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LETTER OF THE EDITOR-IN-CHIEF

Dear Readers,

We are proudly presenting the first issue of the second volume of the Annals of Nursing, which will continue publishing as a semiannual journal.

Mr. Nikola Savić has written a review of the book "Views into Contemporary Nursing," authored by Prof. Dr. Željko Vlaisavljević and Prof. Dr. Vesna Paunović. The book aims to serve as a core textbook in nursing education, providing valuable knowledge for both nursing students and practicing nurses. This comprehensive resource offers a modern and methodologically clear approach to the development of nursing skills and knowledge.

Spomenka Babić Banković contributes an original article based on research conducted in a chain of Serbian pharmacies in Aranđelovac. The study focuses on evaluating the impact of digitization on the company's performance, competitiveness, and business resilience. The results indicate that the digital economy and information and communication technologies have significantly enhanced the competitiveness and resilience of pharmacists.

Slavica Anđelić et al. present a review article on the Serbian healthcare system. They emphasize the need for an organized healthcare system that meets patient demands and ensures their satisfaction. Achieving the highest possible quality in disease diagnosis, treatment, and patient care at reasonable costs, while minimizing errors and adverse effects, is essential for user satisfaction.

Jasmina Veličković et al. offer a review article about the integrated health information system in Serbia. The implementation of this system is expected to bring numerous benefits, such as improved access to patient information, faster diagnostics, better medication selection, increased patient safety, more comprehensive health-statistical reporting, and quicker dissemination of biomedical knowledge.

Goran Stojanović et al. have prepared a review article on communication between nurses and the elderly. Their findings suggest that nurses can effectively address communication barriers by employing strategies like repetition, noise reduction, and environmental control, particularly in managing sensory issues. To enhance communication with older adults, it is important to evaluate all communication barriers, including prejudices, beliefs, fears, and the identity of the elderly.

We are committed to maintaining the high quality of papers published in the Annals of Nursing and extend our gratitude to our reviewers for their invaluable suggestions.

Kind regards,

Goran Belojević

TABLE OF CONTENTS

Annals of Nursing, Vol 2, Issue 1, October 2023 – March 2024

Book Review
Nikola Savić
VIEWS INTO CONTEMPORARY NURSING
p. 1-3

Original Article
Spomenka Babić Banković
BUILDING COMPETITIVENESS AND BUSINESS RESILIENCE IN THE ENVIRONMENT OF DIGITAL ECONOMY – A RESEARCH IN A CHAIN OF SERBIAN PHARMACIES
p. 4-12

Review
Slavica Anđelić, Vojin I. Vidanović, Olivera Milutinović
VIEW ON HEALTH CARE SYSTEM OF THE REPUBLIC OF SERBIA
p. 13-23

Review
Jasmina Veličković, Mitar Lutovac , Mia Jokić
INTEGRATED HEALTH INFORMATION SYSTEM IN THE REPUBLIC OF SERBIA
p. 24-39

Review
Goran Stojanović, Milica Vasiljević Blagojević, Negra Terzić, Jelena Krstić, Željko Vlaisavljević, Dušan Stojanović
COMMUNICATION BETWEEN NURSES AND THE ELDERLY - PRESENT AND FUTURE
p. 40-53

Book review

VIEWS INTO CONTEMPORARY NURSING

Nikola Savić

"Dr. Miša Pantić" Medical School, Valjevo, Singidunum University, Faculty of Health and Business Studies, Valjevo, Department of Health Studies

Received: 30 October 2023**; Accepted:** 5 November 2023; **Published**: 26 December 2023

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Abstract

Insights into Contemporary Nursing is a textbook for nursing students that sublimates all the knowledge that is the basis of good nursing education in an innovative and methodologically clear way. The textbook was published for the first time in 2023 and received good reviews from experts as well as reviewers. The textbook consists of 11 chapters: Chapter One: History of Nursing; Chapter Two: Definitions of Nursing and Health Care; Chapter Three: Theories and Models; Chapter Four: Quality of Health Care; Chapter Five: Organization, Safety, and Documentation; Chapter Six: Health Care Evidence-Based; Chapter Seven: The Health Care Process; Chapter Eight: Nursing Ethics; Chapter Nine: Nursing Issues; Chapter Ten: Nursing Forensics; Chapter Eleven consists of appendices, scales, and instruments for practical application in nursing. The book is excellent literature for the education of various profiles of health workers, and it is extremely useful for the education of nurses.

The book "Views into Contemporary Nursing" the main authors of which are Prof. Dr. Željko Vlaisavljević and Prof. Dr. Vesna Paunović, represents an exceptional treasure in terms of useful literature for the education of highly educated nurses. The goal of the book is to be an integral part of regular textbooks in nursing education. In addition to being useful for nurses, it is also of great importance to nurses in clinical practice, who can gain a lot of knowledge from reading this book. The book was published for the first time in 2023 and was met with positive experiences from experts in the field of medical sciences and nurses. The book also has positive reviews from top experts, Dr. Adriano Friganović, Prof. Dr. Ljiljana Milović, and Dr. Dijana Lalović. These experts form a multidisciplinary and international review team, which gives this book a special stamp.

The first chapter of the textbook refers to the history of nursing, giving an overview of important names in the nursing profession who are the founders of modern care and modern nursing. In this chapter, the authors deal with a general overview of the historical development of nursing, the beginnings of nursing education in the world, the training of nurses in the Republic of Serbia, and nurses who are remembered in history as heroines of the profession, with a special reference to the founder of modern nursing, Florence Nightingale.

The second chapter is an indispensable part of every textbook on health care in nursing education, and it refers to the definitions of nursing and health care. Explanations and definitions of nursing, as well as health care as a field of work for nurses, are given in more detail.

The third chapter of the textbook refers to the theories and models of health care and nursing theories and philosophies, the understanding of which has been retained in nursing practice to this day. Nursing models and theories of health care culture also form an integral part of this important chapter.

The fourth chapter of the book, titled "Perspectives on Modern Nursing", refers to the quality of health care. This topic is given special importance considering that modern nursing cannot be imagined without knowledge of it. In this chapter, the authors provide a detailed overview of standards, norms, and criteria in health care and a detailed description of indicators of the quality of health care.

The fifth chapter is of exceptional importance for the higher and university education of nurses. "Organization, Safety, and Documentation", as is the title of this chapter, are indispensable parts of nursing education. In this chapter of the book, the authors present the nurse as an integral part of the health care system, organizational models of health care, progressive health care, and collaborative practice as the basis of successful treatment and medical treatment. The importance of this chapter also relates to patient safety and the importance of proper and adequate nursing documentation.

The sixth chapter of the book is titled "Evidence-Based Health Care". This chapter is extremely important because it introduces health care and nursing as a scientific discipline in the medical sciences.

The seventh chapter, "Process of Health Care", refers to an important part of the nursing treatment of each patient in the medical system, the importance of which is still not sufficiently understood in our area. The health care process is a model of work in nursing on which quality and

modern health care are based. It is a process that follows the patient from the beginning to the end of the medical treatment through his treatment and care, with a critical review and evaluation with the aim of the most successful recovery of the patient and improvement of health.

The eighth chapter, "Nursing Ethics", is an essential part of any nursing textbook. This chapter provides an overview of the psychological, social, and spiritual aspects of care, nursing morals in professional actions, and nursing ethics in working with patients suffering from malignant diseases.Special importance in this chapter is given to nursing deontology as a very important topic.

The ninth chapter, "Nursing Issues", takes a modern approach to the burnout syndrome of nurses, the “Big Five Theory", factors for the occurrence of burnout syndrome in nursing, risk measurement instruments, and strategies for the prevention of this problem in nursing practice. In this chapter, the multidisciplinary team of authors, Andrea Mirković, Nataša Janošević, and Nikola Savić, present professional diseases of nurses as a major problem that affects the health potential of nurses and other health workers.

The tenth chapter is dedicated to nursing forensics as a modern approach in the modern healthcare system. This chapter represents an innovative approach to health care and is of great importance not only for the education of nurses but also for nurses in clinical practice.

The last chapter in the book, chapter number eleven, contains attachments, measurement, and evaluation instruments in contemporary nursing. This chapter is extremely important for the practical application of acquired knowledge. With its content, the book makes a great contribution to the training of nurses at all levels, but also to the improvement of professional activity and the modern approach to nurses in practice, employed at all levels of health care. Insights into contemporary nursing represent a good starting point in the development of nursing and acquiring knowledge in a modern and methodologically clear way.

Conflict of Interest

The author declares no conflict of interest.

Original Article

BUILDING COMPETITIVENESS AND BUSINESS RESILIENCE IN THE ENVIRONMENT OF DIGITAL ECONOMY – A RESEARCH IN A CHAIN OF SERBIAN PHARMACIES

Spomenka Babić Banković

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Abstract

Background: Digital healthcare encompasses the use of information and communication technologies (ICT) to improve processes related to health, prevention, diagnosis, and treatment of diseases.
Aim: The goal of this research is to explore the transformation of conventional pharmaceutical profession into digital roles.
Materials and Methods: The research was conducted in 2022 within a chain of five pharmacies named "Hygia Pharmacy" in Arandjelovac, Serbia, employing 23 individuals. The primary focus was to assess the impact of digitization on the company's performance, competitiveness, and business resilience. An internet-based survey was conducted among the employees at three different time points: initially, three months later, and six months later.
Results: The business resilience plan of the company was confirmed by 91% of respondents. Most respondents stated that they attend professional webinars (81%) and Zoom meetings (57%) to improve their competitiveness. All respondents rated online sales as positively impacting consumers in terms of shopping convenience and mentioned that internal shipping and receiving documents facilitate work in the pharmacy. Most respondents (78%) gather professional information from digital sources (e-Pharmacy) compared to the paper form of the journal Pharmacy Practice. The survey revealed a downward trend in traditional working techniques compared to digital techniques, which showed an upward trend throughout all three testing cycles.
Conclusion: The research conducted within Serbian pharmacies indicates that the digital economy and ICT have caused significant transformations in terms of improving the competitiveness and business resilience of pharmacists.

Keywords: healthcare, electronic prescribing, pharmacy

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Introduction

The term 'digital economy' refers to the use of information and communication technologies (ICT), as well as new products and services, as a concept in the contemporary economy. This concept emerged in the late 20th century[1,2]. The COVID-19 pandemic has significantly accelerated the use of e-identities, electronic signatures, and the implementation of digital processes in patient healthcare[3]. Digital health care pertains to tools and services that utilize ICT to improve the prevention, diagnosis, treatment, monitoring, and management of health, as well as monitoring lifestyles that impact health[4,5]. The implementation of innovative solutions enhances access to quality patient care and overall efficiency in the healthcare sector. Health challenges in the pharmaceutical and medical fields include the need for: a) an efficient and integrated healthcare system; b) personalized health research, diagnosis, and treatment; and c) preventive and healthcare services tailored to citizens.

Today, there are over 4000 pharmacies in the Serbian market[6]. For their operation and sustainability, digital elements of communication, education, and marketing activities are extremely important, such as digital health materials (webinars, e-journals, etc.). As integral parts of the healthcare system, pharmacies facilitate access to healthcare services for both legal entities and individuals through e-networks, e-prescriptions, and e-health. The electronic health system is an information and management system that supports healthcare processes.

The focus of this research encompasses several key areas: the impact of digitized prescription drug acquisition through e-prescriptions, the application of digitization within pharmacy institutions via communication using digital networks (both internal and external), the role of digitization in the development of Customer Relationship Management strategies, exploration of emerging digital technologies (such as 3D printing) as future developmental trends promoting innovative communication and digital tools, and the importance of pharmacist and medical education in fostering pharmaceutical competitiveness and business resilience[7].

The aim of this research is to explore the transformation of traditional jobs into digital ones and to identify the various advantages associated with this transition. Additionally, the study aims to investigate the relationship between digital and health business models, with a particular focus on the benefits of employing digital algorithms.

Materials and Methods

In the methodological approach of this work, which primarily focuses on the theoretical foundation of applying digital transformation in the domain of developing good pharmacy practice and enhancing the business resilience of pharmacists, we conducted an analysis and adopted both domestic and foreign reference literature, research papers, studies, as well as scientific journals.

To ensure a high level of reliability in our research, we employed the following research methods:

Survey Research: We conducted internet-based surveys to collect data from a group of 23 employees at A.U. Pharmacy Higija, including pharmacists and technicians. The survey covered demographic (gender, age, civil status) and socio-economic (work experience, job position, education level, courses attended) characteristics of the participants. Additionally, it explored their attitudes and beliefs regarding the digitization of pharmacies at three

different time points: initially, three months later, and six months later.

