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Original Research Article

FORMATION OF A HEALTH-PRESERVING ENVIRONMENT IN MEDICAL ORGANIZATIONS

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Abstract: Conceptualizations of the role and purpose of medical organizations have undergone significant transformation in recent years. Whereas previously the primary focus was placed on disease treatment or the achievement of remission, contemporary approaches maintain that, in addition to fulfilling its core clinical functions, a medical institution must comply with requirements related to safety, comfort, and the physical, psychological, and moral well-being of both patients and healthcare personnel. Collectively, these requirements constitute the concept of a health-preserving environment that facilitates the restoration and maintenance of health in all its dimensions. Within this framework, physical well-being is established as early as the design stage of a medical facility, in accordance with approved sanitary and regulatory standards. It encompasses multiple components, including material and technical infrastructure, availability of qualified personnel, hospital specialization, and the effective functioning of auxiliary services. Psychological well-being is determined by organizational policies, the established culture of communication, and the benevolent and respectful attitudes demonstrated by healthcare staff. Moral well-being largely depends on adherence to professional ethical standards by medical personnel and on the overall psychological climate within the hospital setting.The purpose of this article is to analyze the principal components of a health-preserving environment in medical institutions.

Keywords: Health preservation, ergonomics, medical personnel, psychological well-being, digitalization.

INTRODUCTION

Traditionally, the primary purpose of a patient's stay in a hospital has been considered the treatment of disease, the achievement of remission, or the stabilization of an acute or severe condition. While this remains fundamentally true, recent years have witnessed an expansion in the understanding of the hospital environment, incorporating additional dimensions such as enhanced comfort and safety, improved psychological well-being, access to information services, and the provision of social support. Together, these elements constitute a health-preserving environment, the purpose of which is to improve an individual's health and well-being and to

prevent adverse effects on health.

Importantly, the recipients of such influences are not limited to patients. Healthcare personnel are likewise affected, and their well-being directly influences the effectiveness of therapeutic processes within inpatient settings.

Many definitions of a "health-preserving environment" converge on the notion that this term refers to a system or mode of organization aimed at strengthening and maintaining health, as well as fostering awareness of the value of health, encompassing its physical, psychological, and moral dimensions. Within the structure of a health-preserving environment, three interrelated components can be distinguished: the spatial–material, the organizational–strategic, and the communicative–technological [1]. This implies that a health-preserving environment is created not only through the implementation of appropriate technologies, but also through managerial and organizational efforts and the personnel's conscious commitment to working in this direction.

The purpose of this article is to analyze the components that shape a health-preserving environment in medical organizations.

MATERIAL AND METHODS

A literature search was conducted using the PubMed, CyberLeninka, and Google Scholar databases, focusing on publications available in open access. Articles published predominantly within the past ten years and relevant to the topics of health-preserving environments, safe environments, and medical technologies were selected. The selection process was based on an analysis of article titles, abstracts, and full-text content. Publications deemed insufficiently informative, duplicative, or unrelated to the research topic were excluded.

RESULTS

Definition and Historical Development of the Concept of a Health-Preserving Environment

There are numerous definitions of a health-preserving environment. In the publication by M.A. Yasenskaya and M.A. Mylnikova, a "health-preserving environment" is defined as an ergonomically organized surrounding space that ensures convenience, safety, and comfort for both healthcare professionals and patients, taking into account their functional needs and specific characteristics [2]. The authors examine such an environment from the perspective of usability and safety in settings where individuals spend extended periods of time, which is particularly relevant for persons with disabilities. Considerable attention is paid to spatial ergonomics, intended to mitigate adverse health effects, meet patients' needs, and facilitate the professional activities of medical personnel.

The concept of a health-preserving space/environment evolved gradually alongside advances in medicine and technology. An important legacy of the Soviet period is health education associated with preventive medicine. Health-preserving education originated in the Russian Empire in response to a complex epidemiological situation and the need to develop sanitary and hygienic literacy among the population. However, traditional social structures, low levels of education, superstition, a shortage of qualified personnel, and the absence of a centralized education system hindered the development of this area.

