Determinants and Strategies of Knowledge Transfer in Teaching Hospitals

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Abstract: Teaching hospitals are healthcare entities rendering healthcare services to patients. Specialized medical staff not only provide medical services, but also educate future medical staff, conduct clinical research and support the development of medical technologies. The majority of these staff are also research and teaching staff at medical universities. The aim of this article is to identify the determinants of knowledge transfer and the intellectual potential of employees in the relationship between teaching hospitals and medical universities. The inference was made on the basis of the available development strategies of medical universities, including reference to the intellectual potential of employees and the mission of teaching hospitals published on their websites. The following research questions were posed: Is the mission of medical universities consistent with the mission of teaching hospitals? Does the transfer of knowledge and skills of medical staff between a medical university and its teaching hospital contribute to the mission of teaching hospitals? The preliminary findings indicate that the intellectual capital of the scientific-medical staff is of vital importance in the mission of teaching hospitals, which is on a par with the development of the facilities. The analyses were of an expert nature, from the perspective of a statutory auditor and a long-standing researcher of the problems of the functioning of medical entities, namely hospitals. The considerations undertaken in the article are an important voice in the recognition of the determinants for the development of teaching hospitals as entities with intellectual capital useful in solving international health problems. The article is a continuation of the author's research on the development of intellectual capital of employees of teaching hospitals in Poland. The relationship between the findings of the development strategies of medical universities (the founding bodies) and the mission statements of their teaching hospitals confirm their coherence and complementarity.

Keywords: Knowledge Transfer, Intellectual Potential of Hospital Employees, Hospital Management, Knowledge Workers in Hospitals.

1. Introduction

In the era of the knowledge economy, knowledge is the most important asset of an organization. The theoretical and application value of the knowledge of employees is a crucial factor in the development of an economic entity. Learning processes accompany the decision-making and management of the entity, as well as having an impact on the environment. Teaching hospitals are specific economic entities in which human resources, the knowledge and skills of employees, constitute a key asset.

For most teaching hospitals, medical universities are the founding bodies. Medical universities educate future employees, namely, doctors and other medical staff. The place of their education and practical training is the teaching hospitals. The high-level skills of the medical staff are thus shaped by both academic education and practical classes. These relationships indicate the bidirectional nature of knowledge and skills transfer in the relationship between the two entities. When considering a knowledge transfer system, the close relationship between medical universities and teaching hospitals in the area of intellectual capital and human resources, their connections, and interactions must be taken into account. In order to educate future medical staff, their practical experience in patient treatment processes is essential. The reverse relationship can also be considered: the intellectual potential of medical staff is built to a large extent in the educational process. Educational processes accompany medical staff throughout their training and professional work. Lifelong education is embedded in the specifics of the profession and guaranteed by law (Law of 5 December 1996, Article 18).

Knowledge resources, from the point of view of their origins, can be divided into knowledge related to experience (skills), conceptual knowledge (concepts, projects), routine knowledge resources (organizational culture), or systemic knowledge resources (databases, patents, licenses) (Little, Ray, 2005, p.25). There are four basic phases in the knowledge life cycle, such as creation, mobilization, diffusion, and commoditization (Birkinshaw, Sheehan 2002, p.75). For the knowledge transfer process to be effective, all four phases are necessary and, in addition, the process should be continuous and strategic.

2. Essence and Principles of Knowledge Transfer: Literature Review

In an era of rapid technological progress and globalization, knowledge resources, which are a source of competitive advantage, are crucial for the development of a company. For the success of a business entity, knowledge sharing among employees is essential at all levels of collaboration and decision-making..

The concept of knowledge can be discussed based on different approaches and categories. It can be considered as tacit knowledge and explicit knowledge. Tacit knowledge is individual, specific and difficult to formalize. It includes skills, qualifications, and other individual characteristics of its holder. Explicit (accessible) knowledge is formalized by nature and can therefore be transferred between actors using specific tools and forms (Nonaka, Takeuchi 2000, p. 82). Other interesting characterizations of the essence and types of knowledge emphasize its features such as its universal and theoretical nature (episteme), practical and instrumental dimension (techne), "practical wisdom" (phronesis), its non-transferability (sticky knowledge) and the transferability of knowledge between entities, both within and outside the organization (leaky knowledge) (Szyjewski 2003, p.17; Kłusek-Wojciszke, B., Łosiewicz, 2009, p. 140). From the point of view of considerations on knowledge transfer in the health sector, I consider it important to divide knowledge into four categories as follows: know what (facts), know why (principles), know how (skills), know who (context) (Knowledge Management..., 2000, p. 21)."Know what" refers to the knowledge of "facts", "know why" is the knowledge that explains reality, "know how" refers to people's skills, public access to it is limited, "know who" - identifies knowledge holders and describes the extent of knowledge they have (Kłusek-Wojciszke, B., Łosiewicz, 2009, p. 139).

The foundation for the development of an economic entity and the achievement of a competitive advantage is not only the possession of the knowledge, but above all its transfer. Knowledge sharing takes place within the economic entity, but the directions of knowledge transfer may include inter-organizational relations. Proper communication at the entity level is determined by factors such as organizational structure, interpersonal (personnel) relations and organizational culture. These factors can determine both the successes and barriers to knowledge transfer. Among the factors constituting barriers and difficulties in knowledge transfer processes, the following are most often mentioned: the lack of mutual trust, limited perception of knowledge acquisition, the belief that knowledge is assigned to specific groups or positions, different needs and priorities among communication participants, attitudes of uncertainty towards researchers or the value of research, the lack of incentives to participate in communication, excess of various responsibilities, passive forms of knowledge exchange, top-down forms of this exchange, the lack of belief in the capacity and applicability of research knowledge and vice versa (Davenport, Prusak 1998 [after:] Klak M. 2010, p. 82 , Molleman, Fransen2012, p. 160, Gagliardi A. R. et al., 2016, p. 9).