The survey included questions on various topics, such as: Attendance of training courses in business resilience, digital pharmacy, and agile behavior (yes/no); Existence of a business resilience plan in the company (yes/no); Ease of working with prescriptions due to the application of e-prescriptions and the use of e-medicine (yes/no); Frequency of following webinars for interest and accreditation (often, rarely, not at all); Role of Zoom meetings in improving pharmaceutical competitiveness (great, little, no role); Effect of online sales on consumer shopping comfort (yes, partly, no effect); Degree of facilitation of work in the pharmacy by internal dispatch notes and receipts (a lot, moderately, not at all); Implementation of behavioral principles in the institution (yes, no, I don't know); Implementation of behavioral principles in the institution (yes, no, I don't know); Dependency of agile business in the pharmacy on the application of new digital possibilities (great, little, not at all); Implementation of digital projects in the institution on a daily basis (yes, no); Approach to online education and licensing methods (structured, not structured, I don't know); Knowledge about the development and application of e-commerce and e-prescription compared to neighboring countries (great, not at all, I don't know); Existence of a plan for the development of digital competencies within A.U. (yes, no, I don't know); Importance of digital agility for proper collaboration with stakeholders (internal and external) (yes, no); Frequency of mistakes in the application of e-identity within the business and the approach to addressing them for development and learning (always, often, no); Preference for reading digital magazine E-apoteka or Pharmacy Practice (paper form) (E-apoteka, Pharmacy Practice, I don't know); Recognition of a continuous need for technological and digital innovation within the pharmacies in the future (yes, no, I don't know).

This comprehensive survey aimed to gather detailed insights into the perceptions and experiences of employees regarding the digitization of pharmacy practices and its impact on various aspects of their work

Statistical and Mathematical Analysis of Survey Results: The results obtained from the survey were processed using statistical and mathematical models to derive meaningful insights.

The research was conducted at 'Hygia Pharmacy,' a chain of five pharmacies located in Aranđelovac, Serbia. The study aimed to investigate the impact of digital business on the company's communication, sales, operations, and marketing activities. We specifically focused on analyzing how pharmacists within the company utilize these digital skills to enhance their competitive engagement at work and improve the overall performance of the pharmacy chain.

Results

In the survey, 13 pharmaceutical technicians and 10 pharmacists participated (Figure 1). We observed that in 90 percent of cases, both pharmacists and pharmacy technicians held identical attitudes regarding the benefits of digital methods such as e-prescriptions, e-health, and e-commerce. The findings of the survey highlight the structured nature of education as a crucial aspect of organizing work in the pharmacy. Pharmacists and specialists in pharmaceutical activities demonstrated a high level of agility in the application and delegation of e-models. Conversely, from the perspective of technicians, the survey reveals a clear need, ability, desire, and motivation for development and learning in this domain.

Figure 1. Distribution of respondents in relation to job position

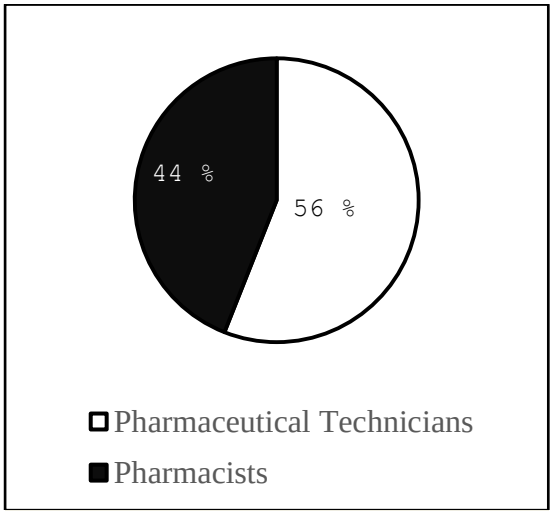
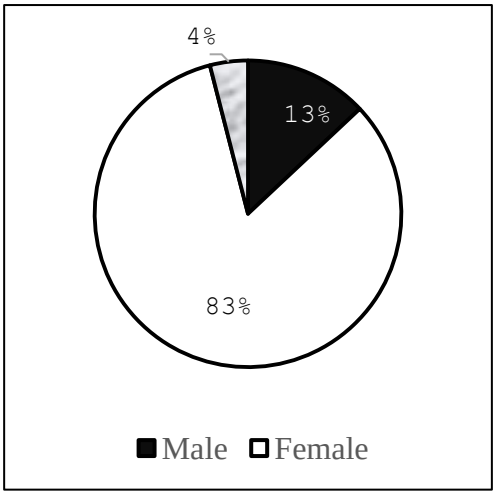


Figure 2. Distribution of respondents in relation to gender

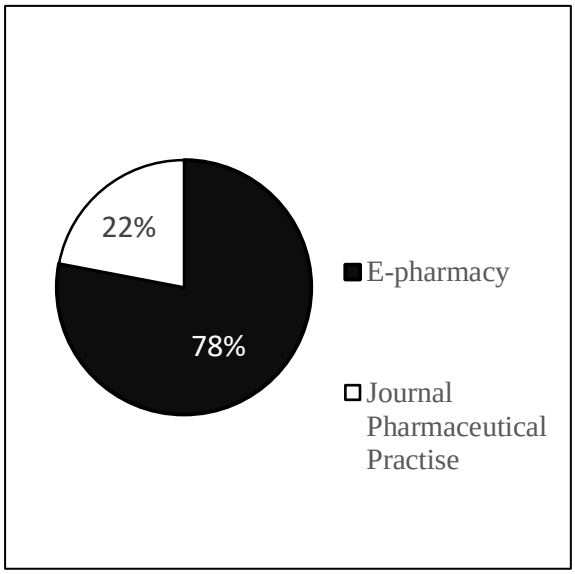


The number of men in our collective, whether pharmacy technicians or pharmacists, is minor compared to women (3 and 19, respectively, with one non-respondent). However, regardless of gender, interest, and dedication to the profession through the aspect of digital methods are not lacking (Figure 2).

The business resilience plan in our company was confirmed by 91% of respondents (21 out of 23). All respondents confirmed that the implementation of e-prescriptions and the use of e-medicine have facilitated work with prescriptions. Thirty-five percent of respondents (8 out of 23) often attend webinars for licensing, while only 9% of respondents (2 out of 23) do not attend webinars at all. Fifty-seven percent of respondents (13 out of 23) rated the significant role of Zoom meetings in improving their competitiveness, while 22% found them interesting (5 out of 23). All respondents rated that online sales positively impact consumers in terms of shopping convenience. Similarly, all respondents rated that internal shipping and receiving documents facilitate work in the pharmacy. Seventy-four percent of respondents (17 out of 23) stated a structured approach to online education and licensing methods.

Eighty-three percent of respondents (19 out of 23) stated a lack of knowledge about the development and application of e-commerce and e-prescriptions compared to neighboring countries. All respondents confirmed that there is a plan for the development of digital competencies in their pharmacy. Seventy-eight percent of respondents (18 out of 23) rated the crucial importance of digital agility for collaboration with internal and external stakeholders. Moreover, all respondents confirmed that errors in the application of e-identities are possible but are identified and corrected in time, thus facilitating development and learning. Finally, most respondents (18 out of 23) gather professional information from digital sources (e-Pharmacy) compared to the paper form of the journal Pharmacy Practice (5 out of 23) (Figure 3)

Figure 3. Sources of professional information for the employees in “Hygia Pharmacy”



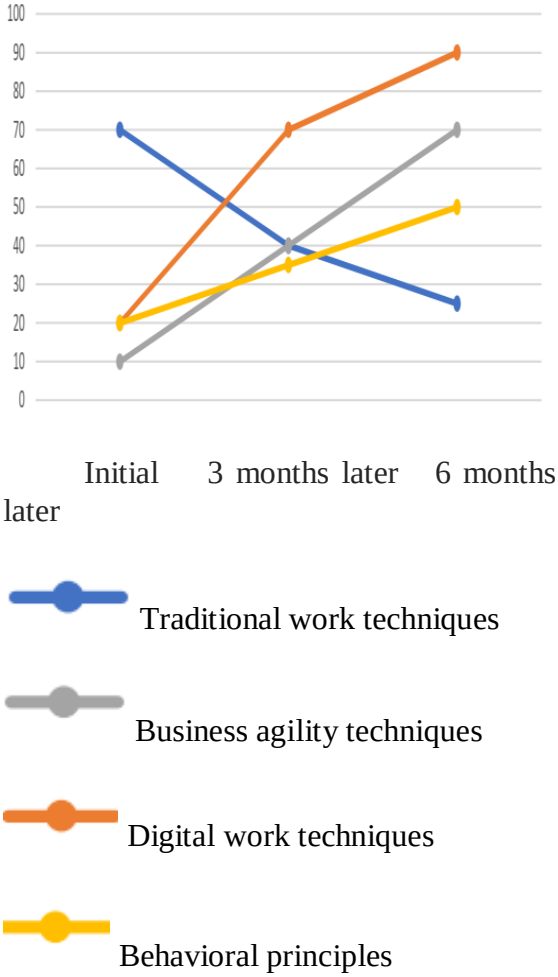
All respondents confirmed that there is a continuous need for the implementation of technological and digital innovations within their pharmacy in the future.

Figure 4 presents the percentage of positive responses to questions regarding applied techniques in three survey cycles. It is evident that traditional working techniques exhibit a downward trend compared to digital techniques, which show an upward trend across all three testing cycles. Business agility techniques follow digital techniques in a demonstrated growth trend.

Behavioral principles are integrated into the progression of digital technologies, impacting teamwork and operational and managerial aspects such as planning, organization, leading, and controlling processes. As a result, new digital structures that significantly streamline the entire organizational workflow are prominently involved in all processes.

Based on the number of affirmative responses, we have elaborated the stance that there is a continuous need for the application of technological and digital innovations within our pharmacies in the future.

Figure 4. The percentage of positive answers in connection with applied techniques through three survey cycles



Discussion

The application of digital economic methods at 'Hygia Pharmacy' has facilitated more modern, precise, faster, and comprehensive communication among doctors, pharmacists, pharmacy technicians, and patients. New e-forms, such as e-prescriptions and e-health, have been implemented, along with new functionalities for receiving e-delivery notes from important external stakeholders, such as suppliers.

Additionally, e-commerce for online purchases and new digital communication tools like webinars and Zoom have been introduced. Furthermore, future trends in the development of 3D printing medicines are being explored.

Each participant in this study confirmed that integrating e-prescriptions and employing e-medicine has streamlined the prescription management process. An e-prescription involves the electronic generation, transmission, and fulfillment of a medical prescription based on a computer, replacing traditional paper prescriptions[8]. The doctor initiates the treatment process by prescribing the appropriate medication to the patient, whether for chronic or acute therapy. Subsequently, a request for medication issuance based on the prescription is generated through the portal of the Republic Health Insurance Fund (RHIF). All patient data is managed through software.

When the pharmacist scans the barcode on the e-prescription via the patient's health card using a barcode reader, they can access all relevant information, including the patient's name, diagnosis, reasons for exemption from participation, dosage, and the possible number of prescription refills. Additionally, the system provides a history dating back up to six months[9].

Every respondent in this study acknowledged the potential for errors in applying e-identities but emphasized the proactive identification and rectification of such errors, contributing to ongoing growth and learning. The e-prescription, devoid of potential errors in traditional handwriting, is electronically transmitted from the healthcare provider to the pharmacy, which acts as the executor. This process ensures the accurate transmission of the entire prescription to the pharmacist through a single channel, making it a convenient, precise, and fast method for doctors[10].

The primary objective of e-prescription is to minimize the risks associated with prescribing and streamline the realization of prescriptions. Unlike traditional manual paper prescriptions, this new approach offers numerous advantages. With the introduction of new functionalities aligned with the fourth industrial revolution, the Serbian Government approved the implementation of e-prescriptions. The process commenced on October 30, 2017, in ten municipalities in Belgrade, with full implementation across the entire country completed in 2018[11].

Since then, e-prescriptions can be utilized in all pharmacies throughout the Republic of Serbia that have signed contracts with the RHIF, allowing the issuance of prescription drugs covered by mandatory health insurance funds. Agreements for dispensing and supplying patients with medicines are renewed annually. This transformation has positioned Serbia among the most modern healthcare systems, facilitating easy access for the population to receive adequate medical care and therapy[12].

