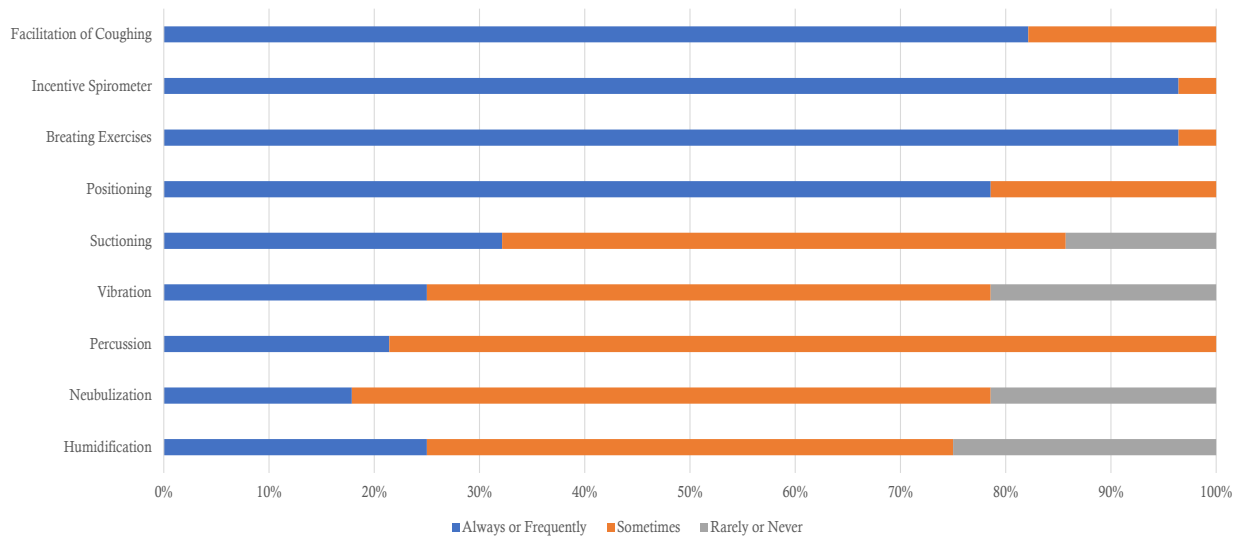


Figure 4. Cardiopulmonary Treatment Techniques

Table 6. Mobilization

Mobilization	Always or Frequently (%)	Sometimes (%)	Rarely or Never (%)
Upper Extremity Training	96.43	3.57	0
Lower Extremity Training	64.29	32.14	3.57
Strength Training	60.71	32.14	7.14
Walking	78.57	21.43	0

Table 7. Educational Topics

Educational Topics	Always or Frequently (%)	Sometimes (%)	Rarely or Never (%)
Strategies for Relieving Dyspnea	46.43	42.86	10.71
Breathing Exercise	85.71	14.29	0
Relaxation Technique	64.29	32.14	3.57
Oral Hygiene	53.57	28.57	17.86
Supraglottic Swallowing	46.43	35.71	17.86
Energy Conservation	42.86	25.00	32.14
Whole-Body Exercise	67.86	17.86	14.29

ROM (n = 26 [92.9%]), Mouth Opening (n = 25 [89.3%]), Numeric Pain Rating Scale (n = 25 [89.3%]), Swallowing Function (n = 24 [85.7%]), and Physical Examination (n = 23 [82.1%]).

More than 60% of the responders marked “always or frequently” for Respiratory Rate (n = 20 [71.4%]), Peripheral Muscle Strength (n = 20 [71.4%]), Tongue Movement (n = 19 [67.9%]), and Heart Rate (n = 18 [64.3%]). Half or more of the responders marked “always or frequently” for Pulse Oximeter (n = 18 [57.1%]), Speech Rate (n = 16 [57.1%]), Arterial Blood

Gas Analysis (n = 15 [53.6%]), Face Pain Scale 53.6% (n = 15), Oral Hygiene (n = 14 [50%]), Speech Quality (n = 14 [50%]), Borg Scale (n = 14 [50%]).

