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HEALTH CARE AND QUALITY OF LIFE

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content

EDITORIAL

Health Care and Quality of Life: A brief overview of journal articles

Prof. Asoc. Dr. Voltisa GJERGJI

Health care is a consistent determinant of quality of life. Quality of life is the degree an individual is healthy, comfortable and able to take part in or enjoy life events. Preserving and enhancing health affects positively all population groups ranging from the prevention of disorders such as bad posture and back pain in youths to the best practice treatments of more severe and chronic disorders in older adults and geriatric population.

Articles of this issue of Medicus Journal are focused on the impact of providing medical care in functioning, in enhanced recovery after interventions, and in the general quality of life of patients. Mental health can also influence a person's perception of their quality of life. We measure health by both physical and mental condition. Burn-out of health care workers is an issue of concern, which should be adequately addressed and treated. The prevalence of burnout among healthcare professionals is high, because the work environment in hospitals is characterized by activities that are demanding and strenuous both physically and mentally.

In summary articles of this issue of Medicus Journal address the following:

- One of the studies pointed out a perioperative care model designed to reduce a patient›s stress response, prevent organ complications, provide early rehabilitation and minimize the patient›s hospital day. This study explores nursing students› attitudes of Bursa Uludağ University toward this model and how clinical experiences influences these attitudes.
- In a study from Medical University of Varna, Bulgaria a significant correlation was found between visual acuity in patients with diabetic retinopathy and social functioning, as well as their mental health.
- Mental health of health professionals and burnout syndrome was also the topic of a literature review. Findings indicated that high workload and

emotional demands, conflicts and lack of support, significantly increased the risk for burnout. Interventions focusing on stress management and social support showed significant improvements in employee well-being.

- A review of literature showed that boredom of students during the class hours manifests itself in altered body postures and these postural changes are associated with an increased risk of developing low back pain.
- One of the articles presents an overview of challenges faced by patients with endocrinological disorders, who also got Covid-19, how to be managed and areas of concern.
- A comparative study in the surgical clinic of the University Hospital Centre « Mother Teresa «in Tirana compared in years apart the microbial charge in the wounds of postoperative patients. They found a considerable improvement in postoperative infection risks, possibly due to much better hygienic-sanitary conditions and infection prevention protocols.

The Impact of Clinical Practice on Nursing Students Approaches to Enhanced Recovery After Surgery

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Abstract

Background: *The concept of ERAS was introduced by Professor Henrik Kehlet in the late 1990s. ERAS protocols are defined as a perioperative care model designed to reduce a patient's stress response, prevent organ complications, provide early rehabilitation, and thus minimize the patient's hospital stay.*

Objective*: This study aimed to explore nursing students' attitudes towards Enhanced Recovery After Surgery (ERAS) and how clinical experiences influence these attitudes. It sought to identify less-known ERAS areas for students and factors impacting their compatibility with ERAS.*

Materials and Methods*: Conducted between November 2021 to March 2022, this descriptive and cross-sectional research included 199 nursing students from*

the second to fourth years of study at Bursa Uludağ University. The Approaches to Enhanced Recovery Practices After Surgery Survey was utilized for the data collection.

***Results**: 76.9% of participants were female, 62.3% had GPAs between 3.00 and 4.00, and 78.4% had graduated from qualified high schools. Overall, the correct answer level to survey questions was 62.17%, with a higher average among those with a higher GPA and qualified high-school graduates. "Early Mobilization" and "Pain Management" had the highest awareness, while "Catheter and Drain Use" and "Hypothermia" had the lowest. Gender, GPA, and high-school group correlated significantly with ERAS compliance.*

***Conclusions**: Our research is similar to other studies conducted with nurses in terms of the ERAS components that were not well known by the participants. These findings will aid healthcare educators in enhancing ERAS compliance and education among nursing students.*

***Keywords**: ERAS, Nurse, Nursing Students, Surgery*

Introduction

Traditional perioperative care is heterogeneous and often based on local traditions and the personal preferences of the surgical team[1]. Scientific studies reveal that many of these practices are unnecessary and harmful[2]. Examples include prolonged fasting, preoperative bowel preparation, and delayed oral feeding[3,4]. Implementing the Enhanced Recovery After Surgery (ERAS) protocol in clinics can be challenging due to long-standing traditional practices[3]. Addressing these issues is essential in terms of improving perioperative care, but rapid change may not be realistic[4].

To this end, it is recommended that nurses conduct more research on the subject, provide ERAS training to healthcare professionals, and encourage healthcare professionals to implement these protocols. Providing such training to nursing students is also among these recommendations[5,6].

Nursing students often encounter practices in clinical settings that are different than what they have learned at university. This disconnection between theory and practice can lead to confusion. Students tend to question the evidence-based practices they have learned and come to rely on traditional methods, which seem easier to apply[7]. Such attitudes may also affect their approach to traditional practices in surgery. Students who understand the impact of traditional methods on perioperative care and can challenge these practices are more likely to embrace evidence-based approaches when they start working in clinics. A shift towards these kinds of practices is crucial for ensuring quality perioperative care and better

patient outcomes[8]. Therefore, the aim of this study was to determine nursing students' approaches to ERAS practices, and whether these approaches had an impact on their clinical practice.

ERAS Timeline

The concept of ERAS was first introduced by Professor Henrik Kehlet in the late 1990s. Despite advancements in surgery, anesthesia, and perioperative care, patients still experience postoperative complications such as pain, cardiopulmonary, infections, thromboembolic complications, nausea, and gastrointestinal paralysis[9]. Kehlet researched the care pathway that needed to be followed to prevent these complications[10]. Following his lead, other researchers conducted studies to obtain evidence-based results that would later be components of ERAS protocols[3]. ERAS protocols are defined as a perioperative care model designed to reduce a patient's stress response, prevent organ complications, provide early rehabilitation, and thus minimize the patient's hospital stay[11]. ERAS guidelines have been prepared for 23 different specialties to date, including pancreaticoduodenectomy, colon, rectal/pelvic, thoracic, vascular, pediatric, urological, bariatric, and orthopedic surgery[12]. Other surgical specialties have also achieved positive outcomes in applying ERAS, although care guidelines have not yet been prepared for them[13,14].

Methodology

Ethical Considerations: The study was conducted according to ethical standards, including obtaining permission from the original author of the survey and the institution where the students were enrolled. Ethics committee approval, dated 02.06.2021 and numbered 2021-05 was obtained from the Health Sciences Research and Publication Ethics Committee of Bursa Uludağ University.

Setting and Sample: The study had a descriptive and cross-sectional research design, aimed at determining the approaches of nursing students towards accelerated recovery protocols. The research was conducted among the students of the Nursing Department at the Faculty of Health Sciences of Bursa Uludağ University between November 27, 2021, and March 26, 2022. The population of the study consisted of second-, third-, and fourth-year students who had taken or were taking the Surgical Diseases Nursing course in the Nursing Department during the 2021-2022 academic year (N = 500). The sample size was determined to be 199 based on the inclusion criteria and power analysis. There were two inclusion criteria for the study: the student had taken or was taking the Surgical Diseases Nursing course at the time of the study, and the student was willing to participate in the research.

Data Collection: The study used the Approaches to Enhanced Recovery Practices After Surgery Survey to collect data on the students' sociodemographic characteristics and their compliance with ERAS protocols. The data form consisted of 35 questions, divided into two sections: a Sociodemographic Data Form and the Approaches to Enhanced Recovery Practices After Surgery Survey. The latter covered the preoperative, intraoperative and postoperative periods, and included questions on the use of catheter and drainage, preoperative fasting, antimicrobial prophylaxis, preparation of the surgical site, early feeding, pain management, early mobilization, preoperative bowel cleaning, hypothermia, discharge, and follow-up and control of the results. The sociodemographic data collected included gender, academic GPA, the status of taking the Surgical Nursing course, attended high school, and employment status. The data were analyzed using descriptive statistics.

Data analysis: The questionnaire, that had previously been developed by Afşar for similar research with surgical clinic nurses, was adapted for use with students in the present study. The data was collected, in accordance with the restrictions on face-to-face contact imposed at the time due to the COVID-19 pandemic, was collected online through Google Forms and analyzed using the SPSS 24.0. Descriptive statistics, test statistics, and p-values were presented for each analysis, and non-parametric tests were used due to the non-normal distribution of the data. The survey questions were grouped according to the components of ERAS, and the relationships between the participants' characteristics and their responses were examined using cross-tabulation and chi-square tests.

Results

The study had 199 participants, of which 76.9% (n=153) were female. Nearly all participants (98.5%) had successfully completed the Surgical Nursing course at their first attempt. The majority of participants (62.3%, n=124) had a grade point average (GPA) of between 3.00 and 4.00 (out of 4). Most participants (78.4%, n=156) had graduated from qualified high schools, while only 7.5% (n=15) had graduated from health vocational high schools, and only two of them were employed as nurses.

The study found that the average rate of ERAS compliance rate in the participants' answers was 62.17% (Table 1). According to the data, questions 1, 14, and 2 were the questions that the participants most often answered correctly. Conversely, questions 29, 21, and 12 were the questions that the participants most often answered incorrectly (Figure 1).

There was no statistically significant difference between the average number of correct responses given by male and female participants. However, there was a significant difference between the average number of ERAS-compliant answers

given by participants with a GPA score of 1.00-2.99 and those with a GPA score of 3.00-4.00. Participants with higher GPA scores had a higher average number of ERAS-compliant answers. Similarly, there was a significant difference between the ERAS-compliant response scores of students who had graduated from health/general/different high schools and those from qualified high schools. Those in the latter group gave a higher average number of ERAS-compliant responses.