Most participants (78%) indicated a preference for sourcing professional information from digital platforms such as e-Pharmacy, as opposed to the traditional paper format of the Pharmacy Practice journal. Pharmacist obligations are evolving in the following directions: a) Analytics of reception programs (work in the pharmacy), creating larger time intervals during which pharmacists can dedicate themselves to explaining, referring patients, and developing e-therapy. b) Continuous improvement of internal business systems (pharmacy software). c) Staying updated with the latest news and ensuring swift compliance with RHIF (changes in the list of drugs approved by RHIF). d) Better temporal

correspondence between pharmacies (e-info)[13].

The role of pharmacists is to upgrade themselves through continuous education, thereby developing their skills in the application of e-prescriptions, following innovative digital progress streams, and gaining full agility for the operation and management of this system[14].

The potential of digital applications, including e-prescription in healthcare, is reflected in a more efficient and integrated healthcare system, personalized health research, diagnosis, and treatment, as well as prevention and health services aimed at citizens[15].

The findings of this study illustrate a declining trend in traditional working methods when contrasted with the upward trajectory observed in digital techniques across all three testing cycles. Moreover, business agility methodologies are seen to parallel the growth trend observed in digital techniques.

Along with e-prescription, e-health is also developing in Serbia. It involves the application of ICT technology to meet the health needs of citizens, patients, experts, and health institutions. The electronic health system serves as an informational and management system that supports health processes. These systems share the common goal of utilizing health data to enhance research and personalize medicine, thereby providing better information for citizens and contributing to the development of healthcare through digital tools[16].

By developing modern healthcare models through telemedicine (telehealth) and mHealth (mobile health) via e-health, the care of patients over large distances providing advice, interventions, and monitoring becomes possible. MHealth refers to medical practice and public health supported by mobile devices such as mobile phones, tablets, and smartphones[17].

We anticipate the introduction of new functionalities on the e-health portal with the approval of the Serbian Pharmaceutical Chamber. Patients can voluntarily register to receive electronic notifications about the possibility and date of prescription drug delivery. This represents a new phase of digitization and personal communication, allowing patients to interact with doctors and pharmacists via mobile devices, including video communication[18].

All respondents in this study rated online sales positively impact consumers in terms of shopping convenience, and they also acknowledged that internal shipping and receiving documents facilitate work in the pharmacy. Communication between Pharmacy Specialized Units (PSUs) is facilitated via internal dispatch notes. An internal dispatch note is a document used to transfer goods (medicines) within the same legal entity. Each internal dispatch note contains elements automatically assigned by the software. The significance of e-dispatch notes lies in the indirect control of PSU inventory, enabling daily inventory lists, fast communication between business units, and swift turnover of pharmacy stock. An additional advantage is the efficient allocation of a given business unit to provide patients with their desired choice of therapy by gaining insight into the warehouse of other PSU.

All participants in this study affirmed the ongoing necessity for integrating technological and digital innovations within their pharmacy moving forward. Digital business transformation gives rise to numerous security issues and implications. The greater the expressiveness of information and communication progress, the proportionally higher the degree of complication and security tendencies and

factors. The key reason is that digital transformation goes beyond merely applying new technologies to business processes; it represents a comprehensive disruptive transformation of all existing economic models. This includes communication and interconnection methods of every modern company with its suppliers, customers, and public administration[19].

E-knowledge and e-skills have become fundamental components of work in modern pharmacies. The necessity for knowledge, continuous learning, and their practical application across various domains of pharmacy activities is inevitable. Therefore, possessing strong digital communication skills is a basic prerequisite for pharmacists to develop business resilience[20].

Conclusion

This research, conducted within a chain of Serbian pharmacies, highlights the crucial role of the digital economy and ICT in the functioning of modern pharmaceutical systems. E-changes are driving significant transformations in business and represent a rapidly developing trend. The research, conducted using analytical-deductive methods, underscores the importance of relevant digital transformations and serves as a valuable contribution to new scientific research findings.

Ethical Approval

N/A (the survey was anonymous)

Conflict of Interest

The author declares no conflict of interest.

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Review

VIEW ON HEALTH CARE SYSTEM OF THE REPUBLIC OF SERBIA

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Abstract

From the viewpoint of theoretical health care system management description, it is significant to identify and evaluate the effects of organization, financing, and rationalization within the healthcare system of the Republic of Serbia. In practical application, this pertains to the strategic decision-making process for improving functions and implementing necessary changes within the system. It also relates to healthcare human resources, as well as ensuring proper client satisfaction and education. The healthcare system possesses characteristics that set it apart from other areas. Given the globalization of the market and the increasing societal needs, it's imperative for the healthcare system to be organized in a manner that fulfills all patient demands and guarantees their satisfaction. User satisfaction is ensured by achieving the highest possible quality in disease diagnosis, treatment, and patient care at reasonable prices, while minimizing the risk of errors and adverse effects on patients.

Keywords: healthcare system, health insurance, Serbia

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Introduction

The globalization of the market and the increasing societal needs compel every organization, including healthcare institutions, to structure itself to meet all client demands and ensure their satisfaction. While healthcare institutions aren't strictly "business" entities, they possess their own organizational structures, which inevitably entail certain business activities. The existence of an organizational structure implies that it can be modeled, allowing for the modeling of the organization itself.

In the case of "non-business" organizations not driven by profit, the purpose of modeling their organizational structure becomes more challenging to quantify. Nonetheless, the primary aim of organizational structure modeling remains optimization, which extends to understanding business activities and facilitating communication within the organization.

However, a question arises about the necessity of optimization when the organization's primary goal isn't profit generation[1]. Despite this, numerous management theorists argue that management knowledge and skills are universal, applicable across all business processes.

Health insurance in the Republic of Serbia operates under a mandatory health insurance system, a model commonly found across European countries, particularly those with a socialist history. The introduction of the new Law on Health Insurance in 2005 marked a shift from solely mandatory social health insurance.

During the societal and healthcare crises of the late 20th century, private medical practices emerged as a response to the challenges faced. The scarcity of healthcare financing sources, coupled with the rise of private practice, underscored the need for private health insurance. This led to the introduction of private health insurance on the Serbian insurance market toward the end of 2003 and the beginning of 2004[2].

The financing of the healthcare system in the Republic of Serbia involves a combination of public finances and private funds. The primary source of funding is the Republic Health Insurance Institute, which collects funds directly from employed employers into its sub-account. This sub-account is accessible to the Ministry of Finance.

In addition to contributions from the Republic Health Insurance Institute, the healthcare system receives financing from various budgetary sources. These include funds from the Pension Fund, allocations from the Ministry of Finance for the unemployed, and other supplementary sources[3].

The recommendation is to provide insight into possible future steps in the development of the healthcare system of the Republic of Serbia to increase efficiency and achieve and preserve financial sustainability in the long term. The goal is to ensure: a long-term financially sustainable health care system; improving the efficiency and quality of the overall health system; continuous and equally accessible health care.

Organization of the Health Care System

The World Health Organization (WHO) resolution, within the global strategy 'Health for All by the Year 2000,' outlined guidelines for international action[4]. It called upon the international community and WHO member countries to review the foundations of health policy and

establish healthcare implementation at three levels:

1. Primary,
2. Intermediate or secondary
3. Central or tertiary [5]

All three levels are functionally interconnected within a unified system, wherein:

1. Higher levels provide support to lower ones.
2. Ensuring unhindered passage according to needs.
3. Maintaining unique medical documentation.
4. Informing lower levels about treatment[6].

The primary level of healthcare serves as the fundamental and central component of the healthcare system, addressing at least two-thirds of health needs. It is primarily administered in Health Centers and institutes for healthcare and public health[7].

These institutions, including Health Centers, pharmacies, student polyclinics, etc., allow citizens to seek medical attention without requiring a referral letter. Among these, the Health Center stands out as the most crucial institution at the primary level[7].

The secondary level of healthcare, facilitated by general and specialized hospitals, aims to address complex health problems using specialized personnel and advanced medical technology. When a Health Center is unable to provide specialized care, patients are referred to the secondary level, typically a hospital. In Serbia, there are 77 hospitals where each patient receives the necessary healthcare, whether it be outpatient or inpatient treatment[9].

The tertiary level of healthcare is tasked with delivering advanced diagnostics and treatment through highly specialized personnel and cutting-edge technological equipment. It plays a pivotal role in providing professional assistance and support to the secondary level while also conducting medical education and scientific research activities. Healthcare services at the tertiary level are typically provided by clinics, institutes, clinical-hospital centers, and clinical centers[7].

Tertiary-level institutions can only be established on university campuses with a faculty of health professions. Tertiary-level institutions without a general hospital at their headquarters must also provide secondary-level health services, i.e., general hospitals.

The implementation of healthcare for the population is directly facilitated through a network of health institutions, contingent upon the advancement of organizational structures and technological capabilities. The expansion of the network of health institutions and the adoption of modern technology necessitates a contemporary management system and an optimal organizational structure[7].

Any organization whose activities can be broken down into operations, or a set of activities, can be modeled accordingly. Processes and operations are distinct concepts, with an operation potentially encompassing multiple processes. The activities of any organization, regardless of its nature, can be categorized into operations, and it's feasible to model processes within non-"business" organizations as well. All organizations engage in work, and the term 'business process' refers to the activitiescarried out within the organization, rather than solely to the nature of the organization itself[1].

In the case of organizations not primarily focused on generating profit, optimizing the organizational structure can serve to enhance the experience of system actors or increase the value of services delivered to users, such as patients in healthcare institutions. The quality of service in healthcare directly impacts individuals' health and carries a significant emotional component, given that most patients have supportive individuals in their social circles.

Optimizing the organizational structure in healthcare institutions can be viewed as a moral imperative, considering its direct impact on people's well-being. Therefore, it's evident that optimization holds importance in certain non-profit organizations as well[1].

Let's assume we've opted to model the organizational structure of healthcare institutions to identify new and improved models that can enhance efficiency and potentially effectiveness in business activities. The tangible increase in efficiency can manifest in real-world scenarios.

While modeling the organizational structure is rarely undertaken in local healthcare institutions, introducing new perspectives into business inherently alters the activity model, regardless of whether decision-makers actively consider it[1].

Behavioral principles are integrated into the progression of digital technologies, impacting teamwork and operational and managerial aspects such as planning, organization, leading, and controlling processes. As a result, new digital structures that significantly streamline the entire organizational workflow are prominently involved in all processes.

Modeling the organizational structure is a crucial practice, especially for non-business organizations like healthcare institutions. Given the inefficiencies often observed in healthcare, organizing these institutions should prioritize benefiting the users of their services—individuals whose health, and sometimes lives, depend on this system. Establishing a framework for enhancing work processes within healthcare institutions is vital, and modeling the organizational structure serves as an invaluable tool in achieving this objective[1].

Certain authors[8] advocate eight core competencies in managing global health efforts, which are closely aligned with health management competencies but include domains adaptable to varying resource conditions and care contexts. These competencies encompass:

1. Strategic Thinking: The ability to set goals and align resources to solve problems and achieve organizational objectives.
2. Human Resource Management: Involves recruitment, retention, education, training, compensation, employee relations, performance evaluation, and mentoring.
3. Financial Management: Includes budget analysis, financial accounting, and assessment of capital projects.
4. Operations Management: Encompasses patient registration and flow, medical records management, bed management, environmental services, infection prevention, nursing, supply chain management, pharmacy, laborato-ry/diagnostic manage-ment, patient referral, discharge processes, and information technology.
5. Performance Management and Accountability: Involves logic models, process and result measurement, balanced scorecards, quality improvement, feedback

mechanisms, and accountability systems.
6. Management and Leadership: Focuses on creating a stimulating environment, overseeing Board of Directors' activities, and developing organizational and corporate culture.
7. Political Analysis and Dialogue: Entails understanding the political and regulatory environment, crafting compromise policies, and conducting stakeholder analysis and advocacy.
8. Community and Client Assessment and Engagement: Encompasses epidemiology, research techniques, participatory community research, health education, marketing, consumer understanding, and customer service focus.

These competencies form a comprehensive framework for effective leadership and management in global health efforts.

Healthcare possesses distinctive characteristics that differentiate it from management in other fields. One notable aspect is the specialized knowledge required regarding health services and their respective value levels[9].

Health Insurance in the Republic of Serbia

The health insurance system of the Republic of Serbia faces similar challenges to those encountered by healthcare systems in other countries, irrespective of their level of development. Key issues include the costs associated with the population's age structure, the adoption of new technologies, and the level of population education. These factors necessitate reforms to the health insurance system. The primary goal of reforming the health insurance system is to reduce costs and align expenditures with the realistic capabilities of the Republic of Serbia's budget[10].

