



PHYSIO FOR ALL

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EDITORIAL

The role and the importance of Kosovo Chamber of Physiotherapy on the improvement of physiotherapy profession _____

_____ ***Feim Gashi PT, Cand PhD.*** _____

PRESIDENT OF KOSOVO CHAMBER OF PHYSIOTHERAPY

The Chambers of Health Professionals in the Republic of Kosovo are independent organizations that present and protect professional interest of its own members, ensure high standards of the Code of Ethics and medical Deontology, promote and protect the activity of health professionals in public and private health institutions, as well as provide continuous professional education with the aim of providing health services and other services that are related with health care, with as high quality as possible. The Chambers of Health Professionals were founded based on the Law No. 04/L-150 Law on Professional Chambers. In total there are 5 Chambers of Health Professionals: Kosovo Doctors Chamber, Kosovo Chamber of Dentists, Kosovo Chamber of Pharmacist, Nurses, and other health professionals.

Kosovo Chamber of Physiotherapist was founded in 2015, even though its full competences were delegated on 1st of January 2018. Until now there are 1020 physiotherapists that have become members of this Chamber and are licensed from this Chamber.

The structure of the chamber consists of the organs of the chamber that includes the Parliament of the Chamber, The Councils, and commissions (temporary and permanent).

The Councils of the Chamber are:

- Leading Council of Kosovo Chamber of Physiotherapists
- Supervision Council of Kosovo Chamber of Physiotherapists
- Ethic Council of Kosovo Chamber of Physiotherapists

The Commissions of the Chamber are:

- The Commission of ethic's matters of the KCHPT
- The Commission of membership, licensing, and re-licensing of Physiotherapists in KCHPT
- The Commission of continuous professional education of Physiotherapists in KCHPTH
- The Commission of Specialized Education of physiotherapists in KCHPTH

- The Commission of Budget and Finance in KCHPTH
- The Commission of Solidarization and Mutual Aid in KCHPT

All chambers of Health Professionals' work are based on Law and Regulations. In accordance with them, those chambers own their own list of registration of:

- The register of members of the Chamber
- The register of licenses issued, and licenses revoked from the Chamber
- The register of disciplinary measures imposed on Chamber members

Kosovo Chamber of Physiotherapists – KCHPTH, towards the physiotherapists that have accomplish the terms and conditions according to Law of Chambers of Health Professionals provides these services:

- Membership in the Chamber
- License for the proper health profession by the proper Chamber
- Re-licensing
- Organizes trainings for continuous professional education such as congresses, conferences, workshops, round tables
- Accredits the programs for continuous professional education
- Facsimile Equipment from the Chamber
- Equipment with Identification Card of the Chamber
- Issues a certificate for the ethical professional past
- Issues other certificates based on the request of members of the Chamber (for example proof that he/she is a member of the Chamber, a member of the assembly, etc.)

The Chamber of the Physiotherapists of Kosovo, in 2019, became a full member of the World Physiotherapy, as well as the World Physiotherapy-Europe Region, where from the same year KCHPT works according to all the rules and standards in accordance with these organizations.

Besides harmonizing all the regulations of the scope of Physiotherapy with the countries of the region, it is also doing the same with Physiotherapy World-Region of Europe, with the main purpose that a physiotherapist licensed in OFTK is equal with all the physiotherapists of the world.

Us as a Chamber, cooperating with the World Physiotherapy-European Region, through hard work have managed that starting from 2023, in our territory the level of the study will be raised from three-year of the studies to four-year Bachelor study system (240 ECTS). The main purpose of all this was that in this way it will be achieved the minimum Physiotherapy competencies recommended by World Physiotherapy.

Besides this, our commitment has also been focused for the possibility of the creation of specializations in the field of physiotherapy, as well as the framing of physiotherapeutic services at the primary health level, which is a very big challenge for us, and we remain hopeful that we can achieve it very quickly with European standards.

KCHPT, in addition to creating high standards for physiotherapists, also takes care to offer to the patients an easy and innovative approach. Through technology, they can provide information on every licensed physical therapist in the city they live in, so they can have safer services.

The Chamber of Physiotherapists of Kosovo has cooperation with the Chambers of the region and Higher Education Institutions that deal with the field of Physiotherapy, with which we are all open for continuous cooperation for the benefit of this profession.

Chronic Obstructive Pulmonary Disease: A View on Comorbidity Phenotypes. A literature review _____

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Abstract

Objective: This review's purpose is to summarize the current state of knowledge on the systemic implication of chronic pulmonary obstructive disease

Background: The 'systemic repercussions' of COPD are of great importance. These include accidental weight loss, skeletal muscle dysfunction, and a higher risk of cardiovascular disease, osteoporosis, and depression. Frequently affecting the patient's health and prognosis, these extrapulmonary COPD characteristics demand thorough screening and proper management to give the most effective medical care.

Methods: We conducted a search of papers describing COPD as a systematic disease on the MEDLINE database.

Discussion: Local and systemic inflammation, oxidative stress, and changes in the neuro-humoral states are some of the likely candidate pathways by which these extrapulmonary complications of COPD are affected, even though the mechanisms for the association of COPD with systemic disorders have not been fully clarified. The processes and mechanisms behind the extrapulmonary symptoms of COPD will likely become more transparent with further research.

Conclusion: COPD management should be based on a clear understanding of COPD-related comorbidities and their impact on COPD itself.

Keywords: COPD, Phenotypes, Risk factors, Symptoms, Severity, Comorbidities, Cluster

Introduction

Chronic obstructive pulmonary disease is a preventable and treatable disease with significant effects on the lungs. It is a progressive inflammatory condition with persistent respiratory symptoms and airflow limitation. More recently, Fabbri and Rabe have stated that COPD should be considered a chronic systemic inflammatory syndrome to encompass the effects of the generalized inflammatory processes related to COPD on hormones, metabolism, and the musculoskeletal system [1]. Although historically, COPD severity has been strongly associated with airway obstruction level, other severe diseases and chronic medical conditions can affect patients with COPD. These are known as COPD-related comorbidities, and they are not to be confused with conditions stemming from the systemic consequences of COPD, even though both influence the course of the disease. [2] Many comorbidities share the same risk factors, and their presence and quantity

have direct results in COPD progression, patient's quality of life, number of exacerbations, and mortality. One of the major mechanisms underpinning these systemic effects is low-grade, persistent systemic inflammation. [3]

COPD-related comorbidities are not exclusive to patients with severe COPD and can be present in any stage of airflow limitation. It is very likely for multiple comorbidities to exist simultaneously in the same patient. [4] They also affect many facets of COPD management strategies and rehabilitation. [5]

Discussion

COPD phenotypes

Several definitions of COPD exist and suggesting that one is a better fit than others would be inaccurate. In recent decades, these definitions have taken place over one another. However, tentatives to perfect COPD definitions have yet to narrow the gap between our understanding of COPD pathophysiology and the goal of personalized therapy. This is where the concept of COPD phenotype comes in handy. A phenotype is the physical appearance or biochemical characteristic resulting from an interaction between its genotype and the environment. [6] Patients can present with predominant emphysema or chronic bronchitis, which has treatment implications. Therefore, identifying individuals with the phenotype of chronic bronchitis and repeated exacerbations is important in clinical practice. Additional phenotypes with clinical or therapeutic relevance include overlap COPD-asthma and frequent exacerbator. Patients who experience two or more exacerbations a year are considered to have the COPD exacerbator phenotype. [7] This phenotype is based on clinical data and patient recall. The COPD exacerbator phenotype suggests a worse prognosis, emphasizes the significance of inquiring about and documenting exacerbations in the clinical record and identifies individuals who may need anti-inflammatory medication in addition to bronchodilators. [8] The complexity of COPD suggests the need to classify different COPD phenotypes based on clinical parameters, number of hospitalizations, comorbidities, and systemic inflammation. Epidemiological research on the incidence of COPD demonstrates that young smokers with asthma differ from those with a chronic airflow obstruction but no history of asthma. In the first instance, increased plasma concentrations of IgE are much more common, along with allergic rhinitis, bronchial hyperresponsiveness, and wheezing, demonstrating that this is an overlap phenotype between asthma and COPD [9]. The overlap COPD-asthma phenotype is described as an incompletely reversible airflow obstruction accompanied by symptoms or signs of greater obstruction reversibility [10] or as

the diagnosis of COPD in a patient with a history of previously diagnosed asthma before the age of 40. These phenotypes identify patients with different responses to the available treatments and allow a more personalised approach to treatment, which is modulated according to COPD severity.

Other COPD phenotypes have been proposed, but their importance when directing treatment is not established. Future research should concentrate on developing straightforward algorithms based on the most discriminating features for categorizing patients into particular phenotypes. Before they can be used in clinical practice, such algorithms must first be evaluated in validation cohorts.

COPD as a “cluster” disease

Several studies show that the cause of death in mild to moderate COPD patients differs from that in advanced COPD patients. While lung cancer and cardiovascular diseases are the main culprits in the first group, respiratory failure is a mortality factor in the second group. [11]

Cluster analysis is a collection of methods for defining groups of individuals based on measured characteristics so that they are grouped based on their differences, into clusters.[12]

Burgel et al.’s key finding is that COPD patients with identical airflow restriction belong to distinct phenotypes, have varied symptoms and outcomes, and vary in age and comorbidities. Comparing this study to the other two that have utilized cluster analysis to describe COPD is interesting[13]

Divo et al., in a prospective study in 2013, were able to significantly link twelve out of the seventy-nine comorbidities studied to mortality in COPD patients. They state that the most prevalent comorbidities in COPD patients, with a noticeable impact on overall morbidity and mortality, are cardiovascular, cerebrovascular diseases, lung cancer, and diabetes. The study developed a graphic depiction of this impact in the form of a “comorbidome.” It validated using a simplified disease-specific comorbidities index to assess COPD mortality. [14]

Another prospective study was conducted in 2015 by Vanfleteren et al. [15] in a pulmonary rehabilitation center. 213 COPD patients were enrolled in this study, and five clusters were established based on 13 objectively diagnosed comorbidities in patients with COPD. The patients of each Cluster had the same level of airflow limitation, smoking, activity-related functional capacity, long term oxygen therapy, which illustrates that the prevalence of COPD-related comorbidities is independent of COPD severity.

1st Cluster - had fewer comorbidities than others

2nd Cluster - the cardiovascular Cluster

- 3rd Cluster - the cachectic Cluster; had the most significant prevalence of underweight-related conditions, osteoporosis, and conditions associated with muscle mass loss.
- 4th Cluster - the metabolic Cluster; patients with obesity, hyperglycemia, and dyslipidemia represented it.
- 5th Cluster - the psychological Cluster, had many patients suffering from depression and anxiety disorders. Surprisingly, the patients in this Cluster were affected by the greatest number of myocardial infarctions.

In 2018 one thousand, five hundred and eighty-four COPD patients were enrolled in a cohort study conducted by Raheison et al. [16]. Cluster analysis showed five phenotypes of comorbidities:

- 1st Cluster - included cardiac profile and was the most prevalent in groups B and D of COPD, according to GOLD classification.
- 2nd Cluster - included fewer comorbidities and had the greatest prevalence in groups A and C of COPD.
- 3rd Cluster - included metabolic syndrome, apnea, and anxiety depression. It had its most significant prevalence among groups C and D of COPD.
- 4th Cluster - denutrition and osteoporosis cluster. It was the most prevalent group B and D of COPD.
- 5th Cluster - bronchiectasis. It was most prominent in COPD patients of group D.

This Japanese study [17] evidenced that comorbidity profiles can be clustered into five categories:

- 1st Cluster – less comorbidity
- 2nd Cluster – Malignancy
- 3rd Cluster – Metabolic and cardiovascular diseases
- 4th Cluster – GERD and psychological diseases
- 5th Cluster – underweight and anemia

Each Cluster's patients have unique clinical characteristics, different in comorbidities, even for the patients with the same FEV1. There were no statistical differences in FEV1 between the 5 clusters because it involved all the COPD stages according to GOLD. It was noticed that there is no connection between the severity of airflow limitation and the type of comorbidity, therefore, the type of Cluster. All the patients in the malignancy cluster (the second one) had one or more extra pulmonary malignancies, and only 19% of them had lung cancer. The patients in

the 4th Cluster with GERD and psychological diseases had higher SGRQ scores and CAT scores, matching previous studies showing that anxiety, depression, and GERD worsen CAT and SGRQ scores. Knowing this fact, carefully treating these conditions is fundamental.

The study reported a connection between emphysema and osteoporosis and between muscle weakness and low BMI. The patients in the 5th Cluster, the underweight and anemia category, had a lower BMI and higher prevalence of osteoporosis, and low DLCO/VA. This suggests common mechanisms between emphysema, osteoporosis, and low BMI.

Main COPD-related comorbidities

When we mention COPD-related comorbidities, we mainly discuss the following:

- Cardiovascular disease
- Skeletal muscle disease
- Psychiatric disorders
- Sleep-related breathing disorders
- Endocrine disorders
- Gastrointestinal disease
- Lung Cancer
- Infections

It is still unclear if COPD is a disease distinct from its comorbidities or whether these are part of the spectrum of COPD symptoms because more than 50% of COPD patients have four or more comorbidities, but their presence is one of the most significant modifying risk factors for COPD severity. [18]

Cardiovascular diseases

Cardiovascular diseases are the most frequent of COPD-related comorbidities. [19] Patients with COPD have a two to three-fold increased risk of developing cardiovascular diseases than non-COPD patients of the same age group and the same smoking habits,[20] and in some studies, the risk is estimated to be up to fivefold as much.[21]

The basic mechanism in the development of cardiovascular disease was once believed to be the establishment of atherosclerotic plaque: endothelial denudation and smooth muscle cell proliferation created an atheroma with lipid accumulation in its center. Later research has revealed that particular inflammatory cells and

their signaling pathways are crucial for the development of atherosclerotic plaques, plaque rupture, and atherothrombosis, all of which result in cardiac events. It is now established that circulating inflammatory markers can predict cardiac events. Future cardiac events can be strongly predicted by CRP, an acute-phase reactant produced in response to acute injury, infection, or inflammation. Baseline CRP independently of conventional risk variables, predicted cardiovascular events in two prospective investigations of healthy males and females. [22] [23]. A combination of systemic inflammation, oxidative stress, and physiological stresses may bring on subendocardial myocardial injury. [24]

A high body mass index, extremely high rates of diabetes, congestive heart failure, and ischemic heart disease are all indicators of groups of people who have “systemic COPD,” according to cluster analysis. They experienced higher rates of dyspnea, a worse quality of life, more frequent medical visits, and a higher risk of death than those with equivalent airflow limitation but without a heavy comorbid load. [25] According to two separate research, cardiovascular comorbidities are likely to play a major role in this phenotype’s poor health outcomes and quality of life scores. [26] The ARIC population study had a 15-year follow-up period for COPD patients. The incidence of cardiovascular events was more common in subjects with a lower FEV1 regardless of smoking status or the presence of cardiovascular disease at baseline. [27] The prevalence of COPD is also high among patients with Coronary Artery Disease (CAD), and it ranges in literature from 7% to 33.6%. [28] [29] [30] [31] While CAD patients are not at greater risk of developing COPD exacerbations, the duration of exacerbations may be prolonged by cardiovascular illness.[32]

Heart failure

The overall prevalence of heart failure in COPD patients with moderate-to-severe airflow limitation in different cohort studies ranges from 7% to 39%, and impairment of left ventricle fraction ejection does not play a role. [33] [34] [35] As in most cases with COPD-related comorbidities, COPD and heart failure are clinically interrelated: while airflow limitation itself major risk factor of heart failure, the latter may result in airflow limitation. [36] [37]

Hypertension

Across all GOLD stages, hypertension appears to be the cardiovascular comorbidity that is most common. [38]

The link between hypertension and COPD is not well understood. According to recent research, increasing loss of elastic connective tissue may be linked to

increased arterial stiffness in COPD. The likelihood of hospitalization within 5 years and the mortality risk increases in COPD patients with hypertension. Patients with COPD are more likely than healthy people to have carotid plaques with higher lipid contents, which are more likely to burst and cause strokes. [39]

Research shows that targeting aggressive disease management of comorbidities in COPD patients with persisting symptoms who are receiving optimum respiratory therapy and have a large burden of cardiovascular comorbidities may help improve symptoms and health outcomes.

Skeletal muscle dysfunctions

Both ventilatory and non-ventilatory muscle groups in COPD patients are affected by skeletal muscle dysfunction in terms of quality of life and survival. An increasingly sedentary lifestyle is a major factor in muscle dysfunction, which leads to a loss of mobility and independence and, eventually, mortality in chronic obstructive pulmonary disease. [40] The reduced skeletal muscle strength associated with severe exacerbations can be effectively avoided by preventing and treating them quickly and aggressively. Individuals who receive repeated doses of oral corticosteroids should be closely monitored for skeletal muscular strength, or corticosteroids should be avoided altogether. Oral corticosteroids should be used sparingly when muscle force starts to diminish. Exercises involving the entire body, like walking or cycling, improve the aerobic capacity of skeletal muscles. According to some studies, specific skeletal muscle growth and differentiation factors were upregulated after exercise training. [41]

Metabolic syndrome and diabetes

Type 2 diabetes and metabolic syndrome are 1.5–3 times more prevalent in COPD patients than in the general population. Circulatory markers of systemic inflammation were increased in patients with chronic bronchitis and COPD when metabolic syndrome was detected, irrespective of the degree of lung function impairment. [42] A person with diabetes has a lower quality of life and a shorter life expectancy. The microvascular (retinopathy, nephropathy, and neuropathy) and macrovascular consequences (ischemic heart disease, stroke, and peripheral vascular disease) are primarily to blame for this increased morbidity and mortality. [43] Additionally, diabetes has been linked to a higher risk of infection and sepsis. By decreasing neutrophil activity and humoral immunity, hyperglycemia alters the host's response to infection. [44] The growth and pathogenicity of invading

bacteria are both arated by elevated glucose levels in tissues and secretions [45]. Increased systemic inflammation increases COPD mortality as well as COPD exacerbations, which become more frequent. By lowering insulin resistance and cardiovascular risk, modifications to COPD patients' routine exercise regimens, dietary recommendations, and drug therapy may improve their outcomes. The shared risk factors and pathogenic processes between metabolic syndrome, type 2 diabetes, and COPD can explain their high correlation. [46] The intensity and impact of each illness are exacerbated by the presence of the others, decreasing patient outcomes. In order to improve respiratory disease, lower cardiovascular risk, and maybe improve other systemic manifestations, best clinical management should therefore encompass both optimizing respiratory disease to reduce insulin resistance and controlling blood glucose and other metabolic variables. [47] The combined effects of quitting smoking and pulmonary rehabilitation are already beneficial for both respiratory and metabolic diseases. All COPD patients' results could be further enhanced by modifying exercise routines, nutritional guidance, and medicines to lower risk or improve control of metabolic syndrome and diabetes.

Depression and anxiety disorder

Between 2% and more than 50% of COPD patients report anxiety symptoms. Accordingly, the frequency of depression symptoms varies. These wildly divergent results can have a number of causes. Anxiety, despair, and fear of being out of breath are signs of emotional fragility and can help identify it because they are linked to a well-documented rise in mortality, morbidity, hospitalizations, length of stay, and readmissions. [48] Several physiological, psychological, and social elements have a role in the complex link between COPD and neuropsychiatric diseases. Before a psychiatric diagnosis is determined, the physical symptoms of the patient should be evaluated very carefully. It is feasible to treat comorbid psychiatric disorders, and effective therapy results in an enhanced quality of life.

Obstructive sleep apnea syndrome

Changes in central respiratory control, lung mechanics, and muscle contractility are just a few of the ways that sleep affects breathing. Healthy people are not adversely affected by these effects, but patients with COPD may experience substantial hypoxemia and hypercapnia, especially during rapid eye movement (REM) sleep.[49] Due to the frequent inability of clinical practice to consider

potential concurrent SDB among specific COPD patients, overlap syndrome is quite common yet frequently goes unrecognized. Greater more significant hypoxemia and hypercapnia are associated with overlap syndrome than with COPD or OSAS alone, which may have important cardiovascular effects. Morbidity and mortality will be decreased with early diagnosis and CPAP therapy. Despite overlap syndrome's great frequency, there is a dearth of information on its pathophysiology and clinical effects. Although several clinical outcome studies in this field have started, long-term follow-up research on the path overlap syndrome's pathophysiology and clinical effects ed. Future research should focus on defining the extent and effects of inflammation, oxidative stress, and leukocyte dysfunction in the overlapping processes of overlap syndrome. [50] [51]

Lung Cancer

COPD and lung cancer are closely related and frequently coexist in patients. Smoking continues to be a serious public health concern despite public health interventions and is still a major cause of lung cancer and COPD. Pulmonologists face a clinical problem when treating patients with severe COPD who have lung cancer, which calls for a multidisciplinary approach.

There have been conflicting findings regarding the incidence of lung cancer among COPD patients in various stages, with some studies finding an increased incidence with COPD severity and others reporting the opposite.[52] If a patient has genetic or epigenetic risk factors common to both diseases, lung cancer may be more common at less severe COPD stages and patients in the more severe stages would not have the predisposing risk factors; on the other hand, if chronic inflammation is to blame, the worse the COPD severity, the higher the risk of developing lung cancer. This could explain why the results are contradictory. Further research is necessary to determine the real cause of these disparate results. [53]

Gastro-oesophageal reflux disease

In multiple datasets, Gastro-oesophageal reflux disease (GORD) symptoms have been linked to more frequent exacerbations in COPD patients. The underlying mechanisms are not well known and need further research. [54] There are several potential causes. One of them is the microaspiration of gaseous and liquid refluxate into the lower respiratory tract. [55] Another one brings up symptoms exacerbated by the vago-vagal reflex from the oesophagus to the airway. In addition, there are

also autonomic dysregulations of the Lower oesophageal sphincter to consider. [56] The widely held belief that GORD has adverse effects on people with COPD is unfounded; in fact, exacerbations of the disease can likely disturb the body's physiology and lead to higher GORD. The intriguing possibility that treating GORD may result in improved outcomes for COPD is still present. However, more randomized controlled trials of antireflux therapy are needed.

Infections

The natural history of COPD is complicated and multifaceted, with both pulmonary and extrapulmonary diseases having a substantial impact. An airway infection is an essential component of the disease pathophysiology. Deteriorating airway inflammation leads to increased systemic inflammation, which is linked to the elevated risk of cardiovascular disease in COPD patients. Not only are airway infections common during COPD exacerbations, but bacterial colonization during disease stability may also raise the risk of pneumonia, resulting in episodes with greater loads of potentially harmful microorganisms and, ultimately, structural alterations in the lung. This creates a vicious cycle of the airway and systemic inflammation, which raises the risk of both conventional and atypical infection. [57] Patients with COPD may experience abrupt cardiovascular events during infection because of increased inflammatory pathways and platelet activation. Recent findings have indicated that patients with stable COPD had greater circulating platelet-monocyte aggregates than well-matched controls [58], as platelet-monocyte aggregate formation is an early phase in atherothrombosis. Analysis of data from 25,857 COPD patients in The Health Improvement Network database has produced additional proof that acute infectious exacerbations are associated with cardiovascular disease [59]. One in every 2,513 exacerbations was linked to an MI within 1–5 days, and there was a 2.27-fold higher risk of MI in those time frames. The bacteria *Chlamydia pneumoniae* and coronary heart disease have also been linked mechanistically, in addition to increased systemic inflammation. Up to 10% of all pneumonia cases are caused by *C. pneumoniae*, which may potentially exacerbate bronchial inflammation brought on by smoking. Up to 10% of cases of pneumonia are caused by *C. pneumoniae*, which may worsen smoking-related bronchial inflammation and it has been theorized to have a role in the pathological alterations associated with COPD [60].

Epidemiological studies have shown that COPD is one of the most common comorbidities associated with Community-acquired pneumonia (CAP) [61], and COPD patients are more likely to have worse clinical outcomes, contributing to the overall socioeconomic costs of CAP. Hospitalized COPD patients with CAP are more likely to be older, have additional concurrent comorbidities, have poorer

clinical outcome data, have a higher pneumonia severity score, and have a higher mortality rate. [62]

Conclusions

The complexity of COPD suggests the need to classify different COPD phenotypes based on clinical parameters, number of hospitalizations, comorbidities, and systemic inflammation. One of the major mechanisms underpinning these systemic effects is low-grade, persistent systemic inflammation.

