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# Investigation of digital health information literacy and the relationship between burnout and job satisfaction of health professionals in three public hospitals during Covid-19 pandemic

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**Abstract:** Burnout and job satisfaction are two multifaceted and multi factorial concepts that are impacted significantly by ones' levels of digital health literacy, particularly amid the concurrent pandemic. To investigate the digital health information literacy levels, burnout and job satisfaction among healthcare professionals, as well as to determine their correlation with participants' socio-demographic characteristics a cross-sectional study was conducted between March and April 2021.195 professionals working in three major public hospitals of Greece participated in the survey through the complication of a structured questionnaire formulated by closed-ended items deriving from the Electronic Health Literasy Scale (eHEALS), the Copenchagen Burnout Inventory (CBI) and the Job Satisfaction Survey (JSS). Regarding burnout, across its all three dimensions, there is an average total burnout of 46.3% with the highest average burnout corresponding to personal burnout (47.7%) and the lowest to burnout related to patients (44.3%). Intense exhaustion is experienced more in women, nurses and those working in closed wards. In terms of job satisfaction, this study showed that the factors that impact job satisfaction positively are the nature of work, supervision and relationships with colleagues, while remuneration, occupational conditions and promotions were found to have a negative impact. Men and those who work as assistants show greater overall job satisfaction, while reduced overall satisfaction is manifested by doctors and employees in closed wards. As per the digital health information literacy, was found its levels were moderately among health professionals. Men, especially doctors and technologists / physiotherapists, and those with a higher level of education, reported their satisfaction with their current digital and internet's usefulness in health-related decision making process. The pandemic outbreak a long with the major changes that took place within the hospitals as a result, affected health professionals gravely, leading them in experiencing intense exhaustion that reduces their job satisfaction.

**Keywords:** Digital health information literacy, burnout, job satisfaction, health professionals, Covid-19 pandemic

## 1. Introduction

Burnout and job satisfaction are two multifaceted and multi factorial concepts, closely related to each other. The emergence of the Covid-19 pandemic in early 2020 impacted gravely their interrelation, as it brought many and important changes, both to health systems and healthcare professional's daily working life. The initial lack of knowledge regarding the transmission, protection and treatment of the disease, combined with the existing shortages in personnel and protective equipment, increased their levels of anxiety, fear and insecurity regarding their work, directly affecting burnout and job satisfaction dimensions.

One of the most widely accepted definitions of burnout was given in 1982 by Christina Maslach, who described it as "a syndrome of physical and mental burnout in which the employee loses interest and the positive feelings he had towards his patients, ceases to be satisfied while develops a negative image of himself" [1]. Burnout occurs mainly among health professionals because of the specificity of their profession and their daily contact with illness, human suffering, death, as well as with adverse working conditions-excessive workload, cyclic working hours, etc. [2, 3]. This has been worsened during the pandemic as healthcare professionals find themselves occupationally exhausted due to their constant exposure to Covid-19 patients with insufficient protective equipment, as well as the continuing conflict between work and personal life as a result of their increasing professional obligations [4, 5].

Burnout, besides a syndrome of physical and mental distress mostly manifested among healthcare professionals, comprises also an indicator of the quality of the health services provided, as it affects both the employees and the patients, the recipients of said services, whose satisfaction is directly related with the level of professionals' burnout [6, 7]. Job satisfaction contributes significantly to this phenomenon, as its reduced levels

are one of its causes [8]. Constituted by a multidimensional set of intrinsic and extrinsic determinants, is distinguished into intrinsic and extrinsic as well. Intrinsic job satisfaction derives from the content and execution of work-the variety of activities and the usage of skills among other functions, while extrinsic job satisfaction emerges from the circumstances the work is performed under, such as working conditions, remuneration, etc. [9]

Higher levels of job satisfaction have a positive effect on individuals' quality of life, as they enable them to cultivate distinct positive feelings towards their work environment and their respective role within it, consequently affecting the relationships they form with their peers, their emotional balance, and well-being [10]. A professionally satisfied worker is more efficient, makes fewer mistakes, presents reduced absenteeism tendencies, as well as being unwilling to quit his job or depart from the field [11]. Concerning healthcare personnel, the constant contact with the disease, combined with additional stress factors- such as the exhausting working hours, along with the psychological burden of being responsible for decision making related to the improvement or maintenance of one's one life, impede the establishment of positive feelings and job satisfaction [12,13]. As a result, healthcare professionals' dedication to their duties is affected due to the lack of job satisfaction, leading to the provision of services of lower quality that do not meet patients' satisfaction requirements [14].