The challenges include the rising demand for healthcare due to factors such as health culture, increased life expectancy, a growing elderly population, and unfavorable living and working conditions. In response, it becomes imperative to extend mandatory health insurance coverage to encompass as many citizens as possible[3].

The Health Insurance Act of 2005, which governs the reform of the healthcare system, also addresses mandatory health insurance. Additionally, it provides for the option of voluntary health insurance, which is regulated by the Decree on Voluntary Health Insurance issued in 2008[2].

The regulation intricately outlines the introduction, types, conditions, methods, and procedures for organizing and implementing voluntary health insurance. In the Republic of Serbia, voluntary health insurance can be organized through three main models: parallel, additional, and private. Parallel and additional health insurance are administered by both insurance companies and the Republic Health Insurance Fund (RHIF)[11].

Parallel health insurance covers the expenses related to health services, medications, medical-technical aids, and other monetary benefits that are not included in the rights provided by compulsory health insurance. It offers insurance with a broader range of coverage, scope, and standard of benefits, including monetary benefits exceeding those covered by compulsory health insurance[12].

Persons who are not covered by compulsory health insurance or who have not joined compulsory health insurance

can opt for private health insurance to cover the costs for the type, content, scope and standard of rights that are contracted with the insurance provider[12].

Voluntary health insurance in the Republic of Serbia is in its early stages of development. The premium for voluntary health insurance depends on several factors, including the selected program of health services, the method of contracting (individual, collective, or family insurance), contracted insurance sums, coverage width, supplementary coverages, compulsory participation in damages, and calculated discounts and surcharges[13].

Voluntary health insurance for travel and stay abroad is widely adopted, often serving as a prerequisite for visa applications. However, the implementation of the Regulation on Voluntary Health Insurance in 2010 resulted in the reclassification of this insurance type, subsequently leading to a reduced share of the total premium[2].

The regulation sets the conditions for the development of voluntary health insurance, as an additional form of mandatory health insurance. The goal is to provide better conditions for patients and additional sources of health care financing, i.e. to reduce or completely eliminate direct payment for performed health services. In the initial years of development, no special results are expected due to unresolved problems in the health system (defining the work of doctors, the issue of private practice, tax treatment of insurance premiums, economic opportunities of the population, habits of the population and development of new products by insurance companies)[2].

Financing of the Health System of the Republic of Serbia

Funds for the health care of insured persons are provided by the RHIF while funds for uninsured citizens are provided from the Republic budget. Due to the lack of private health insurance, private funding comes from out-of-pocket payments, supplemented by a few large companies that have their own occupational disease treatment facilities and provide primary care services[3].

The total funding for health insurance is derived directly or indirectly from citizens through multiple channels. These include financing from the state budget, mandatory health insurance contributions, direct payments "out of pocket" by individuals, funding from community funds, donations, loans, and other sources[14].

A combined method of financing healthcare is employed, determining the collected funds, control systems, bearers of financial burden, and cost growth management. The financing model of the healthcare system is contingent upon factors such as the level of social and economic development, fiscal capacity, efficiency of fundraising, and policy feasibility[14].

Mandatory health insurance in the Republic of Serbia operates under a social insurance model, compulsory for all and based on income levels, with contributions required from both employers and employees. Healthcare services are provided free of charge to patients at the point of care, and the level of protection is not dependent onthe contributions paid[14]. The problem arises when employers who have financial difficulties do not pay the mandatory contributions to health insurance funds. There is a cycle of debt in which the funds do not make payments to

hospitals, general practitioners and other service providers[14].

Tax revenue is used to finance government activities. Thus, the health system has to compete for financial resources with all other programs and sectors financed by the Government[14].

For private health insurance, citizens voluntarily decide whether to buy health insurance. The purchase of this type of insurance can be made on an individual or group basis. Private health insurance is based on competition, with the aim of improving efficiency. The private health sector is developed, but not incorporated into the national health system[14].

Out-of-pocket financing" is a health insurance financing model that envisions individual patients paying the health care provider directly out of pocket for supplies and services they receive. These costs cannot be reimbursed by insurance. This method of financing reduces the unnecessary use of health services, but also raises additional funds[14].

Financing by the local community is organized through the control of primary health care. This type of financing has limited capacity to collect a larger amount of money, but it is effectively used to achieve important results in primary health care in poor and underdeveloped countries[14].

Recommendations for Rationalization of Health Care System of the Republic of Serbia

Implemented healthcare reforms in various economies aim to achieve three basic goals: expanding healthcare availability to more people and providing affordable health insurance for the uninsured, improving the quality of healthcare provided, and controlling the continually rising healthcare costs. By attaining these strategic goals, the industry can address the challenges it faces.

Healthcare organizations are adopting a range of strategies to overcome these challenges, including improving productivity, managing escalating healthcare costs to ensure financial sustainability, empowering consumers and addressing unmet healthcare needs, consolidating through mergers, acquisitions, or private-public partnerships to achieve economies of scale, enhancing efficiency in the supply chain, navigating regulatory challenges, strengthening Internet and IT strategies, and integrating digital support in healthcare[15.]

The healthcare system in the Republic of Serbia faces significant challenges in achieving long-term financial sustainability. There is a clear trend of overspending and major inefficiencies in the utilization of assets and supplies. Control functions are lacking, particularly in size and scope needed for the system to attain and uphold financial sustainability. Poor financial management, especially within public health institutions, is evident, with planning and budgeting of healthcare expenditures not aligning with the budget calendar and fiscal strategy. Inefficient collection of health insurance contributions further threatens the system's sustainability. Moreover, cost-effectiveness, patient options, value received, and effectiveness in terms ofhealth outcomes are not at satisfactory levels. Donations are monitored solely by value within the system, with minimal monitoring of donated equipment and its subsequent utilization[15].

Directions for increasing the efficiency of the health system in the Republic of Serbia are:

- The involvement of the private sector in the healthcare system is currently minimal, and the potential benefits of greater participation from private health service providers have yet to be realized. The system lacks sufficient mechanisms to monitor these institutions or to integrate them effectively in the future.
- The private health sector in Serbia is still underdeveloped, particularly in comparison to public institutions, which predominantly provide services, especially at the secondary and tertiary levels of healthcare.
- While the public hospital sector is relatively robust, there is a significant need for modernization and improvement[15].

Long waiting lists for certain services persist, and opportunities to utilize the private sector to address this issue are not fully optimized. Access to healthcare lacks sufficient regulation, and integration within the system across different levels of service provision is lacking. The system should be developed in a more patient-centric direction.

The imbalance between preventive and curative health services negatively impacts the financial sustainability of the entire healthcare system. The low rate of reimbursement for new innovative medicines compared to comparable EU countries is concerning. Patient information flow within the system is inadequate, with poor cooperation and data sharing between public health institutions. There is a complete lack of collaboration and information exchange between private and public institutions. The implementation and utilization of information and communication technologies in health institutions, especially in the public sector, are at a low level. There is an uneven quality of services provided between private and public health institutions.

The recommendations aim to provide insight into potential future steps in the development of the Serbian healthcare system, with the overarching goals of enhancing efficiency, ensuring financial sustainability, and improving service quality and accessibility for all participants. To achieve these goals, several strategies are proposed:

1. Implementation of the "Hospital Purchasing Mechanism - HPM" model, involving contracts with healthcare units responsible for service provision, to enhance financial sustainability.
2. Adoption of uniform financial reporting frameworks, establishment of SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goals, and development of key performance indicators and risk management strategies to further support financial stability.
3. Encouraging greater involvement of private healthcare providers and fostering partnerships between them and the Republic Health Insurance Fund (RHIF) to reduce healthcare costs.
4. Development of a cost-sharing model wherein patients would bearthe price difference between private healthcare institutions and the amount covered by the RHIF, promoting greater affordability and resource efficiency. These recommendations collectively aim to drive systemic improvements in the Serbian healthcare landscape, fostering sustainability, quality, and accessibility for all stakeholders.

The healthcare system of Serbia should undergo a paradigm shift towards preventive medicine, offering patients the option to choose their preferred doctor from the private sector. By prioritizing quality preventive healthcare through increased screenings, effective chronic disease management, and lifestyle promotion, the system can realize significant cost savings in the medium and long term.

Simplification of procedures and fees for registering new innovative drugs is essential, as such therapies can substantially reduce overall healthcare costs. Furthermore, the development of an integrated information system is paramount, enabling real-time information exchange among all healthcare institutions, public and private, especially those with waiting lists, to facilitate optimal patient outcomes.

We recommend the creation of a software solution to streamline patient records, ensure data privacy, enhance work technology, reduce bureaucracy and logistics costs, and facilitate future integration of paperless data transfer technology. These measures collectively aim to modernize the healthcare system, improve patient care, and drive efficiency gains across the board[15].

Centralizing healthcare at the state level is recommended as the preferred option given the current state of development. Coordination challenges and the risk of service duplication and associated costs are significant arguments against a decentralized healthcare system. Moreover, the observed exceptional growth potential of the health insurance market presents a promising opportunity to bolster the financial sustainability of Serbia's healthcare system.

Conclusions

The healthcare system of the Republic of Serbia boasts a well-established network of institutions with clearly defined roles and responsibilities. However, there is a pressing need to optimize the organizational structure to enhance the patient experience and elevate the quality of services provided to users. Anticipated changes in the modeling of institutional organizational structures aim primarily at achieving greater efficiency.

The healthcare system possesses distinctive features that set it apart from other sectors. With the globalization of markets and evolving societal needs, there is an imperative for healthcare systems to be structured to fulfill patient demands and ensure their contentment. User satisfaction hinges on delivering superior quality in disease diagnosis, treatment, and patient care, all at affordable prices and with minimal risk of errors or adverse effects.

Health insurance plays a crucial role in financing the healthcare system, with expectations for the development of supplementary and voluntary insurance sectors to enhance financing efficiency and service quality for patients. Although reform processes in this segment have been slowest with currently minimal results, significant changes are anticipated in the near future. Key directions for improvement include better billing regulation, increased participation of private insurance, and greater incorporation of the private sector to ensure more stable financing of the health sector.

The strategic goals of healthcare reform encompass expanding healthcare availability, ensuring affordable health insurance, enhancing the quality of healthcare services, and controlling healthcare costs.

Expectations for more effective involvement of the private sector, particularly at the secondary and tertiary levels, underscore the need for healthcare modernization and reduction of waiting lists. Furthermore, expanding preventive services and optimizing the utilization of innovative drugs are imperative. Prioritizing digitalization and enhancing information flow among health institutions are critical. Innovative models for service procurement and cost-sharing are essential for balancing service quality.

Ethical Approval

N/A

Conflict of Interest

The authors declare no conflict of interest.

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Review

INTEGRATED HEALTH INFORMATION SYSTEM IN THE REPUBLIC OF SERBIA

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Abstract

The Republic of Serbia's integrated health information system (IHIS) serves as a central electronic repository for storing and processing various medical and health-related data. It encompasses patient records, institutional information, details of health interventions and services, electronic prescriptions, appointment scheduling for specialist consultations, diagnostic procedures, and surgical operations. The implementation of this system promises several benefits, including improved access to patient information, expedited diagnostics, enhanced medication selection processes, heightened patient safety measures, more comprehensive health-statistical reporting, and accelerated dissemination of biomedical knowledge. This paper aims to explore the advantages of employing information technologies in healthcare delivery within health institutions, contrasting it with traditional methods of data collection, analysis, and interpretation, specifically focusing on primary healthcare institutions. Drawing upon current professional and societal perspectives, the paper discusses the conceptual framework and objectives of IHIS, emphasizing the significance of leveraging information technologies in healthcare.

Keywords: health information systems, healthcare, informatics, delivery of healthcare, Serbia

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Introduction

In modern times, large amounts of data are generated daily for business and private purposes. Data is typically stored in digital format by default. Information systems, which encompass the storage, transfer, processing, and provision of data to users upon request, facilitate this digital storage. In essence, these systems house data and furnish information tailored to users' needs. Thus, the current era can be characterized as the era of information systems.

Almost all new information technologies quickly find applications in various information systems, resulting in the regular appearance of information systems for entirely new purposes. An information system comprises data, processes, personnel, physical resources, and information technology, which collectively interact to gather, process, store, and deliver essential information to aid an organization[1].

Information technology (IT) encompasses the integration of computer technology (both hardware and software) with data and telecommunications technology. It constitutes a fundamental component of any information system. Within a healthcare institution, the amalgamation of information systems and information technology includes a diverse array of applications and products catering to various types of users[2].