TABLE 1: The numbers and rate of ERAS-compliant answers

Question number	Number of participants who answered correctly (n = 199)	Correct answer rate (%)
1	188	94
2	176	88
3	120	60
4	105	52
5	173	86
6	169	84
7	149	74
8	59	29
9	74	37
10	166	83
11	129	64
12	35	17
13	165	82
14	186	93
15	170	85
16	112	56
17	167	83
18	137	68
19	147	73
20	58	29
21	26	13
22	141	70
23	97	48
24	112	56
25	134	67
26	97	48
27	172	86
28	135	67
29	22	11

FIGURE 1: Number of answers to the questions in accordance with ERAS

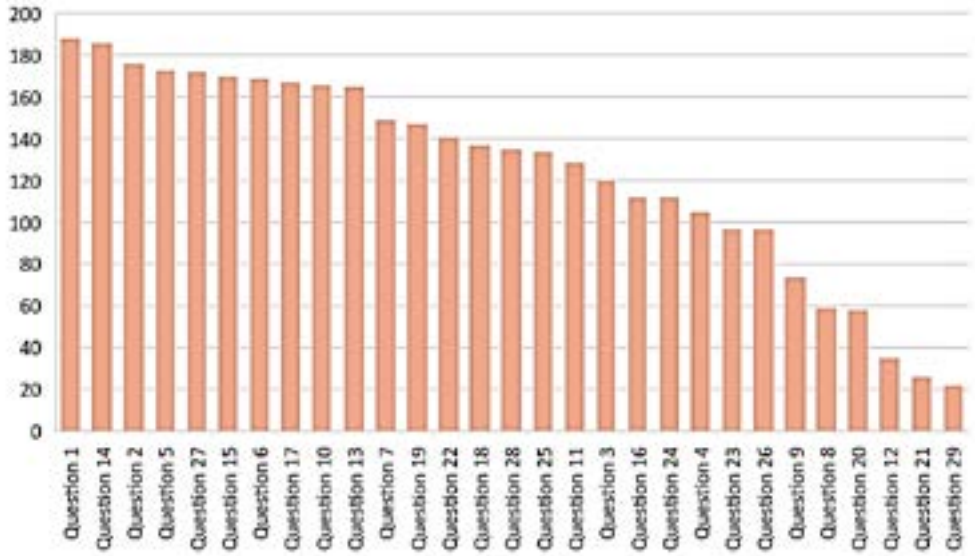

TABLE 2: Comparison of the correct response rates of the ERAS components according to the participants' GPA score

Component	GPA score 1.00-2.99 n(%)	GPA score 3.00-4.00 n(%)	Chi-square test statistics	p-value
Use of catheter and drain				
Question 23	30 (%40,00)	67 (%54,03)	3,683	0,055
Question 29	8 (%10,66)	14 (%11,29)	0,018	0,892
Pre-op fasting				
Question 9	17 (%22,66)	57 (%45,96)	10,863	0,001
Question 10	54 (%72,00)	112 (%90,32)	11,342	0,001
Question 11	44 (%58,66)	85 (%68,54)	2,001	0,157
Question 25	47 (%62,66)	87 (%70,16)	1,193	0,275
Antimicrobial prophylaxis				
Question 18	45 (%60,00)	92 (%74,19)	4,389	0,036
Surgical site preparation				
Question 16	32 (%42,66)	80 (%64,51)	9,067	0,003
Early nutrition				
Question 26	37 (%49,33)	60 (%48,38)	0,017	0,897
Pain management				
Question 14	66 (%88,00)	120 (%96,77)	5,892	0,015
Question 15	60 (%80,00)	110 (%88,70)	2,848	0,092
Question 17	55 (%73,33)	112 (%90,32)	9,996	0,002
Early mobilization				

Question 1	65 (%86,66)	123 (%99,19)	14,043	0,001
Question 2	59 (%78,66)	117 (%94,35)	11,252	0,001
Question 3	49 (%65,33)	71 (%57,25)	1,273	0,259
Question 4	39 (%52,00)	66 (%53,22)	0,028	0,867
Question 6	55 (%73,33)	114 (%91,93)	12,631	0,001
Question 7	54 (%72,00)	95 (%76,61)	0,529	0,467
Question 8	17 (%22,66)	42 (%33,87)	2,813	0,094
Question 19	52 (%69,33)	95 (%76,61)	1,283	0,257
Question 21	12 (%16,00)	14 (%11,29)	0,913	0,339
Question 22	52 (%69,33)	89 (%71,74)	0,135	0,713
Pre-op bowel preparation				
Question 24	31 (%41,33)	81 (%65,32)	10,930	0,001
Hypothermia				
Question 12	9 (%12,00)	26 (%20,96)	2,593	0,107
Question 20	18 (%24,00)	40 (%32,25)	1,543	0,214
Question 28	45 (%60,00)	90 (%72,58)	3,390	0,066
Discharge planning				
Question 5	64 (%85,33)	109 (%87,90)	0,272	0,602
Follow-up and ongoing support				
Question 13	59 (%78,66)	106 (%85,48)	1,533	0,216
Question 27	61 (%81,33)	111 (%89,51)	2,668	0,102

A similar examination of the relationship between correct/incorrect answers and the type of high school from which the students had graduated, showed that nine questions had a significant relationship, and the students who had graduated from qualified high schools had a higher correct response rate to these questions (Table 3).

TABLE 3: Comparison of the correct response rates of the ERAS components according to the high school attended by the participants

Component	Qualified High School n (%)	Health/General/Other High School n (%)	Chi-square test statistics	p-value
Use of catheter and drain				
Question 23	76 (%48,71)	21 (%48,83)	0,017	0,959
Question 29	16 (%10,25)	6 (%13,95)	0,469	0,497
Pre-op fasting				
Question 9	63 (%40,38)	11 (%25,58)	3,162	0,075
Question 10	136 (%87,17)	30 (%69,76)	7,388	0,007
Question 11	103 (%66,02)	26 (%60,46)	0,457	0,499

Question 25	109 (%69,87)	25 (%58,13)	2,110	0,146
Antimicrobial prophylaxis				
Question 18	110 (%70,51)	27 (%62,79)	0,937	0,333
Surgical site preparation				
Question 16	89 (%57,05)	23 (%53,48)	0,174	0,677
Early nutrition				
Question 26	80 (%51,26)	17 (%39,53)	1,862	0,172
Pain management				
Question 14	148 (%94,87)	38 (%88,37)	2,332	0,127
Question 15	135 (%86,53)	35 (%81,39)	0,716	0,397
Question 17	132 (%84,61)	35 (%81,39)	0,259	0,611
Early mobilization				
Question 1	149 (%95,51)	39 (%90,69)	1,497	0,221
Question 2	139 (%89,10)	37 (%89,04)	0,308	0,579
Question 3	98 (%62,82)	22 (%51,16)	1,914	0,167
Question 4	82 (%51,56)	23 (%52,48)	0,012	0,914
Question 6	139 (%89,10)	30 (%69,76)	9,843	0,002
Question 7	119 (%76,28)	30 (%69,76)	0,760	0,383
Question 8	56 (%35,89)	3 (%06,97)	13,517	0,001
Question 19	120 (%76,92)	27 (%62,79)	3,488	0,062
Question 21	21 (%13,46)	5 (%11,62)	0,100	0,752
Question 22	120 (%76,92)	21 (%48,83)	12,876	0,001
Pre-op bowel preparation				
Question 24	97 (%62,17)	15 (%34,88)	10,207	0,001
Hypothermia				
Question 12	32 (%20,51)	3 (%06,97)	4,261	0,039
Question 20	46 (%29,48)	12 (v27,90)	0,041	0,840
Question 28	102 (%65,38)	33 (%76,74)	1,994	0,158
Discharge planning				
Question 5	140 (%89,74)	33 (%76,74)	5,015	0,025
Follow-up and ongoing support				
Question 13	134 (%85,89)	31 (%72,09)	4,534	0,033
Question 27	141 (%90,83)	31 (%72,09)	9,617	0,002

Discussion

Adhering to an updated ERAS protocol has been shown to accelerate recovery, reduce short- and long-term morbidity, shorten hospital stays, and lower medical costs. Despite the proven positive effects of implementing ERAS protocols in

different specialties, the application of ERAS in surgical clinics in Türkiye and around the world is still at a low level [3, 15, 16, 17].

Studies conducted with surgical nurses in Türkiye have shown that their knowledge of ERAS protocols is very low[18, 19, 20, 21]. This is a worrying finding because nurses play a crucial role in implementing ERAS protocols in hospitals. The lack of knowledge about ERAS among nurses can lead to suboptimal care and poorer patient outcomes. It is essential to provide education and training to nurses to encourage the implementation of this evidence-based practice in hospitals[22]. In addition, it is important to provide ERAS education at university and create and improve awareness among nursing students about the subject[6, 23]. However, there are no studies that evaluate the knowledge level, attitudes, or approaches of nursing students regarding ERAS protocols. The findings of the present have been mainly compared to those of Afşar's (2020) study, since the survey used was the same, and the clinics included in the sample were the same clinics where the students participating in the present study undertook their clinical practice.

The present study found that the average percentage of ERAS-compliant responses was 62.74%. In similar studies conducted with nurses, the average percentage of ERAS-compliant responses was at the moderate level or above the average. However, this rate in nurses can be attributed to their low level of knowledge about ERAS, as demonstrated in the same studies, and the facts that they had not previously received ERAS training, that evidence-based practices were not being carried out in the clinics, and that traditional and routine practices were employed[18, 20, 21]. In contrast, in the present study all the participants had theoretical knowledge about ERAS and they had all learned the practices included in the survey during the Surgical Diseases Nursing course. In this case, then, the similarity between the average percentages of ERAS-compliant answers of the nursing students in this study and those of the nurses in other studies may have been related to the traditional practices that students witnessed during their clinical practice. Regarding this point, some examples from our study can be given as follows:

The questions with the highest number of correct answers were found in the "Early Mobilization" and "Pain Management" components of the ERAS. In a similar way in Afşar's (2020) study, "Pain Management" was found to be the component of which the nurses had the greatest awareness, while "Early Mobilization" was the component with the third greatest awareness.

On the other hand, in the present study, the questions with the lowest number of correct answers fell within the "Catheter and Drains Use" and "Hypothermia" ERAS components. In Afşar's (2020) study, "Hypothermia" was the component of which the nurses had the second lowest level of awareness. With regard to the "Catheter and Drains Use" component, there are many studies that emphasize the need to abandon the routine use of prophylactic intraperitoneal drainage;

however, this practice is still routinely used in some surgical clinics[26,27,28]. It is thus thought that the very low correct answer rate of the students in the present study regarding this practice might have been due to their exposure to the traditional use of this practice during their clinical practices.