In 1919, under Soviet authority, the Department of Sanitary Education was established within the People's Commissariat of Health of the RSFSR, initiating a centralized approach to the dissemination of sanitary and hygienic knowledge. Healthcare reforms were implemented; public awareness campaigns were conducted (including theater performances, public lectures, and mobile propaganda trains); informational brochures were published; and a system of dispensaries was created to facilitate the early detection of diseases. The principles of health preservation were also extended to inpatient facilities, where scientifically grounded sanitary, hygienic, and preventive approaches were adopted. Significant attention was—and continues to be—devoted to the sanitary and hygienic condition of the hospital environment, including regular cleaning, disinfection, ultraviolet irradiation, and bacteriological testing of surface swabs from walls and equipment.

At present, the preventive orientation of medicine is experiencing a revival, accompanied by the restoration of systems of medical screening and health education (including informational leaflets, brochures, and health schools). Health-preserving education is no longer solely a prerogative of the state and is increasingly being implemented by other stakeholders as well [3].

Three levels of a health-preserving environment are commonly distinguished: the goal-setting level; the content–technological level; and the personal–value level.

At the first level, goals and objectives are formulated, a strategic plan is developed, and the health-preserving environment is designed with the allocation of appropriate resources and conditions for their effective use. At the second level, material and technical equipment is provided and the health-preserving environment is directly implemented. At the third level, all participants recognize the value of

health and a healthy lifestyle, reflect upon the conditions necessary for maintaining health, and consciously utilize the opportunities offered by the health-preserving environment [1].

The goals and objectives derive from the very definition of a health-preserving environment and consist in restoring and maintaining health. To achieve this, a material foundation is established, incorporating, among other elements, mandatory safety requirements.

The principal requirements for a safe inpatient environment are set forth in sanitary rules and regulations (SanPiN). Recently, updated regulations—SanPiN 2.1.3678-20 and SanPiN 3.3686-21—were adopted for medical institutions. These documents define requirements for the maintenance, finishing, and equipment of hospital premises, including ventilation, water supply, lighting, furniture, linen, cleaning procedures, and related aspects. They also specify standards for various hospital departments (patient wards, admission units, treatment rooms, operating theaters, intensive care units, maternity wards, etc.) [4].

Sanitary regulations are established in accordance with the principle of minimizing all potential health risks, including infectious, hygienic, ergonomic, and injury-related risks. In the aftermath of the COVID-19 pandemic, particular attention has been paid to indoor air quality. Optimal building design, including the proper design of ventilation systems, plays a critical role in maintaining air quality in inpatient facilities and in limiting the spread of airborne infections [5].

Health-Preserving Environment for Healthcare Professionals

Familiarization with the fundamental principles of a health-preserving environment should begin during training in medical universities and colleges, where such an environment is organized not only for patients but also for students themselves, contributing to their physical, emotional, and moral well-being. Medical students, in particular, must recognize the value of their own health, while university administrations should create comfortable conditions that promote the strengthening and maintenance of health among both students and faculty members. A health-preserving environment in educational institutions should eliminate risks to health, support physical activity, and create conditions conducive to healthy learning processes [6].

Health-preserving activity constitutes a set of measures aimed at optimizing conditions for the formation, maintenance, restoration, and improvement of health. The implementation of these objectives is facilitated by health-preserving technologies. The selection of such technologies may be challenging due to differing perspectives on the most effective approaches to maintaining high levels of health, particularly in light of individual variability. Effective strategies may include wellness and sports activities involving students and/or faculty, as well as comprehensive physical education programs. Health-preserving initiatives may also be integrated into educational curricula in ways that maximize knowledge acquisition while minimizing potential harm to health. These measures additionally encompass the promotion of healthy lifestyles and preventive interventions [6].

The development of health-preserving literacy among medical students is implemented through independent work involving the preparation of booklets, essays, and informational leaflets related to healthy lifestyles, nutritional principles, disease prevention, and related topics. A health-preserving organization of the educational process makes it possible to increase the effectiveness of instruction; structure the learning process in an optimal manner; comply with necessary sanitary, hygienic, and technological requirements; take into account perceptual capacities (vision, hearing, attention) during teaching; maintain a positive psycho-emotional atmosphere; establish motivational systems that support healthy habits; and apply interactive, creative, and intellectually engaging approaches in the organization of classes [7].