Medical information systems encompass comprehensive details of nearly all daily activities within healthcare settings, holding significant value in medical, financial, and administrative domains. The recognition of this reality, alongside the substantial support that health funds receive from information systems, has driven the broader adoption of medical information systems over the past decade[3].

Data accuracy is crucial for healthcare facilities, as it ensures comprehensive recording of patient information. This recording is essential for objectively monitoring each patient's health condition and providing doctors with insights into their status, interventions performed, and therapies administered. To acquire this data, it's necessary to record and process all relevant information obtained throughout the treatment process, ensuring easy accessibility for future reference. This data serves to provide the necessary information for making crucial decisions regarding further treatment, ultimately aiming to save the patient's life and preserve vital functions, which is the primary goal of the profession.

Collecting and storing large amounts of data in healthcare settings is practically impossible without modern information technologies. To achieve this, certain information technology standards must be applied. These standards facilitate the exchange and comparison of data, ensure interoperability between systems, and implement robust data protection mechanisms.

Healthcare professionals are increasingly recognizing the advantages and opportunities provided by information systems. As a result, they are becoming more interested in analyzing the vast amount of data generated from daily activities. This analysis aims to uncover answers to numerous questions encountered in everyday situations and to find effective solutions (Figure 1).

The aim of this paper is to explore the benefits of utilizing information technologies in healthcare services within health institutions. It compares these modern methods with conventional approaches to data collection, analysis, and interpretation, with a specific focus on primary healthcare facilities.

Information-Communication Systems in Healthcare Institution

The implementation of a medical information system enables health institutions and their employees to enhance the quality of health services provided, streamline workload, reduce operational costs, and improve patient satisfaction with the care and services offered[4].

Today, doctors expect a medical information system to provide them with comprehensive medical data related to a patient. Additionally, many seek a pleasant working environment with an efficient and user-friendly interface to support their daily routines. They also value tools for generating statistical reports, predicting disease progression, and other applications categorized as elements of health information systems[5].

The first information systems that dealt with health-related data date back to the 1960s and were developed in the United States of America[6]. Since then, numerous systems have been developed to meet the administrative and medical requirements of healthcare institutions.

The first information systems implemented in clinics were initially developed for recording material costs and billing. In the evolution of medical information systems, the administrative segment, including billing, has always been a primary focus whenever a new country introduces information systems in healthcare. The subsequent development step was the creation of systems for scheduling and verifying doctor appointments[7].

Over time, individual information systems have evolved from 'fee-for-service' systems designed to control the budget of a healthcare facility, to systems that fully automate the process of providing healthcare, and finally to expert systems that actively assist doctors in making decisions and efficiently cover each treatment segment.

Today in Serbia, several health institutions, in cooperation with and under the patronage of the Department of Health and other relevant organizations, are planning to implement or are already using various modules of information systems.

As in other parts of the world, the introduction of information systems in healthcare in our country began with the development of software modules for recording used drugs, materials, and provided services. The Republic Institute for Health Insurance (RIHI) prescribed the report format, which is typically submitted monthly, aiming to justify the materials and medicines used and the health services provided.

Advantages of Information Systems in Healthcare

The utilization of information technologies in contemporary healthcare systems is steadily advancing worldwide. While medical information systems themselves are not novel, their widespread and efficient implementation from a technological standpoint has been a prominent trend over the past decade to fifteen years[8]

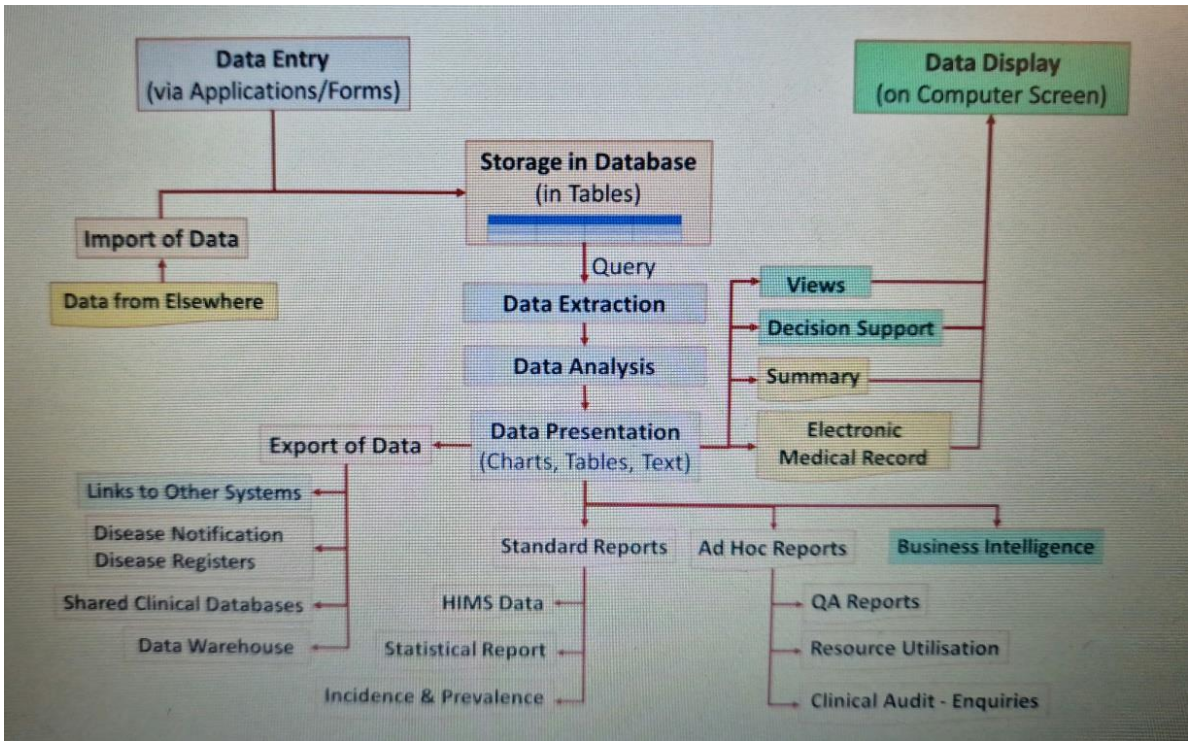

Figure 1. Data flow in the medical information system

Medical information systems play a pivotal role in enhancing the efficiency of healthcare institutions by reducing reliance on paper documentation, maintaining comprehensive records across all aspects of healthcare delivery, and streamlining administrative processes[9]. Moreover, beyond their fundamental function in healthcare, well-designed and effectively implemented systems should also contribute significantly to the advancement of education and research within the field[1].

In accordance with the nature, scope, and complexity of the activity, an adequate information system[3]:

1. Has functionality, capacity, and performance that enable the provision of appropriate support to business processes.
2. Provides timely and accurate information important for decision-making and efficient performance of activities.
3. Is designed with appropriate controls for data validation at the input, during processing, and at the output stages, allowing it to detect inaccuracies and inconsistencies in data and information. To establish and preserve the integrity of the information system, it is necessary to ensure that existing and other data processing systems, as well as the reporting system, are adapted.
4. Provides an appropriate organizational structure with a

clearly defined division of tasks and duties of employees to enable adequate functioning and management of the information system.

5. Adopts and documents an appropriate methodology that establishes all the rules related to the information system.
6. Establishes a risk and security management process for the information system.
7. Has a security policy that governs the principles, methods, and procedures for attaining and sustaining an appropriate level of system and data security. It also outlines the authorization and responsibilities associated with the utilization of information system resources.

The integrated health information system of the Republic of Serbia is structured and designed to facilitate the planning and effective management of the healthcare system, health insurance system, data collection, and processing pertaining to the health status of the population, healthcare financing, and the operational aspects of the health service. The integrated information system of the Republic of Serbia, by law, consists of the following subsystems[10]:

- Health and statistical system.
- Information system of health insurance organizations.
- Information systems of healthcare institutions.
- Information systems of private practice.
- Information systems of other legal entities.

The integrated information system of the Republic of Serbia provides health data to all participants in the healthcare system, with access rights to that data regulated by the participants' rights, roles, and responsibilities.

Numerous entities such as health institutions, insurance funds, pharmaceutical companies, and medical device manufacturers play pivotal roles within the healthcare sector. Effective data exchange among these participants is essential for delivering optimal care to patients, especially during critical moments. Furthermore, the heightened mobility of the population underscores the diminishing relevance of closed medical information systems, which operate in isolation from other systems. Such closed systems often fall short in facilitating seamless information exchange with similar systems, highlighting the necessity for interconnected solutions[3].

The presence of standalone information systems within specific health institutions or limited segments thereof fails to adequately address the ever-expanding requirements for information exchange. Consequently, two imperative processes emerge: integration and collaboration[8].

A prerequisite to enable integration and collaboration is that all medical information systems must meet appropriate standards both in defining and storing data, as well as in facilitating information exchange. The Institute for Public Health of the Republic of Serbia manages data from the Integrated Information System of the Republic of Serbia. It is mandated that the Institute for Public Health promptly notifies the individuals affected by any data security breaches, the Ministry responsible for health affairs, and the Commissioner for Information of Public Importance and Protection of Personal Data.

Every healthcare institution, whether state-run or private, is obligated to implement an information system. This system comprises a technological infrastructure

(network, software, and hardware components), organizational structure, personnel, and procedures for collecting, storing, processing, transferring, displaying, and utilizing data and information.

In recent years, the Government of the Republic of Serbia has shown significant commitment to promoting and enhancing the functionality of information and communication systems. This includes the development of an Infrastructure Plan and efforts focused on safeguarding information of special importance.

The statute for the closer arrangement of measures for the protection of information and communication systems of special importance was adopted on November 17, 2016. It provides detailed regulations for protecting these systems[11]. This statute emphasizes the implementation of an organizational structure where roles and responsibilities of employees are clearly defined within the ICT system operator, ensuring effective information security management.

Integrated Health Information System (IHIS)

IHIS (Integrated Health Information System) was introduced in Serbia in 2023 through the Law on Health Documentation and Records[12]. IHIS simplifies the entry, collection, storage, and exchange of data related to the healthcare system in the Republic of Serbia. It features a user-friendly and intuitive interface for seamless data entry and updates. All data is stored and managed within a centralized database.

Furthermore, IHIS is integrated with existing systems used by the Ministry of Health and state-owned health institutions, ensuring interoperability and streamlined operations[13].

The integrated health information system of the Republic of Serbia grants access to health data to all participants within the health system, aligning with their respective rights, roles, and responsibilities.

IHIS (Integrated Health Information System) of the Republic of Serbia is structured and designed to facilitate the planning and effective management of the healthcare system and health insurance system. Additionally, it serves for the collection and processing of data regarding the health status of the population, healthcare financing, and the operational aspects of the health service. IHIS represents a central electronic system in which all medical and health data are stored and processed. This includes data on[14]:

1. Patients
2. Health workers and associates
3. Health institutions
4. Health interventions and services performed in the HI
5. Electronic instructions and electronic prescriptions,
6. Scheduling for specialist examinations, diagnostic procedures and surgical interventions.

Reliable and timely information forms the foundation for decision-making throughout the healthcare system and is crucial for the development and implementation of healthcare policies, legal regulations, healthcare research, human resources development, education, service provision, and healthcare system financing. Given IHIS's diverse user base and comprehensive functionality, its role extends to generating essential information for decision-makers at all levels of the health system. This includes facilitating evidence-based decision-making by identifying problems and needs within the healthcare sector.

Therefore, according to the World Health Organization, data from various sources serve multiple purposes across different levels of healthcare[15]:

1. **Data at the patient level:** These data address the healthcare and treatment needs of individual patients, serving as the basis for clinical decision-making. Challenges may arise when healthcare workers are burdened with entering large amounts of data into multiple subsystems due to poor coordination or system integration.
2. **Data at the health institution level:** This includes data from the institution's business and management reports (e.g., drug procurement records), enabling health managers to effectively allocate and manage resources. This involves monitoring stock levels, identifying needs, and guiding procurement decisions.
3. **Data at the population level:** Such data are crucial for informing public health strategies and decision-making processes. They provide insights into both service users and non-users within the population. High-quality data from all institutions, both public and private, are essential to accurately represent the entire population.
4. **Public health surveillance:** This integrates information from institutional and community data sources, focusing on identifying health issues promptly to facilitate timely interventions. This includes responses to emergencies, epidemics, and disease outbreaks.

Electronic Medical Record

The basic medical document is the medical record. The medical record is kept for each patient with the chosen doctor. Transient patients do not have an open medical record but are only referred to the protocol number in the Record book. The medical record accompanies the patient throughout his life (Figure 2). The dental record is defined as the fundamental document for maintaining patient records with a chosen dentist, including dentists specializing in children's and preventive dentistry[16].