Technological and communications breakthroughs have supported an increasing percentage of the world's population to enjoy the right to access information, and especially, to retrieve health related information [15, 16,17]. Accessibility alone does not suffice, as digital health information literacy is required for electronic sources to be transformed into a useful information tool. This capability may as well be considered as "e-literacy" or "e-health education", the level of which comprises a significant determinant of the quality of the health services provided [18,19]. Digital health information literacy refers to the set of skills that are necessary in order to seek, retrieve, assess and apply information obtained through electronic and digital sources to a given health situation. The term was proposed by the World Health Organization in order to emphasize the application of digital data in health information literacy [19]. Hence, it is important for healthcare professionals to constantly educate themselves and bring their skills up-to-date,so that they are able to work efficiently and effectively, providing high-quality health services [20,21].

This study aims in identifying the interrelations among digital health information literacy, burnout and job satisfaction of health professionals working in three different Greek public hospitals amid the Covid-19 pandemic. In addition, to investigate how participants' digital health information literacy, burnout and job satisfaction are affected by their respective demographic characteristics.

## 2. Methods

### 2.1. Study Sample

A cross-sectional survey conducted in three Greek public hospitals in particular, "Sismanogleio" General Hospital of Komotini and Alexandroupolis University Hospital in Northern Greece, and "Korgialenio-Benakeio" Athens General Hospital in Central Greece, in March and April 2021, between the second and third pandemic wave. Following the approvals of all hospitals' Scientific and Administrative Boards, 300 questionnaires were distributed. Participation was voluntary and completely anonymous, with all potential participants being thoroughly informed before granting their consent and proceeding with completing the questionnaire. Medical and nursing personnel, technicians and physiotherapists working in the three aforementioned hospitals were eligible to take part in the study, however, 195 completed questionnaires were collected (65% response rate).

### 2.2. Research Tool

Our research tool consisted of four distinct questionnaires, where the first one assisted the collection of participants' demographics, as well as social and professional characteristics. The second one is the Copenhagen Burnout Inventory (CBI) that records health professionals' burnout via a 5-item Likert scale that had been translated in Greek and adjusted accordingly by Papaefstathiou et al. [22]. It is formatted by 19 closed-ended questions that comprise three scales: "personal burnout", "occupational burnout" and "customer-related burnout". Cronbach's alpha internal consistency coefficient for these scales was between 0.82 and 0.87.

To investigate participants' job satisfaction level, the Job Satisfaction Survey (JSS) was applied, as it had been translated into Greek and adjusted accordingly by Tsounis & Sarafis [23] It is comprised by 36 closed-ended questions that assess personnel's satisfaction with regard to nine specific work parameters; compensation, promotion, supervision, advantages, anticipated benefits, operating conditions, peers, nature of work and communication, through a 6-item Liker scale. Cronbach's alpha internal consistency coefficient was estimated at 0.92. Both questionnaires were deployed followed their creators' permission.

The fourth questionnaire is the eHealth Literacy Scale (eHEALS) that evaluates 8 factors corresponding to the healthcare personnel's digital health information literacy levels with a 5-item Likert scale. It was

developed by Norman & Skinner and is available to all researchers for estimating respondents' combined knowledge, easiness, and perceptions of retrieving, evaluating, and applying electronic health information to health problems [24]. Cronbach's alpha internal consistency coefficient was estimated at 0.93. All questionnaires were deemed suitable for our survey given their high reliability index.

### 2.3. Statistical Analysis

Descriptive and inductive statistics through the IBM's Statistical Package for Social Sciences 21.0 (SPSS) were applied. The Kolmogorov-Smirnov test was used to investigate the normal distribution of quantitative variables, while Students' t-test, analysis of variance (ANOVA), Pearson's and Spearman's correlation coefficients were applied as well. In cases of more than two independent variables presenting statistically significant relations in the bivariate analysis, multiple linear regression was implemented. The bilateral level of statistical significance was set at 0.05.