COPD patients can present with predominant emphysema or chronic bronchitis, which has treatment implications. Therefore, identifying individuals with the phenotype of chronic bronchitis and repeated exacerbations is important in clinical practice. Additional phenotypes with clinical or therapeutic relevance include overlap COPD-asthma and frequent exacerbator. Patients who experience two or more exacerbations a year are considered to have the COPD exacerbator phenotype. Cluster analysis is a collection of methods for defining groups of individuals based on measured characteristics so that they are grouped based on their differences, into clusters. Several studies show that the cause of death in mild to moderate COPD patients differs from that in advanced COPD patients. While lung cancer and cardiovascular diseases are the main culprits in the first group, respiratory failure is a mortality factor in the second group.

It is still unclear if COPD is a disease distinct from its comorbidities or whether these are part of the spectrum of COPD symptoms because more than 50% of COPD patients have four or more comorbidities, but their presence is one of the most significant modifying risk factors for COPD severity.

A high body mass index, extremely high rates of diabetes, congestive heart failure, and ischemic heart disease are all indicators of groups of people who have “systemic COPD,” according to cluster analysis. They experienced higher rates of dyspnea, worse quality of life, more frequent medical visits, and a higher risk of death than those with equivalent airflow limitation but without a heavy comorbid load. Combined diagnosis of COPD and heart failure entails a higher level of care burden, complicated polypharmacy, and a higher chance of misunderstandings among various healthcare professionals.

Preventing exacerbations and treating them early and aggressively can successfully reduce the decrease in skeletal muscular strength associated with severe exacerbations. Oral corticosteroids should either not be used at all in people who get them on a regular basis if skeletal muscle strength is to be regularly evaluated. When muscle force starts to decline, oral corticosteroids should be taken with caution.

The optimum clinical care should include both optimizing respiratory disease to reduce insulin resistance and regulating blood glucose and other metabolic variables in order to reduce cardiovascular risk, improve respiratory disease, and maybe improve other systemic symptoms. Modifications to COPD patients' regular exercise routines, nutritional advice, and medication management may improve their results by reducing insulin resistance and cardiovascular risk.

Several physiological, psychological, and social elements have a role in the complex link between COPD and neuropsychiatric diseases. Before a psychiatric diagnosis is determined, the physical symptoms of the patient should be evaluated very carefully. It is feasible to treat comorbid psychiatric disorders, and effective therapy results in an enhanced quality of life.

In terms of public health, it appears necessary to identify smokers who are most at risk of developing COPD and/or lung cancer. Doing so would also usher in a new era of preventative medicine. In this manner, a potential application offering intriguing potential for the future would be to target smokers for low-dose CT screening for early identification of lung cancer.

The widely held belief that GORD has adverse effects on people with COPD is unfounded; in fact, exacerbations of the disease can likely disturb the body's physiology and lead to higher GORD. The intriguing possibility that treating GORD may result in improved outcomes for COPD is still present. However, more randomized controlled trials of antireflux therapy are needed.

The disease's pathogenesis includes airway infection and is associated with a higher-than-normal risk of cardiovascular disease in COPD patients. Exacerbations play a significant role in the vicious cycle of systemic and airway inflammation, which increases the risk of both common and uncommon infections.

Hospitalized COPD patients with CAP are more likely to be older, have additional concurrent comorbidities, have poorer clinical outcome data, have a higher pneumonia severity score, and have a higher mortality rate.

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The need for public physiotherapeutic services in rural and suburban Albania

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Abstract

Introduction: According to Institution of Statistics of Albania 75% of Albanian population lives and is considered a rural population. Based on studies for the general health of the population it is noted that rural and suburban population reports a lower prevalence for good general health compared to the population on urban areas. Even more specifically musculoskeletal issues are seen to have a connection with rural settings but the physiotherapeutic services are missing.

Purpose: The purpose of this study is to establish the need of physiotherapeutic services on rural and suburban Albania based on the level of knowledge of this population for the medical services, benefits provided from physiotherapeutic interventions and the level of patients with musculoskeletal issues that have never received such services.

Methodology: This study included 490 subjects, 230 males and 260 females from the age of 18 to 80+, all living and receiving medical services on similar settings and backgrounds.

Results: 65% of the total population had suffered at least one musculoskeletal issue during the past 3 months. From 320 subjects that had these issues only 6% were recommended to visit a physiotherapist after visiting their local doctor. Only 49% of the whole population knew about physiotherapeutic services .91% of the population preferred to have access of physiotherapeutic services on their local

health center and 81% claimed that traveling to urban areas was an extra expense for their health care.

Conclusions: Based on the data extracted from the study Albania would benefit from providing public physiotherapeutic services in rural and suburban areas to promote public health for the population. This would give employment opportunities for younger physiotherapists and prevent the higher densities of professionals on a single area.

Key words: *Physiotherapy, Rural, Suburban, Albania, Musculoskeletal issues.*

Introduction

Physiotherapy is introduced to humanity as early as the year 460 B.C. by the physicians like Hippocrates and later Galenus. Both practiced physical therapy by using massage, manual and hydrotherapy to treat patients and advocated physical therapy as a mean of promoting good physical and mental health (1,2). Fast forward on the year of 1851 military physician Dr.Lorenz Gleich uses the word “Physiotherapie” in the German language as a way to describe the practice. In 1887 physiotherapists were given official registration by Sweden’s National Board of Health and Welfare which was then followed by other countries. The word “Physiotherapy” was coined by an English physician Dr.Edward Playter in the Montreal Medical Journal in 1894 after 43 years of the German term “Physiotherapie”.(3) Nowadays Physiotherapy is a well known science of rehabilitation and counts more than 650,000 professionals according to WORLD PHYSIOTHERAPY website.

Currently in Albania in the 5 last years there are 1270 licensed physiotherapists according to Nursing Order of Albania and a part of them provide their services in hospitals, health centers and private settings mostly in urban areas.

Urban vs Rural health in Albania

According to Institution of Statistics of Albania 75% of Albanian population lives and is considered a rural population with the expectations of the region of Tirana which is considered a urban population and the regions of Durrës and Vlorë who are considered regions with a mixed population of urban and rural residents. (4) Considering the medical system is more advanced in urban areas more of the residents living in this areas have better access on medical services including physiotherapeutic services compared to rural ones.(5,6),

Older people residing in the urban areas exhibit a significantly lower prevalence of poor self-perceived general health (about 30%) compared with

their counterparts living in the rural areas (around 46%), and particularly those living in the semi-urban areas (about 50%). (7)

On a paper from the early 2000s the Albanian Health Reform Project came to the conclusion that even in Tirana, 21% of the rural population were not registered at a health center and some did not have a family doctor. (8) So the project suggested that by the year of 2006 the goal was to establish a network of community health workers in the rural areas, (9)

Twenty-two years later citizens and patients namely in rural areas have limited access to Primary Health Care (PHC) services due to low quality of care, imperfect availability and financial costs, in some cases according to Swiss Tropical and Public Health Institute (*organization evaluating the accreditation process of Health Care Centers in Albania*) most of rural residents suffer from more chronic and acute diseases due to heavy labor and other socioeconomics factors.

Taken for example Osteoarthritis pathology. This degenerative joint disease is a common health issue which is treated by physiotherapist. According to a study made on socioeconomic and demographic characteristics of patients with osteoarthritis in Albania it results that there was an association of female gender with a positive relationship with rural birthplace (10).

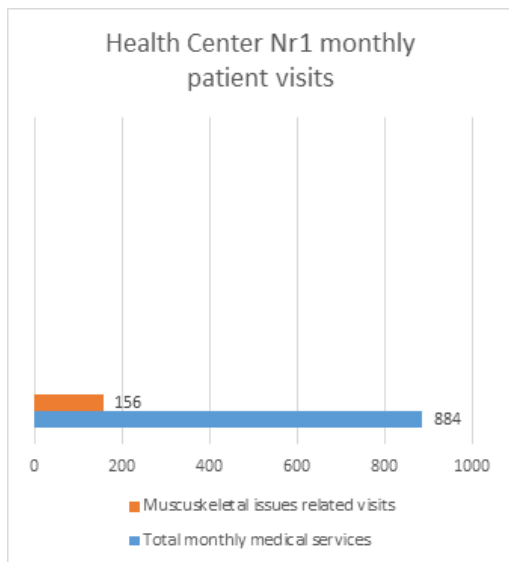
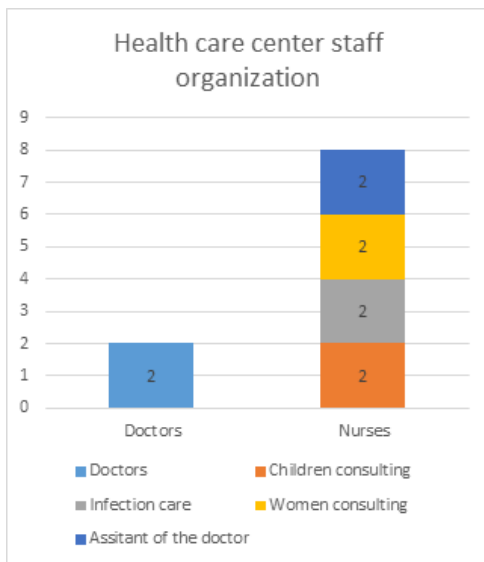
Also according to United Nations Fund for Population Activities (UNFPA) Albania (7) musculoskeletal issues are the number 5th leading causes for morbidity in Albania.

Due to the dominance of the rural population and lack of diverse medical services access on these areas there are more patients in need of physical therapy in rural and suburban areas than in rural ones. Although the number of studies regarding these topics are low.

Multidisciplinary staff and funding

Currently the Albanian health system is undergoing an accreditation process of the Health Care Centers across Albania (11). According to the documents this health care centers provide services by engaging their multidisciplinary staff which consists of: Doctors, Nurses and supporting staff although various studies suggest that having a broad multidisciplinary staff improves patient treatment significantly better. (12)

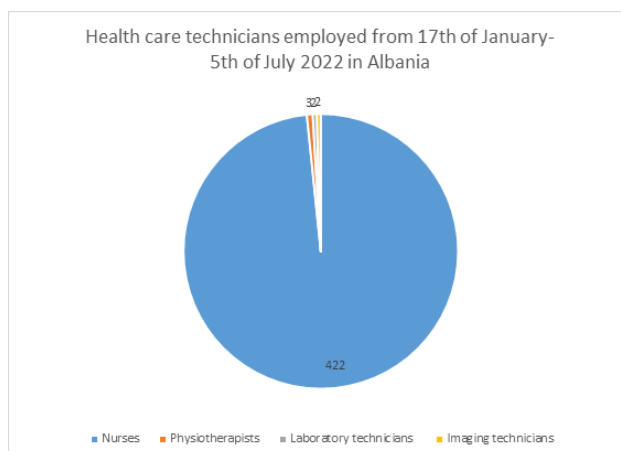
Let's look at the organic of a Health Center Nr1 undergoing the accreditation process in the city of Lushnja part of the prefecture of Fier in the region of "Karbunare e Madhe" which is an area with a rural and suburban setting and habitants.



This health center provides services for 4,700 habitants 923 of whom are chronic patients. Its staff is composed by 2 doctors and 8 nurses (2 children consulting, 2 infection medication, 2 women consulting and 2 assistant of the doctors).

Health Center Nr1 which provides medical services to this region, based on the data extracted from the medical cartels reports an average daily visit of 34 patients (n=34) with a monthly 884 (n=884) visits shared between 2 doctors. From this data there are 6 daily visits related to musculoskeletal issues or 156 monthly visits.

On 20.01.2021 The Compulsory Health Insurance Fund published the Decision nr.20 which ordered the financing of various health services including physiotherapeutic services in regional areas such as Lushnja with a predominant rural population. The physiotherapeutic staff is still missing in the multidisciplinary



staff of the Health Care Centers leaving in questions how different issues which are commonly rehabilitated by physiotherapists are managed.

Even though the funding supports the multidisciplinary staff organization the employment rate is heavily sided on the traditional staff organic composed of doctors and nurses.

From 17th of January 2022 until 5th of July 2022 according to the Portal “Nurses for Albania” which also gives the opportunity of offering employment for all the medical technician professionals there are 422 nurses employed, 3 physiotherapists, 2 laboratory technicians and 2 imaging technicians all over Albania leaving a heavy imbalance on the multidisciplinary staff employment rate.

Methodology

Purpose of the study

The purpose of this study is to establish:

- The need of physiotherapeutic services on rural and suburban Albania based on the level of knowledge of this population for the medical services.
- Benefits provided from physiotherapeutic interventions.
- The level of patients with musculoskeletal issues that have never received such services.

Sample

This study included 490 subjects, 230 males and 260 females from the age of 18 to 80+, all living and receiving medical services on similar settings and backgrounds.

Data instrument

The data was collected by using Google Forms questionnaire distributed to the target population and with onsite interviews with the staff and patients of “Health Center NR1, Karbunare e Madhe, Lushnje”.

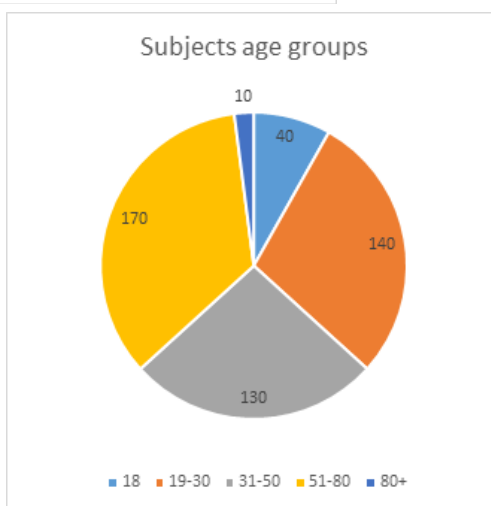
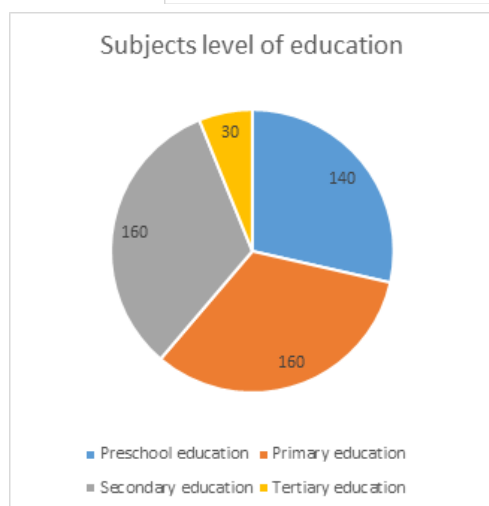
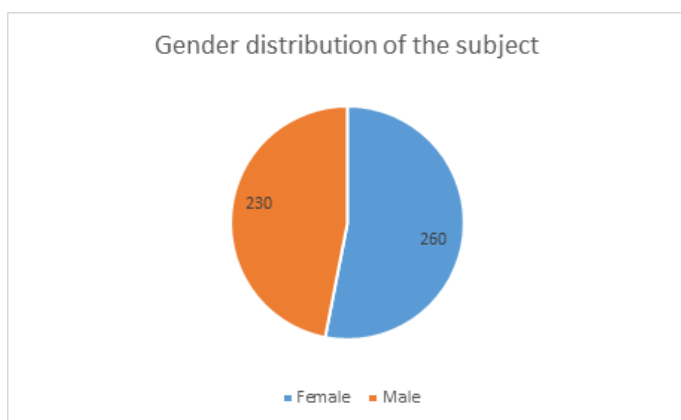
The questionnaire included 10 modules with simple questions which focused on establishing:

- Musculoskeletal issues reported by the subjects on the last 3 months
- Knowledge of the subjects on physiotherapeutic treatments for such issues

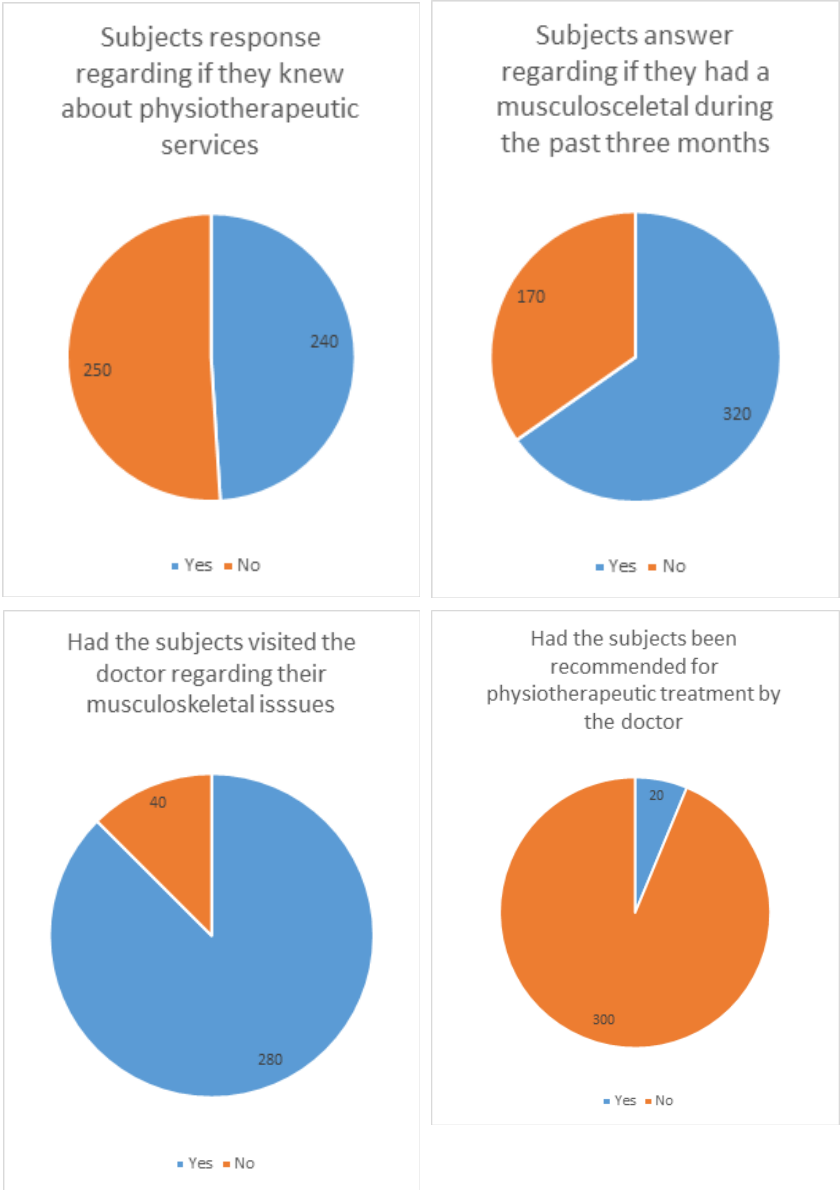
- Effects of missing physiotherapeutic services near their community
- Their opinion on the benefits of introducing this services to the community.

Results

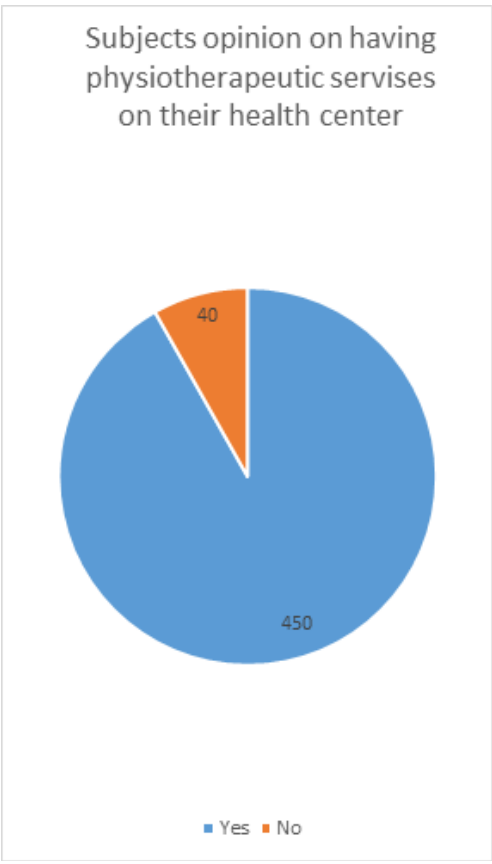
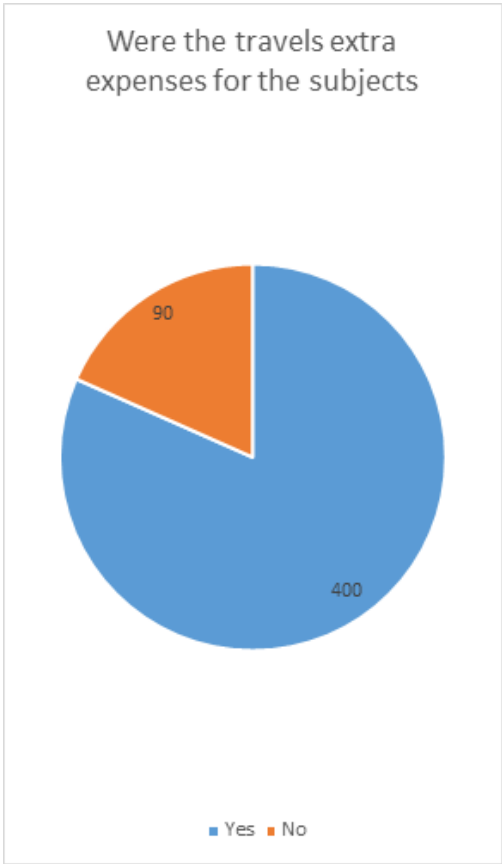
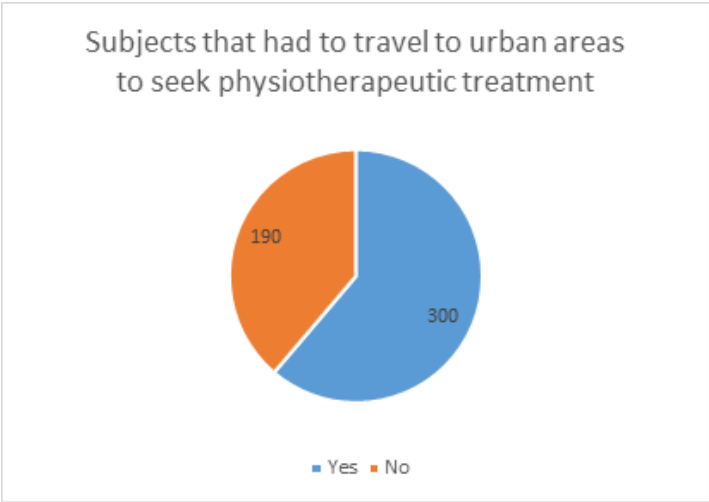
Modules 1-3 collected information regarding the general data such as gender, age and level of education.



Module 4-7 indented to gather information regarding the subject’s knowledge to physiotherapeutic services, their musculoskeletal health on the period of 3 months and the medical approach for this problems by the health center where the subjects seek treatment.



Module 8-10 intended to gather information regarding the cost of seeking physiotherapeutic services on the urban areas away of their community and their opinion on having this services on their local health center.



By analyzing the data provided by the questionnaire it results that:

65% of the total population had suffered at least one musculoskeletal issue during the past 3 months. From 320 subjects that had these issues only 6% were recommended to visit a physiotherapist after visiting their local doctor. Only 49% of the whole population knew about physiotherapeutic services. 91% of the population preferred to have access of physiotherapeutic services on their local health center and 81% claimed that traveling to urban areas was an extra expense for their health care.

Discussion

Albania is still on the process of reforming its medical system and physiotherapeutic services are still seen as secondary services without a primary importance. Even so this doesn't imply that there is no room for future improvement by looking at the model of more develop countries.

A. A, Hall et al; studied the general knowledge of physiotherapeutic services on a rural town in British Colombia, Canada. According to this study the 100 subjects interviewed preferred to seek this treatment although most of them were confused about physiotherapy (13).

Another group of subject similar to the subjects in Albania who did not have physiotherapeutic services as concluded in this study were seen in Canada as pointed on the study by Tracy Miller Mifflin et al;(14) and the study by M. Thomas. (15) In difference with the situation in Albania according to the studies it is stated that monthly visits were provided near nursing centers by physiotherapists in remote areas of Canada (15).