The mandatory immunization card is used to record vaccines administered against infectious diseases, in compliance with regulations on population protection against infectious diseases. This card accompanies an individual from birth until the age of 18, which is when the mandatory vaccination program against infectious diseases is fully implemented.

Keeping medical records, creating, and submitting reports constitute fundamental aspects of the work of every health institution (both state and private), health workers, and health associates[17]. The electronic medical record provides a comprehensive view of data from medical documentation stored electronically for each patient. It consolidates all essential health data critical to the patient's long-term health condition, ensuring accessibility during future healthcare provisions. This integration enhances the patient’s chances of successful treatment outcomes.

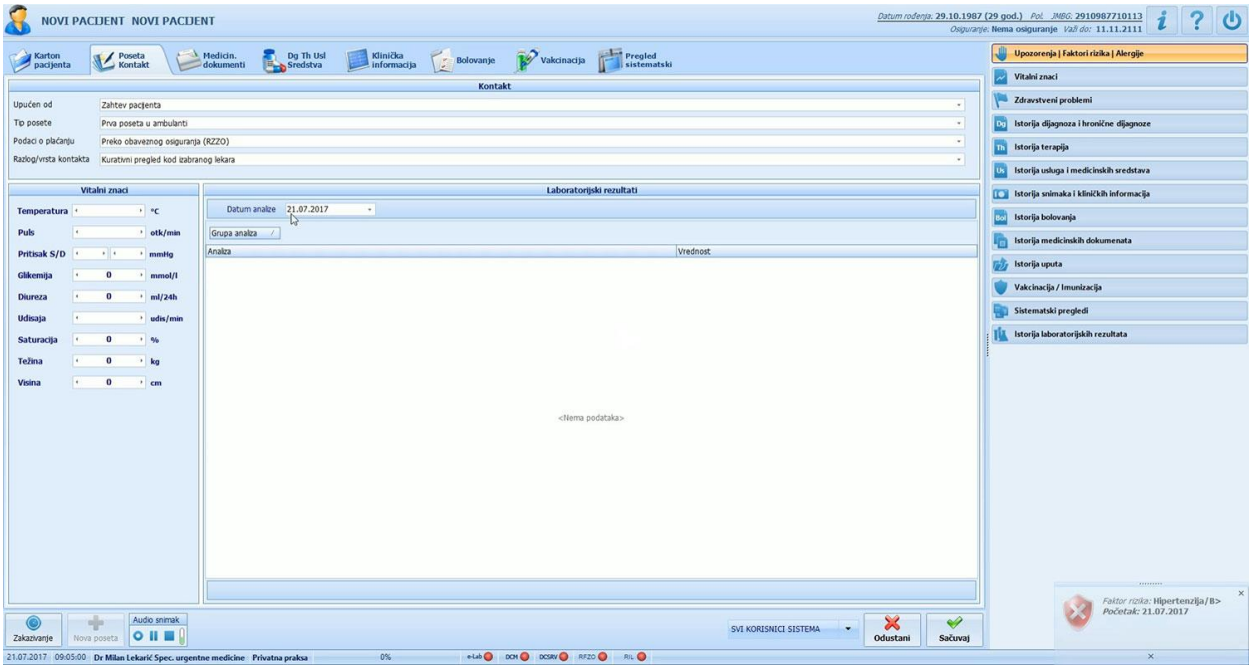

Figure 2. Interface of the electronic medical record

The electronic medical file retrieves medical data from the medical documentation maintained in health institutions (both state and private practices), as well as from the health statistical system and information systems of health insurance organizations[18]. The developed Integrated Information System of the Republic of Serbia serves as the foundation for the introduction of the electronic medical file.

For patients with an electronic health record, medical data is stored electronically. Patients have the right to refuse access to their electronic health record in writing. Patients with an electronic health record are entitled to access their entire medical documentation. If technical requirements are met, patients can also access their medical records online via the Internet (Table 1).

The Personal Data Protection Act governs the collection and processing of medical records[19]. Anyone with access to data is required, while working with medical documentation, to protect it from unauthorized access, inspection, copying, and misuse, regardless of the format in which the medical data is stored (paper, disks, magnetic disks, electronic records such as databases, etc.)[20].

Healthcare institutions, both state and private practices, are required to establish and maintain a security system for medical data in compliance with laws governing the protection of personal data and healthcare documentation. This includes ensuring the integrity of all data recorded in primary medical documentation.

Table 1: Data entered in the basic medical documentation

Patient data	Data on health status and health services
Personal data: surname, first name, surname and first name of one guardian parent, sex, day, month, year and place of birth, marital status, place of residence and stay, JMBG (identification number)	Visitation records
Insurance data	Reason for visit
PNIP (personal number of insured person)	Personal history and objective findings
Chosen doctors data	Diagnosis
Medical data	Health care services provided during stay
Personal medical history	Planned healthcare services
Family medical documents	Refferals to a specialist doctor
Data on disability and incapacity	Referral to hospital treatment
Data on risk factors	Issued medical documents
Social information about patient (level of education, job)	Medication data
Contact details	Issued medical technical aids

The implementation of certified software will facilitate the adoption of electronic health records across all healthcare centers. An electronic health record is a digital representation of an individual's health record, encompassing extensive information about the patient including demographic data, a list of examinations, results of allergy tests, and history of medications or vaccinations. Additionally, it includes receipts for each service or medication utilized by the patient. With the introduction of electronic health records, as soon as a patient registers at the reception desk, the data is automatically transmitted to the doctor's computer, ensuring the doctor has immediate access to the daily schedule and examination plans.

The essential data entered into the EHR system include: demographic information (age, gender, address, marital status, etc.); information on allergies, immunizations, and medical history, encompassing all documents constituting the patient's medical history such as: current status, findings, opinions, list of healthcare providers, results of laboratory tests, radiological findings and images, information on medical treatments, details of prescribed and administered procedures, and medications and materials used.

A health information system serves as the cornerstone for decision-making and encompasses four primary functions: generation, collection, analysis and synthesis, and communication and utilization of information.

The implementation of IHIS has facilitated streamlined and improved planning within the healthcare sector. Its adoption enhances the quality of patient services, transparency of information, and prompt reporting to both patients and the public. Additionally, IHIS promotes an objective approach to patient care, improves accessibility to healthcare institutions, and reduces waiting times for treatment.

ICT Healthcare System Operator

The operator of an ICT system of special importance is obliged, within the organizational structure and considering the nature, scope, and complexity of the business, to determine the duties and responsibilities of employees for managing information security.

The operator of an ICT system determines, within the organizational structure, the tasks and responsibilities of employees for the protection of information assets, i.e., assets and property, for the supervision of business processes important for information security, for risk management in the field of information security, as well as for the tasks specified by procedures in the field of information security[21].

The division of responsibilities among employees should be carried out in such a way as to prevent unauthorized or unintentional modification, damage, or misuse of assets, i.e., information assets, by the operator of the ICT system, as well as to prevent access, modification, or use of assets without authorization and without a record of such actions.

The operator of the ICT system establishes procedures for monitoring activities, auditing, and supervision within the framework of information security management.

When using mobile devices, the protection of data important to the ICT system operator must be ensured, and the risks of using mobile devices in unprotected environments (public places, networks with unknown or insufficient protection, etc.) must be reduced. The ICT system operator considers the following[19]:

1. Records of mobile devices.
2. Physical protection measures for mobile devices (against destruction, damage, loss, or unauthorized access to devices and data important to the ICT system operator).
3. Software installation and update limitations.
4. Installation of adequate software for mobile devices and their regular updating.
5. Limitation of the use of information society services would threaten theinformation security of the ICT system.
6. Controls access to the mobile device and the data on it.
7. Cryptographic techniques.
8. Protection against viruses and other malicious software.

9. Remote management of a mobile device in the event of an incident, by an authorized person of the operator of the ICT system, through which it is possible to permanently delete data and prevent further use of the device.
10. Establishment and maintenance of backup data.
11. Enabling safe use of internet services and applications.

Persons who use or manage the ICT system must be qualified for their work and understand their responsibilities. The operator of the ICT system is obliged, by contract or other means, to require employees and other engaged persons not to disclose confidential and other information important for the information security of the ICT system after the termination or change of their employment[21].

Duties and obligations, which remain valid even after the termination of employment, should be included in the terms of the contract with the employee. The operator of the ICT system is obliged to identify and classify the information assets, i.e., funds and resources, through which the creation, processing, storage, transfer, deletion, and destruction of data in the ICT system are carried out. The operator must make an inventory of the information assets, i.e., funds and resources, and establish, maintain, and regularly update their records. Additionally, the operator is obliged to perform classification according to the level of sensitivity and criticality, considering the possible consequences of violating the confidentiality, integrity, and availability of the assets. This classification must be consistently applied, and an adequate level of protection for these assets must be ensured accordingly. For each information asset, i.e., means and property, it is necessary to designate a person responsible for their protection[22].

Data classification must align with the principle of risk management as outlined in the Law on Information Security, ensuring that the level of protection corresponds to the importance of the data[23]. The operator of the ICT system determines the data classification scheme, considering the sensitivity and importance of the data, as well as the potential damage from unauthorized disclosure, modification, or deletion of the data. The operator must apply the regulations governing data protection issues (e.g., classified data, business secrets, personal data, etc.).

The ICT system operator is obliged to define an appropriate set of procedures for handling, processing, storing, and transferring data. When defining procedures and dealing with data carriers, the irreversible deletion of data should be foreseen when the terms for their storage have expired, and they are no longer needed. This includes procedures for approving the removal of data carriers from the premises of the ICT system operator, storing data carriers in a safe place, using cryptographic techniques for data protection as required by regulations, ensuring the safe transfer of data to new data carriers, storing backup copies on separate data carriers, and implementing other measures and procedures for the protection of data carriers[24].

The operator of the ICT system should establish procedures for the safe scrapping and destruction of data carriers when they are no longer needed, minimizing the risk of data access by unauthorized persons. During transport, data carriers should be protected from unauthorized access, misuse, or damage by ensuring reliable transport, utilizing trustworthy personnel, and providing adequate packaging for physical protection. The operator of the ICT system determines which data, in

accordance with the data classification scheme, should have records kept of the

use of data carriers and the procedures undertaken for the protection of data and data carriers.

Protection of IHIS

The methodology for protecting personal information in medical information systems involves a complex set of strategies including system analysis, risk control, and process control.

The basic steps in developing the methodology for protecting personal information in health institution information systems are as follows:

1. Identification of IT resources requiring protection.
2. Description, i.e., outlining the architecture of the implemented information system and identifying information threats.
3. Assessment of risks in relation to potential damage that may occur.
4. Designing proposals for solutions aimed at reducing risks and mitigating potential consequences.
5. Specification of implemented recommendations[21].

Choosing an adequate protection strategy involves striking a balance between the level and scope of protection, potential risks, and the costs of consequences in case of damage. Health institutions recognize the potential consequences of information confidentiality breaches, underscoring the obligation and necessity for ensuring the safety and protection of personal information throughout the provision of health services[24].

Information security has emerged as a critical factor in the overall development of society, leading to the adoption of numerous standards proven to be best practices in secure information management. The goal of these standards is to secure and protect information and assets from a wide array of threats, whether they are internal or external, accidental or intentional. This is achieved through the systematic introduction, implementation, execution, monitoring, maintenance, and continuous improvement, including upgrades and adaptations to technological advancements in information security systems.

When an organization applies a methodological process to a specific protection project, considering organizational, project, and team dynamics, it is unlikely to perfectly align with any established ICT development methodology. Hence, continuous adaptation, upgrades, and the integration of different methodologies become necessary[24].

In the system, various roles are established to ensure that each user has access to specific functionalities, data, and permissions based on their job responsibilities. Each user in the system is assigned at least one role. Through role assignments, each user logging into the system is presented with a personalized view and granted access only to functionalities defined according to their assigned roles.

The system has implemented a one-way cryptographic function using hash and salt to securely store user passwords, thereby preventing unauthorized disclosure. To enhance security, passwords must consist of at least 8 alphanumeric characters, including at least one capital letter and one special character. Additionally, the system allows setting a password expiration period. All user passwords are stored securely and cannot be reused. Furthermore, each user is automatically logged out of the system after 15 minutes of inactivity to mitigate security risks.

The service subsystem facilitates integration with other systems through an

interface designed for seamless connectivity with existing local information systems used in both public and private healthcare institutions.