It was also found that, the higher the GPA score, the higher the percentage of correct answers. Similar, students who had graduated from qualified high schools had a higher percentage of correct answers. The questions that showed a significant relationship for both GPA groups and the high school groups were found in the "Preoperative fasting", "Early mobilization", and "Preoperative bowel preparation" components. "Preoperative fasting" and "Preoperative bowel preparation" were among the components with the lowest rates of correct answers in Afşar's (2020) study. The nurses' approaches to these questions may also have been reflected in their clinical practices, and it is thought that this may have affected students' approaches towards these practices during their experience in the clinical settings. There was therefore a particular low number of correct answers to these questions given by students with lower levels of academic achievement. The finding that the students with a higher GPA gave a higher number of correct answers can be associated with the fact that the theoretical knowledge acquired during the Surgical Nursing course had a greater effect in this student group.

The study highlights the importance of ERAS education among nursing students and the need to create awareness about ERAS protocols in hospitals. It is important to provide ERAS education and training to nurses and other healthcare personnel in order to improve patient outcomes and reduce medical costs. The study found that the proportion of general ERAS-compliant responses from participants was above average, but the difficulties of remote learning and pandemic-related challenges may have prevented the students from learning more about how to apply ERAS[29,30]. The study also suggests that observing traditional practices observed in clinical settings may influence students' approaches to ERAS protocols, since the findings are similar to those of studies conducted with nurses.

Conclusions

In conclusion, our findings are similar to those of studies conducted with nurses in terms of the ERAS components that are not well known by the participants. These results may help healthcare professionals and educators identify areas for improvement in ERAS compliance and education. To address this problem, we recommend the following actions:

- Motivate students to engage in research on ERAS protocols.
- Guide students to conduct their own research about the traditional practices

commonly used in clinics in order to understand why these practices should not be continued.
- Encourage students to observe and assess traditional practices through group discussions during clinical practice.
- Conduct more studies on ERAS with nursing students, since the present study is limited to only one university.

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The Role of Visual Acuity in Daily Functioning and Quality of Life in Diabetic Retinopathy Patients

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Abstract

Purpose: *To assess the relationship between visual acuity and activities of daily living in patients with diabetic retinopathy and how this relationship affects their quality of life.*

Methodology: *Fifty-nine persons over the age of 18 who were residents of the city of Varna and had information about the presence of DR who passed through the Department of Endocrinology UMBAL "St. Marina"—Varna and the office for laser treatment of retinal diseases of University Specialized Eye Hospital—Varna from February to April 2024 were included. The National Eye Institute Visual Function Questionnaire-25 was translated and adapted into Bulgarian to assess the patient's quality of life. The results were processed using statistical analysis software - SPSS v.21.*

Findings: *According to the degree of retinal involvement by diabetic retinopathy, the median visual acuity was as follows: NPDR, 0.7 (IQR=0.225); PDR, 0.6 (IQR=0.375); DME, 0.5 (IQR=0.425). Analysis revealed a statistically significant difference in visual acuity between the three groups* χ^2*= 6.78; p= 0.034*). There was also a moderate positive correlation (Spearman's rho = 0.462) indicating a significant relationship between visual acuity and social functioning (p<0.001*) and a moderate to strong positive correlation (Spearman's rho = 0.636) demonstrating the existence of a significant relationship between visual acuity and mental health (p<0.001*).*

Originality/value: *This study provides fresh insights into how visual acuity affects daily functional abilities in patients with diabetic retinopathy. The findings offer practical guidance for clinical and public health interventions aimed at enhancing patient autonomy and well-being.*

Keywords: *diabetic retinopathy, quality of life*

Introduction

Diabetes mellitus (DM) has become one of the most critical public health challenges of the 21st century and is considered by many to be a global epidemic. It is one of the most prevalent endocrine diseases, affecting approximately 10.5% of the world's population aged 20-79. (Home et al., n.d.) In Europe, the number of DM patients exceeded 61 million in 2022; the expectation is that it will increase by 13% to reach 69 million by 2045. (Home et al., n.d.) Lack of reasonable control of DM leads over time to significant impairment of several organs and systems, significantly affecting people's quality of life.

Diabetic retinopathy (DR), one of the complications of diabetes, is considered to be the leading cause of vision loss and preventable blindness among the working-age population under 65 years of age in economically developed countries. (Zlatarova et al., 2024)The average incidence of DR among people with diabetes is 34.6%. (Hristova et al., 2021) (Zlatarova et al., 2024) After 20 years of disease, almost all patients with type I, and more than 60% of those with type II diabetes

mellitus, develop diabetic retinopathy to some degree. (Lee et al., 2015) (Home et al., n.d., p. 202) Retinopathy is known to cause loss of contrast sensitivity. (Shani et al., 2018) (Davis et al., 1998) Laser pan-retinal photocoagulation, in turn, is associated with visual field loss. These consequences of diabetic retinopathy inevitably affect patients' quality of life (QoL).

The World Health Organization (WHO) defines quality of life as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns." (Howes et al., 1982)

It is a well-known fact that the presence of DR leads to a reduction in quality of life. (Sokol et al., 1985)ranging from 0.5 to 22.8 cycles/degree (c/deg (*WHOQOL - Measuring Quality of Life| The World Health Organization*, n.d.) As previously mentioned, it can significantly impact visual acuity, potentially impeding basic daily activities such as reading, driving, and facial recognition. Assessing QoL provides insight into patients' practical challenges when performing routine daily tasks. Loss of vision as a result of DR can have profound psychological consequences, leading to anxiety, depression, and a reduced sense of independence. Assessing QoL helps to understand and address these psychological aspects, promoting holistic patient care. A major shortcoming of our healthcare system is the need for a holistic approach to the condition of patients. Understanding the impact of diabetic retinopathy on a patient's QoL can guide healthcare professionals in making informed decisions about treatment options. Balancing interventions' potential benefits and risks with their impact on daily living is critical to patient-centered care. Awareness of patients' challenges when incorporating treatment into their lives helps tailor interventions to meet individual needs better.

The study aims to explore the relationship between visual acuity and activities of daily living in patients with diabetic retinopathy, focusing on how these factors influence their overall quality of life.

Methodology

Patients diagnosed with DM enrolled in the "Electronic Registry of Diabetes and Diabetic Retinopathy" participated in the study. Patients are enrolled in the registry after a pre-signed informed consent; the requirement is that the patient is diagnosed with DM, over 18 years of age, and has a permanent address in Varna, Bulgaria. These patients have been admitted to the Endocrinology Clinic at the University Hospital "St. Marina" - Varna and, on a predetermined day each week, underwent visual acuity and fundus examination with a portable fundus camera and a questionnaire. The group also included patients examined by indirect ophthalmobiomicroscopy in the University Specialized Eye Hospital

- Varna laser treatment office. In both cases, the fundus photography was performed by a trained ophthalmology resident or specialist in ocular diseases, and the reading of the photographs and the staging of diabetic retinopathy - by an ophthalmologist experienced in the diagnosis and treatment of retinal pathology using the international clinical classification system of DR and diabetic macular edema. (Davidov et al., 2009)visual acuity, diabetic retinopathy (DR The study was conducted between February and April 2024.

The objective assessment of the visual acuity of the study participants was performed by clinical examination, including visual acuity without and with optimal optical correction, anterior segment examination (corneal status, lens status for the presence of cataracts, which would also affect their quality of life and relevant to the statistical processing of the data), vitreous status and posterior segment with retinal assessment and classification of the type and severity of DR. All of these clinical data allow the determination of the stage of the disease and, subsequently, the accurate assessment of the relationship between the type and severity of DR and the quality of life of these patients.

The NEI-VFQ-25 questionnaire was translated and adapted into Bulgarian to assess the patient's quality of life. (Alcubierre et al., 2014) It is a tool for assessing visual function and vision-related quality of life in patients with various eye diseases. It contains 25 questions divided into 12 subscales assessing visual function and quality of life.

The relationship between questionnaire results and clinical outcomes was evaluated using the statistical data processing software SPSS v.21.

Results

Seventy individuals were invited to participate in the study, and 59 were included in the study group, all diagnosed with diabetes mellitus. From the analysis, it was clear that there was no normal distribution in the age category. This was because a large proportion of the patients in the study group were diabetics with type 2 diabetes, which is characteristic of the more advanced age group.

The median age of the participants was 62 years (IQR=13). Type 2 DM accounted for 94.9% of study participants, and type 1 DM accounted for 5.1%. The group comprised 31 women (52.5%) and 28 men (47.5%).

Fig. 1 shows the distribution of patients based on the severity of DR retinal damage. We divided retinal damage into three groups: nonproliferative DR (NPDR), proliferative DR (PDR), and diabetic macular edema (DME).

FIGURE 1. Distribution of study subjects according to severity of DR

The visual status according to patient perception is presented in Fig. 2, with more than half of the respondents (50.4%) considering their vision "good." This is most likely because DR can damage both eyes to varying degrees. This sets the stage for maintaining relatively good overall vision based on better vision in the one eye less affected by the disease. The subjective perception of good vision may also be due to effective treatment, early detection of diabetic retinopathy, reasonable diabetes control, regular eye examinations, and timely interventions.

A significant group of patients (37.3%) have "known visual problems" that may not be severe but still affect their daily lives. Patients in this group are likely to experience some difficulty with their vision, but not to the extent of classifying it as poor. They may have symptoms such as blurred vision, difficulty reading, or night vision problems that are not yet severe enough. The results highlight the need for a personalized approach to the treatment and follow-up of patients with diabetic retinopathy.