## 3. Results

### 3.1. Demographics

Participants' demographic and professional characteristics are presented below in Table 1. Most of them were women (74.4%), aged between 40 and 49 years (43.6%), married (71.8%), with children (70.8%), that had graduated from a University or Technological Institute (75.9%), currently working as nurses (57,4%) with more than15 years of experience (56.4%).

**Table 1**. Participants' socio-demographic and professional characteristics

| **Characteristics** | **N** | **%** |
|---|---|---|
| **Sex** | | |
| Male | 50 | 25,6 |
| Female | 145 | 74,4 |
| **Age** | | |
| 20-29 | 13 | 6,7 |
| 30-39 | 35 | 17,9 |
| 40-49 | 85 | 43,6 |
| >49 | 62 | 31,8 |
| **Marital Status** | | |
| Single | 37 | 19 |
| Married | 140 | 71,8 |
| Divorced | 16 | 8,2 |
| Widowed | 2 | 1 |
| **Number of Children** | | |
| 0 | 57 | 29,2 |
| 1 | 41 | 21 |
| 2 | 83 | 42,6 |
| 3 | 9 | 4,6 |
| >3 | 5 | 2,6 |
| **Educational Level** | | |
| PhD | 8 | 4,1 |
| MSc | 46 | 23,6 |
| Bachelor's | 27 | 13,8 |
| Graduate of a Technological Educational Institute | 67 | 34,4 |
| Secondary Education | 45 | 23,1 |
| Primary Education | 2 | 1 |
| **Monthly Income (€)** | | |
| <1000 | 60 | 30,8 |
| 1000-1500 | 107 | 54,9 |
| >1500 | 28 | 14,4 |

| | | |
|---|---|---|
| **Profession** | | |
| Medical Doctor | 48 | 24,6 |
| Nurse | 112 | 57,4 |
| Radiologist | 14 | 7,2 |
| Laboratory Technician | 14 | 7,2 |
| Physical Therapist | 13 | 6,7 |
| **Years of Experience** | | |
| 0-4 | 39 | 20 |
| 5-9 | 15 | 7,7 |
| 10-14 | 31 | 15,9 |
| 15-19 | 30 | 15,4 |
| 20-24 | 30 | 15,4 |
| >24 | 50 | 25,6 |
| **Work Department** | | |
| ER | 13 | 6,7 |
| ICU | 41 | 21,0 |
| Surgical | 32 | 16,4 |
| Internal Medicinal | 45 | 23,1 |
| Covid-19 Ward | 28 | 14,4 |
| Laboratory | 36 | 18,5 |
| **Horpital** | | |
| Komotini's General Hospital | 99 | 50,8 |
| Alexandroupoli's University Hospital | 48 | 24,6 |
| Korgialeneio-Benakeio | 48 | 24,6 |
| **Working Relationship** | | |
| Indefinite | 148 | 75,9 |
| Fixed-term | 21 | 10,8 |
| Fixed-term/Ancillary | 26 | 13,3 |

### 3.2 Job Satisfaction

Table 2 below portrays the descriptive statistics for the JSS's scales. As it becomes apparent, participants' satisfaction was increased because of the nature of their work, their supervisors, and their respective relationships with their peers. They reported moderate satisfaction with the communication within the organization they work, while remuneration parameters were associated negatively with job satisfaction. In this survey, the average overall job satisfaction was found 118.3, indicating moderate levels.