The formation of health-preserving habits during the educational stage not only strengthens students' health and fosters value orientations toward health-preserving behavior, but also encourages conscious efforts to create and improve health-preserving environments directly within future workplaces in various medical institutions [8, 9]. By mastering health-preservation competencies, future healthcare professionals will be better equipped to address managerial tasks related to the organization of health-preserving environments.

The concept of a health-preserving environment also encompasses efforts aimed at improving physicians' working conditions. On average, approximately 1.5–2 hours of daily working time are devoted to administrative tasks, including the completion of various paper-based forms (reports, documentation, etc.), which significantly reduces the time available for patient care. Digitalization, including the implementation of artificial intelligence (AI) systems, may be regarded as a health-preserving technology, particularly in the context of the growing shortage of healthcare personnel and the need to substantially alleviate the workload of hospital staff.

For example, the introduction of accounting

modules, a Telegram-based appointment bot, and AI-generated recommendations based on patient complaints—implemented on the 1C:Enterprise platform in dental clinics in Tatarstan—made it possible to reduce physicians' workload by 20–30%, achieve integration with the Unified State Health Information System, and ensure more efficient resource utilization. Moreover, the combined use of ChatGPT and 1C technologies reduced report completion time by 40–50% [10].

A survey of 150 nurses revealed an underestimation of workplace risks in inpatient settings across several indicators, including awareness of latex allergies (42.7%), risk of falls at work (43.4%), burns (39.4%), and exposure to electrical shocks (36.7%), among others. Such surveys help identify critical gaps that reduce safety and health preservation in hospitals [11].

Fatigue among healthcare personnel, particularly surgical nurses, can be considered a threat not only to the staff themselves but also to patients. A relationship has been demonstrated between fatigue and the ethical climate of an organization on one hand, and adaptive resilience on the other [12]. Therefore, to prevent professional burnout, measures should be taken to manage fatigue (e.g., restorative techniques) and to improve the organization's ethical climate. Coping strategies for fatigue may include training, the use of stimulatory aids, treatment of insomnia, and other interventions [13]. Recognition from colleagues and management contributes to the maintenance of psychological well-being [14]. Furthermore, a well-developed organizational culture of team interaction supports the achievement of better clinical treatment outcomes [15].

Health-Preserving Environment for Patients

According to the definition provided by the World Health Organization (WHO), patient safety is one of the fundamental principles of healthcare. This concept encompasses multiple dimensions of safety, including epidemiological safety, pharmacological safety, minimization of complications and adverse side effects, safety of medical devices and procedures, issues related to optimal patient transportation and care, transfusion safety, and the safety of healthcare personnel themselves, among others [16].

Patient safety in inpatient settings may be influenced by healthcare professionals, administrative management, laboratory services, and even patients themselves. Systemic problems include poor communication and coordination, staff shortages, and the absence of psychological safety among medical workers [17]. Enhancing a culture of safety requires systematic error analysis, open communication, and proactive engagement on the part of healthcare personnel [18].

The safety of a medical organization is established at the planning stage. Contemporary hospital and outpatient clinic design is guided by the principles of functionality, convenience, safety, and aesthetic appeal. Finishing materials are selected to withstand exposure to disinfectants while remaining easy to clean. Entrances are equipped with ramps to facilitate access for patients with physical disabilities. Staircases are fitted with handrails, the gradient of stairs (particularly at entrances) should not be excessive, and doorways must be at least 1.2 meters wide [19].

The principle of safety constitutes an integral component of a health-preserving environment, particularly for individuals with physical or mental impairments. In a study by L. Andrew et al., individuals experiencing mental health disorders or crises described a safe space as one in which they were treated with respect and where their concerns were heard and understood. Conversely, clinical settings were sometimes perceived as unsafe because patients felt they were treated merely as a "condition" rather than as individuals, and their personal concerns were not taken into account [20]. These findings underscore the importance of a supportive psycho-emotional climate and respectful, benevolent attitudes as essential elements of a safe and health-preserving environment.