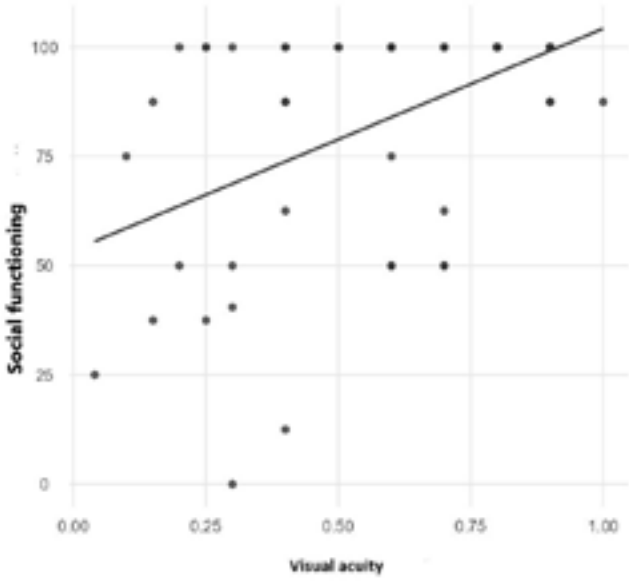
Patients who rate their vision as poor (8.5%) may need more intensive interventions and maintenance. Encouragingly, only 1.7% of respondents rated their vision as "very poor," and there were no patients with complete blindness. This indicates that severe visual impairment is relatively rare among the participants and that effective management of diabetes and its complications is provided by promising access to eye care and timely treatment of diabetic retinopathy.

FIGURE 2 Vision status as perceived by the study group

To determine whether and to what extent, based on available clinical assessment, we could predict patient quality of life, we assessed patients' visual acuity, as we believe it best reflects visual system function. In patients where the visual acuity of the two eyes differed, we took the visual acuity of the better eye for the study. According to the degree of retinal involvement by diabetic retinopathy, the median visual acuity was as follows: NPDR, 0.7 (IQR=0.225); PDR, 0.6 (IQR=0.375); DME, 0.5 (IQR=0.425). The minimum visual acuity in the NPDR group was 0.25; in the PDR group, 0 (monocular absence of vision); in DME, 0.1. Analysis revealed a statistically significant difference in visual acuity between the three groups χ^2= 6.78; p= 0.034*).

We performed a nonparametric Spearman analysis to establish the relationship between visual acuity and quality of life in subscales reflecting social functioning and mental health. The moderate positive correlation (Spearman's rho = 0.462) that we obtained indicates that there is a significant relationship between visual acuity and social functioning (p<0.001*) - Fig. 3

FIGURE 3 Linear correlation between visual acuity and social functioning



Higher visual acuity is associated with better outcomes in social functioning. These results only highlight the importance of maintaining and improving visual acuity in patients to improve their social functioning and quality of life. In terms of mental health, the analysis showed similar results, with a moderate to strong positive correlation (Spearman's rho = 0.636), demonstrating the existence of a significant relationship between visual acuity and mental health (p<0.001*). Better visual acuity was associated with better scores on the mental health subscale.

Table 1 shows Spearman's nonparametric correlation analysis, which includes subscales reflecting visual function and visual acuity.

TABLE 1. Relationship between indicators reflecting visual function and visual acuity

	Correlation coefficient (Spearman's rho)	Degree of freedom (df)	Statistical significance (p-value)
Close range activities	0.653	57	p< 0.001*
Long distance activities	0.659	57	p< 0.001*
Difficulties in performing daily tasks	0.577	57	p< 0.001*
Dependence on others due to vision problems	0.577	57	p< 0.001*
Driving	0.569	57	p< 0.001*
Color vision	0.504	57	p< 0.001*
Peripheral vision	0.237	57	p< 0.071

The table's results are similar to those obtained in the nonparametric correlation analysis for social functioning and mental health, except for the subscale reflecting peripheral visual function.

Discussions

A large number of studies have demonstrated that visual impairment has a direct negative impact on health-related quality of life (HRQoL) in patients with DR. (*International Clinical Classification System for Diabetic Retinopathy and Diabetic Macular Edema - 2012*, 2012, p. 201) (*Visual Function Questionnaire 25 | National Eye Institute*, n.d.) (Boisjoly et al., 1999)ocular history, best-corrected visual acuity, and detailed ocular examination data were collected. Functional visual impairment information was obtained by telephone interviews using the following: VF-14, SF-36 (Short Form-36, a more generic measure of general health function Diabetic retinopathy can have a severe effect on a patient's psychological well-being, which was confirmed by our results. In addition to the physical challenges associated with the disease, patients with diabetic retinopathy also face severe emotional stress, anxiety, and depression, which can impact their daily life and quality of life. (Klein et al., 2001) Diabetic retinopathy affects not only patients' physical health but also psychological aspects. Loss of vision or reduction in visual function can cause severe emotional reactions in patients, including depression, anxiety, and reduced self-esteem. People face fear and anxiety about their future, loss of independence, and the ability to function independently. (Musch et al., 1997) (Saitakis et al., 2023)including the kidneys, heart, and the central nervous system, with ophthalmic involvement and Diabetic Retinopathy (DR Our results also confirmed that patients with diabetic retinopathy often face social challenges

and limitations. (Wulsin et al., 1987) Visual problems can lead to social isolation and limitations in relationships with family, friends, and society. They may have difficulty participating in social events, sporting and cultural activities, and professional gatherings, which can cause feelings of isolation and rejection.

Limitations

- A small sample size limits the statistical power of the analysis and makes it possible to detect significant effects. The small sample size may also make it difficult to generalize the results to a wider population.
- Regional Focus: The study's findings are specific to Varna, Bulgaria, and may not apply broadly to other populations or healthcare systems.
- The instruments used to measure the variables may not be sufficiently valid or reliable. For example, subjective assessments of quality of life and mental health may be influenced by participants' current state or their interpretation of the questions.

Conclusion

The results highlight the importance of early diagnosis and effective treatment of diabetic retinopathy to improve visual acuity, which can improve patients' social functioning and mental health. The specifics of the research conducted in Bulgaria provide valuable information on local problems and opportunities for improvement that can be used to develop effective health policies and patient support programs.

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Burn out in the workplace - an overview

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Abstract

Introduction: *Burnout in the workplace is a complex reaction to continuous stress, that negatively affects employer 's mental and physical health and organizational productivity. This phenomenon is related to various personal and environmental factors, such as workplace support and individual characteristics.*

Aim: *To provide an overview on several aspects of the burnout syndrome in five key sectors: healthcare, education, law enforcement, social work and finance.*

Methodology: *A literature search was carried out to identify and analyses recently published articles related this phenomenon. This included studies from ScienceDirect, BMJ Open, PubMed, Google Scholar, Scopus, Web of Science, etc., using keywords such as "workplace burnout", "stress at work", "interventions for well-being", and "mental health at work".*

Results: *The findings of this review indicate that various factors, such as high workload and emotional demands, conflicts, lack of support, significantly increase the risk for burnout. Interventions focusing on stress management and social support*

showed significant improvements in employee well-being. WHO has developed competency standards for health workers to support people's ability to self-care.

Conclusions: *Personalized interventions, combined with policies that promote a supportive work environment, are essential for reducing burnout and improving overall employer well-being. These findings suggest the need for strategic interventions to address the emotional and psychological needs of employers and development policies and practices that will increase job satisfaction and reduce its negative impact.*

Keywords: *workplace burnout, work support, wellness interventions, stress management*

Introduction

Burnout is a prevalent syndrome in contemporary workplaces, with significant consequences for individuals' mental health, physical well-being, and professional performance (1). The term burnout first was described in 1974 by Herbert Freudenberg, as the emotional and psychological stress experienced by workers. Later, Maslach and Jackson (1981) divided burnout by three qualitative dimensions: emotional exhaustion, depersonalization, and personal accomplishment (2,3). Since then, burnout has been conceptualized as workplace stress in any professional context, especially in professions that require high emotional commitment and constant demands to maintain work quality (4). Beyond its individual impact, burnout also affects organizations, leading to reduced productivity, increased absenteeism, and decreased job satisfaction (5).

Numerous professional fields affected by burnout. In the healthcare sector, high levels of stress from daily tasks and the pressure for quick, accurate decisions make this sector one of the most at risk (6,7). Consequently, burnout has become a global challenge for healthcare systems, affecting both the quality of patient care and employee well-being (8).

In the education sector, teachers face high academic demands and classroom management challenges, which contribute to emotional exhaustion and, in many cases, a desire to leave the profession (5,7). Burnout among teachers also affects students, who may benefit less from teaching when their teachers are overburdened (7,9). Insufficient organizational support and a lack of resources for task completion are key factors in the experience of burnout in education (5).

Law enforcement personnel are also affected by burnout due to ongoing pressures and exposure to traumatic events, which influence emotional exhaustion and depersonalization (10,11). Police officers face administrative constraints and unexpected workloads that increase stress and impact their performance and service quality for citizens (4,12).

Social workers face high emotional demands due to the sensitive nature of their work, often dealing with individuals in difficult social and emotional situations. This exposure contributes to emotional exhaustion and reduced motivation. Burnout in this sector is closely linked to a lack of support and resources, necessitating stronger support for managing emotional burdens (6,13).

The banking sector is also affected by burnout due to the industry's stressful nature and surrounding economic uncertainty. Pressure to meet financial targets during times of crisis increases stress and emotional exhaustion among bank employees (14,15). Interpersonal interactions and organizational culture also influence burnout levels (16).

Burnout presents a widespread challenge across multiple sectors and professions, impacting individuals' well-being and organizational productivity. Studying the contributing factors and identifying prevention methods is essential for creating a sustainable and healthy work environment (1,10).

Methodology

An extensive literature review was carried out, including peer-reviewed articles, scholarly publications, available of WHO strategy documents and other significant documents on workplace burnout. The initial search included a wide range of keywords such as "burnout," "work-related stress," "stress management," and "mental health in the workplace". Recently published scientific articles from prominent platforms such as PubMed, Google Scholar, Frontiers, MDPI, BMJ Mental Health, were used for data synthesis and to develop a reference database for systematic selection and accurate citation. This methodology provides a solid foundation for exploring burnout in the five selected sectors. To enhance accuracy and relevance, only articles published within the last ten years were included.

Results

This overview found that, although burnout is a widespread issue that significantly affects all professional fields, it is highly prevalent among HCPs, education sector staff, law enforcement and police officers and social workers due to the intense and continuous nature of contact with individuals receiving care.