**Table 2**. JSS's scales descriptive statistics

| Scale | Mean | Standard Deviation | Median | Minimum | Maximum |
|---|---|---|---|---|---|
| Compensation | 8,6 | 3,7 | 9 | 4 | 20 |
| Promotion | 10,3 | 4,1 | 10 | 4 | 20 |
| Supervision | 18,7 | 4,6 | 19 | 4 | 24 |
| Anticipated benefits | 9,3 | 3,9 | 9 | 4 | 21 |
| Advantages | 11,3 | 4,4 | 11 | 4 | 21 |
| Operating Conditions | 11,9 | 4,2 | 12 | 4 | 23 |
| Peers | 16,3 | 3,8 | 16 | 4 | 24 |
| Nature of Work | 18,1 | 4,0 | 18 | 4 | 24 |
| Communication | 13,8 | 4,0 | 14 | 4 | 24 |
| **Total Satisafaction** | 118,3 | 21,2 | 119 | 59 | 183 |

Following the descriptive analysis of participants' answers to JSS, demonstrated in Table 3, the most satisfactory work parameters were: "I like my supervisor", "I like the people I work with", "I like the things I do at work", "I have fun with my colleagues" and "My supervisor is quite competent at his/her job".

**Table 3**.JSS answers' descriptive statistics

| Question | Mean | Standard Deviation | Median | Minimum | Maximum |
|---|---|---|---|---|---|
| I believe I am paid fairly for the work I do | 2,2 | 1,3 | 2 | 1 | 6 |
| There are lesser opportunities for promotion in my job | 3 | 1,7 | 3 | 1 | 6 |
| My supervisor is quite competent at his / her job | 4,7 | 1,4 | 5 | 1 | 6 |
| I am not satisfied with the additional benefits (insurance, paid leave, remuneration) that I receive additionally to salary | 2,4 | 1,5 | 2 | 1 | 6 |
| When I do my job well, I get the recognition I ought to | 3,2 | 1,6 | 3 | 1 | 6 |
| Many of the rules and procedures established in the organization I work make it difficult for me to do my job properly | 2,8 | 1,4 | 3 | 1 | 6 |
| I like the people I work with | 4,9 | 1,1 | 5 | 1 | 6 |
| Sometimes I feel like my work has no sense | 4,3 | 1,6 | 5 | 1 | 6 |
| Communication within the organization seems to be good | 3,7 | 1,4 | 4 | 1 | 6 |
| Increases in salary are very rare | 1,6 | 1,2 | 1 | 1 | 6 |
| Those who do their job well have a good chance of getting promoted | 2,5 | 1,5 | 2 | 1 | 6 |
| My supervisor is unfair to me | 4,7 | 1,5 | 5 | 1 | 6 |
| The benefits we receive in addition to the salary we receive are just as good as those offered by other organizations | 2,2 | 1,5 | 2 | 1 | 6 |
| I think my work is not appreciated | 3 | 1,6 | 3 | 1 | 6 |
| My efforts to do my job well are rarely hampered by bureaucracy | 3,4 | 1,6 | 3 | 1 | 6 |
| I find I have to work harder because of my colleagues' incompetence | 3,5 | 1,6 | 3 | 1 | 6 |
| I like the things I do at my job | 4,9 | 1,1 | 5 | 1 | 6 |
| The goals of the organization I work for are not clear to me | 3,6 | 1,5 | 3 | 1 | 6 |
| When I think about my compensation I feel that my work is not appreciated by the organization | 2,5 | 1,5 | 2 | 1 | 6 |
| Employees here are promoted as quickly as in other organizations | 2,3 | 1,4 | 2 | 1 | 6 |
| My supervisor shows little interest in how his subordinates feel | 4,2 | 1,6 | 4 | 1 | 6 |
| The benefits we receive in addition to our salary receive is fair | 2,1 | 1,4 | 1 | 1 | 6 |
| There are few rewards for those who work here | 2,7 | 1,6 | 2 | 1 | 6 |
| I have more workload than I should | 2,7 | 1,5 | 2 | 1 | 6 |
| I have a good time with my colleagues | 4,8 | 1,1 | 5 | 1 | 6 |
| I often feel like I don't know what's going on in the organization I work | 3,2 | 1,5 | 3 | 1 | 6 |
| I take pride in the work I do | 4,7 | 1,4 | 5 | 1 | 6 |
| I feel satisfied with the salary increase opportunities provided to me | 2,2 | 1,4 | 2 | 1 | 6 |
| There are additional benefits beyond the salary we should be receiving but not | 2,6 | 1,7 | 2 | 1 | 6 |
| I like my supervisor | 5,1 | 1,2 | 5 | 1 | 6 |
| I have more paperwork than I should have | 3 | 1,8 | 3 | 1 | 6 |
| I find that my efforts are not rewarded as they should be | 2,3 | 1,5 | 2 | 1 | 6 |
| I am satisfied with the promotion opportunities provided to me | 2,6 | 1,6 | 2 | 1 | 6 |
| There are a lot of bickering and quarrels at work | 3,2 | 1,5 | 3 | 1 | 6 |
| Myworkispleasant | 4,2 | 1,5 | 4 | 1 | 6 |
| Labor duties are assigned without being fully explained | 3,4 | 1,5 | 3 | 1 | 6 |