Web services are thoroughly documented and accessible through a dedicated web portal for support. Designated users, typically software companies, log in using a username and password to access these resources. Integration is achieved through the implementation of web services, facilitating the exchange of XML documents over HTTPS connections.

Web services can be categorized into two types:

1. **Public Services:** These services do not require authentication and are openly accessible.
2. **Protected Services:** Access to protected services requires user-level authentication. Authentication involves using a username and password obtained from IHIS (Integrated Health Information System). Upon successful authentication, a session token is issued with an expiration time of one hour from the last activity, ensuring secure access to authenticated users only.

An essential component of IHIS is its API portal, which provides detailed documentation of the application programming interface (API). This portal serves to guide the integration of local information systems across primary, secondary, and tertiary levels with IHIS, ensuring seamless interoperability and secure data exchange.

Conclusion

The rapid evolution of ICT has introduced new modes of communication and data exchange that differ fundamentally from traditional systems developed up to that point. To regulate mutual rights and obligations, documents, procedures, and rules have been standardized among participants in the communication process, necessitating skilled professionals, well-organized business processes, and the adoption of modern technologies. Concurrently, alongside ICT advancement, malicious activities by individuals and organizations seeking to undermine these systems have also evolved. To counter such threats, businesses implement comprehensive information security measures to prevent both accidental and intentional disruptions to ICT operations and misuse of information.

Specific measures are defined to protect business information within ICT systems, outlining concrete steps to prevent unauthorized access to protected information. Continuous efforts are required to safeguard ICT security, aiming to mitigate all forms of risk and elevate ICT protection to an acceptable level.

The implementation of the state medical information system, known as the "Integrated Health Information System of the Republic of Serbia," has centralized medical data encompassing patient records, health personnel details, collaborations, and institutional information. It also includes data on prescribed medications, treatment instructions, and scheduled examinations. This consolidation has greatly facilitated and enhanced planning within the healthcare sector and supported the development of more effective health policies. The system's integration capabilities enable seamless exchange of electronic health records and demographic data with other components of the IHIS of the Republic of Serbia.

Ethical Approval

N/A

Conflict of Interest

The authors declare no conflict of interest.

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Review

COMMUNICATION BETWEEN NURSES AND THE ELDERLY - PRESENT AND FUTURE

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Abstract

The World Health Organization (WHO) has defined communication quality as one of the five essential skills for a healthy and happy life. Quality communication is particularly important in healthcare, especially for those who have communication difficulties, the majority of whom are elderly. Communication problems among older adults range from those seeking to prevent the development of communication difficulties to those who already experience challenges such as dysarthria, aphasia, and hearing loss. This study aimed to examine the problems in communication between nurses and the elderly. We searched the PubMed and Embase databases using the keywords: "communication," “adults,” "elderly," and "nurses." The findings suggest that nurses' assistance to the elderly in overcoming communication problems is crucial. It is important to understand the specifics of communication, the basic communication rules with the elderly, and the problems older adults face in conducting communication adequately. The findings support the idea that nurses can significantly help overcome communication barriers by choosing appropriate strategies, such as repetition, noise elimination, and environmental control, especially in addressing sensory issues. To improve communication between nurses and older adults, it is necessary to assess all communication barriers, prejudices, beliefs, fears, and the identity of the elderly. Some studies suggest new research topics, revealing that screening to assess sensory functions in the elderly is insufficiently applied and that practical activities within the care of the elderly with sensory impairment are not always utilized. Changing such nursing practices would greatly improve communication and the quality of care for the elderly.

Keywords: communication, adults, elderly, nurses

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Introduction

Communication represents the pathway (means) of transmitting information. One of the many definitions of communication was provided by Hargie in 1994, stating, "Communication is a dynamic and complex process in which people send and receive verbal and nonverbal messages to understand and be understood"[1]. Therefore, communication can be justifiably explained as a process in which there is a mutual understanding of a message between two or more individuals. A message is information about content in any form[2] (Figure 1).

Shannon and Weaver proposed a communication model in 1948, which includes the following elements: conception, message encoding, message transmission, message reception, message decoding, recipient, feedback, and noise in message transmission. In this model, decoding refers to understanding the encoded message. For feedback to occur, the message must be understood. Communication, in this way, becomes bidirectional, as the success of message decoding determines the success of two-way communication. Messages are often unclear or misinterpreted, leading to communication tension, mistrust, or conflict. Changes in communication are usually reported by older people. With typical aging, communication skills subtly change, at least partly due to changes in physical health, depression, and cognitive issues. Aging is related to physiological changes in hearing, voice, and speech. Some language skills remain unaffected, while others tend to decline (e.g., understanding complex concepts)[3].

Communication with patients

Efficient communication in healthcare is considered a fundamental clinical skill for all healthcare professionals. Quality and effective communication are necessary to enhance patient satisfaction during treatment and care. Successful communication establishes a relationship of trust, fosters good collaboration with patients, reduces patient tension, and ensures better emotional health for patients[4].

Effective communication with patients can be achieved by paying attention to the following factors[5]:

- Forgetfulness is more likely when there is more information.
- Older individuals tend to forget a significant amount of information.
- Most people remember best what is said first (it is important to communicate the most crucial health-related information first).
- It is necessary to ask the patient to repeat the information received to assess their understanding.
- Written instructions should be provided to patients to complement verbally given information and advice (written instructions must be clear, understandable, and concise).

Almost daily, patients express dissatisfaction due to unclear communication or a lack of communication. Clear and precise messages are essential in healthcare. To achieve this, healthcare professionals must first communicate the most important information, maintain eye contact with the interlocutor, align nonverbal communication with verbal communication, always check the clarity of the message, and provide support to patients during communication[6].

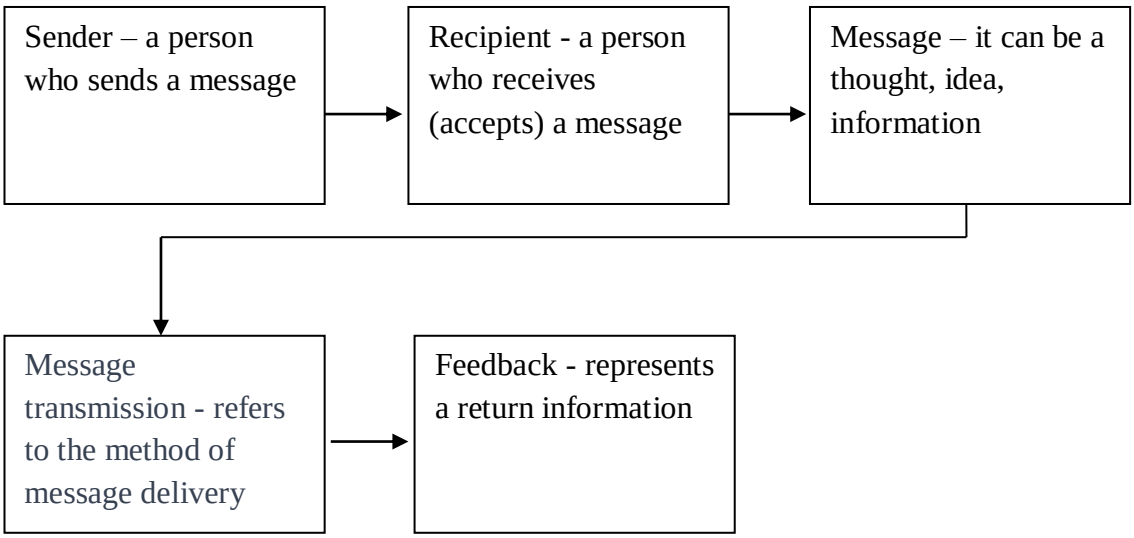

Figure 1. Model of the communication process

The principles through which nurses provide support to patients during communication are:

- Commitment
- Compassion
- Competence
- Confidence
- Conscientiousness[7].

Contemporary communication in healthcare should be achieved in three fundamental ways: using spoken word, written form, and visual effects. Messages should be sent for the purposes of informing, questioning, encouraging, advising, motivating, reassuring, explaining, providing support, problem-solving, etc. Therefore, the manner of communication in healthcare will always depend on the situation, the content of the message, the number of people the message is intended for, and the characteristics of the individuals being communicated with, especially considering the challenges faced by the elderly[8].

Types of communication

According to the breadth of the communication process, we distinguish between direct and indirect communication. Direct communication is the direct exchange of information among people, while indirect communication is conducted through intermediaries (media). Based on the symbols used in communication and the method of sending messages, communication is divided into verbal and nonverbal. Verbal communication involves reading, writing, listening, and speaking. Nonverbal communication includes speech volume, tone and pitch of the voice, silence, body posture, gestures, facial expressions, physical touch, dressing style, posture, and position[1].

It is important that there is congruence between verbal and nonverbal communication. Congruence is particularly crucial in stressful situations (abundant in elderly patients) when it is challenging to detect changes in the

nonverbal signals of the patients being communicated with[9].

Based on the number of people involved in the communication process, there are four types: intrapersonal (communication with oneself), interpersonal (between at least two people), group (within one or more groups), and mass communication (communication with many participants)[1]. Interpersonal communication can be categorized into false, one-way, reactive, and two-way forms.

False communication is characterized by talking without dialogue, where there is no real influence or listening between the speakers. One-way communication elicits reactions, but only in one direction. Reactive communication involves mutual reactions between speakers, but not mutual influence. Two-way communication is the most desirable type, as it involves mutual reactions and reciprocal influence through active listening, thinking, and speaking. This form is particularly important when working with patients[10].

Communication styles

Each person has a unique communication style and way of sharing information. There are four basic communication styles:

- Passive
- Aggressive
- Passive - Aggressive and
- Assertive [11].

Individuals with a passive communication style are often insecure and struggle to express their feelings and thoughts. They may find it difficult to seek help from others, leading to feelings of helplessness, loneliness, and low self-esteem.

Those with an aggressive communication style prioritize their own feelings, thoughts, rights, and needs. They often seek control, manipulate others, and may disregard the feelings of others[12].

Individuals employing a passive-aggressive communication style behave passively while subtly creating bitterness or playing manipulative roles. They may struggle to acknowledge their anger and tend to deny problems, leading to a lack of open communication.

In contrast, assertive communicators stand by their words, respect themselves and others, hold their own opinions while respecting those of others. They express their feelings and thoughts honestly while also respecting the other person's perspective. Assertive communication is considered the most desirable style and should be cultivated, especially in healthcare settings[12].

Communication technologies

We live in a world dominated by communication technologies—computers, smartphones, applications, and software. While younger population cannot imagine life without them, questions arise about the extent to which elderly individuals adopt these modern forms of communication. The use of Information and Communication Technologies (ICT) among those over 60 is on the rise. By 2025, it is projected that over 20% of people over 60 in European Union (EU) countries will be using ICT. This trend has sparked considerable interest among scientists in technology, healthcare, gerontology, and psychology, who explore the impact of ICT use on older adults.

The term "silver surfers" is now used in literature to describe older adults who actively use ICT [13]. According to Eurostat data from 2016, in some developed EU countries, at least every second person over 64 is considered a "silver surfer" [14]. Research by Xavier and colleagues in 2014 indicates that over 50% of people aged 65 to 74 in the UK have internet access at home. In Scandinavian countries and the UK, internet usage among the

elderly ranges from 68% to 84%. Notably, internet use has been linked to reducing cognitive decline among elderly individuals who live alone and lack regular social interaction[15].

Internet access can mitigate social isolation and loneliness among older adults, providing them with opportunities for communication, especially when separated from family and friends or facing mobility challenges. It is believed that embracing ICT could significantly contribute to maintaining both physical and mental health among the elderly[16].

Communication with the elderly living in a nursing home

The separation of elderly individuals from the environment where they have spent a significant part of their lives is a stressful event. Moving into a nursing home requires significant adjustments and changes in habits. The main challenges faced by the elderly in nursing homes include[17]:

- A sense of dependence on strict care and activity schedules.
- Insufficient fulfillment of needs for independence, companionship, conversation, and entertainment.

Elderly individuals residing in nursing homes spend a significant amount of time with each other and the facility staff, but interactions with others are often limited. Staff-resident interactions account for only 10.7% of the time, and communication tends to be neutral and task-oriented, which may not be beneficial. Communication plays a crucial role in the quality of life for nursing home residents, linked to lower rates of depression and reduced incidence of verbal and physical aggression.

A common communication style among nursing home staff is "elderspeak"—a high-pitched, overemphasized, simplistic grammar, slow, or baby-like approach. Despite good intentions, elderspeak hinders effective communication and reduces the self-confidence of nursing home residents, potentially contributing to long-term mental and physical decline due to the lack of frequent and high-quality communicative interactions. Moreover, elderspeak reinforces stereotypes about nursing home residents and the elderly in general[18].