According to the available data, healthcare workers seem to be at particular risk for burnout with significant negative personal but also important professional consequences. For healthcare professionals, international variations in burnout levels reflect differences in cultural expectations and organizational structures. In the U.S., healthcare workers face high burnout rates due to intense performance

demands, with more than 75% reporting serious emotional exhaustion caused by heavy workloads and challenges within the insurance system (2,17). In Japan, societal pressures to appear resilient, combined with high-stress work environments, contribute to comparable burnout rates. In Germany, however, the presence of institutional support has helped reduce burnout to about 55%, underscoring the positive impact of strong support systems for employees (18,19).

Similarly, the education sector experiences noticeable differences across countries. In the UK, teachers feel overwhelmed by rigorous standards and continuous quality demands, with around 65% reporting burnout symptoms due to a lack of adequate support . In contrast, Canadian policies are more supportive, which has led to a lower burnout rate of about 48%, showing the value of organized support for teacher well-being (5,7). In France, where resources are more constrained, nearly 58% of teachers report burnout symptoms, suggesting room for policy enhancements to aid educators (7).

Law enforcement officers also experience high burnout, largely due to frequent exposure to stressful situations. Over 60% of U.S. police officers report symptoms of burnout, including emotional exhaustion and detachment, stemming from daily stress and limited support (20,21). In Germany, however, better stress management programs and institutional support reduce burnout prevalence about 45%, emphasizing how support structures can mitigate job-related stress (10,22).

Social work, with its intense emotional demands, similarly shows high burnout levels across countries. In the U.S., over 65% of social workers report emotional exhaustion due to challenging client interactions (6,20). Meanwhile, in Canada, stress management training has reduced burnout in social services to around 50% (6). In France, where institutional support is less robust, over 60% of social workers experience burnout symptoms, highlighting the need for resources to manage their high-stress roles (18).

Our overview also found that in the banking sector, pressures to meet performance targets and economic instability heavily contribute to burnout. In the US, around 58% of banking employees report burnout due to the demand for high financial performance (15). In Japan, cultural and professional expectations lead to burnout symptoms in over 60% of bank employees (14). Germany's stronger institutional support, however, has reduced this rate to approximately 50%, showing the importance of workplace support in reducing stress and emotional exhaustion (16).

Although the main causes of burnout are almost the same, the factors leading to burnout vary across Europe in terms of their impact on employees' lives. A series of coping strategies have been identified from both the employer and individual perspectives (18,23).

We also found that WHO declared burnout as a serious health issue and incorporated in the International Classification of Diseases 11th revision/ ICD-11. According to ICD-11, burn out is defined "a syndrome conceived as a result of chronic stress in the workplace that has not been successfully managed" (19).

Conclusions

Burnout is a growing issue that affects a wide range of professions, negatively impacting both individual well-being and organizational productivity. It is especially prevalent in high-stress fields such as healthcare, education, law enforcement, social work, and banking, where emotional exhaustion, detachment, and performance pressures are common.

The prevalence of burnout is influenced by workplace policies, structures, and cultural norms, with supportive environments helping to reduce its occurrence. Countries and organizations with strong employee well-being initiatives tend to have lower burnout rates.

To mitigate burnout, experts recommend creating supportive work environments through stress management programs, training for coping with stress, and fostering employee well-being.

Further research is needed to better understand burnout's causes and identify effective interventions for both individuals and organizations.

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Boredom and Students Low Back Pain. A narrative Review

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Abstract

Low back pain (LBP) affected more than 619 million individuals globally in 2020, and according to the Global Burden of Disease study, this number is projected to rise to 843 million by 2050, establishing LBP as one of the most prevalent health conditions of modern times. Among those affected, students represent a significant population, with prevalence rates reaching as high as 94% in some studies. Research suggests that prolonged lecture hours contribute to increased boredom among students, an emotion experienced universally and defined as a lack of stimulation or interest, engagement in monotonous activities, or activities perceived as unchallenging. Common causes of boredom for college students include lengthy classes, lack of activities, monotony, loneliness, and waiting periods. Boredom often manifests in altered body postures, such as slumped, hunched, or forward-leaning positions during extended sitting periods in classrooms. These postural changes are associated with a heightened risk of developing low back pain.

Key Words: *Boredom, Low Back Pain, Students, Posture, Boredom Proneness.*

Introduction

Low Back pain has affected more than 619 million individuals in the year 2020 and according to the Global Burden of Disease study the number is predicted to raise to 843 million by the year of 2050, remaining as one the most prevalent pathology of modern times (Ferrira et al., 2020). The complex pathology manifests with various of symptoms including pain, dysfunction, discomfort predominantly experienced in the lumbar area of the spine (Casiano et al., 2022). Often with the involvement of neural structures referral pain or radiculopathy may be experienced as a symptom of Low Back Pain (Baron et al, 2016). The causes are broad starting with specific Low Back pain from conditions such as herniated discs, vertebral misalignment, tumors, or nerve root pathologies and non-specific Low Back Pain commonly referred to pain that it is not associated with a known pathology (Violante et al., 2016; Maher et al., 2017). Non-specific Low Back pain lists etiological and risk factors such as prolonged sitting, standing or working, poor mental and social life, unhealthy life style, triggering distractions and also boredom (Chiarotto et al., 2022; Ehrlich 2003) Having a variety of symptoms and causations and affecting millions of individuals every year Low Back Pain also has an economic and social impact, limiting and causing disability to workers in various professions. (Fatoye et al., 2023)

Students are on of the affected population by Low Back Pain, prevalence of whom has seen to be increasing, with studies reporting a prevalence up to 94%(Taha et al., 2023; Boussaid et al., 2022; Sany et al., 2022). Academic life, high mental demand followed by sedentary life and poor ergonomic factors also contributes to this issue. (Alshehri et al., 2023) Low Back Pain disrupts student's life causing lack of concentration, lack of sleep and overall discomfort in participation. (Alsaadi et al., 2022). This leads to poor mental and social health.

Depression is noticed to have a correlation with Low Back Pain in student population caused by lack of sleep and poor academic performance as a result of pain. (Tavares et al., 2018). Students are by default forced to participate into sedentary activities as they have to seat for prolonged hours during lectures followed my studying hours that still require to be sited. (Hosteng et al., 2019; Baradaran Mahdavi et al., 2021). Prolonged sitting is considered a monotonous activity and it is associated with boredom. (Ryo Wataya et al., 2015)

Studies suggest that prolonged lecturing hours cause boredom to students. According to students one hour is the optimal time for a lecture not to be boring among other factors such as interactivity with the lecturers and engaging topics. (Ubah, 2018). Students prefer to participate more in lectures that try to engage their problem solving skills then traditional methods. (Alaagib et al., 2019). Boredom

is expressed in various ways. Students can be noticed yawing, using their mobile phones, chatting to their peers and slouching forward on their desk, fidgeting or leaning their head in one hand. (Bull et al., 1978; D'Mello et al., 2007). Slouching or leaned forward posture has been associated with Low Back Pain according to various studies. (Jung et al., 2020; Waongenngarm et al., 2025).

The aim of this Review article is to investigate what the existing literature suggests for the correlation between of Boredom and Low Back Pain, this being a direct or indirect cause to the pain.

What is Boredom?

Boredom is a common emotion that almost every person has experienced. It has many definitions such as lack of stimuli or reasons to engage in certain activities, engaging in monotonous activities or activities that don't exceed interest (Ndetei et al., 2023). Mikulas et al., define boredom as "state of relatively low arousal and dissatisfaction which is attributed to an inadequately stimulating situation" and Estwood et al., define it as "the aversive experience of wanting, but being unable, to engage in satisfying activity" (Mikulas et al., 1993; Eastwood et al., 2012).

Boredom can also be perceived in many dimensions. It involves physiological, physiological and philosophical components, it can be a negative emotion but also it can be seen as a positive one. Boredom could function as a cue to motivate, by having an adaptive effect, promoting exploration and the pursuit of new experiences by pushing people to look for more rewarding and exciting activities (Weissinger et al., 1992). According to this viewpoint, boredom is a dynamic force that motivates people to actively interact with their surroundings in quest of more satisfying experiences (Bench et al., 2013). The connection between creativity and boredom makes boredom even more complicated. It may be easier to be creative when one lets their thoughts wander during boring times, which emphasizes the advantages of accepting rather than rejecting apparent monotony (Gomez-Ramirez et al., 2017; Craven et al., 2022).

Besides the positive traits boredom also influences negative responses. It was shown by two concurrent tests that boredom does, in fact, increase the chances for eating disorders and unhealthy eating habits (Havermans et al., 2015). Furthermore, another study that looked at the issue of self-administered shocks during boredom found that the main goal of these acts is to break up monotony rather than control unpleasant emotional feeling (Nederkoorn et al., 2016). It was also discovered that reduced task autonomy in dull circumstances resulted in elevated frustration and depression (Hoft et al., 2018). Boredom's enduring dissatisfaction and disinterest can progressively undermine one's sense of success and purpose, leaving one feeling empty and disillusioned (Lee et al., 2019). Long

stretches of boredom can also lead to a deficiency of mental stimulation, which can exacerbate the vicious cycle of inactivity and sluggishness. When people struggle to participate in fulfilling and interesting activities, their general well-being may suffer (Weissinger 1995). Boredom is frequently connected to stress-related physiological reactions including elevated cortisol and heart rate (Bench et al., 2013). For example, the body's reaction to the emotional distress caused by boredom might result in tension headaches, tight muscles, and exhaustion. Furthermore, prolonged screen time, mindless eating, and other sedentary activities linked to boredom can lead to weight gain, bad posture, and a decrease in cardiovascular health (Havermans et al., 2015).

Because a sedentary lifestyle is linked to a lack of stimulating activities and extended periods of low energy, chronic boredom can also impair immunity by suppressing the body's natural defenses. Long-term boredom can lead to less physical activity, which can cause problems including poor circulation, a higher chance of obesity, and even metabolic syndrome (Tam et al., 2021). Additionally, because their daily routines are unstructured, people who are bored frequently report disturbed sleep patterns, which can hinder their ability to recuperate and result in long-term health issues like weariness or hypertension (Nederkoorn et al., 2016).