**3.3Burnout**

Table 4 below includes the descriptive statistics for the CBI's scales. An average total burnout of 46.3% is observed with the highest value being corresponding to the personal burnout (47.7%) and its lowest value relating to patient-related burnout (44.3%).

**Table 4.**CBI's scales descriptive statistics

| Scale | Mean | Standard Deviation | Median | Minimum | Maximum |
|---|---|---|---|---|---|
| Personal Burnout | 47,7 | 15,8 | 45,8 | 8,3 | 100 |
| Occupational Burnout | 46,9 | 14,9 | 46,4 | 17,9 | 85,7 |
| Customer-related Burnout | 44,3 | 18,1 | 45,8 | 4,2 | 100 |
| **Total Burnout** | 46,3 | 14,7 | 45,5 | 11,3 | 89,7 |

Following the descriptive analysis of participants' answers to CBI, summarized in Table 5, the items most associated with exhaustion and burnout were: «Is your work emotionally exhausting?", "Do you feel exhausted by your work?", "Are you disappointed by your work?", "Do you find it difficult to work with patients?" and "Do you get frustrated while working with patients?"

**Table 5**.CBI's answers' descriptive statistics

| Question | Mean | Standard Deviation | Median | Minimum | Maximum |
|---|---|---|---|---|---|
| Is your work emotionally exhausting? | 63,5 | 26,4 | 75 | 0 | 100 |
| Do you feel exhausted by your work? | 56,4 | 28,2 | 50 | 0 | 100 |
| Are you disappointed by your work? | 34,5 | 28,4 | 25 | 0 | 100 |
| Do you find it difficult to work with patients? | 33,3 | 32 | 25 | 0 | 100 |
| Do you get frustrated while working with patients | 17,5 | 23,5 | 0 | 0 | 100 |
| Does working with patients absorb your energy? | 42,4 | 32,3 | 50 | 0 | 100 |
| Do you feel like you're giving more than you're getting while you're working with patients? | 56,2 | 33 | 50 | 0 | 100 |
| How often do you feel tired? | 62,6 | 21,9 | 75 | 0 | 100 |
| How often do you feel emotionally exhausted? | 58,7 | 22 | 50 | 0 | 100 |
| How often do you think "I can't take it anymore"? | 43,6 | 27,1 | 50 | 0 | 100 |
| Do you feel exhausted from your work at the end of the day? | 54,2 | 24,2 | 50 | 0 | 100 |
| Do you get tired in the morning at the idea that you have to go to work? | 38,5 | 27,2 | 25 | 0 | 100 |
| Do you feel like every hour in your work is exhausting; | 65 | 26,1 | 75 | 0 | 100 |
| Do you have enough energy to devote your free time to family and friends? | 53,6 | 26,5 | 50 | 0 | 100 |
| How often do you feel physically exhausted? | 55,3 | 22,3 | 50 | 0 | 100 |
| How often do you feel exhausted? | 54 | 24,4 | 50 | 0 | 100 |
| How often do you feel weak and vulnerable towards patients? | 35,8 | 25 | 25 | 0 | 100 |
| Are you tired of working with patients? | 21,9 | 26,1 | 25 | 0 | 100 |
| Do you ever wonder how much longer you'll be able to work with patients? | 33,6 | 31,7 | 25 | 0 | 100 |

### 3.4. Digital health information literacy

Table 6 below presents the descriptive statistics for the e-HEALS questionnaire. The overall digital health information literacy score was 3.9, indicative of a fairly good level among the survey participants, who reportedly acknowledged the internet as helpful for decision-making. In addition, they admitted being satisfied with their current ability of seeking scientific information.