Chest X-ray was marked “always or frequently” by 35.7% (n = 10) of the responders. More than a quarter of the responders marked “Rarely or Never” for the component impairment measures for patients included

Musculoskeletal Treatment Techniques

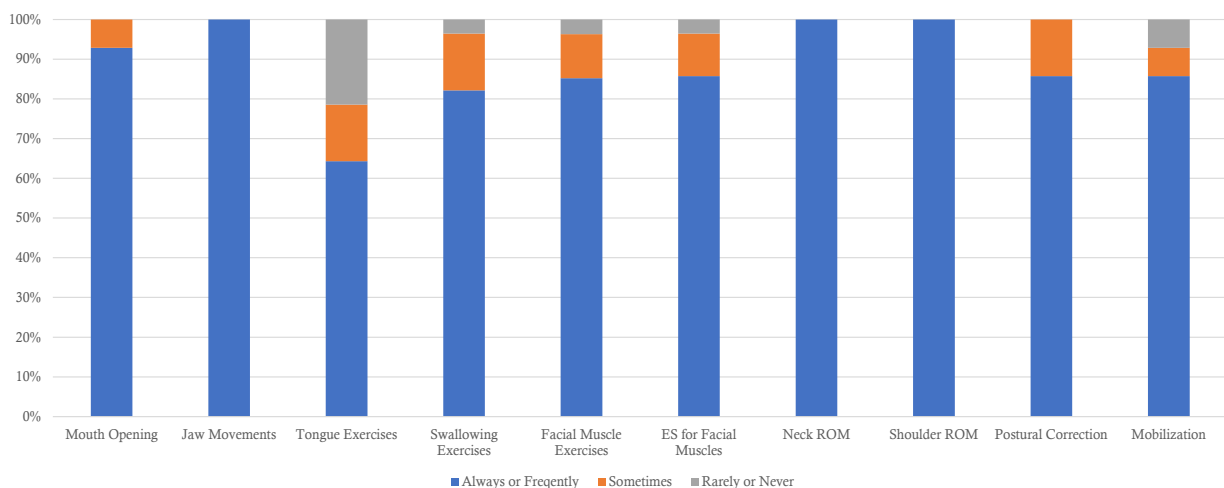


Figure 5. Musculoskeletal Treatment Techniques

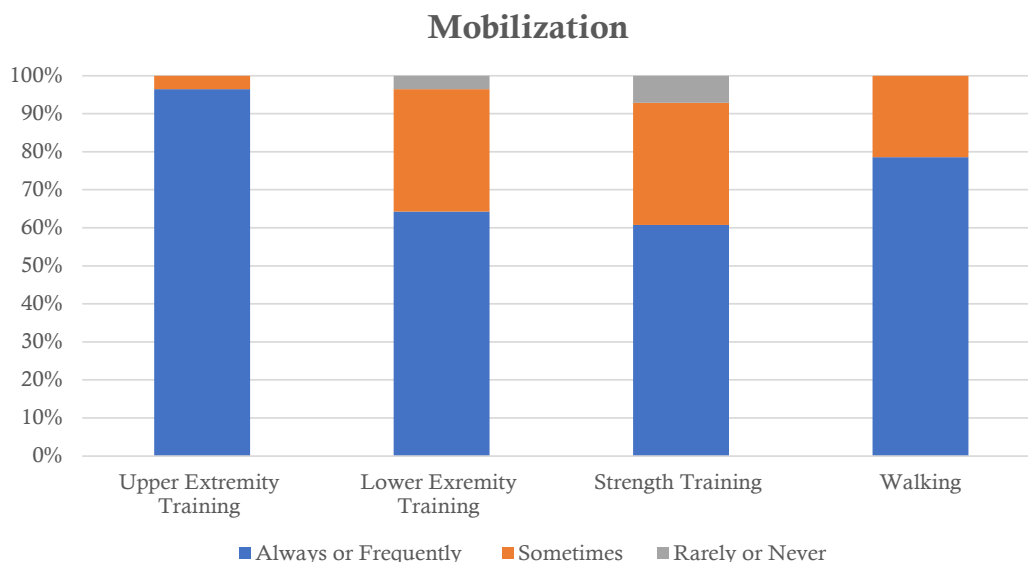


Figure 6. Mobilization

Oral Hygiene (n = 9 [32.1%]), Speech Quality (n = 7 [25%]), and Chest X-Ray (n = 7 [25%]).