Studies by Tayyab I. Shah et al and Brighid McFadden; (16 ,17) come to the conclusion that there is an unequal distribution of physiotherapeutic services between rural and urban areas, with rural areas having the disadvantage. Xiaoxiao Liu et al found that patients with OA (osteoarthritis) tend to travel longer for health care because physiotherapeutic services were missing near their local health care institutions (18). As concluded by my study the rural population in Albania also has the tendency to travel seeking medical care not available near their local facilities.

Elizabeth Williams et al; who studied the benefits of the regional and rural physiotherapy services in Australia came to conclusion that having physiotherapeutic services in this areas provided access in developing career paths and helping new graduate students. (19) Romany Martin et al; also came to similar results about post-graduate physiotherapists working on rural areas. (20)

Australia also is providing improvement to this services in rural areas even by having shared services between private practitioners and public founding's in rural

areas, so even though public facilities maybe missing there's a chance to use private facilities to provide public services. (21)

Conclusion

The population of subjects involved in this study could benefit by having local physiotherapeutic services near their local health care facilities, due to the high percentage of subjects suffering from a form of musculoskeletal problems. On the other hand, we see a low percentage of this subjects receiving this services or being aware that they exist.

Further studies on different areas of Albania must be concluded in order to further determine the need for these services and how can they be implemented.

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*Recognition and evaluation
of specific physiotherapeutic
techniques in the conservative treatment
of adolescents with idiopathic scoliosis.
A literature review*_____

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Abstract

Introduction: Scoliosis is a lateral deformation of the spine in the shape of the letter “S” or “C”, which can be located in different segments of it. Idiopathic scoliosis is the most common form encountered in 80% of scoliosis cases. Its nature or cause is not exactly known, so the classification is related to the age at which the deformity is detected.

Purpose: Recognition and application of some specific physiotherapeutic methods as part of the international treatment of scoliosis which physiotherapists should include in their practices to improve the conservative management of adolescents with idiopathic scoliosis in Albania.

Methodology: The study presents a theoretical-scientific overview, based on evidence. The search in the database PubMed, Google Scholar, Scopus, and guidelines of physiotherapy evidence included the period 2016-2022, using the keywords: ‘scoliosis’, ‘physiotherapy’, ‘Schroth technique’, and ‘Lion method’. Articles that were not in the English language were excluded. The basis for data processing for this study was 8 articles, which met all the criteria.

Results: Specific physiotherapeutic methods proved to be very efficient in the latest studies by reducing the scoliotic deformity angle (Kob) by 5-10°, improving the posture with symmetry of the scapular and pelvic circumference, increasing the articular amplitudes of the back and improving the functions respiratory.

Conclusion: All physiotherapists in Albania should know these methods from a theoretical-practical point of view and include them in their professional practices to improve the conservative management of adolescents with idiopathic scoliosis.

Introduction

Scoliosis is a lateral deformation of the spine in the form of the letter “S” or “C”, which can be located in different segments of it. This lateral bending of the spine is asymmetrical, and the affected vertebrae are rotated and fixed in an abnormal position relative to their anatomical placement. Scoliosis in its entirety can be divided into three large groups: functional scoliosis, structural scoliosis and idiopathic scoliosis.

Idiopathic scoliosis is the most common form encountered in 80% of scoliosis. Its exact nature or cause is not yet known, so the classification is related to the age at which the deformity is detected. On this basis, it is divided into: infantile idiopathic scoliosis - occurs in young children from birth to 3 years, juvenile

idiopathic scoliosis - the deformity develops in the age group of 3-10 years, adolescent idiopathic scoliosis - occurs from the age of 10 until the end of skeletal growth (1).

Early adolescence, especially between the ages of 11 and 14 years old is the ideal time to check the spine for scoliosis. Control and treatment at an early stage prevents the progression of the deformity and improve posture, the flexibility of movement, and muscle strength. In small scoliotic curves, no corrective manipulation is required. Treatment is recommended to start when the scoliotic deformity angle (Cobb) reaches 20-40°. (2)

This year, a reorganization of all the actors involved in the management of scoliosis has started. On February 8, 2022, the Ministry of Health in cooperation with the Ministry of Education, Sports and Youth launched a pilot project on the detection of abnormal curvatures of the spine that will require further evaluation and treatment by a healthcare specialist, based on the regulation of health service in schools. For adolescents diagnosed with scoliosis, school health personnel should offer support services at school such as physiotherapeutic exercise programs by specialists and counseling between adolescents and parents on these programs. (3)

The Scoliosis Research Society (SRS), founded in 1966, and the International Society of Orthopedic Rehabilitation and Scoliosis Treatment (SOSORT), founded in 2004, promote and encourage conservative medicine based on clinical evidence and provide education, guidelines, and consensus about treatment options for patients with scoliosis. SOSORT uses the term Specific Physiotherapy Exercises for scoliosis about all the schools represented within the organization. (4) The different methods of international treatment of scoliosis worldwide should be recognized and included in the clinical practices of physiotherapists in Albania to improve the management of scoliosis conservatively. These methods according to the historical order of development of each are:

The Lyon Method - The school of physiotherapy in Lyon is one of the oldest in France, which emphasizes physiotherapy as an integral part of scoliosis management in cases of spine stabilization with a brace or cast. The purpose of this technique is to improve joint amplitudes, neuromuscular control, coordination, trunk stabilization, muscle strength, and respiration. The scoliosis treatment protocol according to the Lion method depends on the Cobb angle and the patient's age. (5)

Schroth method- This method was developed by Katharina Schroth in 1920 in Germany and today counts about 3000 cases of scoliosis treated annually. Its objective, in addition to providing effective treatment for patients, is also the education and treatment of physiotherapists for intensive inpatient and outpatient rehabilitation. The method includes mobilization and flexibility of the column and muscle activation associated with inspiration and expiration. (6)

The scientific approach in Italy with exercises for scoliosis - founded in Italy in 1960 by Antonio Negrini and Nevia Verzini, trains and educates patients for active self-correction of posture through individualized programs.

The school of physiotherapy for scoliosis in Barcelona - a method founded by Elena Salva in 1968, is based on the original principles of correction according to Katharina Schroth aiming to improve posture through muscle activation and respiratory techniques.

The Doomed Method - founded in 1979 by Professor Krystyna Dobosiewicz based on the mobilization of the primary curves of the column towards correct curvatures with interest in thoracic kyphosis and lumbar lordosis and Individual Functional Therapy founded in 2004 by Marianna Belek, which uses techniques of Proprioceptive Neuromuscular Facilitation and release myofascial for the correction of scoliotic deformity. Both methods are established in Poland.

Lateral displacement technique - founded in England in 1984 by Dr. Min Mehta, which emphasizes the fact of stabilization and correction of scoliosis with exercises with lateral displacement in the opposite direction of the deformity. (7)

Objectives

We aim to knowledge and apply some specific physiotherapeutic methods as part of the international treatment of scoliosis that physiotherapists should include in their practices., as well as to improve the conservative management of adolescents with idiopathic scoliosis in Albania. More specifically:

1. Reduction of the scoliotic deformity angle (Kob)
2. Pain reduction
3. Improvement of articular amplitudes/flexibility of the vertebral column
4. Improvement of respiratory functions
5. Improving the asymmetry of the back
6. Postural correction

Methodology

The study presents a theoretical-scientific overview, based on evidence. The search in the database PubMed, Google Scholar, Scopus, and guidelines of physiotherapy evidence included the period 2016-2022, using the keywords: 'scoliosis', 'physiotherapy', 'Schroth technique', and 'Lion method'. The selected articles had to all have in their focus the model of therapeutic management based

on the experiences of the seven largest schools of Physiotherapy specialized in the conservative treatment of scoliosis and the SOSORT guideline. Articles that were not in the English language were excluded. The basis for data processing for this study was 8 articles, which fulfilled all the above-mentioned criteria.

Results

International scoliosis treatment methods worldwide are based on biomechanical and neurophysiological concepts of the organism and the results of their application are presented in the following table:

Study	Author	Methods	Results	Duration
Effects of the Schroth exercise on idiopathic scoliosis- a meta-analysis (8)	Park JH et.al 2018 [PubMed]	Schroth Methods	Kob angle reduction 10° Increased thoracic expansion Improvement: –balance -column movement amplitudes	3 months
Schroth physiotherapeutic scoliosis- specific exercises added to the standard of care lead to better Cobb angle outcomes in adolescents with idiopathic scoliosis(6)	Sanja Schreiber et.al 2016 [PubMed]	Schroth Methods	Reduction by 3.5° of the Kob angle Improvements in pulmonary activity Improve posture balance and rotation of the trunk Balancing the pressure in the soles.	6 months
The Schroth Method of treatment for a patient diagnosed with scoliosis: A case report (9)	Heather Watters et.al 2016 [Google Scholar]	Schroth Methods	Reduction of back pain from 8 to 3 according to VAS Increase in muscle strength in m. latissimus dorsi, gluteal, hip abductors Increased thoracic expansion Improvement in daily life functions	9 weeks
Physiotherapy scoliosis-specific exercises, a comprehensive review of seven major schools (7)	Hagrid Berdishevsky et.al 2018 [PubMed]	Schroth Methods Lion Doomed Ecc.	Reduction by 5-10° of the Kob angle Improvement of pulmonary activity Improving posture, balance, and trunk rotation Reduction of back pain Increase in muscle strength in m. latissimus dorsi, gluteal, hip abductors Improvement in daily life functions	3-6 months

Review of scoliosis-specific exercises methods used to correct adolescent idiopathic scoliosis (10)	Joseph M.Day et.al 2019 [PubMed]	Schroth Methods Lion Doomed et	Reduction by 5-10° of the Kob angle Improvement of pulmonary activity Improving posture, balance, and trunk rotation Reduction of back pain Increase in muscle strength in m. latissimus dorsi, gluteal, hip abductors Improvement in life functions daily	3-6 months
"Brace technology" thematic series-The Lyon approach to the conservative treatment of scoliosis (11)	Jean de Mauroy et.al 2017 [Google Scholar]	Lion Methods	Combination of immobilization with orthosis and exercises Reduction of Kob angle 5-10° Self-correction and postural symmetry Stability of the scapular and pelvic girdle Decreased pressure in the intervertebral disc	6 months
Scoliosis incidence and treatment methods (12)	Catalin Ionete et.al 2022 [PubMed]	Schroth Methods Lion Doomed Ecc.	Reduction of Kob angle 3-5° Increased thoracic expansion Improvement - balance - column movement amplitudes Symmetrical posture	3-6 months
2016 SOSORT guidelines: Orthopaedic and rehabilitation treatment of idiopathic scoliosis during growth (13)	S.Negrini 2016 [PubMed]	Schroth Methods Lion Doomed Ecc.	Reduction of Kob angle 5-7° Increased thoracic expansion Improvement - balance - column movement amplitudes Symmetrical posture	3-6 months

Conclusion

Based on the recent studies specific physiotherapeutic methods, part of the international treatment of scoliosis, have proven to be very efficient in reducing the angle of scoliotic deformation (Kob) and to improve posture, articular amplitudes, and respiratory functions. These methods should be presented from a theoretical-practical point of view to all physiotherapists in Albania and included in their professional practices to improve the conservative management of adolescents with idiopathic scoliosis.

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Approach of Physical Activity in Type 1 Diabetic Patients

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Abstract

Introduction: Type 1 Diabetes Mellitus (T1DM) is an autoimmune disease caused by absolute deficiency of insulin because of the destruction of β cells islet of the pancreas. Aerobic exercise and diet are the two main points of diabetes treatment.

Methods: The data for this study comes from an online survey of 50 people with health diseases, conducted between June 8 and July 12, 2021. More precisely, the data of our study are an email-only data, with people selected randomly from a database maintained by B-Sport Plus Project. The database contains questions about physical activities in diabetic patients.

Results: Among the 50 interviewers with type 1 diabetes, the largest age group covers those younger than 18 years old. 31% of the patients answered that health conditions limit their daily activity. 47% of them spent 1-2 h on sport and recreational activity per day. 47% of the patients reported they do multiple sport activities, the others do leisurely walking (walking their dog), bicycling, skating, swimming and curling, gardening and light housework, dancing or other moderate exercise classes,

weight training and running, brisk walk. 62% of them reported that they are willing to exercise 1-2 hours per day. 33% of the patients reported they do not participate in sport and recreational activities from lack of time, the others from financial constraints, family and friends influence, lack of self-confidence, illness/injury, problems with transportation.

Conclusion Aerobic exercise can improve the sensitivity of Insulin, blood glucose and lipid metabolism, thereby reducing insulin dosage and improving glycemic control. WHO recommends at least 150 minutes of moderate physical activity per week. T1DM patients, physiotherapists or fitness trainer, kinesiologist and endocrinologist need to fully understand how the physical activity effect on metabolism and implement individualized aerobic exercise programs.

Keywords: *type 1 diabetes, physical activity, glycemia, aerobic exercises.*

Introduction

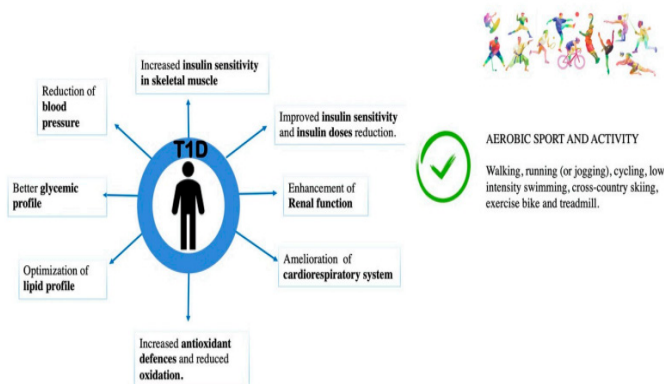
Diabetes Mellitus (DM) is a metabolic and endocrine disease caused by the reduction or absence of a hormone called Insulin. According to the American Diabetes Association (1), diabetes is classified in four types:

1. Type 1 Diabetes Mellitus (T1DM): T1DM is an autoimmune disease caused by absolute deficiency of insulin because of the destruction of β cells islet of the pancreas.
2. Type 2 Diabetes Mellitus (T2DM): T2DM is a disease caused by reduction in insulin secretion because of the insulin resistance (decrease in the sensitivity of peripheral tissues like adipose and muscle tissue and hepatocyte to insulin).
3. Gestational Diabetes Mellitus (GDM): Abnormal levels of glucose in the first stage of pregnancy who can return to normal after delivery or not.
4. Atypical forms of diabetes: maturity-onset diabetes mellitus of the young (MODY), latent-autoimmune diabetes in adults (LADA), mitochondrial diabetes mellitus (MDM), abnormalities of the exocrine pancreas, endocrinopathies, drug induced diabetes, etc.

Type 1 Diabetes Mellitus is a chronic disease in which the pancreas produces little or no insulin, so the current treatment for T1DM patients is exogenous insulin replacement therapy. Aerobic exercise and diet are the two main points of diabetes treatment. WHO defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure (2). Physical activity refers to all

movement including during leisure time, for transport to get to and from places, or as part of a person's work. Aerobic exercise can improve the sensitivity of Insulin, blood glucose and lipid metabolism, thereby reducing insulin dosage and improving glycemic control [3-5]. Boniol et al. and X. Lu and C. Zhao [6] found that physical activity reduced fasting blood glucose and HbA1c levels in T1DM patients, and its benefits were associated to the duration of exercise performed weekly rather than the type of exercise performed [7]. This was explained by different mechanisms like the increase in the number of cellular glucose transporters, improvement of insulin receptors function on skeletal muscle and adipose tissues, increase of the sensitivity of peripheral tissues to insulin, [8–11]; increasement of the uptake and oxidation of fatty acids in muscle tissues [12]; increasement of the expression of nitric oxide synthase (NOS) in vascular endothelial cells [13, 14]; promotion of lipoprotein activity, etc. However, for these patients, exercise still has the risk of hypoglycemia or hyperglycemia. T1DM patients, physiotherapists or fitness trainer, kinesiologist and endocrinologist need to fully understand how the physical activity effect on metabolism and implement individualized aerobic exercise programs.

FIGURE 1. Positive effects of physical activity, in type 1 diabetic patients



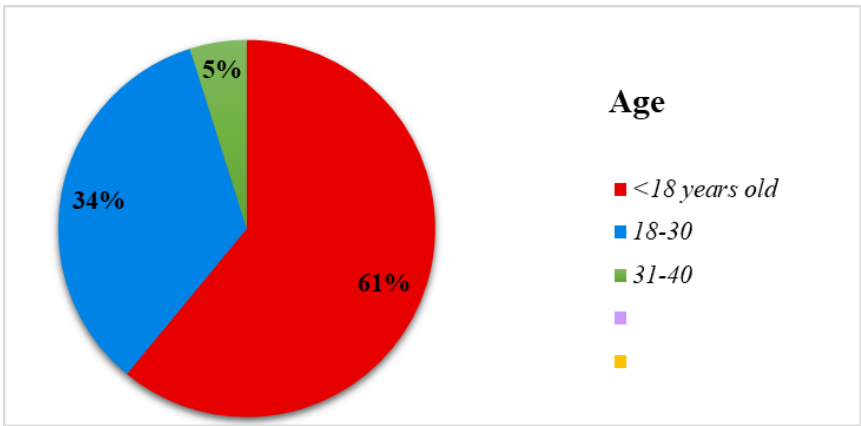
Methods

This is a descriptive study. The data for this study comes from an online survey of 50 people with health diseases, conducted between June 8 and July 12, 2021. More precisely, the data of our study are un mail-only data, with people selected randomly from a database maintained by B-Sport Plus Project. The database contains questions about physical activities in persons with health diseases, from which we have studied diabetic patients. We studied the data of 50 patients in Albania, diagnosed with type 1 Diabetes Mellitus. These patients underwent a

questionnaire for their physical activity (sports and recreational activity), to study the effect of physical activity in diabetes. We excluded patients with type 2 Diabetes Mellitus.

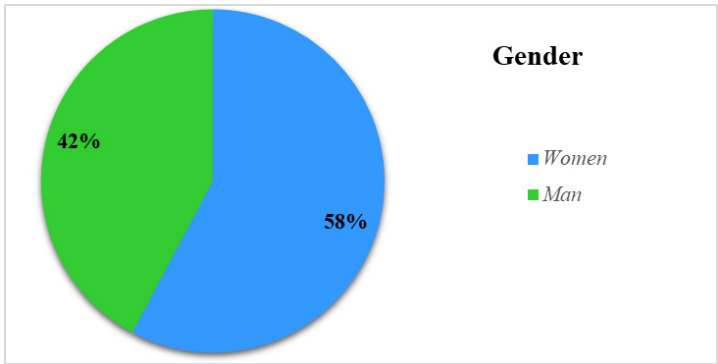
Results and Discussion

FIGURE 2. Age distribution of the sample



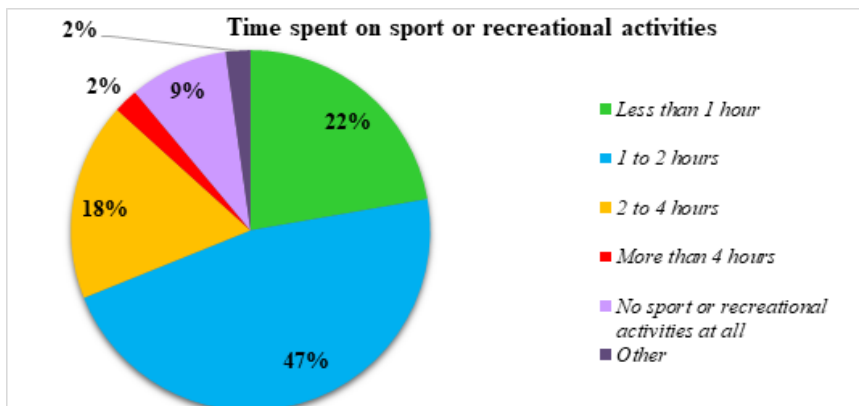
Among the 50 interviewers with type 1 diabetes, the largest age group covers those younger than 18 years old. The purpose of the questionnaire is to study physical activity in young people with type 1 diabetes and the important thing is to understand if young people with type 1 diabetes are physically active. The number of people with diabetes rose from 108 million in 1980 to 422 million in 2014. Prevalence has been rising more rapidly in low- and middle-income countries than in high-income countries (18)

FIGURE 3. Gender distribution of the sample



In this questionnaire, more females responded than males, with a minor difference. Type 1 diabetes, unlike other autoimmune diseases, affects both males and females equally (19)

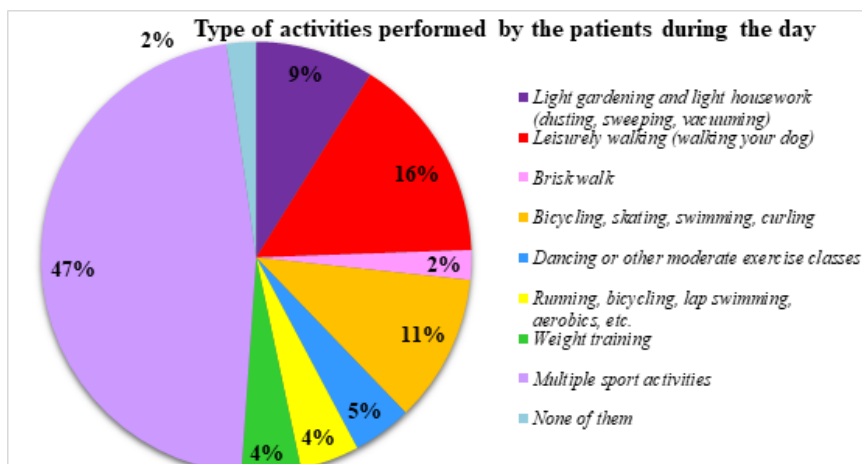
FIGURE 4. Time spent in sport and recreational activities



47% of the patients spent 1-2 hours doing sport and recreational activity per day, 22 % of them less than 1 hour, 18% of them 2- 4 hours, 9 % of them don't make any activity or sport, 2% of them more than 4 hours. In comparison to our study, the majority of the studies in America or Britain show that adults in this countries take on average 5117 and 2000 steps/day during the week, approximately 40 and 20 minutes/day respectively (15). According to this study, 38% of US citizens report no leisure-time physical activities and 43% report 1 to 2 activities in 30 days.

WHO recommends at least 150 minutes of moderate physical activity per week (approximately 20 to 25 minutes sports per day).

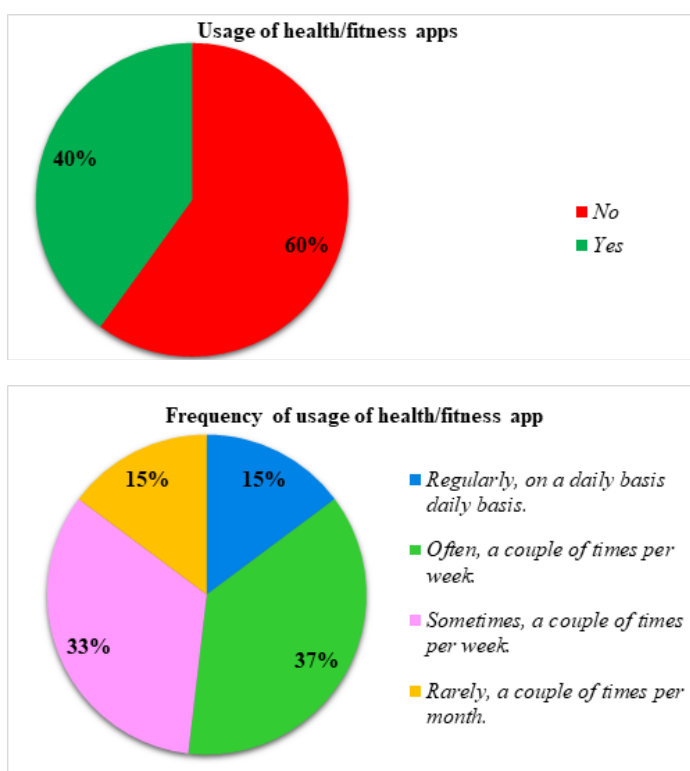
FIGURE 5. Type of activities performed by the patients during the day



47% of the patients reported that they do multiple sport activities, 16% of them do leisurely walking (walking their dog), 11% of them do bicycling, skating, swimming, and curling, 9% of them do light gardening and light housework, 5% of them do dancing or other moderate exercise classes, 4% of them do weight training and running, 2% of them do brisk walk.