Although everyone has perceived boredom not everyone has the same experience with boredom. Some individuals are more prone to experience boredom than others. This boredom proneness is associated with feelings of restlessness, fatigue, frustration, anxiety, emptiness, and sadness, along with wandering attention and a lack of challenge, motivation, or things to do. (Tam et al., 2021).

The relationship between being easily bored and mental health problems such as depression as well as unhealthy habits is supported by empirical data. It has also been connected to mortality and a hindrance to prospering (Britton et al., 2010). There are many different ways to deal with boredom, but reading is a common coping and planning strategy. Other strategies include reflecting, fantasizing, interacting with others, watching television, exercising, and partaking in particular activities. These tactics fit into more general categories that include attentional refocusing and stimulus seeking (Harris et al., 2000).

Boredom and Students

Classes, a lack of activities, monotony, loneliness, and waiting are common causes of boredom, especially for college students (Sharp et al., 2016). Given the variety of these reasons, it's possible that personal characteristics will mitigate the degree to which each circumstance leads to boredom. Individuals with high boredom

proneness and low mood labeling may find it difficult to create internal stimulation and may feel unchallenged and unstimulated in a variety of contexts (Sharp et al., 2015).

In addition, bored students are easily sidetracked by other activities like manipulating things, gazing out the window, or utilizing devices unrelated to the lesson (Nett et al., 2010). This lack of involvement is further highlighted by the students' inability to actively participate in class activities—they avoid contributing to debates, asking questions, or providing solutions. (Sharp et al., 2018) When students mentally check out of the classroom and lose themselves in their own thoughts or imaginations, daydreaming is a typical sign of boredom (Westgate et al., 2019). Students who are bored also tend to use procrastination as a coping strategy, which causes them to put off finishing their homework or studying (Rahimi et al., 2023).

According to research, extended boredom can have a negative effect on cognitive function, resulting in shorter attention spans and memory retention problems (Eastwood et al., 2012). These cognitive difficulties frequently make it more difficult for students to properly comprehend and apply new information, which can lead to poorer academic performance and lower grades. Additionally, when students search for meaning and purpose in their educational experiences, chronic boredom is often linked to elevated levels of irritation, anxiety, and even depression (Malkovsky et al., 2012). This emphasizes how crucial it is to design compelling and interesting learning settings that maintain students' active participation.

Furthermore, boredom can alter the dynamics of the classroom as a whole in addition to having an impact on individual students. According to Pekrun et al. (2010), a large number of uninterested students might cause a chain reaction of distractions and lower overall class efficiency. Disengaged students may, for instance, inadvertently annoy their friends by talking, fidgeting, or engaging in other off-task activities. This has a knock-on impact that could cause disengagement in the entire class. Teachers can use tactics like implementing interactive teaching methods, creating a feeling of community in the classroom, and adjusting the curriculum to fit the interests and ability levels of the students in order to offset these results.

A variety of circumstances might contribute to college students' boredom, and individual traits like mood labeling and boredom proneness can have an impact. Boredom can be easily recognized by observable actions such as procrastination, physical restlessness, changes in posture, and lack of participation. Research from a variety of sources, including Sharp, Nett, D'Mello, Bull, Mota, Witchel, and others, show how disengagement and restlessness are frequently linked to boredom in educational environments. In order to effectively address and mitigate boredom in academic situations, instructors and students must be able to recognize these behavioral signs.

Boredom and Students Low Back Pain

The sedentary nature of activities that are frequently linked to boredom is one reasonable explanation for the correlation between boredom and low back discomfort (Citko et al., 2018). People are more inclined to sit for extended periods of time when they become bored engaging less in physical activities whether at work, in their free time, or while they are doing screen-based activities (Cleary et al., 2016). Cargnin et al., on their study investigating non-specific Low Back Pain in the nurse's work process suggests that repeated tasks associated with boredom and anger tend to increase the prevalence of Low Back Pain (Cargnin et al., 2019). Other studies also back up the findings that work or school dissatisfaction and other psychological aspects relating work activities influence musculoskeletal pain. (Puntillo et al., 2021). Students dissatisfaction with lecturing hours and the prolonged sitting also contributes to boredom and by association to Low Back Pain. Adding to the factors that correlate to Low Back Pain is also the emotional factors, especially in the student's population where stress and depression have a high prevalence (Yan et al., 2021; Barbayannis et al., 2022; Acharya et al., 2018)

Students that are prone to boredom tend to have a poor self-control. This leads to a cycle of boredom involves a struggle to initiate activities or to keep focus on said activities. This starts a vicious cycle of boredom and indecision where people struggle to decide what kind of meaningful engagement to engage in (Danckert et al., 2019). Lack of activities or participation on activities leads to lower level of dopamine releases on the body as the brain doesn't find it necessary to engage (Kravitz et al., 2016). Dopamine is linked to pain inhibition so an individual who suffers from a Low Back Pain and has a higher proneness to boredom is more risked to experiencing more frequent pain episodes (Li et al., 2019).

Students that are bored exhibit a variety of observable actions. First of all, there is a glaring lack of participation, as students don't seem to be motivated or interested in contributing to class discussions or finishing projects (Nett et al., 2010). Another common indicator of physical restlessness is students shifting or squirming in their seats as a coping mechanism for their disinterest in the material (D'Mello et al., 2007). Changes in posture are also a common expression of boredom as suggested by Peter Bull in his experimental study. It was observed that bored students tend to lean on forward putting their head on their hand when experiencing boredom. (Bull, 1978) Another study suggests that shifts on posture from leaning back to forward or vice versa also indicate for a bored state among students. The study further implies that certain postural behaviors, likely characterized by restlessness, fidgeting, or a desire for a break, may serve as observable indicators that a student is transitioning towards a state of boredom (Mota et al., 2003). Bench et al also supports the findings with the body posture

expressing boredom as their study suggests that hunched and slumped posture is related to boredo (Bench et al., 2013). Witchel et al., in their experimental study distinguishing interest and boredom through body movement suggest that boredom is associated with sudden movements of the head and shoulders followed by period of stillness. Supporting the boredom expression through restlessness (Witchel et al., 2014).

The biomechanical strain that a hunched or slumped posture places on the spine is the primary cause of low back pain. Sitting with one's back hunched for extended periods of time can cause spinal misalignment, which puts uneven strain on the facet joints, intervertebral discs, and surrounding soft tissues. (Jung et al., 2020).

In addition to having an impact on posture, boredom interacts with psychological variables that may intensify pain perception. Due to their lack of mental activity, bored people are more sensitive to even the smallest aches and pains, which can lead to heightened awareness of physical discomfort (Li et al., 2019). The subjective perception of pain may be exacerbated by this increased focus, leading to a vicious cycle in which discomfort further diminishes interest and increases feelings of boredom. This cycle emphasizes how psychological and physical variables are intertwined in the onset and persistence of pain.

There is a complex relationship between boredom and low back pain, with sedentary activities linked to boredom having a major impact on the beginning of discomfort. Research indicates that musculoskeletal discomfort, particularly in students, may be caused by psychological variables in addition to job or school-related discontent. Student boredom and poor self-control are cyclical, which lowers dopamine release and increases the likelihood of recurrent episodes of low back pain. Students who exhibit observable behaviors—like a lack of participation or changes in posture—are likely bored. From a biomechanical perspective, low back discomfort is mostly caused by the drooping or stooped posture that is associated with boredom, as it puts strain on spinal structures and affects spinal alignment.

Conclusions

In summary, there is a complex relationship between boredom and low back discomfort, especially when it comes to students. This association has important consequences for both physical and psychological health. Long periods of sitting lead to musculoskeletal pain because the sedentary character of activities that are associated with boredom and academic disappointment are combined. Students who are prone to boredom and exhibit poor self-control can set off a loop that impacts dopamine release and raises the possibility of recurrent episodes of low back pain. More research is necessary to create focused therapies and preventive measures that can successfully address the complex interactions between low back pain and boredom. These studies can help develop holistic strategies to improve

students' total well-being by highlighting the interdependence of mental and physical health in the face of contemporary issues and scholastic expectations.

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Endocrinological Disorders and Covid-19

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Abstract

Introduction: *The COVID-19 pandemic has created tremendous economic and psychological dynamics for all humankind, regardless of the challenges among the different population groups. People with endocrinological and metabolic disorders need delicate measures during this pandemic. COVID-19 has physiological and biological consequences that affect these people differently, as they have compromised bodies.*

Methods: *This article employed a comprehensive and multifaceted approach for effective data collection, placing a strong emphasis on integrating both qualitative and quantitative methodologies in order to thoroughly analyze and critically assess the significant impact that COVID-19 has had on individuals who are living with various endocrinological disorders, as well as those related health issues that often accompany these conditions. This dual approach ensured a more nuanced understanding of the challenges faced by this population during the pandemic.*

Findings: *We present an overview of challenges faced by people with endocrinological disorders during Covid-19, management and areas of concern.*

Key words: *endocrine system, disorder, Covid-19, impact, immunity*

Introduction

Endocrinological disorders have long been associated with immune alterations. Understanding how the endocrine axes modulate the functions of the immune system in these chronic conditions can provide insight into immune responses in the general population. During the pandemic, knowledge of how endocrinological disorders are important in the immune response was more critical. (1,2). The endocrine system is a network of glands that produce hormones regulating a variety of important functions such as growth and development, metabolism, especially the rate at which calories are burned, sexual function, reproduction, and mood. Hormones are the body's chemical signaling system (3). They serve as messengers from one part of the body to another. People with endocrine issues have to be extra careful with hygiene and compliance with modern protocols like wearing masks and social distancing (4). The purpose of the present review is to point out endocrinological issues and provide guidance concerning the management of these patients in the era of the pandemic. Data from previous pandemics were also summarized to provide a guide for clinical practice.

The Endocrine System and Its Role in the Immune Response

The endocrine system comprises a set of diverse glands that communicate via a signal cascade mediated by messenger molecules known as hormones. The hormones exert power in the processes that have to do with metabolism, tissue growth and repair, behavior, mood, or reproduction, among many others. A perturbance of the delicate balance of these messengers and their target structures could result, therefore, in a particular disease (5). Besides, the endocrine system can also influence processes outside of the direct control of classical targets, as hormones switch part of the immune response. Hormones develop their immune regulatory functions, in part, through communicating with the organs of the immune system such as the thymus and the bone marrow through information transmission via nerve cells (6). In this regard, all endocrine organs exert their influence on some immune parameters, due to different hormonal mediators, translating into different reading modes and a heterogeneous immune function regulation. These implications are varied depending on which of the different hormones mainly secreted by a particular endocrine gland are being addressed (7,8).