Functional Exercise Capacity Measures

All three Functional Exercise Capacity Measures were marked “always or frequently” by more than 40% of responders. These include 2 Min. Walk Test (n = 13 [46.4%]), Self-Paced Walk Test (n = 13 [46.4%]). While the 6 Min. Walk Test was marked “ Rarely or Never “ by 42.9% (n = 12) of the responders.

Health-Related Quality of Life measures

The components of quality of life scales like Fatigue and Severity Scale (n = 14 [50.0%]), Cancer Quality of Life Questionnaire-Core 30 (n = 13 [46.4%]), Oral Behavior Checklist (n = 12 [42.9%]), World Health Organization Quality of Life Questionnaire (n = 11 [39.3%]), Hospital Anxiety and Depression Scale (n = 11 [39.3%]), Short Form -36 (n = 10 [35.7%]), Head and Neck Cancer

Inventory (n = 10 [35.7%]), Head and Neck Performance Status Scale (n = 10 [35.7%]), and FACT- H&N Evaluates Health Related Quality of life (n =10 [35.7%]) were used in varying frequency.

Treatment

The frequency with which individual interventions and approaches were used in the management of head and neck cancer care facilities are demonstrated in Figure 4-7 and Tables 4-7.

Cardiopulmonary Treatment Techniques

The following components which target the cardiopulmonary system were marked “Always or Frequently” by 70% of the responders. These include Breathing Exercises (n = 27 [96.4%]), Incentive Spirometer (n = 27 [96.4%]), Facilitation of Coughing (n = 23 [82.1%]), and Positioning (n = 22 [78.6%]). While the components Suctioning (n = 9 [32.1%]),

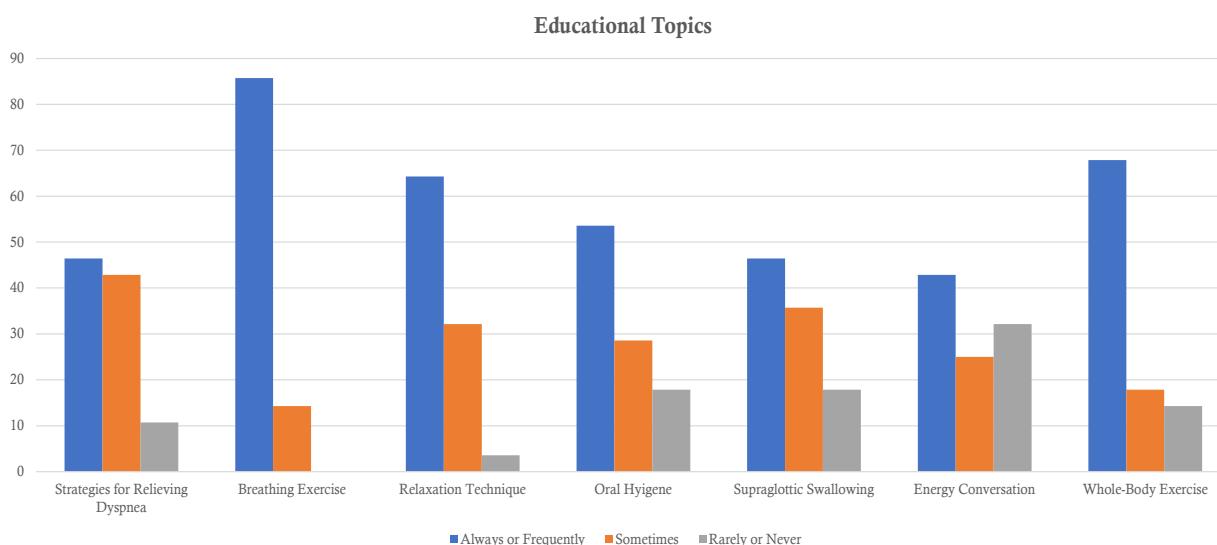


Figure 7. Educational Topics

Vibration (n = 7 [25.0%]), Humidification (n = 7 [25.0%]), Percussion (n = 6 [21.4%]), and Nebulization (n = 5 [17.9%]) were marked “Always or Frequently” by less than 40% of the responders.