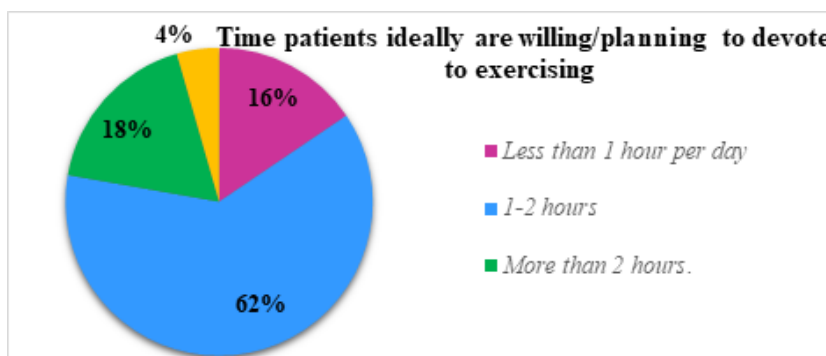
According to a study in the US, the most common physical activity was walking (the average time of walking was 198 minutes/week for men and 152 minutes/week for women). After the walk, the most frequent physical activities for men were bicycling and yard work, while for women were aerobic exercise and dance. (16)

FIGURE 6. Usage and frequency of health/fitness apps



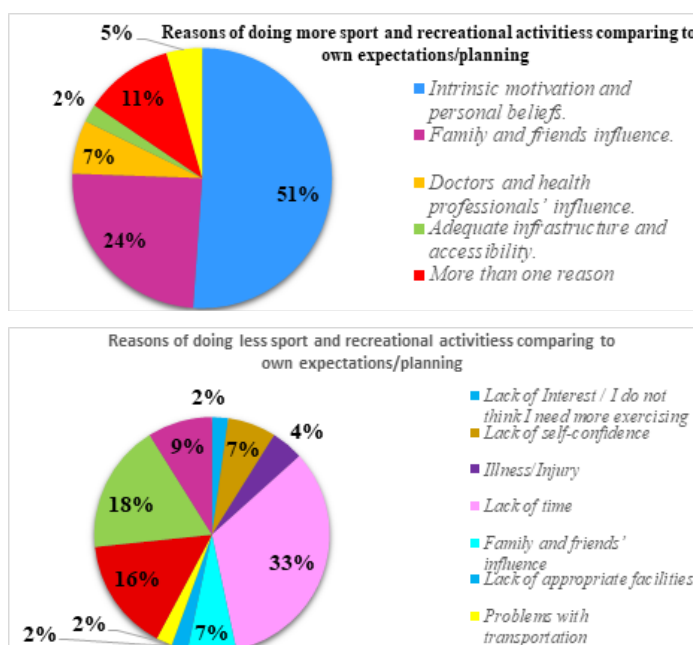
More than half of the patients reported that they do not use any health or fitness app tool to track their health, while 40% of them do use them. According to a study, 42.26% of diabetic patients were smartphone owners, from whom 41.1% used fitness and diet apps. 37% of those who use health and fitness apps report that they use it a couple of times per week, 33% of them sometimes, 15 % of them regularly on a daily basis and 15% a couple of times per month.

FIGURE 7. Time patients are ideally willing/planning to devote to exercising



62% of them reported that they are willing to exercise 1-2 hours per day, 18% of them more than 2 hours, 16% of them less than 1 hour per day, 4% of them were not sure they had time for physical activity. engagement

FIGURE 8. Reasons of doing more or less sport compared to own expectations/planning



51% of the patients reported they are willing to do sport and recreational activities because of intrinsic motivations and personal beliefs, 24% of them because of family and friend influence, 7% of them because of doctors and health

professionals influence, 2% of them because of adequate infrastructure and accessibility.

On the other hand, 33% of the patients reported they do not participate in sport and recreational activities from lack of time, 18% of them from multiple reasons, 16% of them from financial constraints, 7% of them from family and friends influence, 7% of them from lack of self-confidence, 4% of them from illness/injury, 2% of them from problems with transportation. According to a survey, 58% of diabetic patients want to play more sport, with only 6% of people saying they want to play less.

The main reason for not doing physical activities was not having enough time, followed by lack of money, the weather, not having sports facilities or people to play (17).

Conclusions

Aerobic exercise can improve the sensitivity of Insulin, blood glucose and lipid metabolism, thereby reducing insulin dosage and improving glycemic control. Most of the cases spent 1-2 h sport and recreational activity per day, followed by less than 1 hour, 2- 4 hours, and no activity or sport. A major part of the patients reported that they do multiple sport activities, followed by leisurely walking (walking their dog), bicycling, skating, swimming, curling, light gardening and light housework, dancing or other moderate exercise classes, weight training and running and brisk walk. Diabetic patients commonly reported that they do not use any health or fitness app tool to track their health. According to our study, the majority of the cases reported that they are willing to exercise 1-2 hours per day, some of them more than 2 hours and a minority of the cases less than 1 hour per day or were not sure they had time for physical activity. Most of the patients reported they do not participate in sport and recreational activities from lack of time, some of them from multiple reasons or from financial constraints and a minority of the cases from family and friends influence, from lack of self-confidence, from illness/injury, or from problems with transportation. However, for these patients, exercise still has the risk of hypoglycemia or hyperglycemia. T1DM patients, physiotherapists or fitness trainers, kinesiologist and endocrinologist need to fully understand how physical activity affects metabolism and implement individualized aerobic exercise programs. WHO recommends at least 150 minutes of moderate physical activity per week (approximately 20 to 25 minutes sports per day).

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Medical confidentiality in general and that after the death of the patient ____

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Abstract

The preservation of secrecy occupies an important place for the respect of freedoms and human rights, which is also foreseen in the Albanian Constitution. In the Albanian Penal Code, several articles have been presented that punish the violation of the confidentiality of correspondence etc. This principle is also very important in medicine. In fact, in the last years, the risk of its violation has become greater due to the development of electronic media, computers, faxes, voice messages etc. Under these conditions, a new medical legislation has begun to be developed in many countries, for these issues. But the field of medical confidentiality after death is not studied enough. It is important to know the different aspects of this issue in our country, because recently there have been many publications in our country, accompanied by discussions and criticisms, especially regarding the illnesses and deaths of some public figures. In this presentation, among others, some ethical, philosophical and legal data on this issue are analyzed, which are mainly related to the interests of the deceased person, the time that has passed since death, the negative impact of not saving medical data on his memory, followed by the presentation of some well-known cases etc. In conclusion, it is emphasized that medical confidentiality after death, especially that of a public person for our country, is a very delicate issue that requires great care in cases of its announcement.

Keywords: *Personal privacy, medical confidentiality, medical confidentiality after death, Albania.*

1. Introduction

The preservation of secrecy is a very important issue for the respect of freedoms and human rights, which is foreseen in the Albanian Constitution, according to which non-interference outside the law in the private life of a person is guaranteed (Article 35) (Elezi,2002).

The Albanian Penal Code contains several articles that punish the dissemination of personal secrets (Article 122), unjust interference in private life (Article 121), obstruction or violation of confidentiality of correspondence (Article 123) etc. (K. Penal i Republikës së Shqipërisë, 1995).

This principle is also very important in medicine, foreseen in the Code of Ethics and Medical Deontology of Albania. In fact, in the last years, the risk of its violation has become greater due to the development of electronic media, computers, faxes, voice messages etc.

Under these conditions, a new medical legislation has begun to be developed in many countries, for these issues. But the field of medical confidentiality after death is not well known. Its various aspects are important to know in our country as well, because recently there have been many publications, accompanied by discussions and criticisms, especially regarding the illnesses and deaths of some public figures.

2.General knowledge on medical confidentiality

Is it permissible to publish everything about medical studies that are carried out on the human body? Can all medical records on illnesses and cause of death be disclosed by doctors? Should efforts be made for the post-mortem disclosure of data on the human body, as a result of criminal acts or suspicions of their commission? Is it possible that the application of the principles of medical ethics: confidentiality, consent, respect for the human body after death are conditioned by the time period that has passed? (Charlier,2014).

Recently, these questions have started to be asked in our country, especially in relation to medical records and the death of public figures of the previous regime, such as of Enver Hoxha, Mehmet Shehu, Nako Spiru, etc., or those persecuted and killed in that period.

To understand them, the important principle of medical confidentiality must first be analyzed, which was transformed from a moral obligation into a legal obligation and finally as one of the fundamental human rights (Çipi, 2015). According to this principle, in order to protect the interests of the patient, the information that the

doctor receives from him during the exercise of his medical practice, should not be shown to other persons or disseminated. In the absence of a guarantee that his secret will be kept by the doctor, the patient can keep hidden important data that can negatively affect his treatment, or that of other people (Çipi, 2005).

In fact, the concept of medical confidentiality, in many countries, especially the Western ones, has a close connection with that of the privilege of the doctor-patient relationship, a narrower concept than the confidentiality of the patient's rights. According to him, the treating doctor should not disclose the data he receives from the patient to another party and should not use it against the patient in court or other legal processes (Robitcher, 1968; DeWitt, 1959).

Recently, the issues of medical confidentiality are receiving more and more attention regarding their ethical and legal aspects. The great development of electronic media has changed the meaning of the traditional transmission of medical information. The use of mobile phones and today's electronic devices: computers, faxes, etc., have created the possibility of unintentional violations of medical confidentiality. Electronically sent voice messages can be heard by other people except the patients. Likewise, the computerization of medical records, which has many advantages, risks violating their confidentiality.

For this, in many countries, a new medical legislation has been elaborated for the protection of confidentiality in various circumstances (Berg, 2001).

3. Medical confidentiality after death

Medical confidentiality after the death of the patient and that for public figures constitutes a special field, not much studied.

In this study, some of the main aspects of this issue related to the concept of preserving or not preserving medical confidentiality after death, the philosophical and ethical arguments of these attitudes, the circumstances in which this secrecy is not preserved, the impact of the time that has passed since death, who will have the right to keep the medical confidentiality after death or not, etc.

The preservation of medical confidentiality after death is necessary to protect the individual, either for his private life or his social position, due to the damage that can be caused to the patient, mainly moral, in the event that these medical data were to be disclosed (Berg, 2001).

Today's concerns about confidentiality mainly concern the issue of when a doctor discloses a venereal (sexually transmitted) disease, or that the person has been an alcoholic or other information that may be disparaging to the public, or whether the disclosure is made to was defended against a defamation action against the patient.

Likewise, blood types in themselves may not be information to be kept secret, but in cases of paternity issues along with DNA, they can be very important. For example, in cases of identification of the corpses of the Srebrenica massacre, carried out by Serbs in Bosnia, through comparative examination of DNA data with that of their living parents, found that in some cases the father of a victim was not the real biological father. This finding was necessary to keep secret to avoid serious family conflicts later. Or in the case of people affected by HIV/AIDS, this disease must be kept a secret even after their death (Berg,2001).

Failure to maintain medical confidentiality after death can occur because doctors have not made any promise to their patient to preserve medical records after his death. Indeed, despite this being foreseen in ethical codes, few physicians have shown an obligation to maintain the confidentiality of individual patients, and even less to postmortem medical secrecy.

According to foreign medical literature, the protection of medical confidentiality after death is dependent on the interests that the deceased had before death to preserve it.

So, if non-maintenance of post mortem medical confidentiality will be in favor of the deceased person, this may not be objected to (Berg,2001). ***Philosophical views about interests after the person's death*** (Berg,2001).

It is in the interest of the dead person that the information be preserved, if its publication after death would harm him, e.g. from not keeping the promise to maintain medical secrecy, which may affect the memory of the person when he was alive, or from defamation that may cause him moral damage.

Indeed, the dead man, whose consciousness has disappeared, has no need to have interests. But, when he was alive, he had interests that should continue to be preserved even after his death. Even the relatives of the deceased have interests, which are determined by the fact that the deceased lives in their memory. Thus, the damage to the memory of the dead by not keeping the medical confidentiality by the doctors, will harm the interests of the living people to preserve in their minds the virtues of the dead person.

It may happen that for a man who during his life has been very correct, the release of confidential medical records, changes the opinion of all his acquaintances so that they now understand that he was a flawed man.

From the philosophical and ethical point of view, there are two attitudes towards the preservation of confidentiality after death (Berg,2001):

- the first attitude, according to which, the preservation of confidentiality after death should be much stronger, have an absolute character, compared to medical secrecy before death. This is because the person who has died now no longer has the opportunity to approve this breach of confidentiality, or to protect their reputation or identity.

- the second attitude, according to which the dead person's interest in maintaining his confidentiality will be less than when this person was alive. This, for the reason that the person who has died cannot be harmed, in the sense that he no longer feels pain, happiness or other emotions. While in the living person, failure to maintain confidentiality, e.g. the medical one will harm him and make him suffer from this action, for the consequences of this disregard for his wishes.

Some other situations of failure to maintain medical confidentiality after death (Guidance and advice etc., 2021):

- cases of denunciations for the medical follow-up of the person before death,
- in cases of opposition to wills,
- when medical documents from insurance companies are requested by relatives, these are necessary for financial benefits, which are determined by the medical cause of death of their man who has been insured in these companies,
- the need of relatives to be familiar with the diagnoses of inherited diseases of the deceased person, in order for them to take medical measures for their prevention,
- the interest of studying the progress and distribution of various diseases (non-maintenance of confidentiality is only for the researcher and not for other persons),
- publication interest e.g. for events with multiple deaths from specific diseases, or when the dead person is a public figure, or the detection of murders and criminal events etc.

The effect of the time that has passed since death on the preservation or not of medical confidentiality (Berg, 2001; Charlir, 2014).

Over time, the memory of the dead that is stored in the mind of a living person begins to fade. Likewise, the interest of the deceased's family members will, over the years, decrease. In this case, it should not be forgotten that the memory of the people who knew the deceased is much more important than what is left in subsequent generations. So, the protection of medical confidentiality after death will diminish over time, until its complete disappearance.

In foreign literature, there is a view according to which confidentiality should no longer be maintained when a time has passed, corresponding to one or two generations after the person's death.

In French legislation, this time has been 150 years. Then it is reduced to 120 years and the trend is that this time will decrease even more. But it is emphasized

that even with the passing of the necessary time, this does not mean that the information will become public (Charlier, 2014). This difficulty to keep or not this secret may also occur because the doctors of this case may have died over time, or the medical documents of this case have been destroyed.

In practice, there are cases of our study of the medical or forensic aspects of corpses or previous skeletal remains. They were not “patients”, according to the literal meaning of this term. In medical legislation in general, the preservation of medical secrecy both during life and after death usually rests with the patient’s treating physician.

So, in these cases, these will be considered as “dead persons”, without life, but they must be respected. Therefore, in the publications of the examinations of these cases, at least their anonymity should be preserved (Charlier, 2014).

Who has the obligation to maintain medical confidentiality or not after death?

This obligation belongs primarily to the treating physician of the patient who died; but this can also be for the doctor who performed the autopsy of the dead person, or other medical personnel (Berg, 2001).

The request for not keeping the medical secret can be made by the relatives of the person who died, or by the person himself before he died.

The disclosure of the medical confidentiality can also be carried out by the doctor in the previously mentioned circumstances, such as in cases of medical information requested by the media, bibliographers for general interests, clarification of criminal events etc.

4. Cases from the literature

In 1965, Churchill’s friend and personal physician, Lord Moran (Charles McMoran Wilson) published shortly after Churchill’s death, the book: “The struggle for survival 1940 - 1965”, a biography of Churchill’s life, based on the diaries that Moran held throughout the period from 1940 until Churchill’s death in 1965 (Robitscher, 1968).

The book relied on Moran’s diaries throughout this time and contained two types of arguments (Robitscher, 1968):

- the chronological events of what Churchill had done and expressed in his meetings with Roosevelt and Stalin; his remarks on the war, his opponents in Parliament etc. This, because Lord Moran, as Churchill’s personal physician, had been present in all these confidences, not in the role of a doctor, but in that of a trusted friend.

- arguments on Churchill's state of health, which if they were made public during his lifetime, he would not hope to continue his duties for another two years as prime minister.

The publication of this book was accompanied by severe criticism in the British press of that time (Robitscher, 1968). According to them: Doctor Moran should have remained silent as far as he had seen.

In the well-known magazine *Lancet*, on the occasion of the publication of this book, it was emphasized that, "Public trust in the medical profession derives mainly from the conviction that what happens between the patient and the doctor should not be disseminated" and that, "If confidentiality is maintained for the living, he must be doubly respected for the dead". "By writing publicly about the state of health of an identifiable person, Lord Moran has set a precedent that should not be taken lightly."

While at the well-known British Medical Association (British Medical Association), in its annual meeting after this publication, its representative body, consisting of 560 members, took the decision, with only three votes against, in which Lord Moran was not mentioned, where it was emphasized: "The death of a patient does not release the doctor from the obligation to maintain secrecy".

In spite of these contradictory attitudes about this book, many opinions and arguments in its favor were given in the discussions and the press of the time (Robitscher, 1968). According to them, "the testimonies of Lord Moran are very precious, because through them the missing aspects of Churchill's life have been revealed, in the first place, through the making public of the medical evidence".. "A figure like Churchill cannot have any privacy. He belongs to the whole world, living or dead, and all that pertains to him, especially health problems, have a universal interest" (Robitscher, 1968). "We live in a time when public figures, living or dead, become subjects of biographers, secretaries, assistants, or family members. When everyone is allowed to write about these cases, then why are doctors prohibited from doing so?" (Robitscher, 1968)

The same reasoning can be made in the case of Lord Moran, who published this book after the patient's death, mainly for Churchill's treatment, without discrediting the deceased (Robitscher, 1968).

In the medical literature, such examples are countless (Robitscher, 1968; Piédelièvre, 1966):

- the case of Marat, one of the leaders of the French revolution of 1789, who was killed while taking a bath, but whose doctor found that he was suffering from dermatitis (skin infection) of the scrotum and the perineum. The bath soothed him from the illness he was suffering from. This made it easier to assassinate him.

- the case of the doctor who compiled the medical reports on the progress of Napoleon's illness and behavior before he died.
- cases of illnesses and deaths of many US presidents etc.

5. Medical confidentiality in Albania

The issue of medical confidentiality in our country is presented in the Code of Medical Ethics and Deontology, which contains article 22 (keeping medical confidentiality) and article 23 (disclosure of medical confidentiality). So, according to these articles, the doctor's medical confidentiality constitutes a very important principle, but not of an absolute character, because it can be disclosed when the patient's life is at risk or the law requires it (Kodi i Etikës dhe Deontologjisë Mjekësore, 2012).

Thus, failure to maintain medical secrecy, as required by law, is also provided for in the Code of Criminal Procedure of our country. According to Article 282 (reporting by medical personnel), medical personnel for a treatment that they perform and suspect to be related to a criminal offense, are obliged to report it to the prosecutor's office (Kodi i procedurës Penale të Republikës së Shqipërisë, 1995).

A few months ago, pursuant to this article of the criminal procedure, two doctors and a nurse were arrested in Fier with the criminal charges of "not accusing the crime" and "actions that prevent the discovery of the truth" (Top Channel, 2022). This is because they had treated a person who was wanted by justice, after his crash with firearms in a village of Elbasan. So, in this case, they had not implemented article 282 of the Code of Criminal Procedure, according to which they were obliged to report the treatment they had performed on this person to the judicial authorities.

6. Medical confidentiality after the death of public persons

The issue of medical secrecy after death is mentioned in the Code of Medical Ethics and Deontology (year 2012) of our country only in the second paragraph of Article 22 (maintenance of confidentiality): ".....Even after the death of the patient, with the exception in cases where it (medical secrecy) poses a risk to the health and life of others, the doctor must not reveal the professional secret".

As can be seen, this issue is dealt with very little in the Albanian medical legislation.

Therefore, for these cases, especially for public persons, which have begun to be analyzed in our country, the rules recommended by foreign literature should be applied, some of which were previously presented in this study.

For my part, I have participated in several cases of forensic deaths, the results of which I have announced and published in the press, thus not preserving medical confidentiality, but without violating the rules of the particularities of these cases, especially about criminal deaths and as such they will be considered as cases where post-mortem secrecy is not maintained. However, before the publication, I also received the permission of their family members (the deaths of Mehmet Shehu, Nako Spiru) (Çipi, 2015, 2018, 2020)).

- The case of the victims of the bomb in the Soviet embassy in Tirana in 1951, is also a criminal case, where there was no need to maintain medical confidentiality; also for this issue, I received the permission of the victims' family members, who also helped in their discovery and examination.
- In the case of the exhumation of Enver Hoxha in 1992, directed by me, its publication in the 2000s was done to refute the slander published at that time, according to which during the exhumation (taking out of the grave), the corpse was hit in the head and was damaged by the crane that was pulling it out. For this publication, I also had the approval of one of Enver Hoxha's family members. It was done to refute the slander published at the time, according to which during the exhumation (removal from the grave), the corpse was hit on the head and damaged by the jib of the crane that was removing it. For this publication, I also had the permission of one of Enver Hoxha's family members.

In relation to Enver Hoxha's medical follow-up data, the following publications can be mentioned:

- Notes on Enver Hoxha's medical follow-up, left by Prof. Dr. Fejzi Hoxha (published after his death by Prof. Dr. Lluka Heqimi), peer, from Gjirokastra and he, who had known Enver Hoxha since childhood and had cured him, despite the difficulties of this treatment, for a very long time (Heqimi, 2003). The publication of these notes, after the death of their author, constitutes one of those cases when medical confidentiality may not be preserved for very well-known public figures.

Indeed, in the last 10 years of his life, Enver Hoxha has been under the health care of a selected medical team, which included Prof. Dr. Isuf Kalo and Prof. Dr. Ahmet Kamberi.

In recent years, two books with detailed datas have been published by these two doctors who treated Enver Hoxha:

- “Block” by Prof.Dr. Isuf Kalo, year 2019 (Kalo, 2019).
- “Our special patient” of Prof. Dr. Ahmet Kamberi, year 2020 (Kamberi, 2020).

Both books, regarding the preservation or not of medical secrecy after death, are justified, because they relate to the main leader of the 40-year-old communist dictatorship; therefore, his medical problems would be necessary to be known in the first place by the general public of our country. On the other hand, the permission of the widow of Enver Hoxha was obtained, for the publication of the book “Our special patient” by Prof. Dr. Ahmet Kamberi.

In these books, the patient’s interests are generally preserved and respected.

So in the book “Block”, Prof. Dr. Isuf Kalo writes among others: “I think that if Enver Hoxha had not lived at that time, he would not have become a dictator, but he would have become a very charming teacher, because he was very charming as a person;.....He became a cooperative patient that makes the doctor’s job easier. He didn’t want us to dictate him or the disease to dictate him, but he had the intelligence and the opportunity to cooperate with his treatment”.

While in the book “Our Special Patient”, Prof. Dr. Ahmet Kamberi, relying mainly on the doctor-patient relationship, emphasizes that: “in the relationship with the doctors, the patient was cordial. It never happened that he expressed his displeasure in words to any of us, even when he was not satisfied with our advice. He simply expressed his displeasure with a frown, with a lack of desire to prolong the discussion and with disobedience....”.

But in the first book «Block» by Isuf Kalos, some information and thoughts on intimate life are given, which I think the Patient himself and his wife would not agree to be published after the Patient’s death.

In the same way, in the book «Block» thoughts and arguments of a mainly psychological nature are given by the author of the book, about various events of that time, thoughts which the Patient did not express and with which the Patient himself when he was alive, I believe that he would not agree.

These may have been some of the reasons that the approval of Enver Hoxha’s family was not obtained for the publication of the book: “The Block”.

Regarding these two publications, I have the following remarks and suggestions:

- The publication of these books by two well-known doctors: Prof. Dr. Isuf Kalo and Prof. Dr. Ahmet Kamberi, it would be good to be accompanied by the full publication of the autopsy report, as was done with the leaders of BS,

Lenin and Stalin. This more to prove or disprove the hypothesis that he may have been eliminated.

- It would be more appropriate for such books to be published at a later time, as recommended by the relevant literature, according to which the memory of people who knew the deceased is much more important than what is left in subsequent generations, therefore the protection of medical confidentiality after death will diminish over time, until its complete disappearance. This is due to the fact that the publication of these two books, especially the book “The Block”, was accompanied, in addition to numerous praises, even with a strict opposing reaction to the charming appearance of Enver Hoxha in the relationship with the doctors who treated him, while in the minds of people, both old and younger, the very negative testimonies of Enver Hoxha’s life are still fresh, a part of those published by those who have known him since his youth, as well as those of monstrous crimes ordered by him, many of them still undiscovered etc.