| Question | Mean | Standard Deviation | Median | Minimum | Maximum |
|---|---|---|---|---|---|
| I know what information resources regarding my job are available on the Internet | 3,7 | 1 | 4 | 1 | 5 |
| I know where to find helpful information resources on the Internet | 4 | 0,9 | 4 | 1 | 5 |
| I know how to find helpful information resources on the Internet | 4 | 1 | 4 | 1 | 5 |
| I know how to use the Internet to answer questions regarding my job | 4,1 | 0,9 | 4 | 1 | 5 |
| I know how to use the information I find on the Internet to help me | 4,1 | 0,9 | 4 | 1 | 5 |
| I have the skills I need to evaluate the information | 3,9 | 0,9 | 4 | 1 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| resources I find on the Internet | | | | | |
| I can tell high quality from low quality information resources regarding my job on the Internet | 4 | 0,9 | 4 | 1 | 5 |
| I feel confident in using information from the Internet to make decisions regarding my job | 3,6 | 1,1 | 4 | 1 | 5 |
| How useful do you feel that the internet is in helping you make decisions? | 3,2 | 1,1 | 3 | 1 | 5 |
| How important is it for you to have the ability to access online sources? | 3,9 | 1 | 4 | 1 | 5 |
| How satisfied are you with the current ability to seek for scientific information? | 3,3 | 1 | 3 | 1 | 5 |
| **Total Score** | 3,9 | 0,8 | 4 | 1 | 5 |

### 3.5. Correlations

Correlations among job satisfaction and burnout are presented below in Table 7.

**Table 7.**Correlations

| | Personal Burnout | Occupational Burnout | Customer-related Burnout | Overall Burnout |
|---|---|---|---|---|
| **Satisfaction from** | | | | |
| **Compensation** | -0,2 (0,003) | -0,2 (0,03) | -0,2 (0,004) | -0,2 (0,002) |
| **Promotion** | -0,1 (0,3) | -0,1 (0,5) | -0,1 (0,2) | -0,1 (0,3) |
| **Supervision** | -0,1 (0,4) | -0,1 (0,4) | -0,1 (0,1) | -0,1 (0,2) |
| **Anticipated benefits** | -0,2 (0,001) | -0,2 (0,05) | -0,2 (0,01) | -0,2 (0,004) |
| **Advantages** | -0,3 (<0,001) | -0,2 (0,003) | -0,3 (0,001) | -0,3 (0,001) |
| **Operating Conditions** | -0,2 (0,04) | -0,2 (0,004) | -0,3 (0,001) | -0,2 (0,001) |
| **Peers** | -0,1 (0,1) | -0,2 (0,01) | -0,2 (0,001) | -0,2 (0,01) |
| **Nature of Work** | -0,4 (<0,001) | -0,4 (<0,001) | -0,5 (<0,001) | -0,5 (<0,001) |
| **Communication** | -0,2 (0,002) | -0,4 (<0,001) | -0,4 (<0,001) | -0,4 (<0,001) |
| **Overall Satisfaction** | -0,3 (<0,001) | -0,4 (<0,001) | -0,4 (<0,001) | -0,4 (<0,001) |

Values are expressed as Pearson correlation coefficient (p-value)