Musculoskeletal Techniques

All components targeting the musculoskeletal system were marked “Always or Frequently” by more than 80% of the responders, except for Tongue Exercises which was marked by 18 [64.3%]. These include Positioning (n = 22 [78.6%]), Facial Muscle Exercises (n = 23 [82.1%]), Swallowing Exercises (n = 23 [82.1%]), Facilitation of Coughing (n = 23 [82.1%]), Mobilization (n = 24 [85.7%]), Electrical Stimulation for Facial Muscles (n = 24 [85.7%]), Postural Correction (n = 24 [85.7%]), Mouth Opening (n = 26 [92.9%]), Incentive Spirometer (n = 27 [96.4%]), Breathing Exercises (n = 27 [96.4%]), Jaw Movements (n = 28 [100%]), Neck ROM (n = 28 [100%]), and Shoulder ROM (n = 28 [100%]). It is to be noted that the last three were predominantly marked “Always or Frequently” by 100% of responders.

Mobilization

More than 60% of responders marked “Always or Frequently” for mobilization including Upper Extremity Training (n = 27 [96.4%]), Walking (n = 22 [78.6%]), Lower Extremity Training (n = 18 [64.3%]), and Strength Training (n = 17 [60.7%]).

Educational Topics

Approximately, 50%-70% of responders marked “Always or Frequently” for Whole-Body Exercise (n = 19 [67.9%]), Relaxation Technique (n = 18 [64.3%]), and Oral Hygiene (n = 15 [53.6%]). Furthermore, Breathing Exercise was marked “Always or Frequently” by 85.7% (n = 24).

Discussion

To the best of our knowledge, this is the first study publishing the current patterns of clinical practice adopted by physical therapists in United Arab Emirates for the assessment and management of head and neck cancer patients. The chief findings and outcomes were as follows:

- The majority of the assessment tools were focused on determining functional impairment. Mandibular, neck, and shoulder movement, mouth opening, the Numeric Pain Scale, swallowing function, general physical examination, peripheral muscle strength, and tongue movement are all examples of specific movements. Furthermore, the impairment measures component’s assessment placed a strong emphasis on cardiorespiratory functional measurements as pulse respiratory rate, pulse oximeter, and heart rate.
- Little to some focus however was spent on the face pain scale and arterial blood gas analysis. As well as oral hygiene, speech quality, Borg’s scale, and the fatigue and severity scale. About 50% and more of the respondents reported taking out the above impairment assessment measures.
- As per the treatment measures, neck, jaw, and

shoulder movements were the most dominant, followed by breathing exercises, incentive spirometer, and mouth opening. All of these were marked 90% or above for “Always or Frequently”. Some focus was given to the postural correction, electrical stimulation for facial muscles, mobilization, facial muscles exercise, swallowing exercise, and facilitation of cough. About 80% of the respondents preferred these protocols as a treatment for their patients. Furthermore, 60% and above chose walking, positioning, whole-body exercise, relaxation, strength training, lower extremity training, and tongue exercises.

Assessment

Impairment Measures

Most attention was given to assessing the patient’s functional ability in the components stated earlier. Head and neck cancer patients usually encounter different signs and symptoms depending on the type, stage of metastasis, and the followed treatment protocol. Symptoms are not just from the disease itself, but secondary symptoms associated with the treatment protocol (chemotherapy, radiation, etc.) like nausea or fatigue can be seen (Alho et al., 2006). Generally, many studies stated that head and neck cancer patients develop limitations within the neck and shoulder movements, as well as experiencing mandibular and tongue pain. Not only does this depend on the stage of cancer, but also the location of the tumor and whether or not patients went through surgery to remove it.

Some patients face muscular imbalance post-tumor removal and damage to the central or peripheral nervous system (Alho et al., 2006). All of those factors play a role in the patient’s upper limb strength and mobility, especially regarding the mandible, neck, and shoulder movement. Swallowing function may also be affected due to the facts stated above. Surgery for larynx cancer may cause great impairment in communication. Radiotherapy or chemoradiotherapy can cause dry mouth or stiffening and constriction of the local tissues, followed by problems in chewing and swallowing food (Geurts et al 2006).