7. Conclusions

- The important principle of medical confidentiality, which from a moral obligation has turned into a legal obligation and finally as one of the fundamental human rights, also contains the medical secret after death, which is not known enough.
- This concept of medical confidentiality after death contains various aspects that belong to mainly philosophical arguments, the interests of the dead person, the circumstances when this secret is not preserved, the time that has passed since death, the persons who have the obligation to preserve it or not, cases of preservation or not her for public persons etc.
- This type of medical secret, especially that of a public person for our country, constitutes a very delicate issue that requires great care in the cases of its announcement.

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A Case report of Spontaneous Gallbladder Perforation in Durrës Hospital

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Abstract

Gallbladder perforation occurs very rarely. The most frequent causes of this complication are: acute calculous gangrenous cholecystitis, acalculous cholecystitis, but very rarely, perforation of the gallbladder may occur without obvious clinical and radiological signs of perforation of the gallbladder. Here I am describing the case of a 76-Year-old woman. The patient was presented to the Emergency Department of Durres regional hospital with the diagnosis: Acute generalized abdomen. The etiological diagnosis was established during the surgical intervention. This clinical case is rare, but it shows that this diagnosis should be taken into consideration by surgeons, in elderly patients who present acute generalized abdomen with unclear etiology in the preoperative period.

Keywords: *Gallbladder, Generalized peritonitis, Perforation.*

Introduction

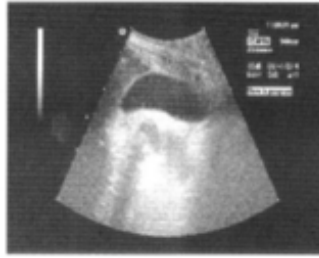
A rare complication of acute cholecystitis is gallbladder wall perforation. In these patients, due to difficulties in diagnosis or due to delayed treatment, a high level of mortality is observed (1). The incidence of perforation in acute calculous cholecystitis varies from 2 to 11 %. Perforation is the serious complication and

appears in advanced stages of acute cholecystitis. It mainly appears in the stage of acute gangrenous cholecystitis. While in the case of acute acalculous cholecystitis, the incidence of perforation varies from 10-20% (15). Regardless of the etiological cause that led to the perforation of the gallbladder, the clinical signs presented by the patients are similar (10, 14). Gallbladder perforation is mainly diagnosed in the stage of generalized peritonitis (16). The patients undergo surgery at this stage and regardless of the late diagnosis, their clinical outcome has been good (3, 4). I will describe a rare case of a patient with generalized peritonitis from spontaneous perforation of the gallbladder.

Case presentation

A 76-years-old woman was referred to the Durres hospital emergency department with severe abdominal pain, spread throughout the abdomen, continuous. The patient reports that she had abdominal pain for three days, which has been increasing in intensity. On palpation, the patient has pain in the entire abdomen, but more in the right abdominal quadrants and in the hypogastrium, with peritoneal reaction in these abdominal areas. The patient does not refer to a chronic accompanying disease. In admission the blood pressure measured 160/95 mmHg, the pulse rate was 82 beats per minute, the respiratory rate was 23 breaths for minute and the temperature was 37.4 grade Celsius. Laboratory analyses results: white blood cell count: 15.610 / mm³; AST: 38 U/L; ALT: 20 U/L; total bilirubin: 1.2 mg/dl; amylase: 56 U/L; creatinine: 1.2 mg/dl; urea: 51 mg/dl; total protein: 4.7 g/dl. Sonography does not reveal changes in the bile ducts, but the expansion of the intestinal loops and edema of their wall is evident (Figure 1, 2). In the computerized tomography of the abdomen, liquid between the loops, thickening of the wall of the loops, their dilatation and hypotony is evident, but no perforation of any intra-abdominal organ is evident (Figure 3). The patient was hospitalized, the abdominal pain is persistent, with a peritoneal reaction, in the stage of an acute abdomen, with unknown etiology. In these conditions, the patient undergoes emergency surgical intervention. An exploratory laparotomy with a median incision is performed. In the intraperitoneal space, bile-colored liquid is evident in moderate amounts, localized throughout the intraperitoneal space. There is no evidence of damage to other organs, except for a perforation of the gallbladder wall. The gallbladder had normal walls, no inflammation and no infection, no calculi, apart from the area where the perforation had occurred, which was necrotic and of very small size, with a diameter of 2-3 mm, located at the fundus of the cholecyst. In the histopathological examination, a small inflammatory and necrotic area is evident which coincides with the perforation hole. The patient's postoperative progress was good. The hospital stay was 18 days. She leaves the hospital cured.

FIGURE 1



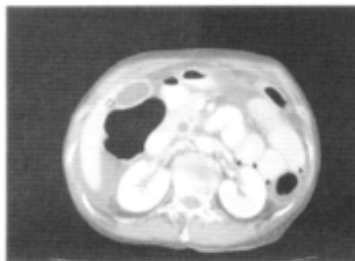
Ultrasonography of the gallbladder: Unremarkable findings and the gallbladder wall has a well-preserved continuity.

FIGURE 2



Ultrasonography: Findings reveal a diffuse thickening and dilatation of the small intestine.

FIGURE 3



Computed tomography: Finding reveal a normal-looking gallbladder, while the small bowel wall is diffusely thickened and dilated.

Discussion

Gallbladder perforation has been reported in many cases, but there are discussions regarding the method of diagnosis and treatment (14). Cases of perforation to whom not a specific cause is found are rare in literature and are reported as spontaneous cases, compared to cases of perforation of the gallbladder due to acute cholecystitis, which are more frequent (3,4). In the case of spontaneous perforation of the gallbladder, the perforation occurs more often in the fundus, as this area has the lowest level of vascularization. This fact shows the main importance of the ischemic process, which leads to perforation of the gallbladder wall (1,14). The diagnosis of spontaneous perforation of the gallbladder in most cases is established in the operating room during the intervention (4). The reasons for the impossibility of establishing the diagnosis in the preoperative period are the unclear clinical signs, and the limited radiological data in clarifying and establishing the diagnosis (7). In our case, the imaging examinations did not help in establishing the diagnosis due to the absence of inflammation of the gallbladder. Mortality in cases of perforation due to acute cholecystitis is high (14). As for idiopathic perforation of the gallbladder, mortality is low. This is explained by the proper and urgent treatment of the patient (4).

Conclusion

The case I referred compared to other cases of perforation of the gallbladder, has similarities in the clinic, in the imaging examinations and in the pre- and post-operative progress. The histopathological examination revealed ischemic necrosis at the level of the perforation of the gallbladder wall. This necrosis is caused by an ischemic insult. This insult can be caused by atherosclerosis, local vasoconstriction, vasculitis, or by idiopathic factors. In conclusion, the cases of elderly patients presenting to the emergency room with the diagnosis: Acute abdomen of unknown etiology should also be suspected of spontaneous perforation of the gallbladder.

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Prospective research view on the methodological framework and protocol for social nursing components _____

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Abstract

The COVID-19 pandemic brought the social aspect of the nursing profession into even sharper focus. Nursing discipline is a social virtue that extends beyond only delivering care. Historiography has been impacted by social change. The objectives are to assess how society views professional nurses and to assist in explaining nursing's social component from the perspective of the relevant nurses. The methodology will be based on Grounded Theory, a design framework with sociological roots that is

commonly employed in qualitative research. Expected outcomes will help to shape the future of nursing education and profession by identifying variables that define the social component of nursing and determining barriers and other profession-related determinants.

Keywords: *Social, aspects, nursing, research protocol, future perspective.*

Introduction

Nursing discipline is more than just care; it is a social value, and the COVID-19 pandemic emphasized this aspect of the nursing profession even more (1, 2, 3). Various examples even during the pandemic show that the social aspect of nursing can evolve the healthcare landscape, especially in support of vulnerable groups (4, 5), but also the community as a whole (6).

The meaning of nursing care as a social practice and the value that social theories can have in health research, in particular in understanding health outcomes and the interventions taken (7), has been studied in limited research (8, 9), since the focus has always been on health care and not on the social dimension of caring for different pathologies.

Knowledge translation is viewed by a number of authors as an integral component of social constructivism in clinical healthcare practice. Because knowledge is not an immobile thing to be «sent» and «received,» but rather a fluid collection of understandings that are shaped by both those who create it and those who use it. Clinicians apply new knowledge by altering it based on prior experiences and conceptions, by connecting it to prior understandings, by giving it significance, and, frequently, by continuously checking their understanding (10). Studies show that nursing research is focused mostly on specific contexts of care delivery (11), even if nursing care has the capacity to strengthen social actions.

Despite the disagreements on this matter, research contends that it is not sound scientific practice to move further without taking the application of theory in knowledge translation into account. Without a theory, it will be challenging to comprehend the fundamental principles guiding interventions, to comprehend the effects that different interventions have on behavior change, and to make comparisons between researches (12).

The nursing profession grew out of a need within society and continues to evolve based on the needs of society. Almost everything in nursing has changed, but the main objective—taking care of patients—remains constant. In its earliest stages, nursing began in homes. The sick were cared for by their family members in their homes before hospitals were created to shelter them. A science of medicine

was not yet considered to exist. It was Florence Nightingale, in 1840–1845, who laid the practical foundations of nursing (13).

Meanwhile, the American doctor Joseph Warrington (14) wrote a book for nurses and midwives which was also the first example of a textbook for nurses. The present-day nursing profession is still evolving. History records the track of social change. Because to promote social justice (delivery of health care in an effective and ethical manner), a nurse must have key leadership skills and other competences (15).

Technology and education are two current nursing issues. The following components must be included in training programs for nurses who are in charge of general care, according European Union Standards for Nursing and Midwifery; 1) Theoretical instruction (a. Nursing; b. Basic Sciences; c. Social Sciences); and 2) Clinical instruction (16). While social and cultural factors influence the perception that nurses have about their status (17), for example, the phenomenon of nursing bullying that begins even before nursing education with the choice of the nursing profession and continues throughout the professional career, whether as a clinician (18) or as an academic (19).

To bring forth a change in culture, nurses should actively work in all dimensions and in collaboration with stakeholders and research. The academic significance of this research is closely related to the gaps in knowledge related to the topic, in particular for a Western Balkan country. The history of the evolution of the nursing profession in European countries, especially in countries like Albania with low resources, is not well studied compared to the history of nursing in America (20, 21, 22); Canada (23, 24) and Australia (25, 26).

Understanding the profession and reflecting on how nursing has changed over time can help one comprehend how to educate nurses and how to practice nursing in a socio-political environment. Knowledge of the pathway to licensure, regulations in their profession, the role of research, and how history and the current pandemic have affected nursing not only informs but also empowers today's students, helping to create a better future for nursing. Today, the image of nurses in technology is still stigmatized, in line with the still present trend of bullying (27, 28), despite the significant historical role the nursing profession has played in the reframing of women's roles in society and in the creation of new possibilities to reshape their sense of power and self-worth (29).

The profession that nursing students have chosen has a long history, a rich tradition, and is a strong pillar of society. This is still valuable in the context of the globalization of the labor market since it makes adaption easier to have ethical, cultural, language, and communication skills in addition to professional ones. This is especially crucial for nations like Albania, whose socioeconomic conditions and budget constraints have left the healthcare sector still in transition. The idea of

European integration has as one of its main objectives the improvement of life through cooperation and integration. Finally, it is important to inform nursing professionals on changes in laws and decisions that affect their field as well as potential effects of European integration on nursing care and science. The social component of nursing, a significant but largely ignored aspect of care, is intimately tied to the contribution made by this research in the field. According to the World Health Organization, the Social Determinants of Health (SDH) are a broad category of forces and systems that have an impact on people's day-to-day living situations and include non-medical aspects such as a person's birth, growth, employment, living situation, and aging. Political structures, social standards, welfare policies, economics guidelines and procedures, and development goals are some of these elements and systems. The most important influences of the SDH are related to health inequalities within and between countries (30). Additionally, it has been discovered that the postmodern education competences that are concentrated on integrating a literate society into nursing education can be integrated into nursing care curricula through a collaborative partnership between nursing educators and clinical nursing (31).

Nurses, by profession, play a critical role in reducing health care inequalities (32, 33), as studies have shown that social determinants of health can be more important than health care in determining health outcomes.

To reduce disparities in health care, it is imperative to integrate social aspects of health care into health programs and curriculums (34). The need to integrate elements of cultural competence into the nursing curriculum and education has been addressed by previous studies (35).

Social change has left its mark on history, and nurses who want to be leaders of change and the promotion of social health justice can benefit from advanced education (36). In addition, the clarification of social responsibility to nurses benefits patients, professional development, and the design of continuing education activities based on scientific evidence (37). Nurse education in the frame of European integration must follow European Union directive requirements highlighting the need for pedagogical qualifications of educators (38). According to studies on the future goals of Albanian nursing students, the majority of them have stated a desire to continue their professional careers overseas, primarily in Eurozone countries. In order to produce knowledge that is applicable, this necessitates the integration of social, cultural, and professional aspects as well as knowledge development in nursing education (39).

The COVID-19 pandemic highlighted even more the social aspect of nursing, while this aspect, especially after the eradication of infectious diseases, was slowly being left out of the attention of both educators and professionals themselves (40, 41).

Albania, as a country aspiring to integrate into the European Union, must have the contribution of all fields to achieve it. While nursing students have the potential to be a crucial part of this process because they are the first to offer their services in a variety of European countries, they know very little or nothing about it. They know very little about the history of European integration and policies related to their profession that may have been part of this integration agenda.

As a result, stating that it is a research protocol, the major goal of publication is to identify worldwide partners who will join the project and/or provide financial support for it, even though relevant data results are not presented. Taking into account what was cited above, the paper proceeds with the protocol, including the research methodology and conclusions section.

The Protocol

Objectives

The objectives of this research protocol will be:

- Evaluating how society perceives nurses as professionals, even in the face of a pandemic.
- Increasing understanding of the social dimension of nursing from the perspective of nurses.
- A literature review describing the history of nursing in Albania.
- Promoting ongoing communication and collaboration among nursing education, practice, and research on a national and international scale.

The methodological and theoretical framework

To achieve the objectives, the methodology for the data collection and analysis will be based on grounded theory (GT) (42), a design framework widely applied in qualitative research (43, 44) that has its roots in sociology and can be used successfully by novice researchers (45).

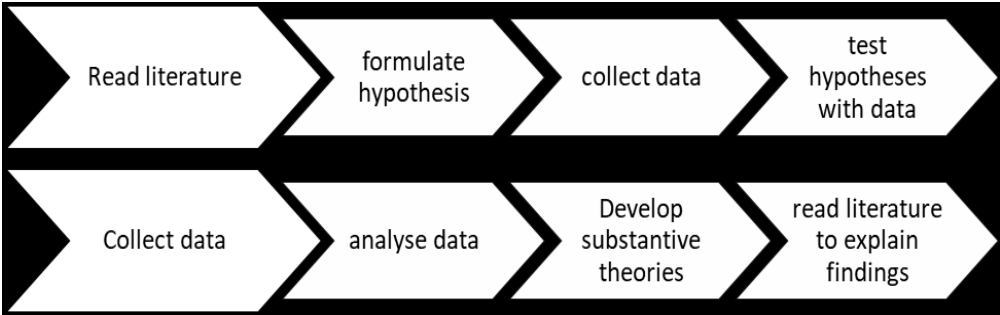
This research methodology was developed in 1960s by Barney G. Glaser and Anselm L. Strauss, 1967) (46) and since then has gained a lot of popularity. An explanation of the primary concern of the population being studied, as well as how this concern is addressed or handled, is provided by the grounded theory, a comprehensive research methodology. The theory has been used previously in area of education research (47), as well as to explain the social aspect of nursing in different studies (48). Finding out what people know and how they understand their

world is the main goal of grounded theory. The goals of this proposal are thought to be achievable from both the social science and healthcare perspectives (49). Investigating social psychological characteristics and coming up with theoretical explanations for them are relevant uses of grounded theory. While in traditional research (Figure 1) the researcher starts from literature review to understand the researched problems, in grounded theory research the data collection, coding and analysis occur at the same time (50).

Traditional research methodology

Grounded theory

FIGURE 1. The proposed Methodology
(Grounded theory vs Traditional research methodology) Source: (51)



Based on the grounded theory process the area of interest identified for the proposed research is the public image of nurses in the community as well as among nursing students and professional nurses themselves, focusing only on the data. Data will be collected though mixed methods, such as open ended question interviews with participants, focus groups or collecting Texts and Artefacts (52). The data analysis will be based on line by line coding, followed by open coding, axial coding and selective coding which will represent the framework with a variable that includes all the collected data (53).

The methods for reviewing, including the inherent quality components, will be used for the objective related to the literature review outlining the history of nursing in Albania (54). The updated PRISMA reporting guidelines for systematic reviews will be used more (55). The flowchart of research protocol is presented in Figure 2.

Sample study

Participants will be from three different target groups. Adult people from different target groups of the population, nursing students and nursing professionals. The selection of the nursing students and professionals will be a convenient and intentional sample, while the selection of the adults from different target groups will be random. The study will first be conducted at a national level, and then it will be promoted to be conducted internationally. The tools and instruments for the data collection will include semi structured interviews with different focus-groups. Focus groups will typically have a sample size of 6 to 11 participants. Based on the situation, the data collection will be virtual or in person. The interviews will include general questions about the social aspect of nursing and move to more detailed questions as the interview advances. The interviews will be paper-based or recorded with the participants' permission. Utilizing conformability, the interviews' validity and reliability will be evaluated (discussion of preliminary findings with other researchers), dependability (detailed and descriptive data analysis), credibility (selecting the appropriate method for data collection) and transferability (coding process after consultation with relevant experts). The semi-structured interviews will only be conducted if participants have provided their consent forms to take part in the study.

Data analysis

Textual and conceptual analysis of the data will be divided into two layers. The textual level will consist of focus groups, codes, and text data. On a conceptual level, networks, categories, and key categories will be included. Descriptive statistics will be utilized for the analysis of sociodemographic data.

Ethical aspects

Every phase of the research proposal will be guided by all the Ethical Principles for Medical Research Involving Human Subjects of the Declaration of Helsinki (56) and Ethics for researchers European Commission (57). The researcher applicant also ensures that for the realization of this project they will act in accordance to the Code of Conduct for Integrity in Scientific Research in the Republic of Albania (58). Potential individuals participating in the study will also be informed that they are free not to participate. Persons who decide to participate will be provided with privacy and confidentiality in accordance with national laws on personal data protection. Additionally, information about the types of data to be collected, the

purposes for which they will be used, the limitations on their use, disclosure, and retention, as well as any anticipated secondary uses of the data, will be provided to potential study participants. After the relevant Ethical Committee has approved the research protocol, the data collection will start.

The expected outcome(s) will have the following impacts on nursing education and the field's future:

- A discussion of the social perception of nursing from the perspective of the native community, including the variables that determine the social aspect of nursing.
- An outline of how nursing is perceived in society from the perspective of nursing students identify obstacles and factors related to the chosen career.
- An assessment of the social perception of nursing as seen by nursing professionals identifying the profession-related barriers and determinants.

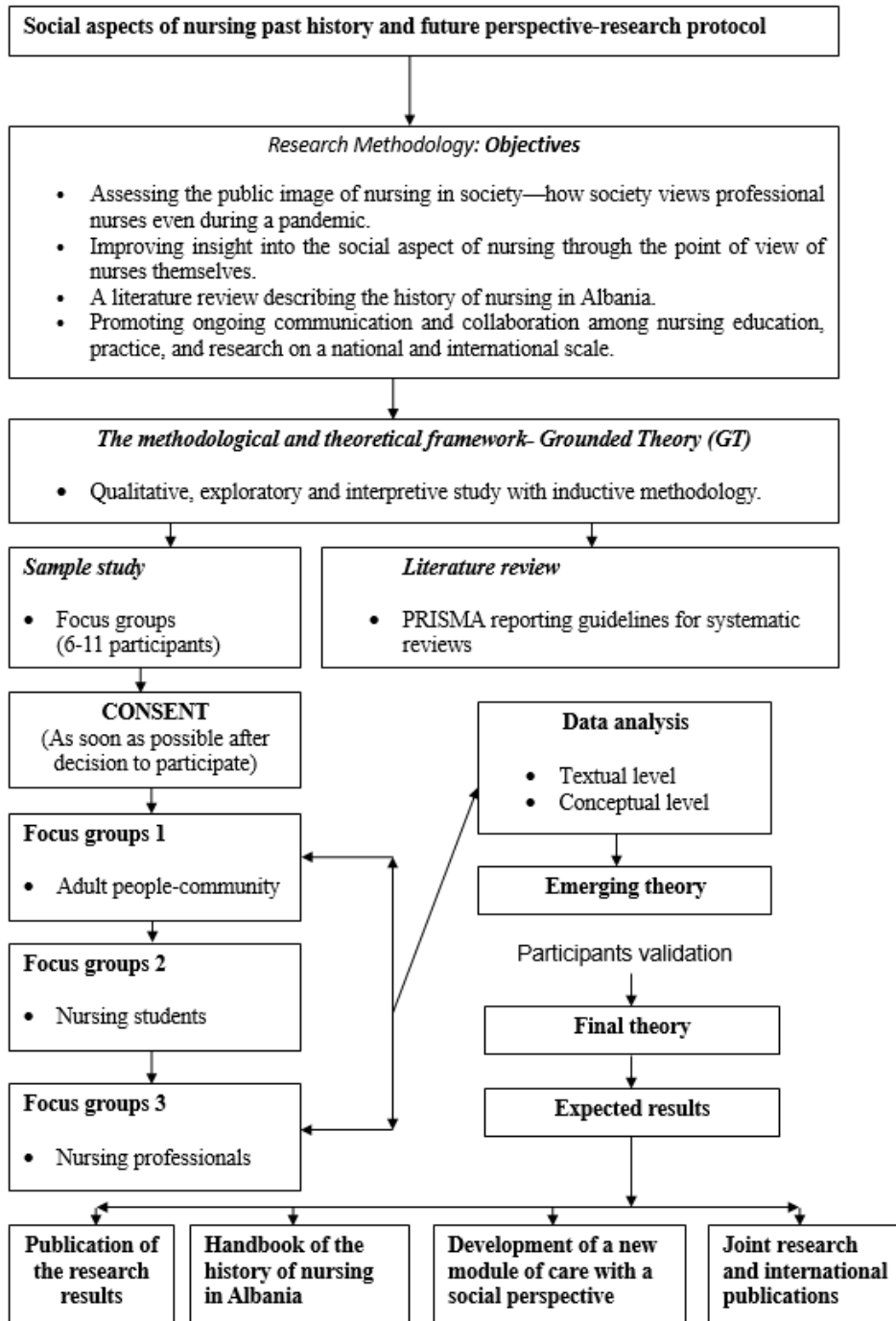
Expected products

- Publication of the research results as scholarly publications in international indexed scientific journals.
- A written summary that serves as a roadmap for the evolution of nursing in Albania and acts as a reference for future research on nursing education.
- The development of a new module of care with a social perspective to be introduced in the nursing curriculum.
- Joint research and international publications to maximize impact and visibility.

Conclusions

Researchers are expected to study research, policy, and implementation related to the social aspect of nursing and its integration by health professionals in daily practice during the next few years. The authors of this research protocol invite anyone with an interest in the nursing profession on a national or international level to join the research team with the potential to completely achieve the suggested objectives with a global impact on health education and care.

FIGURE 2. Research protocol flowchart



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Assessment of maternal obesity and perinatal consequences _____

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Abstract

Introduction: Nowadays the prevalence of obesity especially maternal obesity prevalence has increased substantially and provides a major challenge to public health. Besides that, weight gain during pregnancy may result in negative outcomes for women and neonatal.

Objective: We evaluated maternal obesity prevalence and outcomes during and after pregnancy at the Regional Hospital of Ferizaj.

Methods: A total of 258 pregnant females who delivered their babies at the Regional Hospital of Ferizaj between March 2018 and March 2020 were included in this study. Based on the body mass index (BMI) of maternal, the patients were divided into groups: underweight, normal weight, overweight, obese I, obese II, and obese III/ morbid obese. The effects of obesity on fetal and maternal outcomes were investigated.

Results: Overall 258 pregnant women were included in our study, the average age was 28.7 ± 3.4 , with min age of 19 and a max of 41 years old. The prevalence of BMI over the normal weight among pregnant women resulted in 70.5% (182/258). Most of the maternal were overweight at 29.6% (54/182), obese class I at 27.5% (50/182), obese class II at 25.3% (46/182), and obese class III at 17.6% (32/182), with a significant association between them $\chi^2=2.8$, $p<0.02$. Adverse obese maternal effects

and perinatal consequences or other problems were significantly more frequent than in normal-weight maternal. Besides that, in this study, the low-birth-weight infant rate was higher in the low BMI pregnant cases with a strong significant association ($\chi^2=37.8$ p value < 0.0001).