Regarding the bivariate correlations among demographics and professional characteristics with job satisfaction, statistically significant relations were obtained with the scoring on all scales, except for satisfaction drawn from colleagues. In particular, following the multivariate analysis was found that those who worked at "Sismanogleio" General Hospital of Komotini Alexandroupoli's University Hospital manifested greater overall job satisfaction (b =12.5, 95% CI =5.8 to 19.2, p<0.001), were more satisfied with promotions (b =1.7, 95% CI =0.3 to 3.4, p=0.02), supervision (b =1,5, 95% CI =0,03 to 2.9, p=0,046), rewards (b =1.7, 95% CI=0.3 to 3.1, p=0.021), operating conditions (b =2.1, 95% CI =0.8 to 3.3, p=0.002) and the nature of their work (b =1.9, 95% CI =0.6 to 3.2, p=0.004), in relation to those working in "Korgialenio-Benakeio". In addition, men were more satisfied with the operational conditions (b =1.3, 95% CI =0.02 to 2.6, p=0.047) and communication (b =1.5, 95% CI =0.2 to 2.8, p=0.023) while younger employees of younger age were more satisfied with supervision (b =-0.8, 95% I =-1.5 to -0.1, p =0.027) and rewards (b=-0.9, 95% CI = -1.6 to -0.2, p = 0,.01). Ancillary employees presented more satisfaction with salary compared to indefinite and fixed-term ones (b =1.9, 95% CI interval =0.3 to 3.4, p=0.02), employees of lower educational level were more satisfied with supervision (b =0.8, 95% CI =0.3 to 1.3, p=0.002) while employees with fewer years of experience were more satisfied from the advantages (b=-0.4, 95% CI =-0.7 to -0.1, p=0.012).Finally, employees of closed wards (b =1.5, 95% CI =0.4 to 2.7, p=0.008) and with a lower monthly income (b =-1.9, 95% CI =-2.7 to -1.1, p<0.001), were more satisfied with the operating conditions while employees of open wards were more satisfied with the nature of their work (b =1.2, 95% CI =0.03 to 2.3, p=0.044).

When investigating the relations among demographic and professional characteristics with burnout, statistically significant relations were identified for all the respective bivariate correlations. Specifically, after the multivariate analysis was concluded it was found that nurses presented greater personal(b =4.7, 95% CI =0.1 to 9.3, p=0.046), occupational (b =6.3, 95% CI =2.1 to 10.4, p=0.003) and overall burnout in relation to doctors and technicians (b =5.4, 95% CI =1.2 to 9.6, p=0.012). Employees with more years of experience presented with a higher personal (b =2.1, 95% CI =0.9 to 3.2, p<0.001) and overall burnout (b =1.5, 95% CI =0.4 to 2.6, p=0.009), while women (b =5.9, 95% CI =0.2 to 11.6, p=0.044), employees of older age (b =3.1, 95% CI =0.1 to 5.9, p=0.042) and those who worked in closed wards (b =8.6, 95% CI =3.3 up to 13.9, p=0.002), manifested greater custom-related burnout; participants of a lower educational level presented higher personal burnout levels (b=2.4, 95% CI =0.5 to 4.3, p=0.012).

Concerning the relations among demographic and professional characteristics with digital health information literacy, statistically significant relationships emerged solely between educational level and participants' professional group with the scoring in the e-HEALS scale. Those with a higher level of education presented with better digital health information literacy (b=-0.2, 95% CI=-0.3 to -0.1, p=0.001), while nurses presented worse digital health information literacy compared to doctors and technicians (b =-0.3, 95% CI=-0.5 to -0.1, p=0.013).

## 4. Discussion

According to our findings, men present higher job satisfaction levels than women (122.2 vs 117), which agrees with the findings of another corresponding study [25]. With regard to workplace, employees of closed wards manifest reduced overall job satisfaction compared to those working in open ones, as shown by other similar studies in the past [26,27]. However, an older study focusing on employees of closed wards, such as the ICU, recorded higher job satisfaction rates as working conditions are controlled while there are no disruptions by interventions of patents' relatives [28].

Concerning job satisfaction parameters, starting from the one with the lowest value, satisfaction emerging from the salary, all samples' demographic characteristics, are linked to low job satisfaction levels, as the average satisfaction value is below 12. This finding agrees with previous ones that highlight the low satisfaction levels of health professionals with respect to remuneration, benefits, and additional advances [29-32]. Regarding the operational conditions, the result of the study shows a moderate satisfaction in men, nurses, technicians, physiotherapists, and those working in a closed ward, which is consistent with other studies [25-29]. As per job satisfaction gained from promotion, the multivariate linear regression supported that the employees of Komotini General Hospital and Alexandroupolis University Hospital were more satisfied with this dimension compared to the employees of "Korgialenio-Benakeio". This difference in satisfaction can be due to organizational and administrative procedures and policies. This coincides with the results of other studies, according to which, the low job satisfaction levels that occur among nurses stem from the organizational policies established [30], while the administrative and organizational climate within the organization as well as the support it offers to its employees for advancement and promotions are positively related to increased satisfaction [31].