An article written in 2006 pointed that head and neck cancer patients experience dyspnea-related symptoms (Alho et al., 2006). Subjects regularly experience trouble breathing due to restriction in upper thoracic and neck movement post-surgery or tumor extraction. Additionally, certain malignancies can obstruct channels in the body, which may lead to hindering the performance of particular systems in the body as well. Tumors can likewise provoke alterations in the body by compressing the neighboring tissues and organs. That leads to decreased blood circulation within the blood channels which can affect the oxygen consumption in the blood. Hence, measuring the pulse oximeter, pulse respiratory rate, and heart rate is essential. Comprehensive physical examination and peripheral muscle strength assessment were prevalent as well. It is known that patients who undergo chemotherapy show minimal muscle strength and functional ability due to the sedentary lifestyle, fatigue, lowered immune system, and pain following the therapy sessions (Alho et al., 2006; Geurts et al., 2006).

Furthermore, only some physiotherapists focused on

pain and fatigue-related assessment as well as dyspnea-related symptoms such as the Borg's scale. This however contradicts the fact that many of these patients' primary symptoms are dyspnea and other breathing problems, like soreness of the throat, hoarseness, general fatigue, and pain due to treatment (Alho et al., 2006). Moreover, little focus was given to the health-related quality of life measures. Patients who are in their late stages of cancer or have been undergoing numerous therapy sessions may fall into depression and anxiety. Particularly those who have been hospitalized for long periods of time. That is due to various factors that effects the patients' mental and psychological health, hospital settings alone can be a causative factor for patients to slip into depression. More and further attention needs to be given to those criteria. In addition to that, long-term cancer patients may have decreased quality of life because of their general lifestyle and decreased physical activity. Untreated depression has been shown to affect compliance to therapy, wound healing, and appetite (Geurts et al 2006; Chen et al., 2013). Further indicating that improving the general quality of life for these patients is a significant physiotherapy goal. Without assessing such measures, an individualized treatment plan cannot be established.

On the other hand, the Numeric Pain Rating Scale, Face Pain Scale, and Fatigue and Severity Scale were checked by 50% or more of the respondents as "Always or frequently". Yet, specific scales related to head and neck cancer were not predominant, as compared to general pain and quality of life scales.

Treatment

Similar to the surpassing assessment measures, treatment patterns also predominantly were directed on the mobilization of the upper limb, such as the mandibular, neck, shoulder range of motion, and swallowing exercises. The results confirm that functional mobility of the upper limb, including the head and neck, were the center of the treatment plan. A study observed that combining aerobic, resistance, and flexibility training during chemotherapy can assist in improving physical fitness as balance and muscle strength (Lin et al., 2021). This also depends on the primary symptoms of each case. Following radiotherapy, subjects may face decreased tongue strength and laryngeal elevation, which may greatly impact swallowing function, and cause fibrosis of the surrounding tissues (Pauloski et al., 2008). A study stated that cervical range of motion, swallowing, mouth opening, and shoulder disability were regarded as late complications of the disease. They may not be related to decreased survival rates; however, they are definitely related to decreased quality of life (Alho et al., 2006). This clearly indicates that rehabilitation programs for those components play a major role in the patients' quality of life and overall health, not only to control those complications but also to prevent them.

Cardiorespiratory

Next in line comes the cardiorespiratory capacity and lung volume. If compared with the predominant assessment measures, little focus was given to such a component. However, treatment measures focused on

breathing exercises, as well as incentive spirometer use. One of the known primary symptoms of head and neck cancer patients are related to decreased lung capacity and dyspnea (Alho et al., 2006). Many of those patients who undergo tumor removal are bedridden for long periods of time. Their breathing and lung capacity decrease due to the cancer treatments administered. Moreover, dysphagia is seen in patients due to trauma of the upper digestive tract after surgery. This is associated with an increased risk of respiratory complications such as pneumonia and aspiration (Pauloski et al., 2008). Focusing on lung expansion and increasing lung capacity is an essential aspect of rehabilitation in head and neck cancer patients. Despite the fact that little assessment was given to such symptoms, it is important to embed such treatment hand in hand with resistance training and range of motion. Studies have declared that this can improve QOL and alleviate the deterioration of the cardiovascular system in patients with head and neck cancer, and prevent further respiratory complications and secretions, especially post-surgery (Lin et al., 2021).