Conclusion: The finding of this study conclude that obesity plays a significant risk factor and it is a strong association with complications in pregnancy and newborns. Further studies are recommended to explore the obesity problems to develop guidelines and strategies and to minimize the adverse effect of this risk for developing maternal and newborn complications.

Keywords: *Body mass index; obesity; pregnancy, maternal*

Introduction

Nowadays the prevalence of obesity especially maternal obesity prevalence has increased substantially. It is a public health and pandemic problem that contributes to preventable deaths each year (1). Moreover, the cases of overweight and obese women of reproductive age are increasing in many countries. In obstetric services, pregnancy obesity is one of the important challenges. Meantime, the rise of maternal obesity prevalence is associated with the increase of potential negative effects on the mother and fetus. Due to the consequences that obesity in pregnancy causes, it is redefined as an obstetric condition that requires special attention (2). It is estimated that, in 2025, more than 21% of women in the world will suffer from obesity (3). Obesity is defined as body mass index (BMI) ≥ 30 kg/m² and can be further stratified by class: class I (BMI 30.0 to 34.9 kg/m²), class II (BMI 35.0 to 39.9 kg/m²), and class III and above (BMI ≥ 40 kg/m²) (4).

Marchi et al in one study highlights that maternal obesity increases the adverse outcomes not only for the mother but also for neonatal, and childhood. Moreover, maternal obesity increases the risk of gestational diabetes mellitus, gestational hypertension, pre-eclampsia, instrumental delivery, Caesarean section delivery, and stillbirth (5). Women with obesity are more likely to deliver a neonate with congenital abnormalities, large-for-gestational-age (LGA), and respiratory distress syndrome (6). Cnattingius et al, in their study, found that maternal overweight and obesity during pregnancy are associated with increased risks of preterm delivery, especially extremely preterm delivery (7). On the other hand, preterm birth (< 37 weeks' gestation) complications were a leading cause of death in children under 5 years, accounting for 1 million mortalities globally in 2015 (8). Furthermore, preterm babies are at increased risk of many complications, a risk that increases with decreasing gestational age at delivery. Post-term birth (≥ 42 weeks' gestation)

is also associated with an increased risk of stillbirth, neonatal and infant death (9), and an increased risk of maternal morbidity due to fetal macrosomia, hemorrhage, and thromboembolic disease (10). The aimed study was to evaluate the prevalence of maternal obesity and its complications during and after pregnancy.

Methods

This paper is an observational descriptive and cross-sectional design study. The inclusion criteria were pregnant women with obesity who delivered their babies at the University Clinical Center of Kosovo, Regional Hospital of Ferizaj between March 2018 and March 2020. The exclusion criteria for this research were incomplete medical records of pregnant women. Also, we have excluded all pregnant women with previous illness histories (like hypertension and diabetes mellitus).

During the two years of this study, we investigated about 258 pregnant women. For the classification of maternal BMI, we have used the WHO directive. So, maternal obesity was categorized as: obese I (30–34,9 kg/m²), obese II (35–39,9 kg/m²), and obese III/morbid obese (≥ 40 kg/m²). All participants were divided into groups based on BMI, so: < 18.5 kg/m² was underweight, 18.5–24.9 kg/m² was normal weight, 25–29.9 kg/m² was overweight, obese I (30–34,9 kg/m²), obese II (35–39,9 kg/m²), and obese III/morbid obese (≥ 40 kg/m²). Moreover, we have investigated the effects of obesity on fetal and maternal outcomes. Participants in this survey were informed through verbal communication during the first the hospital. In this survey, no personal data were recorded, and all questionnaires were completed anonymously. Additionally, maternal were informed that participation in the study was voluntary and participants could withdraw at any moment. All study procedures were approved by the Human Investigation Committees at the Ferizaj Hospital. All methods were applied in accordance with relevant guidelines and regulations.

The statistical software package SPSS version 26.0 was used to analyze the maternal and neonatal outcomes. The number (n) and percentage (%) were used to present all categorical variables while for continuous variables we used the means and standard deviations (SD). The tests such as the chi-square (χ^2) test and the t-test were used to compare variables and to compare the mean values, respectively. To evaluate the associations of maternal obesity with GH and HBP we used univariate and multivariate logistic regression analyses. A p-value < 0.05 was evaluated as statistically significant.

Results

Overall 258 pregnant women were conducted in this study, the mean age was 28.7 ± 3.4 , with min age of 19 and a max of 41 years old. Most of the maternal were in the age group 25-35 years old. The prevalence of BMI over the normal weight among pregnant women resulted in 70.5% (182/258). Most of the maternal were overweight at 29.6% (54/182), obese class I at 27.5% (50/182), obese class II at 25.3% (46/182), and obese class III at 17.6% (32/182), with a significant association between them $\chi^2=2.8$, $p<0.02$. About 59.6% live in the urban area, approximately 40% were in high school, and 38.7% were at the university level. Moreover, 55.8% of maternal were employed, and 53.5% were multiparous. Related to the familiar history of diabetes mellitus and hypertension about 46.8% of the maternal have a familiar history with diabetes mellitus and 46.5% with hypertension. Gestational diabetes appeared in 28.7% of maternal, gestational hypertension at 34.1%, preeclampsia at 33.7% and about 39.5% have a caesarian section. According to the habits, most of maternal do not smoke, and also 71% have a sedentary life (table 1).

TABLE 1. Baseline characteristics of maternal: Maternal outcomes and labor and delivery

Variables	under-weight	normal weight	over-weight	obese class I	obese class II	obese class III
Age group < 25 years old	11	22	19	13	14	7
25–35 years old	8	14	24	16	13	9
> 35 years old	9	12	11	21	19	16
Residence						
Rural	7	13	20	23	27	14
Urban	21	35	34	27	19	18
Education						
Primary level	7	12	9	12	9	6
High school	16	17	19	20	19	12
University	5	19	26	18	18	14
Employment						
No	15	23	19	23	22	12
Yes	13	25	35	27	24	20
Parity						
Primiparous	20	23	21	23	19	14
Multiparous	8	25	33	27	27	18

Family history of diabetes mellitus						
No	22	30	29	18	24	14
Yes	6	18	25	32	22	18
Family history of hypertension						
No	19	26	34	23	19	17
Yes	9	22	20	27	27	15
Hyperglycemic and hypertension disorders						
Gestational Diabetes	5	8	12	17	20	12
Gestational hypertension	2	7	19	21	24	15
Preeclampsia	3	6	20	18	22	18
Caesarian section	12	9	19	20	25	17
Smoking						
No	24	35	39	45	34	26
Yes	4	13	15	5	12	6
Physical activity during pregnancy						
No	22	25	28	42	39	27
Yes	6	23	26	8	7	5

Table 2 shows the pregnancy and neonatal outcomes related to maternal obesity. We have grouped all maternal into two big groups. The first group includes all maternal with normal weight and the second group includes maternal obesity (such as maternal in the category of overweight, obese class I, obese class II and obese class III). Based on the logistic regression analyses, the pregnancy and neonatal outcomes were several times in risky in maternal obesity than in normal-weight pregnant women.

TABLE 2. Pregnancy and neonatal outcomes related to the maternal obesity

Variables	Normal weight		Obese	
	Odds ratio (95 CI)	P value	Odds ratio (95 CI)	P value
Gestational Diabetes	1.1 [0.52-1.95]	0.04	8 [4.1-12.6]	<0.01
Gestational hypertension	2.2 [2.0-7.5]	0.01	11 [8.1-22.7]	<0.0001
Preeclampsia	1.9 [0.98-5.5]	0.02	14 [8.2-24.0]	0.001
Caesarian section	1.2 [0.7-2.3]	0.03	3.7 [1.9-6.8]	0.004
Length stay >7 days	1.5 [0.67-2.84]	0.005	4.1 [2.5-7.1]	0.0001
Preterm delivery \leq 37 weeks	1.02 [0.75-2.4]	0.01	3.2 [1.52-7.81]	0.009
Apgar score \leq 7 at 5 min	0.74 [0.1-2.4]	0.9	1.5[0.5-3.2]	0.04
Birthweight \leq 2500kg	0.5 [0.08-1.2]	0.4	1.2 [0.02-2.4]	0.03

Birth weight $\geq 4000\text{kg}$	0.7 [0.05-1.8]	0.6	2.4 [1.09-3.8]	0.003
Birth weight $\geq 4500\text{kg}$	1.9 [1.0-3.5]	0.02	6.7 [3.05-7.9]	<0.0001
Admission of the baby to the neonatal intensive care unit	1.9 [0.72-2.8]	0.03	9.5 [4.1-15.5]	<0.0001

Discussion

This study demonstrates that being overweight or obese increases the risk of various adverse maternal and neonatal outcomes. Numerous studies have documented similar findings (11-14).

Our findings show that women older than 35 years of age were 1.8 times more likely to be obese compared to younger women. This fact is consistent with another study conducted by Madi et al (15) who also reported that older pregnant women among obese pregnant women had higher parity compared with the control group but is in contrast with another study conducted by Stepan et al (16) were not observed a significant difference between maternal age and gestational age in the comparison between groups with and without obesity.

Ngoga et al, highlight in their study that the rates of hypertensive diseases of pregnancy and gestational diabetes among obese women are significantly increased (17). In the present study, the prevalence of gestational hypertension was 33.7%, which was higher than that observed in another published study (18), but lower than in another study (19). Our data show that obese women have a 2 times greater risk of developing hyperglycemic disorders (28.7%), and this finding is higher than a previous study (17).

Avci et al, in their study, found significant increases in maternal and neonatal outcomes (such as hypertension, gestational diabetes mellitus, cesarean delivery, premature rupture of membranes, shoulder dystocia, etc) caused by obesity. Moreover, adverse maternal effects in obese cases were significantly more frequent than those in normal-weight cases. So, preterm birth, perinatal mortality, low APGAR scores, macrosomia rates, etc were significantly higher in maternal obese cases. While the low-birth-weight infant rate was higher in the low BMI cases than that in the other BMI categories ($p < 0.01$) (19). The findings of this study were consistent with the findings of our study. Adverse obese maternal effects and perinatal consequences such as preterm birth, newborn intensive care unit requirement, or other problems were significantly more frequent than those in normal-weight cases.

Moreover, in this study, the finding of the low-birth-weight infant rate was higher in the low BMI pregnant cases than that in the other BMI categories (with a strong significant association $\chi^2=37.8$ p value < 0.0001) was similar to the previous

study (19). We also found a significant association between obese mothers and some of the neonatal outcomes such as gestational diabetes and hypertension, macrosomia, pattern delivery, admission of the baby to the neonatal intensive care unit, and an Apgar score ≤ 7 with a p-value less than 0.05 compared to the maternal which resulted in normal weight. The results of this study are in agreement also with previously published studies (21,22).

Conclusion

The finding of this study concludes that obesity plays a significant risk factor and it is a strong association with complications in pregnancy and newborns. Further studies are recommended to explore the obesity problems to develop guidelines and strategies and to minimize the adverse effect of this risk for developing maternal and newborn complications.

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The level of Pap test positivity and the factors associated with it among adult women in Fier, Albania

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Abstract

Purpose: Cervical cancer continues to remain a major concern for public health globally. The aim of this study was to determine the positivity level of the Pap test and the prevalence of cervical potentially pre-malignant and malignant lesions in a group of adult women aged 18 years and older in Fier Prefecture in Albania.

Material and methods: This cross-sectional study included 1254 women who showed up for a Pap test at the gynecology service at the Fier Regional Hospital during

2013 and 2014. Basic socio-demographic data (age, place of residence, marital status) as well as data related to women's gynecological history, including information related to menopause status, current pregnancy, menstrual cycle (regular or irregular), data on previous diseases of the genital tract, previous cytological examinations, and previous biopsies was collected. Adequate cervical smears were interpreted, allowing the calculation of the prevalence of various cervical lesions. Binary logistic regression was used to identify factors associated with a positive Pap test result.

Results: The average age of women in our study was 39.8 ± 10.7 years. About two-thirds of women resided in urban area, 99.1% were married at the time of the survey and 17.8% were in menopause. Only 1.8% of women had been subjected to a cytological examination in the past. Among the 1134 adequate cervical smears the level of positive Pap test result was 8.7% and the prevalence of LSIL, HSIL and ASC-US was 4.1%, 1.6% and 3%, respectively. No cases of squamous carcinoma were detected. Age was positively, strongly and significantly associated with a positive Pap result: compared to 21-30 years old women, those aged 31-40, 41-50 and >50 years were significantly 1.98, 6.09 and 14.07 times more likely to have a positive Pap test reading. There was a tendency for the Pap test positivity to be higher among urban woman, probably due to earlier initiation of sexual activity and more sexual partners compared to rural women. Only 2% of women had had cytological examinations in the past.

Conclusions: The prevalence of abnormal Pap test among adult women in Fier prefecture was relatively high even though comparable to national and international studies. There is need to increase the awareness of women about cervical cancer and their participation in cervical cancer screening programs.

Keywords: Albania, ASC-US, cervical cancer, HSIL, LSIL, Pap test.

Introduction

Cervical cancer continues to remain a major concern for public health in all countries of the world. Cervical cancer is the fourth most common cancer in the world in women: in 2020 there were 640,000 new cases were registered and 342,000 women lost their lives from cervical cancer during; about 90% of new cases and deaths worldwide in 2020 occurred in low- and middle-income countries (Sung et al., 2021). More than 85% of the global burden of cervical cancer occurs in developing countries, where these cancers represent over 12% of all cancers in women. Cervical cancer was the most commonly diagnosed cancer in 23 countries and was the leading cause of death of women in 36 countries of the world in 2020; the vast majority of these countries are found in sub-Saharan Africa, Melanesia, South America, and Southeast Asia (Sung et al., 2021).

Cervical cancer screening programs accelerated the decline in cervical cancer incidence and mortality through the implementation of such interventions in many countries in Europe, Oceania and North America (Sung et al., 2021). These rates have also decreased in Caribbean and Central and South American countries (eg, Argentina, Chile, Costa Rica, Brazil, and Colombia) during the 2000s, although incidence rates remain high (Sung et al., 2021). In the absence of effective screening, as in Eastern Europe and Central Asia, there has been a rapid increase in premature mortality from cervical cancer in recent generations (Sung et al., 2021). Perhaps most concerning are the uniform increases recently reported in 7 out of 8 sub-Saharan African countries, including Gambia, Kenya, Malawi, Seychelles, South Africa, Uganda, and Zimbabwe (Sung et al., 2021).

In 2018, given the significant global burden of cervical cancer and growing inequality, the WHO Director-General issued a call for global action to eliminate cervical cancer (target: ≤ 4 cases per 100,000 women worldwide) through the triple intervention strategy of: 1) vaccinating 90% of all girls by age 15, 2) screening 70% of women twice in the 35 to 45 age group, and 3) treatment of at least 90% of all pre-cancerous lesions detected during screening (Sung et al., 2021). A modeling of achieving these targets predicted that over 74 million cases of cervical cancer and more than 62 million deaths from cervical cancer could be avoided over the next century (Sung et al., 2021). This target is projected to be reached between 2055 and 2059 in developed countries, while in developing countries it may be reached by the end of the 21st century, reflecting the apparent gap in baseline incidence rates and the resources needed to achieve the goal (Sung et al., 2021). To achieve these goals, it is important that the population of women is screened according to the guidelines of international health authorities. The application of the Pap test for the screening of cervical cancer has been associated with a spectacular decrease in the incidence of this cancer in all developed countries (Gustafsson et al., 1997). Since the Pap test is essential for the early detection, prevention and control of cervical lesions with a potentially malignant nature, it is important to study the prevalence of lesions diagnosed through the Pap test (the level of Pap test positivity) as well as the factors associated with it. This was exactly the purpose of this study conducted in a population of adult women aged 18 and over in Fier Prefecture.

Methodology

Study design

This is a cross-sectional study. The study population included all women who showed up for a Pap test at the gynecology service at the Fier Regional Hospital during 2013 and 2014.

In total, during this period, 1254 women (aged 18 years or older) presented to our service either on their own initiative to perform the Pap test or recommended by the family doctor for this examination.

Data collection

Basic socio-demographic data (age, place of residence, marital status) as well as data related to women's gynecological history, including information related to menopause status, current pregnancy, menstrual cycle (regular or irregular), data on previous diseases of the genital tract, previous cytological examinations, and previous biopsies was collected.

In addition, data related to the obtaining of cervical smears in women who presented for the Pap test examination was also collected. Cervical smears were read through cytological examination. Interpretation of smears was based on the criteria of the Bethesda System as well. For example, non-neoplastic cellular changes were based on the presence of squamous metaplasia, tubular metaplasia, keratotic changes, atrophy, or pregnancy-related changes (in pregnant women only); reactive cellular changes are generally associated with inflammation or repair, radiation, lymphocytic cervicitis, intrauterine devices, etc. (Pangarkar, 2022). Atypical squamous cells of undetermined significance (ASC-US) are evidenced by nuclear staining on the order of 2.5-3 times the size of intermediate cells, with a slight increase in nuclear/cytoplasmic area ratio, a slight variation in nuclear size or contour, and mild hyperchromasia with evenly distributed chromatin. If cells with surfaces similar to surface and intermediate cells are evident, grouped in small groups or isolated, with transparent cytoplasm, with indistinct borders, large nuclei (up to six times larger than normal), the ratio nucleus/ cytoplasm from 0.33, nuclear membrane smooth or slightly invaginated, with uniform nuclear chromatin, slightly granular, with two or three nuclei (morphological markers of HPV infection including nuclear pleomorphism, hyperchromasia, perinuclear halo with a clearly distinguishable zone around the nuclei and peripheral cytoplasmic thickening), etc., then these are indicative of the presence of LSIL – LSIL, therefore, is a category that describes the changes of infection associated with human papilloma virus. If the elements of dyskaryosis are evident in the cytological examination, such as irregular chromatin, anisocytosis and irregular nuclear membranes, i.e., squamous cells that look very abnormal, then the diagnosis is oriented towards HSIL – HSIL, in this way, shows a real pre- cancerous lesion. However, the above lesions have virtually endless variations and the elements mentioned above are merely indicative. The experience of the cytology professional is a key element to establish the correct diagnosis.

Statistical analysis

Absolute numbers and corresponding percentages were used to describe categorical data. To describe the numerical data, the mean value and standard deviation were reported. To compare the mean values of a continuous numerical variable across the categories of a categorical variable, the non-parametric Mann-Whitney U-test (for two independent samples) was used in the case when the categorical variable had two categories; if the categorical variable had more than two categories, then the non-parametric Kruskal-Wallis test for k independent samples was used.

Binary Logistic Regression was used to identify factors associated with an abnormal Pap test reading. 2 models were constructed: model 1 that estimated the crude odds ratio (uncontrolled for any confounding effect) and model 2 that estimated the odds ratio adjusting for the confounding effect of age.

An association was considered significant if P value <0.05.

All statistical analyzes were performed through the statistical package Statistical Package for Social Sciences, version 26 (IBM SPSS Statistics for Windows, version 26).

Results

Table 1 presents basic socio-demographic data as well as other information about the women included in the study.

The average age of women in our study was 39.8 ± 10.7 years. About two-thirds of women resided in urban area, 99.1% were married at the time of the survey and 17.8% were in menopause. Only 1.8% of women had been subjected to a cytological examination in the past. About 90.4% of smears were judged adequate for interpretation.

TABLE 1. Distribution of subjects in the study according to age group

Variable	Absolute number	Percentage (%)
Total	1254	100.0
Age (mean \pm standard deviation)	39.8 \pm 10.7	
Age-group		
≤ 20 years	34	2.7
21-30 years	245	19.5
31-40 years	429	34.2
41-50 years	340	27.1
>50 years	206	16.4

Residence		
Urban	809	66.4
Rural	410	33.6
Marital status		
Single	11	0.9
Married	1155	99.1
Status of menopause		
In menopause	221	17.8
Not in menopause	1021	82.2
Previous cytological tests		
Yes	22	1.8
No	1232	98.2
Adequacy of Pap smear		
Yes	1134	90.4
No	120	9.6

* Any discrepancy with the total number of women (n=1154) is due to missing information.

Table 2 below presents data regarding the presence of LSIL, HSIL, ASC-US, atrophy, inflammation, and squamous cell carcinoma in adequately obtained cervical smears.

It can be noted that in 65.2% of appropriately obtained smears, the Pap test was normal. Meanwhile, the prevalence of LSIL was 4.1%, the prevalence of HSIL was 1.6%, the prevalence of ASC-US was 3%. No case of squamous carcinoma was detected. Atrophy was present in 5.9% of cases (these were considered normal since they were seen in subjects over 45 years of age), whereas inflammation was present in 20.2% of appropriately obtained strips. Globally, the Pap test was positive (abnormal) in 8.7% of appropriately obtained smears.

TABLE 2. The presence of cervical lesions in adequately obtained smears

Variable	Absolute number	Percentage (%)
Total	1134	100.0
Pap test result		
Negative (normal)	739	65.2
LSIL	47	4.1
HSIL	18	1.6
ASC-US	34	3.0
Atrophy	67	5.9
Inflammation	229	20.2
Squamous carcinoma	0	0.0
Overall Pap test result		
Negative (normal)	1035	91.3
Abnormal (LSIL, HSIL, ASC-US)	99	8.7

Table 3 presents the distribution of Pap test results according to the age of the women included in the study.

A progressive, statistically significant increase in the percentage of abnormal Pap test results is evident with increasing age of women. For example, in women aged 20 years or younger no Pap test was abnormal, but the percentage of Pap tests with an abnormal result increases to 2.1% in women aged 21-30 years, 4.1% in women aged 31-40 years old, it increases even more reaching 11.7% in women aged 41-50, and peaks in women over 50 where approximately one in four tests (23.5%) were abnormal.

TABLE 3. Distribution of Pap test results according to the age of the women in the study

Variable	Pap test result		P-value
	Negative	Abnormal	
Age-group			
≤20 years	33 (100.0) *	0 (0.0)	<0.001 **
21-30 years	229 (97.9)	5 (2.1)	
31-40 years	370 (95.9)	16 (4.1)	
41-50 years	263 (88.3)	35 (11.7)	
>50 years	140 (76.5)	43 (23.5)	
Total	1035 (91.3)	99 (8.7)	

* Absolute number and row percentage (in parenthesis).

** P-value according to the chi-square test.

Table 4 presents the relationship between selected independent characteristics of women in the study and the abnormal result of the Pap test. It can be noted that increasing age of the woman is a statistically significant risk factor for an abnormal Pap test result. Thus, compared to women aged 21-30, women aged 31-40 are about 2 times more likely to have an abnormal Pap test reading, those aged 41-50 are 6.1 times more likely to have to have an abnormal Pap test reading and women over 50 are 14.1 times more likely to have an abnormal Pap test reading. These differences are highly statistically significant ($P < 0.001$).

On the other hand, when age is treated as a numerical variable, it turns out that for every 1 year increase in women's age, the likelihood of receiving an abnormal Pap test result increases by 1.09 times, and this relationship is also highly significant ($P < 0.001$). Women in urban areas were 1.43 times more likely to have an abnormal Pap test compared to women living in rural areas, but this difference is not statistically significant ($P > 0.05$) [data not shown in Table 4]. After controlling for the confounding effect of age (Model 2 in Table 32), the association was again not statistically significant but weakened further ($OR = 1.27$), implying that the role of place of residence in an abnormal Pap test reading is even smaller.

Regarding menopause, in the univariate analysis menopausal women were 4.72 times more likely to have an abnormal Pap test compared to non-menopausal women, and this difference was highly statistically significant. ($P<0.001$) [data not shown in Table 4], giving the impression that menopause itself is a risk factor for obtaining an abnormal Pap test reading. However, after controlling for the confounding effect of age (model 2 in Table 4), it is observed that the relationship changes completely, goes in the opposite direction ($OR=0.93$) and loses statistical significance ($P>0.05$). This implies that menopause itself is not a risk factor for getting an abnormal Pap test reading but in fact age is the main risk factor.