Glucocorticoid hormones, such as cortisol, insulin, and thyroid hormones, all produce a mild or moderate immunosuppressive effect by up or down-regulating different cellular and humoral immune functions (9). At the same time, these hormones are necessary for modulating immune system activity against infections, mainly as a compensatory mechanism to other changes. A dysregulation of the mechanisms involved in hormonal regulation of the immune response can lead to increased susceptibility to infections or an increased risk of disease progression in these adults (10). Situations of pandemic and severe acute stress caused by them offer us the unique observational circumstance to verify this fact. In the case of COVID-19, in less than two years, it has become clear that patients with diabetes, obesity, or thyroid dysfunctions are especially vulnerable to developing a serious clinical condition (11,12). This is due not only to autologous and endogenous hormonal, organic, and immune changes that all of these groups suffer but also to the fact that the virus has a high capacity for endocrine and exocrine tissues, thereby enhancing the pre-existing endocrine dysfunction. This manuscript seeks to synthesize current knowledge regarding the effects of endocrinological disorders on Covid-induced immunity, exploring potential mechanisms and clinical implications.

Materials and Methods

A comprehensive review of the existing literature was performed to investigate the relationship between endocrinological disorders and alterations in immune system function. Our primary objective was to analyze how various endocrine axes affect immune responses in chronic conditions. To collect relevant data, we systematically searched several databases, including PubMed, Scopus, and Google Scholar, for peer-reviewed articles and studies focusing on the interaction between hormone regulation and immune system responses, particularly regarding vaccine efficacy and outcomes. Additionally, we examined the implications of these findings within the context of the ongoing pandemic, highlighting the importance of understanding the influence of endocrinological disorders on immune responses.

Results

Impact of Covid-19 on Patients with Endocrinological Disorders

The COVID-19 pandemic has created tremendous economic and psychological dynamics for all humankind, regardless of the challenges among the different population groups (13). People with endocrinological and metabolic disorders

needed delicate measures during the pandemic. COVID-19 has physiological and biological consequences that affect these people differently, as they have compromised bodies. The current data shows that in several cases, management of chronic diseases poses special challenges during the COVID-19 pandemic (14,15). The majority of infected individuals do not develop serious or life-threatening complications. The presence of endocrinological disorders may predict a worse outcome of COVID-19. Special considerations include the management of diabetes in individuals who become infected, as COVID-19 may promote the development of possible future endocrine diseases. COVID-19 may unmask subclinical endocrinological disorders, which can have dramatic effects on ongoing hormone replacement in patients with specific thyroid disorders, creating a state of immune debilitation that makes the host more susceptible to the acquisition of existing viral infections, including COVID-19. L-thyroxine used for hypothyroidism could increase morbidity by itself in COVID-19 (16,17). Thyroxine excess has shown a higher COVID-positive status compared to euthyroid voluntary blood donors. This same population had increased psychological stress during the pandemic, greater anxiety, fear, and concerns about the economic consequences, followed by depressive symptoms, sleep disturbances, and suicidal thoughts. A significant percentage had no access to their physician, no access to scheduled laboratory hormone control, and no access to prescriptions.

The mortality rate in hypothyroidism was also significantly higher, and more were severely symptomatic, with a notable percentage experiencing mild symptoms (18,19). The perception of a state of hypoglycemia worsened in a significant number of the subjects, and those who were free to describe their feelings found that a large percentage were more afraid of hypoglycemia during COVID-19, with many describing this psychological distress as "terrible." Data also shows that in type 1 diabetics, the fear of hypoglycemia worsens during the COVID-19 pandemic (20). A significant percentage said they were more afraid of hypoglycemia during COVID-19, and many described this psychological distress as "severe" or "terrible." Analysis showed that increased stress leading to hypoglycemia in COVID-19 is significantly associated with reductions in activity level and behavior (21). The ongoing pandemic also affected their ability to attend doctor's appointments or have bloodwork done.

Management of Endocrinological Disorders in the Context of Covid-19

Managing endocrinological disorders in general and the hormonal sequelae of COVID-19 survivors, in particular, have been highlighted as areas of concern. The COVID-19 phenotype appears to be predominantly vascular in nature. The SARS-CoV-2 virus binds with its spike protein to the angiotensin-converting

enzyme 2, which is expressed in the lungs, heart, testes, and gastrointestinal tract (22) It may be possible that because of the wide distribution of both hormonal and non-hormonal effects of viruses, endocrinologists need to be prepared for collateral effects (23).

1) Justification of immunosuppressive therapy: Avoiding steroid or hydroxychloroquine treatment unless it is absolutely necessary.
2) Management of the existing endocrine disease: Customizing the hormonal replacement strategies while keeping in mind the hypercoagulable state in COVID-19. Particular caution would be needed in thyroid cancer patients where an increase in levothyroxine therapy can be procoagulant. Subcutaneous and depot therapy can be considered in routine patients not requiring urgent hormone correction or in patients needing regular chemotherapy.
3) Medication management in postoperative patients: Rapidly returning physical hormone-adrenal function test requirements to the current COVID-19 discharge policy.
4) Investigations in suspected patients: Not to be delayed for patients with symptoms of Cushing's syndrome in the absence of typical features when home cortisol tests are available.
5) Monitoring of endocrine symptoms via telehealth: In the absence of a personal patient system, endocrine symptoms can be minimized by good replacement with steroids and long-acting hormone therapy.
6) Telemedicine in endocrinology: Clinic appointments to be systematically followed as can be translated by telephone.
7) Patient education: Guidance on when to seek medical advice, astute medicine use, and encouraging self-management strategies are important (24).

Central, peripheral, and secondary access for patients to attend essential medical appointments and collect biological specimens have been severely curtailed. The care team should be aware of these issues so they do not surprise patients with extra blood samples, which may increase their risk of exposure to the virus (25). It is worth pondering why we are so concerned about the hormonal effects of the virus. It is because, with the paucity of high-quality evidence of the effect of this pandemic on people with endocrine diseases, endocrinologists are keen to mitigate all possible risks to our patients, even if these are speculative. In the context of this major public health catastrophe, the whole purpose of holistic and personalized management changes is to protect the vulnerable (26).

Future Research Directions

Epidemiological, pathophysiological, and interventional studies should be undertaken to unravel the impact COVID-19 has on patients with endocrine disorders. These studies are especially needed in patients with PGL, who are most at risk. The aim of these studies should be to understand, in the long term, both the direct relationship between viral infections and endocrine glands, and indirect ones, which in complex critically ill patients manifest as TSH. Moreover, the use of drugs modulating the neuroendocrine system has to be investigated. In fact, an efficacious therapeutic plan should include treatment strategies to ameliorate the cytokine storm and, at the same time, the hormone release and decrease in release, according to their hormonal profile. Also, the efficacy of some current medications for endocrinologically affected patients, whose doses would be titrated according to hormonal status, must be tested in a specifically organized clinical trial, which could also be useful for viral infections other than coronaviruses. The coordination among multidisciplinary scientific societies was established to develop clinical guidelines aimed at enhancing research efforts. This involved the pooling of data from laboratory tests and results that were universally shared and validated within international databases (27). Such collaborative initiatives are intended to boost the capacity of ongoing and future research, thereby assisting clinicians and researchers in their advancement towards more tailored and specific therapeutic care. Additionally, this framework facilitates a coordinated antiviral therapeutic response to potential future pandemics. The implementation of precautionary yet responsible actions is crucial to ensure that future pandemics can be addressed with appropriate scientific and civic preparedness. To achieve this, comprehensive data collection during widespread challenges is imperative, allowing for subsequent re-analysis and interpretation. In the absence of data derived from standard research protocols, adherence to current treatment recommendations is essential.

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Postoperative wound infections in the surgical clinic of University Hospital Centre "Mother Theresa" in Tirana- a microbiologic study

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Abstract

Introduction: *Every year hundreds of thousands of surgical and invasive medical procedures such as endoscopic and others are performed in Albania. In each of these procedures, a surgical instrument or medical device comes into contact with the sterile tissue or mucous membranes of the patient. In case of failing during disinfecting and sterilizing procedures there is a risk of transmission of environmental pathogenic microbes.*

Methodology: *This is a comparative study carried out in March 2014 and September 2021 in the surgical clinic of ward III of the University Hospital Centre "Mother Theresa". The samples were taken from the postoperative wounds of patients with surgical intervention, in which were isolated and identified the pathogenic microbes. The samples in the operative wounds were taken with sterile tampons inserted in simple broth, then they were placed in a thermostat for 24 hours at a temperature of 37°C. The tubes are left on the table, the transition is made to nutrient*

media such as Agar-blood, Machonkay, Deoxycholate-citrate, they are put back into the thermostat at a temperature of 37°C for 24 hours and the next day the plates are analyzed to isolate and identify the pathogenic microbes.

Results: *Surgical wound infections are considered surgical infections, which are directly related to the type of surgical intervention. Out of 49 samples of postoperative wounds taken in 2014, 48.8% (24) of them were isolated and identified microbial stains. Regarding the pathogen type: 12.5% E. Coli, 16.7% Staphylococci aureus, 50% Staphylococci epidermis, 12.5% Pseudomonas and 8.3% Klebsiella. Out of the 7 samples in 2021, no pathogenic microbes were isolated.*

Conclusions: *Comparing the microbial charge in the wounds of postoperative patients in 2014 and 2021, we found a considerable improvement. We relate this finding with the considerable improvement of hygienic-sanitary conditions in 2021, in accordance with infection prevention protocols.*

Key words*: surgical wound, interventions, hospital infections, pathogen, microbial stain*

Introduction

Every year hundreds of thousands of surgical and invasive medical procedures such as endoscopic and others are performed in Albania. In each of these procedures, a surgical instrument or medical device comes into contact with the sterile tissue or mucous membranes of the patient. The biggest risk of all such procedures is the introduction of pathogenic microbes that can cause infections.