Musculoskeletal

Only little focus was addressed towards postural correction, electrical stimulation for facial muscle, facial muscle exercise, swallowing exercises, and facilitation of cough. Damage to the central and peripheral nervous system may occur post tumor extraction. Electrical stimulation and facial muscle training are an important part of rehabilitation for head and neck cancer patients. A coordinated treatment plan for facial nerve management, hand in hand with a surgical approach might help provide an ideal and comprehensive treatment protocol (Crawford et al., 2020). As stated previously, many patients face swallowing dysfunction and dysphagia. Therefore, focus on such aspects needs to be included in the treatment program more often. Also, postural correction to expand muscles around the thoracic area will not only help with musculoskeletal conditions but also would improve the breathing pattern and lung capacity.

Mobilization

Little focus was provided on lower limb exercise, strength training, and walking. That may be due to the fact that the attention of treatment is in the proximal areas near the tumor, precisely the upper limb more than the lower. It is crucial to make sure the patient is not immobilized for long periods of time, particularly to prevent shoulder complications and spinal accessory nerve dysfunction post neck dissection (Van Wilgen et al., 2003). Recent studies showed that shoulder pain and dysfunction are not only due to such complexities, but further due to neuropathic pain in the neck so as adhesive capsulitis, and myofascial pain in upper neck muscles, due to immobilization (Lin et al., 2021). Focus on the musculoskeletal system is important to prevent complications like frozen shoulder, and postural dysfunction, as well as providing neuromuscular retraining of the shoulder girdle. Stretching and strengthening of the cervical area and upper limb is crucial as well. A study mentioned that the role of exercises in oncologic rehabilitation programs has been limited to addressing

specific impairments related to the disease, or the surgery. However, recent studies state that physical activity can improve both the QOL and physical performance of cancer patients, whether it would be after or during treatment (Samuel et al., 2013). Including full-body exercises and general training and strengthening for both upper and lower limb, like an active and passive range of motion, postural exercises, strengthening exercises with light weights, and majorly focusing on the upper neck and shoulder muscles (McNeely et al., 2008) needs to be a priority for every physiotherapist dealing with head and neck cancer patients, to prevent any further complications.

Limitations

The first limiting challenge encountered was that the number of hospitals that provide physiotherapy rehabilitation for head and neck cancer patients was very limited. The following limitation found was the lack of compliance. Not all targets remained cooperative and prepared to participate in this survey. As only around 56% responded and gave delivered us with the feedback. Additionally, due to the COVID-19 pandemic, difficulties have been noted to get in contact with several hospitals, particularly when they do not reply to emails or phone calls. Last but not least, the elements within the used tool were very broad, given the fact that HNC is not prevalent in the country. To our knowledge, few physiotherapists in the United Arab Emirates have dealt with HNC patients, as compared to physiotherapists abroad or within the neighbouring counties of the Middle East. Therefore, there was a shortage within the sample size leading to the inability in evaluating definite types of treatments and/or assessments in the study.

Further Study

Further investigation is needed to identify factors responsible for shaping the followed clinical pattern by the physical therapists in managing head and neck subjects within the United Arab Emirates. Furthermore, if the study was to be conducted in the future, alterations need to be made like broadening the study range for it to be within the Middle East, not limiting to the United Arab Emirates solely. That is because fortunately, head and neck cancer are not very common in the country.

In conclusion, the management of head and neck cancer in the United Arab Emirates seems to be somewhat thorough. This study reveals that there is a notable discrepancy between assessment measures and certain treatment patterns, and vice versa. Besides, there were certain aspects of both assessment and management of head and neck cancer that were neglected and not given enough attention. To conclude, assessment measures predominantly focused on functional impairment measures of the upper limb, including functions related to mandible and tongue, mouth opening, and neck movement. Treatment on the other hand predominantly focused on functionally related exercises for upper limb training, breathing exercises, and facial muscle exercise.

Author Contribution Statement

Gopala Krishna Alaparathi conceptualized the study, and Kalyana Chakravarthy Bairappareddy provided methodological guidance. Omran Adil Al Bannay, Murtadha Massod Abdulrasool, Hanna Kassem, Ahad Fahad Al Zahrani, Asma Mohammad Ali, and May Tamim Mohammed performed patient data acquisition, analysis, and interpretation. All of the authors contributed equally to the writing and editing of the manuscript

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Ethical approval

The study was a part of an approved student thesis for undergraduate program. It was approved by research Institutional Ethics Committee, college of Health Sciences, University of Sharjah (REC-21-05-04-02-S).

Availability of data

Available upon reasonable request.

Conflicts of interest

None.

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