TABLE 4. Association of selected factors with abnormal Pap test result: odds ratio (OR) from binary logistic regression

Variable	Odds ratio (OR) *	95% Confidence Interval (95% CI) **		P-value ***
		Lower limit	Upper limit	
Age-group				<0.001 (2)
21-30 years	1.00	Reference	Reference	Reference
31-40 years	1.98	0.72	5.48	0.188
41-50 years	6.09	2.35	18.82	<0.001
>50 years	14.07	5.44	36.36	<0.001
Age (in years)	1.09	1.07	1.12	<0.001
Residence				
Rural	Reference	Reference	Reference	0.338
Urban	1.27 §	0.79	2.07	
Menopause status				
Not in menopause	Reference	Reference	Reference	0.835
In menopause	0.93 §	0.49	1.76	

* Odds ratio of an abnormal Pap test result versus a normal result.

** 95% confidence interval (95% CI) for the odds ratio.

*** Statistical significance value according to Binary Logistic Regression.

§ Age-adjusted OR.

Discussion

The present study, which included 1254 women who presented to the gynecological service of the Fier Regional Hospital during the period 2013-2014 to perform a Pap test, represents one of the few studies that shed light on the demographic profile of women who undergo a Pap test, data related to previous gynecological diseases, previous pregnancies, and menopause, as well as data related to Pap test results, suitability of smears, and factors associated with an abnormal Pap test result.

To our knowledge, there are no similar studies conducted earlier in Albania that shed light on the above-mentioned aspects of women who presented to have a Pap test at the Fier Regional Hospital at their own request or recommended by their family doctor and/or other health care professionals. We tried to identify other studies conducted earlier regarding the result of the Pap test among women in our country. We were able to find a study conducted at the “Queen Geraldine” Obstetric-Gynecological Hospital (Xhani and Filipi, 2013) and a study conducted among women presented for a Pap test at the American Hospital, in Tirana (Kapllanaj, 2022). Also, a summary report of the Institute of Public Health was identified regarding the results of the National Cervical Cancer Screening Program in Albania, compiled in 2020 (Ylli et al., 2020). It can be affirmed with conviction that the data related to the results of the Pap test among women in our country are insufficient, while the association of these results with various factors is a completely unexplored field in our country. In this context, the present study takes on even greater importance.

The study in Tirana that studied 5146 smears during 200-2012 in the premises of the University Obstetric-Gynecologic Hospital “Queen Geraldine” in Tirana reported a global prevalence of abnormal Pap test of 4.8% (Xhani and Filipi, 2013). In our study, the overall prevalence of abnormal Pap test reading was 8.7%, which is significantly higher than in the study in Tirana. However, the overall abnormal reading rate in our study is lower than the abnormal reading rate among 4,223 smears read at American Hospital (private hospital) during 2019-2020 (1 year), where 25.4% of all smears were abnormal on Pap test (Kapllanaj, 2022). It is clear that the figure in our study is in an intermediate position between the total prevalence of abnormal reading of the Pap test reported by the study in Tirana and the corresponding figure reported in the study at the American Hospital. The reasons for these discrepancies are impossible to be determined from the present study, and therefore further studies are needed to clarify the situation.

On the other hand, data from the evaluation report of the National Cervical Cancer Screening Program in Albania reported that among 12,300 women examined with the HPV test (not the Pap test) until December 2019 (about one year after the start of National Program), the level of positivity for high-risk HPV lesions was 6.1% (Ylli et al., 2020). However, the National Program uses the HPV test, not having direct comparability with our study, where the Pap test was used.

In the international arena, different levels of Pap test positivity are reported, depending on the countries (or more precisely, the level of development of the countries) where the studies are conducted. For example, a study among 1,650 women in India reported an overall prevalence of abnormal Pap test readings (including LSIL, HSIL, and ASC-US) of 8.5% (Sachan et al., 2018), a figure that is entirely similar to the corresponding result in our study. Another study in India

among 550 women reported an overall prevalence of abnormal Pap test reading at 6.7% (Arun, Singh, & Gupta, 2018). A study in Iran among 1000 women reported that the Pap test was positive in 2.6% of them (Pourasad-Shahrak, 2015) while another study in Iran among 440 women aged 20-65 years reported that the Pap test was abnormal in 29.9% of cases (Vahedpoor et al., 2019). In South Korea, a large study that included more than 4 million smears of women aged 30 and over screened with a Pap test reported that the overall rate of Pap test positivity was 6.6% (Han et al., 2012).

The prevalence of LSIL, HSIL and ASC-US in the study in Tirana was 1.6%, 0.18% and 2.76%, respectively (Xhani and Filipi, 2013); in our study, the respective prevalence are 4.1%, 1.6% and 3%, i.e. higher; meanwhile, the study at the American Hospital did not report the specific prevalence of lesions detected through the Pap test, therefore the comparison for specific diagnosis is impossible. A study in India that included 500 women aged 21–65 years reported that the prevalence of LSIL, HSIL and ASC-US was 10.3%, 0.48% and 6.47%, respectively (Sharma and Leekha, 2018).

Studies show that the usual (conventional) Pap test is a procedure that can be performed satisfactorily in low-income countries, including the poorest countries in Africa, Asia and the Americas (Suba and Raab, 2004). However, in low- and middle-income countries there are many challenges or barriers to the implementation of cervical cancer screening programs; the main obstacle is related to the complexity of screening processes, poverty, limited access of the population, lack of knowledge and awareness about cervical cancer, lack of sustainable preventive programs, lack of health care infrastructure that is necessary for these screening programs and lack of trained personnel, etc.; social, religious, and cultural barriers may play an important role as well; finally, government resources can be allocated to other existing programs that have greater visibility and popularity compared to cervical cancer screening programs (Catarino et al., 2015).

In our study we evidenced a strong and statistically significant association between women's age and abnormal Pap test results and specific Pap test diagnoses. This finding is consistent with studies within our country and in the international arena. For example, the study in Tirana reported that the rate of abnormal Pap test results increased from 3.8% among women under 25 years of age to 6.3% among women aged 35-45; likewise, the prevalence of specific diagnoses of cervical lesions increased with increasing age (Xhani and Filipi, 2013). Even the study conducted at the American Hospital reported a statistically significant increase in the prevalence of abnormal Pap test readings with increasing age, from 22.93% in women aged 19-29 years, to 26.65% in women aged 30-39 years, 31.15% among women aged 40-49, 32.18% among women aged 50-59 and 35.78% among women aged 60-69, decreasing (to 26.85%) among women aged 70 and over (Kapllanaj, 2022).

The association of the prevalence of the diagnosis of cervical lesions in the Pap test with the age of the patients is a finding that is also reported in the international literature. Thus, a study among 1650 women reported that the prevalence of LSIL, HSIL, and ASC-US increased with age, but LSIL and HSIL had the highest prevalence at 41-50 years of age and ASC-US at 51-60 years of age (Sachan et al., 2018). However, the large study in South Korea (which examined over 4 million smears of women aged 30 and over) reported the highest Pap test positivity in the 30-39 age group (7.25%), followed by from the 40-49 age group (6.81%), decreasing further in the 50-59 age group (6.46%) and even further in women 60 years and older (6.34%) [Han et al., 2012].

The prevalence of HPV infection was higher among women living in urban areas (6.9%) compared to women living in rural areas (4.7%) [Ylli et al., 2020]. This finding is in accordance with the finding of our study where the positivity of the Pap test was higher in women from urban areas compared to rural ones; this can be explained by the earlier sexual activity and the greater number of sexual partners among women living in urban areas.

Socio-economic factors also play a role in understanding the groups that have less access to cervical cancer screening programs, which include especially people with low incomes, ethnic minorities, etc. Socio-economic factors operate mainly through low education level, which is a risk factor for cervical cancer, through lower access to screening programs, lower access to preventive services due to low information and awareness, etc. (Singini et al., 2021). A possible explanation for the increase in the positivity of the Pap test among women in Fier Prefecture may include precisely the low socio-economic level of older women, who may be in more difficult economic conditions and have difficulties to access the cervical cancer screening service; consequently, they probably present much later to health care services at a time when a large proportion of them are probably already affected by the condition and have developed various pre-cancerous lesions at different stages. However, this remains only an assumption, which must be verified through other studies in our country.

Reports regarding the level of Pap test positivity in different populations are very different. The main factors relate to the reasons mentioned earlier, including the different procedures for obtaining, fixing, storing, preparing the smears, the different training of the cytological professionals who read the smears, the different populations where the screening is applied, the highly variable infrastructure in different countries and areas, application of non-standardized criteria and standards, etc.

Conclusion

The level of Pap test positivity among adult women in Fier Prefecture is comparable to international reports and it lies between the values reported by previous studies in our country. Given that the Pap test will continue to be used for a long time as a main screening test in our country, then it is necessary for women to be aware of this important examination and to improve the capacities for the correct collection of cervical smears and their correct reading and interpretation. There is need to increase the awareness of women about cervical cancer and their participation in cervical cancer screening programs.

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Neonatal Encephalopathy in the Term Newborn

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Abstract

Introduction: Perinatal brain injury is the third leading cause of child mortality globally.

Purpose: Evaluation of perinatal risk factors for encephalopathy in neonates in order to prevent deaths and disabilities

Method: This is a prospective, case-control study conducted in the Maternity Hospital "K. Gliozheni" during the time period 2012 - 2016. 65 newborns at term ≥ 37 weeks diagnosed with encephalopathy according to the Thompson classification >5 within 12 hours of birth were compared with a control group, infants without encephalopathy in a 1:1 ratio selected casual and gender-appropriate.

Results: Total antepartum risk factors were found in (70.8%) of cases and (18.5%) of controls ($p < 0.01$). Sentinel events were found in 38.5% of cases and in 9.2% of controls. ($p < 0.01$). Acute intrapartum events in total were found in (38.5%) of cases and (9.2%) of controls ($p < 0.01$). 43.1% of babies had a combination of antepartum and intrapartum factors ($p < 0.01$). Significant and independent predictive factors of risk for neonatal encephalopathy resulted: from maternal factors, mother's age > 35 years ($p = 0.03$). Of the intrapartum factors: pregnancy with twins ($p < 0.01$), hypertension/preeclampsia ($p < 0.01$), non-reactive FHR before delivery ($p < 0.01$).

From intrapartum factors: breech birth ($p=0.01$), emergency cesarean section ($p=0.01$), meconial amniotic fluid ($p=0.02$), prolonged birth ($p=0.01$).

Conclusion: Knowledge of perinatal risk factors associated with neonatal encephalopathy is essential for developing interventions to prevent neonatal death and disability.

Key words: *neonatal encephalopathy, hypoxic ischemic encephalopathy, etiological factors*

Introduction

Neonatal encephalopathy is estimated to affect 2-9:1000 term newborns, while EHI affects 1.5-2.6:1000 term newborns. As the term “neonatal encephalopathy” became increasingly favored, studies show that the diagnosis of “birth asphyxia” declined between 1991 and 2000 (1-3). It is essential for health care providers to understand that the term “neonatal encephalopathy” is simply a descriptive term for the neurological condition of the newborn, and does not determine the underlying etiology of the condition. Unfortunately, the term hypoxic-ischemic encephalopathy (EHI) is the most common term still used to describe any newborn showing signs of encephalopathy, but this term may not be accurate (4). The term Hypoxic-Ischemic Encephalopathy should not be used, if there is no evidence of perinatal asphyxia as the primary cause of the encephalopathy (5). EHI is a frequent cause of neonatal encephalopathy, but the differential diagnosis should also be made with other causes such as infections, epilepsy, genetic, maternal, metabolic or toxic, so health care providers should be familiar with the evaluation, diagnosis and treatment of various causes of Neonatal Encephalopathy (6,7).

The use of the term neonatal encephalopathy and Hypoxia Ischemia is often contradictory. It has been proposed that the term neonatal encephalopathy should be used for full-term and near-term infants who have not shown any “sentinel” events (8,9). It is difficult to prove the presence of cerebral hypoxia except in animal models or in cases of neonatal cerebral ischemia. All currently used clinical and laboratory parameters including umbilical blood pH and seizures are nonspecific (10). Some of the cerebral lesions shown in the MRI of EN patients can be provoked in animal models by inducing hypoxia/ischemia, but this again does not prove that the entire spectrum of EN manifestations is a consequence of cerebral hypoxia (11-13). There are few studies conducted on a population basis that have shown that there are antepartum risk factors, and not just asphyxia, that are associated with EN (14). On the contrary, some authors state that EHI is the cause of EN in 50-80% of cases, based on clinical criteria, EEG and MRI (15). The purpose of the

study is to evaluate perinatal risk factors for encephalopathy in neonates in order to prevent deaths and disabilities.

Method

Type of study

This is a prospective, case-control study. The study was conducted at the Maternity Hospital “K. Gliozheni” during the time period 2012 - 2016.

Sample

Patients included in the study:

- Newborns at term ≥ 37 weeks diagnosed with encephalopathy according to the Thompson classification >5 within 12 hours of birth.
- Babies with encephalopathy were compared with a control group, babies without encephalopathy in a 1:1 ratio, randomly selected and adjusted according to gender.
- Control babies were included in the study if they were at term and the Thompson score was <3 .
- Neurological assessment was performed at the beginning of the study for cases and controls and then every day for 5 days (cases only).
- Encephalopathy was graded (mild, moderate, or severe) on the most severe day between days 1 and 5, according to the modified Sarnat classification.

Exclusion criteria from the study:

- Preterm babies (< 37 weeks);
- babies with marked dysmorphism or babies with at least one major congenital anomaly;
- babies with hepato-splenomegaly, cataract and thrombocytopenia indicative of intrauterine infection;
- babies with microbiological evidence of early neonatal infection with positive bacteriological cultures of blood or cerebrospinal fluid collected within 24 hours of birth; and infants whose neurological condition normalizes with correction of hypoglycemia
- Babies, cases and controls who have used antibiotics

Examinations

Umbilical cord blood gas examination, including pH and base excess values, was routinely obtained at the time of delivery in all neonates, including controls.

Assessment of amniotic fluid volume at term; oligohydramnios was defined as an amniotic fluid index <5 cm and polyhydramnios as a vertical pocket >8 cm.

Small for gestational age was defined as a birth weight <10th percentile adjusted for sex and gestational age according to WHO.

Physiological variables monitored:

- Heart rate
- Respiratory frequency, saturation
- Arterial pressure
- The temperature

Clinical evaluations include:

- Neurological status on admission and during NICU stay,
- Type of respiratory support required,
- Determining the degree of encephalopathy,
- The presence of seizures and the time of their onset,
- Time of full initiation of oral feeding,
- Neurological examination at discharge.

Results

65 babies with encephalopathy and 65 controls - babies without encephalopathy - took part in the study.

Regarding the clinical characteristics for Apgar score 1 min and Apgar score 10 min, the values were smaller in the cases with a significant difference with the controls ($p < 0.01$).

For Apgar score 1 min <3 there were 60 (92.3%) of cases and 2 (3.1%) of controls, for score 4-7 there were 5 (7.7%) of cases and 52 (80%) of controls and for score > 7 were only 11 (17%) of controls and none of the cases.

For Apgar score 10 min <3 there were 33 (50.8%) of the cases and none of the controls, for score 4-7 there were 32 (49.2%) of the cases and 7 (10.8%) of the controls and for score >7 there were only 58 (89.2%) of the controls and none of the cases.

The need for resuscitation prevails in cases compared to controls ($p<0.01$).

There was no need for resuscitation in only 1 (1.5%) of the cases and 58 (89.2%), of the controls, inhalation, oxygen mask or both were applied in 23 (35.4%) of the cases and 7 (10.8%) of the controls, positive pressure ventilation was applied in 23 (35.4%) of the cases and 1 (1.5%) of the controls, while only endotracheal intubation and intubation accompanied by cardiac massage was applied in 5 (7.7%) and 14 (21.5%) respectively. in cases. Birth trauma affected 12 (18.5%) of the cases and 1 (1.5%) of the controls ($p<0.01$). Table 1 presents the characteristics of encephalopathic infants and controls.

TABLE 1. Characteristics of encephalopathic infants and controls

Characteristics	Encephalopathic infants (n=65)	Controls (n=65) P	P
Apgar score min. 1			<0.01
<3	60 (92.3)	2 (3.1)	
4-7	5 (7.7)	52 (80.0)	
>7	0	11 (17.0)	
Apgar score min. 10			<0.01
<3	33 (50.8)	0	
4-7	32 (49.2)	7 (10.8)	
>7	0	58 (89.2)	
Resuscitation			<0.01
Jo	1 (1.5)	58 (89.2)	
Suction reflex, oxygen mask or both	23 (35.4)	7 (10.8)	
ventilation	23 (35.4)	1 (1.5)	
Endotracheal intubation	5 (7.7)	0	
Intubation and cardiac massage	14 (21.5)	0	
Birth trauma			<0.01
Yes	12 (18.5)	1 (1.5)	
No	53 (81.5)	64 (98.5)	

Clinical characteristics of babies with neonatal encephalopathy: in relation to the degree of encephalopathy, the average degree predominates in 36 (55.4%) of the cases, followed by the severe degree in 21 (32.%) and the mild degree in 7 (10.8%) of the cases ($p < 0.01$).

Regarding neurological signs > 48 hours, weakening of tone and reflexes was observed in 41 (63.1%) cases, agitation in 28 (43.1%) cases and MODS appearance in 44 (67.7%) cases ($p=0.4$).

Convulsions were observed clinically in 29 (44.6%) cases, lack of absorption in 51 (78.5%) cases ($p<0.01$), metabolic acidosis in 27 (41.5%), 16 (24.6%) of the cases ended in exitus before exit.

Neurological condition at discharge was normal in 22 (45%) cases, abnormal tone in 14 (28.6%), abnormal tone and absorption in 5 (10.2%) and abnormal tone, absorption and level of consciousness in 8 (16.3%)) in cases, ($p<0.01$).

TABLE 2. Multivariate analysis of intrapartum risk factors for encephalopathy. Logistic regression

Intrapartum factors	OR	aOR	95%CI	P
Cord prolapse	1.0	1.12	0.41 – 5.12	0.9
Detachment of the placenta	11.6	2.28	0.85 - 4.75	0.1
Amniotic fluid embolus	7.3	1.76	0.68 - 2.99	0.4
Shoulder dystocia	7.3	1.80	0.80 - 2.86	0.2
Acute onset of bradycardia	16.7	2.38	0.83 - 5.85	0.1
Podalic birth	7.3	3.35	1.38 - 8.11	0.01
Uterine rupture	6.5	1.73	0.68 - 3.44	0.1
Emergency cesarean section	4.6	3.91	1.96 - 7.84	0.01
Meconial amniotic fluid	5.8	3.04	1.56 - 9.47	0.02
PROM > 18 hours	6.7	2.12	0.87 – 3.12	0.1
Prolonged labor	4.7	3.84	1.56 - 9.47	0.01

Discussion

Total antepartum risk factors were found in 46 (70.8%) cases and 12 (18.5%) controls ($p<0.01$). Significant factors resulted:

- Diabetes mellitus
- Hypertension/preeclampsia
- Chorioamnionitis
- Obesity
- Non-reactive prenatal Fetal Heart Rate
- Of the prenatal risk factors with diabetes, there are 8 (12.3%) of the case mothers and 2 (3.1%) of the controls ($p=0.05$),
- Hypothyroidism in 3 (4.6%) of cases and 1 (1.5%) of controls ($p=0.3$),
- Hypertension/preeclampsia in 13 (20%) of cases and 3 (4.6%) of controls ($p<0.01$), -
- Chorioamnion in 6 (9.2%) of cases and 1 (1.5%) of controls ($p=0.05$),

- Marked anemia during pregnancy in 4 (6.2%) of cases and 1 (1.5%) of controls ($p=0.01$).
- Obesity in 10 (15.4%) cases and 2 (3.1%) controls ($p=0.01$),
- Previous cesarean delivery in 12 (18.5%) of cases and 5 (7.7%) of controls ($p=0.07$),
- Neurological pathology (hemiparesis) in 3 (4.6%) cases and none of the controls ($p=0.08$),
- No prenatal care in 3 (4.6%) of the cases and none of the controls ($p=0.08$), SGA in 7 (10.8%) of the cases and 4 (6.2%) of the controls ($p=0.3$),
- Oligohydramnios in 5 (7.7%) of cases and 2 (3.1%) of controls ($p=0.2$),
- Polyhydramnios in 5 (7.7%) of cases and 1 (1.5%) of controls ($p=0.09$).
- Non-reactive FHR before delivery was found in 21 (32.3%) cases and 1 (1.5%) of controls ($p<0.01$).
- Urinary infection was found in 6 (9.2%) cases and 2 (3.1%) controls ($p=0.1$).
- Streptococcus GBS + was found in 7 (10.8%) of cases and 3 (4.6%) of controls ($p=0.2$).
- Dysmorphic features / mother or father was found in 1 (1.5%) cases and none of the controls and
- Marked anemia of the baby at birth was found in 2 (3.1%) of the cases and 1 (1.5%) of the controls ($p=0.6$).

Sentinel events were found in 38.5% of cases and in 9.2% of controls, with a significant difference between them ($p<0.01$).

Acute intrapartum events in total were found in 25 (38.5%) of the cases and 6 (9.2%) of the controls, with a significant difference ($p<0.01$) of which:

- Cord prolapse in 1 (1.5%) case and in 1 (1.5%) control,
- Detachment of the placenta in 10 (15.4%) of the cases and 1 (1.5%) of the controls ($p<0.01$),
- Amniotic fluid embolism in 3 (4.6%) cases and none of the controls ($p=0.08$),
- Shoulder dystocia in 3 (4.6%) cases and none of the controls ($p=0.08$),
- Acute onset of bradycardia in 7 (10.8%) cases and none of the controls ($p<0.01$),
- Podal birth in 8 (12.3%) cases and none of the controls ($p<0.01$),
- Uterine rupture (external or burden-related factors) in 6 (9.2%) cases and 1 (1.5%) of controls $p=0.05$.
- Emergency cesarean section in 15 (23.1%) of cases and 1 (1.5%) of controls, 4 (6.2%) $p<0.01$.
- Meconial amniotic fluid in 18 (27.7%) of cases and 4 (6.2%) of controls $p<0.01$, -PROM > 18 hours in 16 (24.6%) of cases and 3 (4.6%) of controls $p<0.01$,

- Prolonged labor in 16 (21 (32.3%) of cases and 6 (9.2%) of controls $p<0.01$.
- 27 (43.1%) of the babies had a combination of antepartum and intrapartum factors compared to 4 (6.2%) of the controls, ($p<0.01$).

Regarding the maternal factors, the average age of the mothers of the cases is greater $M=28.7 (\pm 5.2)$ years compared to the age of the control mothers $M=26.5 (\pm 4.8)$ years, $p=0.01$.

In cases, a low economic level prevails in 16 (24.6%) compared to 3 controls (4.6%), with a significant difference between them ($p<0.01$).

Also, the low level of education prevails in 15 cases (23.1%) compared to 5 controls (7.7%), with a significant difference between them ($p=0.02$).

Assisted fertilization was performed in 19 (29.2%) of the cases and 4 (6.2%) of the controls, with a significant difference between them ($p=0.02$).

Previous neonatal death occurred in 7 (10.8%) of the cases and 1 (1.5%) of the controls, with a significant difference between them ($p=0.03$).

Twin pregnancy occurred in 10 (15.4%) of the cases and 1 (1.5%) of the controls ($p<0.01$).

Metabolic disorders of the fetus were found in 17 (26.2%) of the cases and 2 (3.1%) of the controls, with a significant difference between them ($p<0.01$).

Myopathy was found in 7 (10.8%) of the cases and 1 (1.5%) of the controls, with a significant difference between them ($p=0.03$).

The results of our study are similar and comparable with other studies reported in literature (16-18). Accurate prediction of the severity of long-term complications of neonatal encephalopathy is difficult, although clinical, laboratory and imaging criteria have been used (19,20).

Conclusion

Correct recognition and interpretation of the term neonatal encephalopathy and not confusing it with the term hypoxic-ischemic encephalopathy is important for diagnosis and treatment. Identification of risk factors before birth and timely intervention in such cases can minimize fetal injury and occurrence of NE. Introduction of advanced methods of treating encephalopathy such as hypothermia will improve the survival and outcome of the infants. The use of advanced imaging methods for diagnosis such as magnetic resonance will provide more accurate diagnosis.

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The Reduction of Metal Artifacts in Thorac and Neck Regions in Ct Scan _____

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Abstract

Introduction: CT scan is a very important image modality for examining the patient due to information we receive from it in a very short time. Receiving high quality images is challenging but the evolution of the CT scan has helped the radiology technician a lot. In this article we are going to focus on metal reduction artifacts. In polytrauma hospitals, when orthopedic, neurosurgical, and surgical clinics are mostly

with patients that have implant on them, having tools to reduce the artefacts from metals is crucial to not miss anything in regions around.