Healthcare researcher W. Gesler introduced the term "therapeutic landscapes," suggesting that the environment may serve as a place of healing in physical, social, and symbolic dimensions. Subsequent researchers have examined such spaces in homes, hospitals, and natural settings, exploring sensory aspects of the physical environment, social interactions, and related factors. The interaction of physical, social, and symbolic environments requires consideration of service users' perspectives when designing safe, recovery-oriented spaces [20]. This implies that patients' views may serve as an important reference point in shaping a health-preserving environment.

Population aging has led to an increase in the proportion of older individuals, including among patients in inpatient medical facilities that provide medical and social care to the elderly. The level of mobility and capacity for self-care declines from 93% among individuals aged 60–64 years to 20–23.7% among those aged ≥80 years. At the same time, a mentality oriented toward reliance on state support may hinder the transition to more efficient models of care (for example, a shift toward day-care hospitals). For elderly patients, the involvement of psychologists, rehabilitation specialists, and physiotherapy rehabilitation professionals becomes increasingly important, which should be taken into

account in the operation of day-care facilities where older individuals frequently receive maintenance treatment. Reduced self-care capacity necessitates assistance with dressing, mobility, feeding, toileting, and personal hygiene [21].

In addition, older patients typically present with a significant comorbid burden and a history of chronic diseases, further complicating treatment and care. Approximately one in five individuals who have experienced a stroke demonstrates clinically significant levels of anxiety requiring pharmacological intervention and psychological therapy [22]. High rates of depression, anxiety, and suicidal ideation are observed among patients with head and neck cancers. Individual or group therapy, as well as family and social support, contribute to coping with psychological difficulties [23].

Thus, health preservation in older adults requires additional efforts and resources.

Patients' assessment of the quality of medical care provided in inpatient settings may reflect the extent to which the health-preserving environment meets their expectations. For example, in Regional Clinical Hospital No. 2 of Primorsky Krai, a survey of 400 patients was conducted using five quality criteria: openness and accessibility of information about the organization; comfort of service provision conditions (including waiting time); accessibility of services for persons with disabilities (including accommodations for hearing and visual impairments, as well as medical support); courtesy and benevolence of staff; and overall satisfaction with service conditions. The survey was conducted over four consecutive years. A negative trend was identified for the criterion "accessibility of services for persons with disabilities," leading to the adoption of a "Program of Measures for the Organization of an Accessible Environment." An analysis of the difficulties faced by patients with disabilities in the inpatient setting revealed significant shortcomings, including the absence or insufficiency of ramps and handrails, non-optimal ramp inclines, and the positioning of nursing stations at heights that did not allow convenient interaction for individuals with disabilities. Corrective measures were implemented to address all identified deficiencies [24].

Quality management systems and internal audits play an important role in assessing and improving safety in medical inpatient facilities. Audit results are submitted to the institution's analytical center to develop amendments, recommendations, standard operating procedures (SOPs), and informational guidelines. For instance, following an internal audit at the V.A. Almazov National Medical Research Centre, SOPs were developed for the assessment, prevention, and management of pressure ulcers, as well as for risk assessment and fall prevention. The identification of elevated risk levels necessitates the implementation of preventive and therapeutic measures [16]. In Germany, healthcare professionals conduct seminars, surveys, online training sessions, electronic newsletters, and develop recommendations aimed at assessing and improving safety within hospital environments [25].

The professional competence of healthcare personnel significantly influences patient health and safety. Strict adherence to aseptic and antiseptic protocols, disinfection procedures (including instruments, premises, and dressing materials), proper hand hygiene with the use of medical gloves, and sterilization of materials used in patient care are of critical importance. Violations of disinfection protocols are often associated with human factors, insufficient staff awareness of proper processing and disinfection methods, non-compliance with the operating requirements of bactericidal equipment, and breaches of established sterilization standards. Such shortcomings may lead to the emergence and spread of healthcare-associated infections, representing a direct violation of safety and health-preserving principles.