If we fail to properly disinfect or sterilize these medical instruments and equipment, we risk breaching host defense barriers, as well as person-to-person transmission (eg. hepatitis B virus) or transmission of environmental pathogens, such as Pseudomonas aeruginosa (1). Disinfection and sterilization are essential processes that ensure that medical and surgical instruments or equipment will not transmit infectious pathogens to patients. Through the health care policies, we identify according to certain items the cleaning, disinfection and sterilization that must be carried out and strictly followed.

Lack of compliance with established guidelines for disinfection and sterilization and failure to follow science-based guidelines can lead to epidemic outbreaks or cases of nosocomial infections.

However, sterilization and disinfection are only one of the basic horizontal hospital infection control procedures.

During the year 2021, fewer infections of operative wounds were observed where there were no isolations for different pathogens compared to previous years. Likewise, during 2021, no epidemic outbreaks have been observed in the

country's hospitals from hospital infections, which indicates an improvement in the hospital environment, sterilization and disinfection and other measures. (3)

FIG. A. A post-surgical wound swab sample

FIG. B. Surgical set in sterile cystine

Also, a decrease in days-stay in the hospital for 3-7 days, as well as over 3 weeks is observed, which indirectly indicates the absence of serious hospital infections as observed in previous years. We also have a decrease in the use of antibiotics in

more than 1 day, which indirectly indicates that we have a decrease in hospital infections. (4-5)

Surgical wound infections, which are directly related to the type of surgical intervention, are considered surgical infections and are divided into two types:

1. Superficial wound infection which is characterized by the development of infection within 30 days, and where the infection affects only the superficial part of the wound. This infection presents with pain, edema, erythema, and purulent secretions from which pathogenic microbes are isolated.
2. Deep wound infection where the infection appears within 30 days, affects the soft tissues, and presents purulent secretions from the depth of the incision, temperature above 38o C, abscess and must definitely have wound drainage. (6)

Every year in the world, on average, 15-28% of the patients operating in surgery clinics get a hospital infection.

In a monitoring study carried out in Albania during the years 2012 - 2015, 234 samples of post-operative wounds were taken from the ward number 1 and ward number 3 of the "Mother Teresa" University Hospital Center. The age of the patients was 22 - 70 years, and 213 were male and 21 were female. Samples were taken and a microbiological examination was carried out for each patient's postoperative wound. Out of 234 samples, 44.4% microbial strains (n=104) were isolated and identified, of which E. Coli strains (30.7%, n=32), Staphylococcus aureus strains (43.2%, n=45), Staphylococcus epidermis strains (4%, n=14), Pseudomonas aeruginosa strains (5.7%, n=6), Proteus strains (3.8%, n=4) and 3 strains of Klebsiella pneumoniae (2.8%). An assessment of hospital environments, disinfection and sterilization was also carried out. (7)

The contamination of the wounds was thought to be a consequence of the hygienic-sanitary conditions not according to the standards, the surgical sets were very old and were sterilized in the autoclaves found in the surgical wards. Wound treatment was carried out in patient rooms where there were more than 3-4 patients in the room together with visitors, and the infrastructure of the halls and wards was not in modern conditions.

However, the data of the PPS study in 2019 show a general prevalence of 16.8%, similar to the countries of the European Union (EU), but it is still necessary to conduct a similar study to summarize all the data. Also, since the prevalence of hospital infections is complex, and the use of antibiotics must be justified and specified. There is an urgent need to strengthen other measures to limit nosocomial infections and follow relevant protocols and guidelines by having efficient infection control units in every hospital. (8)

Methodology

The study was carried out during March 2014 and September 2021 in the surgical clinic of ward III of the University Hospital Centre "Mother Theresa". The samples were taken from the postoperative wounds of patients with surgical intervention and was carried out the identification and isolation of pathogenic microbes.

The samples in the operative wounds were taken with sterile tampons inserted in simple broth, then they were placed in a thermostat for 24 hours at a temperature of 37°C. The tubes are left on the table, the transition is made to nutrient media such as Agar-blood, Machonkay, Deoxycholate-citrate, they are put back into the thermostat at a temperature of 37°C for 24 hours and the next day the plates are analyzed to isolate and identify the pathogenic microbes. (9).

Results

56 samples were analyzed in total. Out of 49 samples of postoperative wounds taken in 2014 in the III-rd clinic of the "Mother Teresa" University Hospital Center in Tirana, 48.8% (24) of them were isolated and identified microbial stains. Regarding the pathogen type: 12.5% E. Coli, 16.7% Staphylococci aureus, 50% Staphylococci epidermis, 12.5% Pseudomonas and 8.3% Klebsiella.

The age of the patients was 20 – 65 years, out of them 32 were male and 24 were female. Samples were taken from each patient's postoperative wound to carry out a microbiological examination.

In 2014, the samples of the operative wounds were taken at the time when there were more than 4 patients in the patient's room, and there were many visitors.

While in 2021, the samples of the operative wounds in the intervened patients were taken in the room where there are only two patients and no visitors, since after the period of covid-19, visitors were not allowed to enter the patients' rooms outside of the specified schedule, something which makes there is less flow of people and less contamination.

According to the results, it can be seen with a higher percentage of the identification of the pathogenic microbe Staphylococci aureus, since the wounds were smelly and contaminated, which comes as a result of the carelessness of hygiene in the environments where the patient stays in a room with four other people, supported by the identification of gram-negative bacteria, which find suitable ground in the environments of intervened wounds.

Staphylococci are gram-positive, facultative anaerobic cocci that appear in the form of grape villi. They are catalase positive, constituting the main component of the normal flora of the skin and nose.

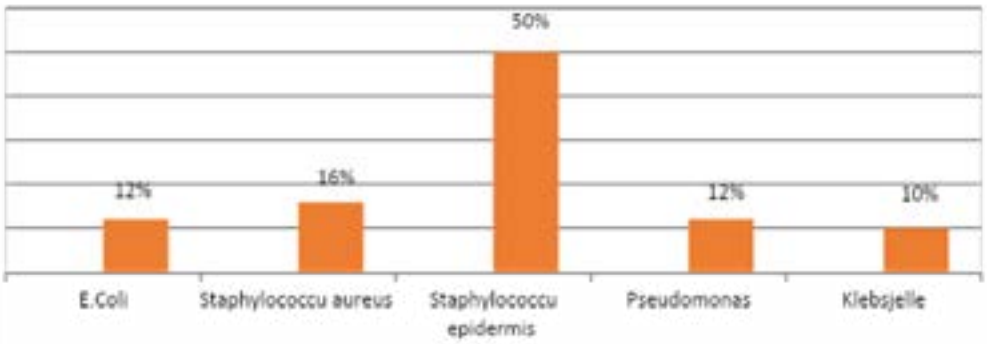
- Staphylococcus aureus is one of the most frequent causes of hospital and community opportunistic infections, especially operative wounds.

  Identification
  1. Beta - hemolysis in blood agar
  2. It ferments mannitol
  3. Golden pigment (aureus) is present
  4. Coagulase positive

- Staphylococcus epidermidis. Staphylococcus epidermidis is a rarer cause of opportunistic infections than S.aureus, but still significant. It is a mediator of nosocomial infections (eg catheters, surgery (heart valves).

  Identification
  1. There is no hemolysis on blood agar
  2. It does not ferment mannitol
  3. No pigment
  4. Coagulase-negative.

GRAPH. 1 Identification of pathogenic microbes



While in the monitoring carried out in 2021, out of the 7 samples of postoperative wounds, no pathogenic microbes were isolated.

It was also noticed that surgical interventions were performed in operating rooms with modern infrastructure, where at the entrance to the room the patient passes through the passage to the filter room and then to the operating room (10).

The hygienic-sanitary conditions were quite good and infection prevention protocols are implemented, as well as the operating theaters are cleaned, disinfected

by health personnel according to the regulations and at the end of the operations, the theaters are disinfected by the sterilization center with the relevant equipment.

The surgical sets were packed, put in cystine with the indicator paper on top, which shows that the surgical sets have been sterilized and have the date of sterilization. (11)

We also emphasize that during the monitoring in these operating rooms there are not only two or three cysteines with surgical packages, but there are many and the operations are performed in the most comfortable way possible.

Conclusions and Recommendations

This study compared the microbial charge in the wounds of postoperative patients in two different years 2014 and 2021.

In the monitoring carried out in 2014, based on the results of the study, it was found that the contamination of the wounds was the result of:

Lack of hygienic-sanitary conditions according to the standards, low level of infrastructure of the operating theaters and pavilions, use at a depreciated level of the sets surgical, Inadequate sterilization carried out in autoclaves located inside the operating block, use of practices for treating wounds in patient rooms where there could be more than 2-3 operated on, accompanied by family members.

The impact of post-operative wound infections on patients' lives plays an important role in: Lengthening the length of stay, Increasing the cost of treatment, increasing diagnostic procedures.

In the monitoring carried out in 2021, 7 samples of postoperative wounds of clinic No. 3 were taken. Of the total of 7 samples taken for microbiological examination, none of the operative wounds came out contaminated.

This indicates a good continuation of the chain of infection in surgical wounds. (12) Interventions were performed in operating rooms with modern infrastructure, where the patient enters the room through the passage to the filter room and then to the operating room.

Hygienic-sanitary conditions are in accordance with infection prevention protocols, as well as operating rooms are cleaned, disinfected by health personnel according to regulations and at the end of operations, the rooms are disinfected by the sterilization center with the relevant equipment.

The surgical sets are packed, inserted into the cystine with the indicator paper placed on top, which shows that the surgical sets have been sterilized and have the date of sterilization (9,11)

We also emphasize that during monitoring in these operating rooms there are not only two or three cystines with surgical packages, but they are endless, thus helping the doctor to have unlimited access to sets.

One of the most effective methods to prevent post-surgical infection is prophylaxis, which can be achieved only with a single dose of an antimicrobial agent which is defined in detailed instructions for antimicrobial prophylaxis before surgery that is part of the National Infection Prevention Project surgical. (11,12). We recommend the implementation of the National Program for the Prevention and Control of Hospital Infections supported by the World Health Organization.

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