Improving communication and satisfaction among elderly residents in nursing homes can be achieved by:

- Encouraging the elderly to do as much as they can independently.
- Involving a smaller, consistent team of caregiving staff to foster trust and security.
- Planning and conducting more frequent, shorter conversations[18].

Several studies have explored communication interventions aimed at enhancing interactions between staff and nursing home residents, particularly those with dementia[19,20,21]. Research indicates that nurses who adopt less authoritarian speech styles demonstrate greater respect, a caring attitude, and a less controlling approach toward elderly residents. Additionally, training nurses to use personalized memory books has shown significant success in communicating with residents experiencing cognitive challenges.

Memory books, integrated into daily interactions, are believed to improve communication among residents and between residents and staff. These books contain caregiving information that supports residents' independent functioning during care, thereby enhancing their overall well-being[22].

This study aims to explore communication challenges between nurses and elderly individuals, seeking effective solutions.

Materials and Methods

For this study, a systematic analysis of studies on the characteristics of communication with elderly individuals was conducted. We conducted a search in the PubMed and Embase databases using the keywords 'communication', 'adults', 'elderly', and 'nurses'.

Results and Discussion

Communication problems in the elderly

Communicating with older individuals presents several challenges stemming from stereotypes about aging, physical and psychosocial changes, and health issues[20,22]. In a large-scale study involving 12,000 individuals aged 65 and older, 42% reported hearing problems, 26% had difficulties with writing, and 7% experienced issues using the phone. These challenges are compounded by health conditions that significantly impact communication abilities, presenting new obstacles for older adults accustomed to different capabilities throughout their lives.

Common communication issues among older adults include:

- Hearing loss (presbyacusis)
- Stuttering
- Memory difficulties, especially short-term
- Weakened facial muscles affecting speech
- Swallowing problems
- Decreased vision (cataracts, presbyopia)
- Difficulty writing

Changes in the social roles of older adults also contribute to communication challenges, often leading to decreased self-esteem. Health problems range from physical issues associated with aging, like hearing loss, to neurological conditions affecting brain function and muscle control[3].

Several serious illnesses that can affect the communication of the elderly include[23]:

- Stroke
- Cancers
- Brain tumor
- Parkinson’s disease
- Alzheimer’s disease and dementia
- Amyothropic lateral sclerosis

Stroke, brain tumors, and other forms of brain damage can lead to aphasia, an acquired speech disorder that impairs the ability to express thoughts and ideas. Depending on the severity of the condition, communication can be improved with specific technological devices such as hearing aids, therapeutic interventions, and general communication strategies tailored to the abilities of the elderly person[22].

Characteristics of communication with the elderly who have sensory problems (impaired vision and impaired hearing)

Many elderly individuals experience both hearing and vision impairments, which disrupt their communication with their surroundings. This often prompts them to request objects to be brought closer, information to be repeated, and for speech to be clearer and slower. In some cases, seniors may completely withdraw from communication due to these sensory issues. Research indicates that a significant proportion of the elderly experience sensory problems typical of this life stage, such as presbyacusis (hearing loss) and presbyopia (age-related vision decline)[23].

Löhler et al. highlight that impaired communication is a hallmark of presbyacusis, emphasizing the importance of early detection for improved communication through appropriate treatment, including the prescription of hearing aids to enhance auditory perception[24].

Guerra-Zúñiga et al. note that the utilization of hearing aids in the elderly is influenced by various factors including patient concerns about device handling, audiological considerations, and healthcare program accessibility. Audiologists express concerns over the lack of adequate rehabilitation programs tailored for elderly patients[25].

Silagi et al. observe that elderly individuals, particularly those with lower educational backgrounds, often communicate more within their families. The amount of time spent communicating with family and friends depends on the severity of their sensory impairments[26].

In an experimental study by Horng et al., herbal remedies were shown to enhance vision, thereby improving written communication among older adults[27].

Heine et al. identify common communication strategies with seniors who have sensory impairments, such as repetition, reducing noise, and controlling the environment to enhance clarity. Seniors frequently request clarifications to minimize misunderstandings. The use of assistive technologies, such as hearing aids, speech assistance devices, robotic systems, and video systems, is highlighted as beneficial for improving communication effectiveness with elderly individuals[28].

Characteristics of communication with the elderly who have cognitive disabilities

Cognitive impairments significantly disrupt communication and daily life for elderly individuals. Issues such as forgetfulness and difficulty finding or recalling the right words are particularly challenging. Dementia, one of the most common conditions associated with cognitive decline in the elderly, exacerbates communication problems.

According to Banović and colleagues, communication with individuals suffering from dementia is often fraught with challenges, stress, and negative emotions[29].

Sobral and colleagues highlight that elderly individual with dementia struggle with addressing others by name, comprehending speech, and recalling past events. These communication difficulties hinder their ability to perform daily activities[30].

Despite these challenges, research indicates that seniors with dementia often use Information and Communication Technologies (ICT) and smartphones to compensate for cognitive deficits, such as using reminders on their phones.

There are common questions about initiating communication with someone with dementia, how much information to share about their condition, and whether to downplay the issue. Nevertheless, it is crucial to approach such interactions with understanding, patience, and respect, allowing ample time for conversation.

Prejudices related to communication problems in the elderly

Old age and aging are often accompanied by various prejudices and stereotypes. Younger individuals frequently perceive

the elderly as forgetful, slow, incapable, non-functional, dependent, and hard of hearing. These stereotypes, particularly those related to cognitive and sensory abilities, significantly disrupt communication[31].

One manifestation of these prejudices is elderspeak, a speech pattern where people address the elderly using simplified language, akin to speaking to a child. Research by Shaw and Gordon has shown that elderspeak can lead to resistance to care among the elderly. Neglecting communication issues in older adults can have harmful effects; the overemphasis on elderspeak communication reduces understanding and can diminish the dignity of the elderly[32].

Barber and Lee emphasize that stereotypes significantly influence how elderly individuals assess their own abilities, often rating their listening skills lower due to age-related stereotypes[31]. Communication disorders further disrupt social interactions, partly due to these stereotypes.

To improve communication among the elderly, it is essential to address all communication barriers, prejudices, beliefs, fears, and the individual identity of each elderly person, as emphasized by Goll et al.[33].

Research indicates that communication problems and impairments in cognitive and sensory functions also contribute to the development of self-stigma among the elderly. David et al. identified three levels of self-stigma in elderly individuals with hearing impairments: cognitive attributions such as feeling old, unintelligent, or handicapped; emotional reactions including shame, pity, and ridicule; and behavior-related reactions such as concealing their impairment, distancing themselves, and struggling to adapt to hearing aids[34].

Prejudices exacerbate negative self-perception, leading to reduced social interactions, withdrawal, isolation, and diminished quality of life among the elderly.

Nursing activities in improving the communication of the elderly

Healthcare workers engage in daily communication with the elderly, using this interaction to understand their problems, fears, needs, and desires. Nurses establish successful collaborations and provide appropriate care through effective communication. Communication is fundamental to nursing practice, where carefully chosen words offer support, encourage active aging, and educate the elderly on self-care to enhance their independence.

However, nurses must adapt their communication styles to accommodate the unique problems and needs of elderly patients. A study by Wanko Keutchafo et al. identified common nonverbal strategies used in nurse-elderly communication, such as active listening, smiling, facial expressions, head movements, managing spatial distance, and emphasizing key points[35]. The study underscores the importance of nurses paying attention to their nonverbal cues and word choice to prevent misinterpretation.

Improving communication with the elderly requires assessing their cognitive and sensory abilities. Höbler et al. identified that nurses working in nursing homes acknowledge barriers, with inadequate screening for sensory functions being a significant obstacle to effective communication[36].

Andrusjak et al. highlight the underutilization of sensory function assessments in nursing homes, with practical activities for elderly individuals with sensory impairments often

overlooked in care practices, thereby affecting communication and quality of care[37].

According to Roets-Merken et al. instrumental activities of daily living heavily rely on effective communication among the elderly. Therefore, nurse-led self-care programs prove effective in empowering elderly individuals with dual sensory impairments to maintain their daily activities[38].

By addressing sensory needs and promoting the use of assistive technologies, nurses play a crucial role in enhancing communication with the elderly. Additionally, studies consistently show that single women with lower education and income levels experience higher levels of loneliness and social isolation[39].

Recognizing the significance of assessing elderly communication abilities, nurses can tailor their communication approaches to encourage engagement and prevent isolation.

Pedrozo Campos Antunes et al. identified four categories of assistive technology: assistive technology for individuals with speech problems, robotic or video conferencing systems, information and communication technologies, and other types of assistive communication technologies such as hearing aids. Assistive communication technologies for older adults are not only used by individuals with disabilities or conditions that impair communication. They are generally intended for elderly individuals without pathological communication issues[40].

Identification of opportunities provided by ICT (information and communication technologies) in the treatment and care, especially for patients with Alzheimer's disease and caregivers. Martínez-Alcalá CI and colleagues focused on communication involving assistive technology, telecare, and telemedicine. Information systems and the internet were the most used technologies. The key finding of this research is that the use of ICT tools can strongly be recommended to be used as a lifestyle in older adults to improve the quality of life and communication of older adults with dementia and their caregivers. Since AD patients are completely dependent on caregivers in most activities, attention needs to be paid to their caregivers to avoid stress and depression. In addition, the use of ICT in caregivers' daily lives can help them understand the disease process and manage situations in a way that is beneficial for both parties[41].

Dooley at al. investigated communication interactions between healthcare workers and dementia patients, concluding that patient-carer-professional communication in dementia care raises various ethical questions: how to balance the different communicative needs of patients and carers; clarity in terms of sensitivity in diagnosis; and whether to minimize or disclose difficulties in interaction and misunderstandings to increase patient engagement. Healthcare workers need guidelines for diagnosis and strategies to optimize patient and carer involvement[42].

The impact of communication problems on the social relationships of older adults

Healthy social relationships are crucial for maintaining mental and physical health in later life stages. Reduced social support, smaller social networks, and more negative social interactions are associated with depression, compromised immune function, lower self-rated health, increased disease prevalence, and higher mortality rates. Evidence from Palmer et al. suggests that communication disorders negatively impact social relationships. The relative impact of communication disorders on

social relationships, compared to other types of disabilities, is also poorly understood. Regression analysis results have shown that communication difficulties were significantly associated with several parameters of social relationships. Communication difficulties were a significant predictor of less socializing, fewer positive social interactions, less participation in social activities, and higher levels of loneliness[43].

Understanding the concept of elderspeak and whether this speech is beneficial or harmful for older adults was investigated by Shaw et al. It was found that exaggerated prosody (emphasis on words), a key characteristic of elderspeak, reduces understanding. Older adults generally perceive elderspeak as patronizing, and speakers are perceived as showing less respect. In individuals with dementia, elderspeak also increases resistance to care. An individualized approach in communication with older adults is necessary. The lack of attention to communication needs among the elderly can have harmful effects on their understanding and well-being[32].

Medical nurses should be aware of nonverbal communication with the elderly, particularly in how messages are sent and interpreted (as they can be misunderstood). Research by Wanko Keutchafo et al focuses on nonverbal communication between older adults (over 60 years old) and nurses. The studies highlight active listening, proxemics (the study of spatial behavior), emphasis during speech, head movements, facial expressions, gestures, and smiling as nonverbal strategies most used by nurses when communicating with older adults. There was no mention of using silence as a nonverbal communication strategy for nurses[35].

Conclusion

Typical problems in communication with the elderly relate to presbyacusis, stuttering, cognitive issues, weakening of facial muscles, visual impairment, and inability to write. Elderspeak reduces self-confidence among residents of nursing homes and contributes to long-term mental and physical deterioration. An individual approach is needed in communication with the elderly. Nurses should be aware of their verbal and non-verbal communication with the elderly to avoid misinterpretation of messages.

Good and efficient communication requires the presence of active listening, respect (for oneself, the interlocutor, and the situation), empathy, and training of nurses. Self-care programs supported by nurses are effective in empowering older adults with dual sensory impairments to engage in instrumental activities of daily living and in strengthening communication.

A special contribution is reflected in the development and creation of communication maps for healthy elderly individuals and in finding links between the frequency and time dedicated to communication, and cognitive and sociodemographic factors, to identify difficulties in a timely manner and improve communication functionality.

Conflict of Interest

The authors declare no conflict of interest

Ethical Approval

N/A

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61

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