Aims and Objectives: The aim of this article is to show the effectiveness of I-MAR as an important tool to use in patients with implant on, especially in thorax and neck regions.

Material and methods: In this article we are showing 2 study case images from 2 patients received from our CT scan in radiology department of University Trauma Hospital. Siemens CT go. Top is a 128-slice scan with two beam sources.

Conclusion: After comparing the raw dates images and images with I-MAR on, we concluded that I-MAR is a very useful algorithm to reduce artifacts. By using it we can receive more information about soft tissues around implant and the regions nearby affected by artefacts. Using this algorithm helps the technician receive a better-quality image.

Key words: *I-MAR, artefacts, implants, patient, better quality*

Introduction

The advance of technology has been a great success to archive different things in different fields benefiting humankind. Even in Medicine the impact of technology is tremendous which results in better health care service for patients. In radiology through years has been a great evolution regarding the machine we use in.

The discovery of CT scan by engineer Godfrey Hounsfield has been one of the greatest evolutions that radiology ever had. Being able to receive an image from a different angle has truly changed the way a patient can be diagnosed through the image we receive. The importance of receiving a quality image has always been a goal. There are several ways to do it.

Receiving an image from CT scan is a procedure requiring putting the patient in correct position and choose the right protocol but this is not all it takes to receive a high quality image.

So, this is what's challenging for radiology technicians nowadays: processing the image to have a final high-quality image. In this article we are focusing on the importance of IMAR to reduce metal artefacts because we will have seen them a lot in images in the future.

High density and high atomic metal implants cause dark and bright streaking artefacts to lead to the loss of information.

Any loss of information can lead to missing a diagnosis. That's why is important to take high quality image. According to Do et al. 2018 there are several ways to reduce metal artifacts as follows:

1. Detector collimation and pitch should be decreased, on the other hand voltage and mAs should be increased. This “trick” might overcome photon starvation and beam hardening, but we should find a balance between the quality of the image and the dose that patient take-ALARA principle. Also increasing voltage means decreasing soft tissue contrast.
2. Anti-scatter grid that every CT scan has nowadays. Scatter grids are parallel (one-dimensional) or crossed lamellas (two-dimensional) positioned between the individual detectors to absorb the scattered photons.⁴ This equipment helps in reducing artefacts.
3. Post processing is very important. The splay artifacts become worse when the reconstructed slice thickness becomes thinner. When the slice thickness is twice or greater than the width of the detector elements, the splay artifacts are decreased by thicker slice reconstruction and are essentially eliminated. If the slice thickness is 1 to 2 mm is a possible agreement between partial volume effect and artifact reduction. This thickness applies to larger anatomical regions. Increasing slice thickness is not recommended, for articular surfaces that require a high resolution like the wrist or ankle.⁴
4. Furthermore, to conventional iterative reconstruction algorithms, there are particular post-processing algorithms centered on minimizing metal artifacts like O-MAR (Philips), iMAR (Siemens) and MAR (GE), which are also known as projection-based artifact correction. Their common principle is based on a combination of corrected iterative data and raw data. The metal implant is removed from the original image by multi-threshold metal segmentation. Linear interpolation is executed on the sinogram and the in painted sinogram is combined with the original data to create the corrected image. To decrease blurring of the adjacent anatomic structures, this filtering and mixing step is performed repeatedly.

The iterative frequency split-normalized algorithm has been shown to upgrade the visibility of tissues adjacent to and distant from the implant. This algorithm is superior in comparison to conventional reconstruction with filtered back projection and metal artifact reduction with linear interpolation in hip prostheses and the spine implants.⁴

Patient 1: Thorax CT-Scan from neurosurgical clinic

Table 1: I-MAR applied thorax protocol

Protocol	Thorax– helical
Patient position	Supine head first

Area coverage	2cm superior the shoulder- upper abdominal region
Respiratory phase	Inspiration
Scan direction	Caudalcranial
Gantry angle	0
Slice thickness	5 mm
Increment	5 mm
Kv	120
Resolution	Standard
Collimation	64*0.625
Rotation time	0.75 s
FOV	512 mm
Enhancement	0.0
Recon (IRS)	Plain phase 2 mm/1 mm
Reconstruction	Axial, coronal, and sagittal
O-MAR	Selected – 5 mm thickness
Pitch	0.984
Matrix	512*512



The doctor requested a Chest CT scan for his patient. The radiology technician chose the protocol for chest and after the scanogram was taken, it noticed a spine implant. The technician activated IMAR- on-Spine implant to reduce the metal artefacts. In the image below we can compare the quality of image with and without IMAR.

FIG. A: raw data of the chest

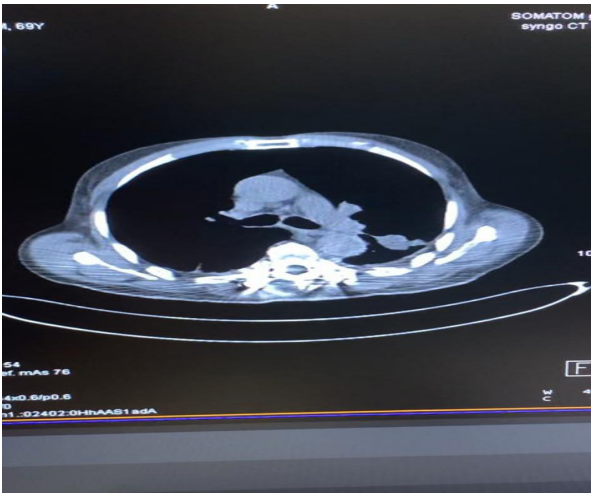
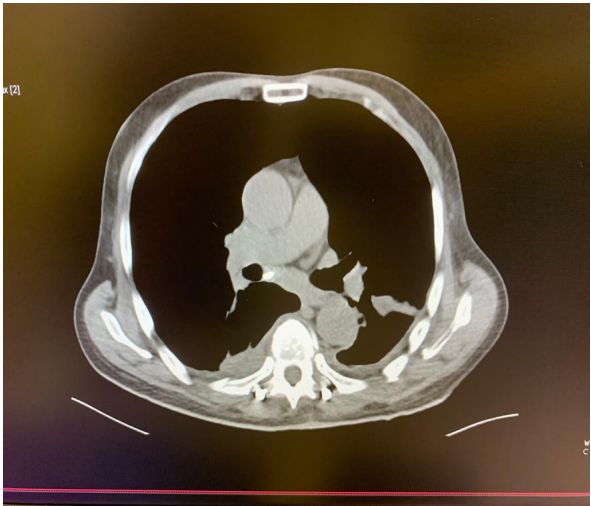


FIG. B: processed image with IMAR ON)

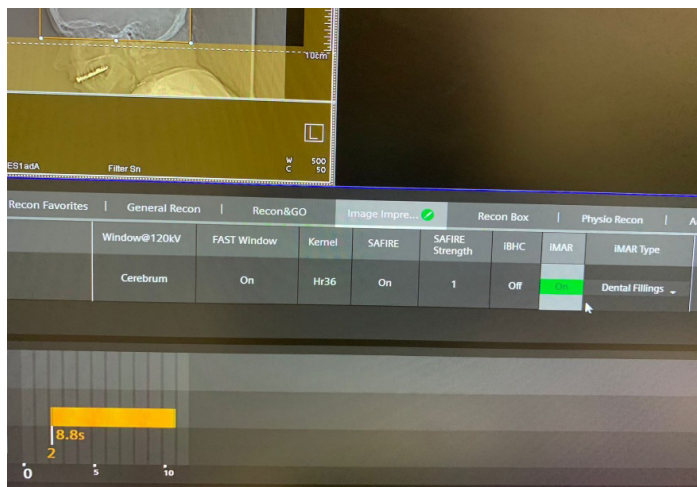


Patient 2. Neck CT scan

TABLE 2: i-mar applied neck protocol

Protocol	NECK– helical
Patient position	Supine head first
Area coverage	1 cm superior to skull vertex - middle T1

Scan direction	Cranial-caudal
Gantry angle	0
Slice thickness	5 mm
Increment	5 mm
Kv	120
Resolution	Standard
Collimation	64*0.625
Rotation time	0.75 s
FOV	200 mm
Enhancement	0.0
Recon (IRS)	Plain phase 2 mm/1 mm
Reconstruction	Axial, coronal, and sagittal
O-MAR	Selected – 5 mm thickness
Pitch	0.984



The doctor requested head and neck for the patient. After the scanogram, it is noticed dental filling. The radiology technician activated IMAR on, and the result of image was the reduction of dental filling artefacts especially in neck region.

FIG. A: Raw data image

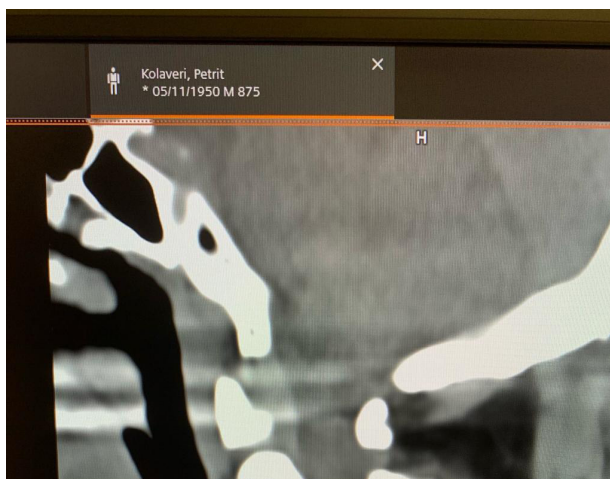
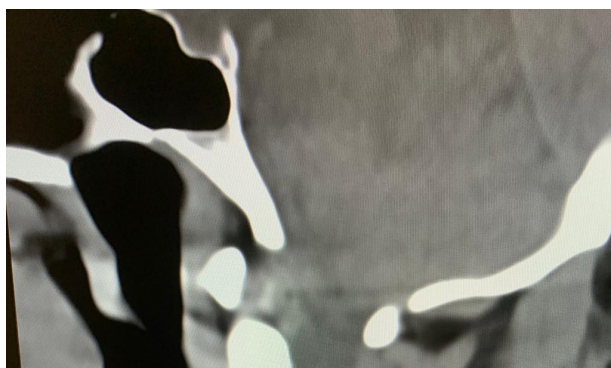


FIG. B: IMAR on images



In polytrauma patient this area is very important for any fracture of C-spine and damage of medulla spina)

As is seen in these two comparing images the reduction of dental filling is considerable due to IMAR tool.

To conclude

The advance of technology has been a great advantage for radiology to take better quality image from patients. The use of I-MAR algorithm significantly reduces the artefacts of metal. It is recommended to use it every time that radiology technician sees a metal implant in scanogram of patient.

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*Cardioembolic Stroke at Prosthetic Valve Endocarditis*_____

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Abstract¹

Background: Embolic events are frequent and life-threatening complications of infective endocarditis (IE), related to the migration of cardiac vegetations. The risk of embolism is very high in IE, with embolic events occurring in 20-50% of patients. The brain and spleen are the most common sites of embolism in left-sided IE. Stroke is a severe complication and is associated with increased morbidity and mortality rates.

Case presentation: A 73-year-old male presented to the Emergency Department, in May 2022 with right hemiparesis, aphasia and fever (38 °C). He reported a history of recurrent fever lasting two days. His pre-existing comorbidities included Diabetes Mellitus, Arterial Hypertension and Atrial Fibrillation on anticoagulation therapy with Acenocoumarole and INR levels within normal range. His past medical history was significant for an Aortic Valve Replacement, in September 2021 and a subsequent hospitalization in January 2022 with Prosthetic Valve Endocarditis. At the time, he presented with recurrent fever up to 38.8 °C, no significant findings in the transthoracic echocardiogram (TTE) and positive blood cultures for Enterococcus faecalis. It was started an antibiotic therapy. Laboratory and imaging studies in his latest admission revealed a cardioembolic stroke.

Conclusion: Infective endocarditis can present with a wide variety of symptoms and early diagnosis can be challenging. Establishing the diagnosis early in the course of the disease would enable a prompt implementation of empiric antibiotic therapy, potentially preventing serious complications. Keeping a high index of suspicion when evaluating patients at high risk for IE, might lead to more favorable outcomes of major complications associated with it.

Keywords: *Biological prosthetic aortal valve, bacterial endocarditis, stroke.*

Background

Endocarditis may be classified as native valve endocarditis, endocarditis in intravenous drug addicts and prosthetic valve endocarditis. The most severe form of Infective Endocarditis (IE) is Prosthetic Valve Endocarditis (PVE), which occurs in 1–6% of patients with valve prostheses.¹ 10–30% of IE cases belong to PVE and it is divided equally between mechanical and bioprosthetic valves. PVE is today still a challenge for internals with difficulties in diagnosis, therapeutic strategy and poor prognosis.

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The diagnosis of prosthetic valve Endocarditis is more difficult than in NVE (Native valve endocarditis). The base of diagnosis is echocardiography and blood cultures. Based on studies, it is frequent in a PVE to be found negative blood cultures and no significant echocardiographic findings.⁴

PVE needs immediate and aggressive treatment, especially antibiotic therapy, and reintervention when it is considered and valued with imaging.

Case presentation

A 73-year-old male presented to the Emergency Department, in May 2022 with right hemiparesis, aphasia and fever (38 °C). He reported a history of recurrent fever lasting two days.

Medical history

Regarding the medical anamnesis we note that the patient had Diabetes Mellitus, Arterial Hypertension, Atrial Fibrillation on anticoagulation therapy with acenocoumarole and INR levels within the therapeutic ranges. In September 2021 the bioprosthetic aortic valve was replaced. The patient suffered biological prosthetic Valve Endocarditis in January 2022, followed with readmission in the hospital. At that time, he was presented with recurrent fever up to 38.8 °C, shivers, sweating, dyspnea, cough. There were positive blood cultures for *Enterococcus faecalis* but no significant findings in the transthoracic echocardiogram (TTE) and transesophageal echocardiogram (TEE). It was started an antibiotic therapy.

Family history: Arterial Hypertension and Diabetes Mellitus

Physical examination: Conscious. Pale. Pulmonary bilateral basal crepitations with RF 20/min and SpO₂ 91%. Tachycardic, arrhythmic with HR 121/min and BP 90/60 mmHg. No oedema.

Neurological examination: Alert, oriented. Normal communication. Preserved verbal fluency. Cranial nerves: Paralysis facial dexter. Reflexes: ROT 2+ Bilateral. No pyramidal signs. Normal sensitivity. No meningeal syndrome. Hemiparesis dexter with F/M 3/5. No extrapyramidal signs. Hemiparetic gait.

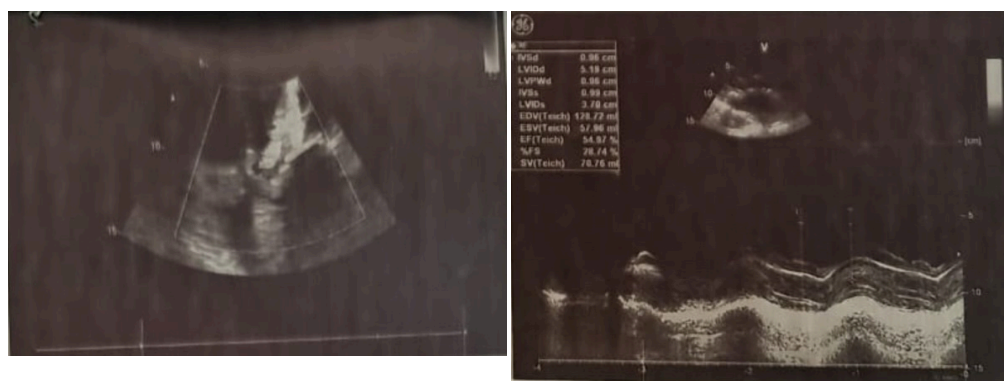
During hospitalization, the patient was examined with laboratory and imagery findings. The first imagery examinations of CT-Scan of head showed a subacute ischemic lesion in left basal ganglia (Fig. 1 &2).

FIG. 1&2 Non contrast computed tomography showed subacute ischemic lesion in left basal ganglia



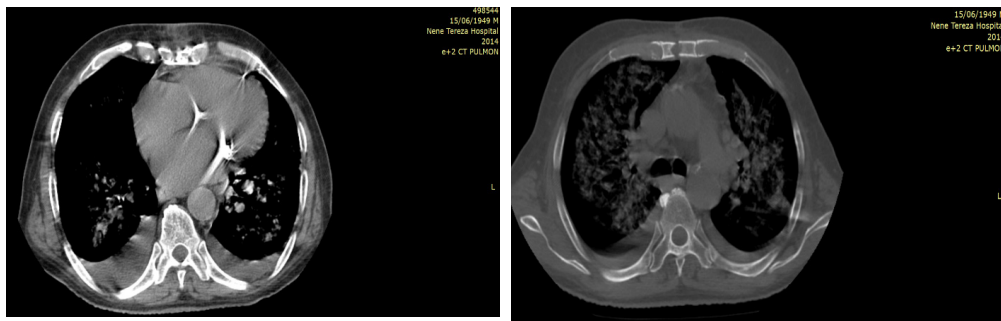
Based on his medical history (Bioprosthetic Aortic Valve Replacement, in September 2021), a subsequent transthoracic echocardiogram was accomplished. In transthoracic echocardiogram (TTE) resulted Aortal biological protheses with Vmax 3.2 m/s and moderated paravalvular jet. This data were compared to both TTE and TEE, made in January 2022, when he was presented with recurrent fever up to 38.8 grade Celsius, shivers, sweating, dyspnea, cough. (In January 2022 TTE and TEE resulted negative, even though the positive blood cultures for *Enterococcus faecalis*). TTE resulted with no significant findings. The hemoculture resulted again positive with *Enterococcus faecalis* (Vancomycin sensible, HLGR, HLSR)

FIG. 3&4. Transthoracicechocardiogram (TTE) resulted Aortal biological protheses with Vmax 3.2 m/s and moderated paravalvular jet.



It was impossible for the patient, because of his medical condition, to be provided with TEE. He presented as cardiac decompensated too. This followed a Thorax-CT (Fig.5&6.), which showed cardiomegaly, bilaterally pleural effusion, and diffuse central bilateral ground glass opacifications.

FIG. 5&6 Non contrast computed tomography showed cardiomegaly, bilaterally pleural effusion and diffuse central bilateral ground glass opacifications



So the therapy with diuretics i.v. accompanied Vancomycin 1g i.v. bid. On the other side, the patient was under Acenocoumarole when he was admitted in hospital, which was substituted with Enoxaparin 0.6 ml SC. To exclude other focuses or ascites, was performed an Abdomen-CT in the same time as the Thorax one. Here resulted only Hepatomegaly.

FIG. 7. Non contrast computed tomography showed hepatomegaly



Other findings

The full Blood Count analysis showed: WBC 12100/mm³ (n.v 4000-10000), HGB 7.3 g/dl (n.v 11.0-16.5), RBC 2820000/mm³ (n.v 4.2-6.1 x 10⁶), HCT 23.1% (n.v 35.0-50.0), MCV 81.8 (n.v 80-97), MCH 25.7 (n.v 26.5-33.5), PLT 520x10³ (n.v 150-400); ESR 53 mm/h

Laboratory findings were as follows: prothrombin time (PT)— INR 4.63 (n.v. < 1.2), activated Partial Thromboplastin Time (aPTT) 15 (n.v. < 1.20), Alkaline Phosphatase 46 U/L (n.v. 40–150), Alanine aminotransferase ALT 6 U/L (n.v. 0–45), Aspartate aminotransferase AST 8 U/L (n.v. 0–35), GGT 18 U/L (n.v 12–

64), C-Reactive-Protein (CRP) 5.66 mg/L (<0.5), PCT 1.1 ng/ml (<0.1), Serum Urea 55.3 mg/dl (n.v 10-43), Creatinine 0.79 mg/dl (n.v 0.5-1.2), Total Protein 6.0 g/dl (5.8-7.6), Albumin 3.0 g/dl (3.2-4.6), Potassium 3.5 mmol/l (n.v 3.5-5.1), Sodium 135 mmol/l (n.v 136-146), Chlor 102 mmol/l (n.v 101-109), Glycemia 160 mg/dl (n.v 74-106), Bilirubin 1.13 mg/dl (n.v 0.5-1.2), TSH 0.76 mu/ml, HbA1C 6.5%, Ac.uric 6.3 mg/dl, Ferritin 42 ng/dl (22-234), CK 35 U/l (30-200), Ck-mb 1.0 ng/dl (<5.2), Troponin I <0.019 ng/dl (<0.034), NTproBNP 4779.8 pg/dl (<125), D-Dimer 2.9 ug/ml (<0.5)

Lipid profile: Cholesterol 112 mg/dl (n.v 140-220) and Trygliceride 145 mg/dl (n.v 50-150);

Urine analysis: Albumin 0.25 mg/dl; RBC 1-2/mm³ (0-5); WBC 1-2/mm³ (0-5);

Urine culture: Negative

Hemoculture: Positive *Enterococcus faecalis* (Vancomycin sensible, HLGR, HLSR)

Treatment

The anticoagulation therapy with Enoxaparin 0.6 ml SC was carried on and substituted Acenocoumarole (INR 4.63 when he was admitted in hospital). Secondly, he was treated with Furosemide 60 mg i.v./d, Spironolacton 25 mg/d, Nebivolol 5 mg/d p.os, Vancomycin 1g i.v. bid, Cerebrolysin 10 ml i.v. bid, Insulin Lantus 18 UI SC, Atorvastatin 20 mg/d p.os and Omeprazole 40 mg i.v./d. Anemia was detected as he was hospitalized with Hb 7.3 g/dl. That was followed by blood transfusion and after 2 packed red blood cells resulted Hb 9.1 g/dl, RBC 3530000/mm³ and HCT 28.5%.

Discussion and conclusions

This case is defined as early PVE (Based on ESC recommendations^{2,3}: An early prostatic valve endocarditis is considered every IE, that occurs within 1 year of surgery). There is also the term “late PVE”, which is defined as IE occurring beyond 1 year. The significance of this classification is the importance of microbiological profiles differences observed before and after this time point.

In this case, the patient was hospitalized initially in September 2021 (Implementation of Biological prosthetic Valve) and after 4 months, in January 2022, was rehospitalized initially with fever up to 38.8 °C, shivers, sweating and later with dyspnea and cough.

On the other side, the Duke criteria have been shown a lower sensitivity in the diagnosis of PVE. The early postoperative period and a persistent fever should be valued always carefully and the broad of examinations in this case can help us judge. The diagnosis of IE is based mainly on the results of echocardiography and blood cultures. Based on ESC recommendations⁴⁻⁹, the main causes of an early PVE are Staphylococci, Fungi and Gram-negative bacilli, especially Staphylococci and enterococci. The clinical conditions and positive blood cultures for *Enterococcus faecalis* made us think more as a suspect of IE. This followed immediately the treatment with antibiotics, in this case Vancomycin, based on AntibioGram.

The mortality rate in PVE is considered 20–40% because of its poor prognosis and late complications. There are several factors including older age, early PVE, heart failure, diabetes mellitus, stroke, healthcare-associated infections, staphylococcal or fungal infection etc.

There is also a high risk for complications, including embolic stroke, despite appropriate antimicrobial treatment. Based on studies, approximately 35% of patients with IE have symptomatic cerebrovascular complications and 80% of them have stroke evidence on imaging.

As a new Infective Endocarditis in a prosthetic valve should be followed by a new intervention. Based on studies, patients with IE are at risk for bleeding complications, particularly intracerebral hemorrhage. In these cases, intracerebral hemorrhage may result from hemorrhagic transformation of an embolic stroke, rupture of a mycotic aneurysm, or septic arteritis with hemorrhage from vessel wall erosions.

This followed a multidisciplinary consult, which based on clinical condition, laboratory findings, imaging, high risks of reintervention decided to postpone the surgery intervention until a new valuation after 4 weeks.

Infective endocarditis can present with a wide variety of symptoms and early diagnosis can be challenging. Establishing the diagnosis early in the course of the disease would enable a prompt implementation of empiric antibiotic therapy, potentially preventing serious complications. Keeping a high index of suspicion when evaluating patients at high risk for IE might lead to more favorable outcomes of major complications associated with it.

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