Our findings, about all burnout dimensions, coincide with those of other relevant studies, as they show greater burnout levels in relation to its personal and occupational dimensions, rather to its patient one [33-36]. Corresponding findings have been presented by similar studies investigating technician and physiotherapists' burnout [37-39]. Furthermore, women manifest a higher percentage of total burnout (47,9) than men (41,9), a fact reflected in other similar studies in the past [33-35,40]. Additionally, those working in closed wards and had contact with Covid-19 patients, manifest greater overall burnout levels (48,2) compared to those working in open wards (45). This could be considered as an anticipated element in our survey, as employees in closed wards presented with higher burnout rates even before the outbreak of the concurrent pandemic, considering as the main causative factors for this phenomenon, the increased pressure they had undergone from their work environment as well as the lack of social support and acknowledgement of their work [35, 41-42].

However, the emergence of Covid-19, intensified social isolation, increased work pressure and physical discomfort due to the prolonged usage of personal protective equipment [43], leading to increased feelings of loss of control, vulnerability, and concern about the infectious spread of Covid-19 and the threat it poses to their family members' health, in case of its potential transmission through them [44]. Nurses working in a high-risk clinical setting [45-46], or in hospitals with deficiencies in human resources and personal protection equipment [40, 47], show higher burnout levels, while the same applies in general, in nurses caring for patients with infectious and contagious diseases [35, 48-50]. Similarly, to our findings, many studies support that nurses manifest higher burnout rates than doctors and technicians and physiotherapists [33-35, 37-38]. Finally, as per burnout experienced by health professionals in relation to the geographical area they reside and the organizational and operational structure of the hospital they work, employees of Alexandroupolis' University Hospital present with a higher average total burnout (47,9) compared to those employed by "Korgialenio-Benakeio E.E.S " (46,4) and Komotini General Hospital (43). This finding coincides with the one of a recent study that highlighted how the impact of the pandemic appeared more aggravating for doctors and nurses of a tertiary hospital [48]. From further analysis it was noted that, all job satisfaction parameters were negatively correlated with the three burnout dimensions. This associations have been supported by numerous studies investigating the relationships between burnout and job satisfaction [49-52].

The overall score on the digital health information literacy scale was 3,9, indicative of a fairly good level. This value was higher than the ones estimated in corresponding similar surveys, which either concerned exclusively nurses [18, 52], either students of nursing or other health professions [53-56]. At the same time, the study participants acknowledged as important the ability of knowing how to use the Internet, to answer

questions about their work and to use the information they retrieve online to help them, while not feeling very confident when using information from the Internet to make decisions about their work. Recently, in a study it was found that the digital health literacy dimension with the highest score was related to how to seek useful information on the internet while the worst was, as in our study, related to confidence in deploying information retrieved online [53]. In our study, employees with higher education levels presented with better digital health information literacy levels, supporting the linkage between education and digital health information literacy, suggested before [58-62].

The main limitation of our study was that it had been carried out during the third pandemic wave, a period characterized by the daily increase of positive cases and, subsequently, an increase in hospitalizations and ICU admissions. Thus, as the third and most generalized lockdown was implemented at that time, access to two of the three study hospitals, Alexandroupolis' University Hospital and "Korgialenio-Benakeio E.E.S", became more difficult, leading, in combination with the personnel's burdened workload, to limited participation. In addition, many studies investigate healthcare professionals' burnout, by applying different research models, measuring distinct dimensions from our survey questionnaire, posing a difficulty and a limitation in the effectiveness of comparing our findings to those of other concurrent studies.

In conclusion, hospital administrations ought to take immediate measures alleviating healthcare professionals' burnout, through increasing the satisfaction they receive from their work. In addition to interventions at an individual level, such as offering clear definitions of their roles and responsibilities, appropriate interventions at the workplace level are considered required as well, for more efficient and effective human resources management, to reduce the incidence of burnout syndrome and augment job satisfaction [9]. The emergence of the pandemic has highlighted the need to search for information and knowledge, establish training programs for health professionals' quick adaptation and education on digital technology and in seeking internet sources. Health professionals' ability to access the internet and take advantage of its potential, should be a main concern of hospitals' administrations.

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