To minimize these risks, staff members of the I.I. Mechnikov North-Western State Medical University developed a training module entitled "Safe Hospital Environment," designed in accordance with the predominant risk factors encountered in inpatient settings: physical (mechanical, radiation, thermal injuries), chemical (disinfectants, pharmacological agents), and biological (microorganisms, helminths, etc.). The module is used in the education of medical students and is intended to foster motivation to comply with safety regulations and to develop the practical skills necessary to maintain a safe hospital environment [26].

The recent COVID-19 pandemic was accompanied by psychological challenges affecting both healthcare personnel and patients, including anxiety, insomnia, suicidal ideation, and depression. Telephone-based interventions involving psychiatrists proved beneficial for patients, with a significant reduction in symptom severity. For healthcare staff, team-based support mechanisms demonstrated effectiveness in mitigating psychological distress [27, 28].

The digital and technological transformation of recent decades has also profoundly influenced healthcare. The transition to electronic document management systems enables the processing of large volumes of data structured by age groups, diagnoses, geographic districts, and other parameters. The concept of a unified information space integrates data from multiple databases into a comprehensive system. Ideally, such an integrated information environment should include data on patients,

scientific research, the specialization of medical institutions, as well as their material, technical, and digital infrastructure. This approach reduces informational barriers between different medical organizations involved in a patient's care. Ultimately, it enhances service quality and aligns with the principles of a health-preserving environment [29].

Key areas for the implementation of digital information technologies in healthcare include the development of an "electronic health passport" for citizens; the establishment of a unified computer database accessible to both specialists and patients; provision of secure access to medical information for healthcare professionals and patients; and the creation of online consultation centers for medical institutions. In addition, both healthcare personnel and the general population must be trained in the effective use of databases and access to relevant medical information [30].

It is also important to note the emergence of so-called high-technology medical care, financed from the federal budget. Its distinctive feature lies in the use of innovative technologies, including cellular therapies, information technologies, genetic engineering, and robotics. The most in-demand areas of high-technology medicine include organ transplantation, radiation medicine, radionuclide diagnostics, and advanced surgical procedures [29]. The integration of new technologies into medical practice enhances the quality of healthcare delivery, which in turn improves patients' quality of life, sense of well-being, and long-term prognosis.

Discussion

The concept of a health-preserving environment has emerged relatively recently. Although some authors associate this term primarily with environmental ergonomics, it is substantially broader, as it encompasses all aspects related to the improvement and maintenance of health. While the primary efforts of healthcare professionals are directed toward patient treatment, the health of medical personnel themselves is likewise regarded as an important focus within a health-preserving environment.

The formation of a health-preserving environment begins at the design stage of a medical institution, in accordance with current sanitary regulations (SanPiN) and contemporary understandings of a safe environment. Accordingly, careful planning must address architectural design; the organization of ventilation, lighting, and heating systems; the rational selection of finishing materials; and the appropriate placement of wards, radiology units, treatment rooms, operating theaters, sterilization units, and other functional areas. The qualifications of personnel, their commitment to ethical values and professional codes, and their personal attributes constitute essential components of a health-preserving environment. Moreover, a responsible attitude toward one's own health fosters a conscientious approach to patient care, emphasizing risk minimization and the maintenance of a safe environment. The institutional policy of a medical organization, together with its adherence to humanistic and ethical principles, contributes to sustaining a positive moral and psychological climate within the workforce, which is reflected in respectful and benevolent attitudes toward patients.

Digitalization and robotization, increasingly implemented in healthcare, enable the redistribution of staff working time from administrative burdens toward direct patient care. The establishment of a unified electronic documentation system significantly accelerates the retrieval of relevant information, facilitates rapid navigation within available data, supports optimal clinical decision-making, and ultimately contributes to improved treatment outcomes.

CONCLUSION

A health-preserving environment is aimed at the restoration, improvement, and maintenance of physical, mental, and moral health. The principal components of a health-preserving environment include its physical infrastructure (buildings, equipment, funding, etc.); applicable sanitary rules and regulations; qualified medical personnel; institutional policy; the processes of treatment and rehabilitation; the psychological climate; social support for patients; as well as systems of audit, monitoring, and quality assessment of medical care.

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