In order to prevent and resolve barriers and difficulties in knowledge sharing, the management of teaching hospitals should establish strategies to deal with them and implement them consistently. Such solutions include the following: creating interpersonal relationships based on trust and cooperation, favouring teamwork among specialists from different disciplines, creating an effective and employee-accepted system of incentives and rewards, and promoting ethical and pro-social attitudes. Selected suggestions for strategies to improve knowledge transfer are presented in Table 1.

Table 1: Suggestions for strategies to improve knowledge transfer in selected publications

Author	Factors for improving knowledge transfer
Eljiz K. et al., 2020	The authors suggest the nine communication methods through which knowledge can be translated: research reports, posters, healthcare industry and academic presentations, peer-reviewed articles, presentations, podcasts, webinars, and infographics.
Wensing M., Grol R., 2019	1. *Researchers and advisors from different disciplines work together in multidisciplinary teams,* 2. *Better recognition of published work,* 3. *Validation of structured approaches,* 4. *Critical evaluation of the effects of implementation programmes,* 5. *Measurement of the results of improvement, transfer, and implementation according to a new generation of measures.*
Gagliardi A. R. et al., 2016	1. Numerous and varied opportunities for interaction, 2. Strong leadership commitment, skills, and experience, 3. Phased approach to developing a common language, achieving success, 4. Support from experts, champions, innovators, 5. Clear and agreed objectives, roles and expectations, 6. Cooperation between researchers and decision-makers, 7. Formalized creation of the brand, structure, and processes.
Wang W., Hou Y., 2015	8. Knowledge sharing is significantly influenced by rewards (hard and soft) and altruism for organizational benefit.
Van Acker F. et al., 2014	1. Trust increases the likelihood of disclosure of accurate information (based on benevolence and competences), 2. Actual knowledge sharing is more frequent in an interpersonal environment than online,

Author	Factors for improving knowledge transfer
	3. Trust in knowledge sharing is higher in an interpersonal environment than in an online environment.

Source: self-compilation based on literature.

In subject-related literature, the boundary between concepts such as data (facts, figures), information (processed data), knowledge (information and people), and wisdom (knowledge, intuition, experience) is sometimes blurred. However, their essence is indicated by attributes, defining their specificity and distinctiveness (complexity, users). (Włodarkiewicz-Klimek, 2016, p. 196)

The term 'knowledge transfer' can therefore be understood and considered at different levels of complexity, from data to information, reaching the goal of wisdom.

Knowledge transfer in the relationship between medical universities and teaching hospitals should be supplemented by additional directions of such transfer: within each entity, from entity to environment, and from environment to entity. Significant enrichment of the knowledge of medical (scientific and medical) staff takes place through their cooperation with the national and international environment. The experience of recent years with the COVID-19 pandemic, its control and prevention, has shown how valuable these relationships are.

3. The Teaching Hospital as a Knowledge Transfer Entity: Methodology of the Research.

The aim of this article is to identify the determinants of knowledge transfer and the intellectual potential of employees in the relationship between teaching hospitals and medical universities. The inference was made based on the available development strategies of medical universities, including reference to the intellectual potential of employees and the mission of teaching hospitals published on their websites.

1. In the research process, the following research questions were posed:
2. Is the mission of medical universities consistent with that of teaching hospitals?
3. Does the transfer of knowledge and skills of medical staff between the medical university and its teaching hospital contribute to the mission of teaching hospitals?

The research process consisted of the following stages:

1. Analysis of legislation on the rules governing teaching hospitals,
2. Recognition of the role of human resources and their intellectual capital in medical universities and teaching hospitals, knowledge building and transfer in these entities (literature review, review of the websites of teaching hospitals and medical universities, synthesis),
3. Compilation and classification of selected data characterizing human resources and the management of these resources, the missions and strategies of medical universities and teaching hospitals,
4. Expert analysis of the relationship of information from sources such as the development strategy of medical universities and teaching hospitals, as well as mission and strategy information materials (websites),
5. Analysis of the conclusions from selected areas of research conducted by the author in previous years on the intellectual capital of hospital employees,
6. Conclusions from the conducted research.

Out of 33 teaching and university hospitals, five teaching hospitals and their founding bodies - medical universities - were selected for analysis. Websites and documents published on them, including mission statements and development strategies were analysed.

The entities for the study were selected while taking into account the possibility of obtaining complete data on documents with a defined mission and strategy of the teaching hospital and its founding body, namely the medical university. In many cases, the development strategy of the medical university was available for analysis, but the teaching hospital established by it did not publish a development strategy, or a formulated mission. The websites of teaching hospitals in the vast majority of cases do not publish activity strategies. Development strategies of teaching hospitals are developed, but they are considered to be classified documents.

Among teaching and university hospitals, 24 of them are on the list of hospitals accredited for the quality of medical services. The list of 187 accredited hospitals is published by the CMJOZ (Centre for Monitoring Quality in Health Care) (List of accredited hospitals, 2024). One of the prerequisites for a hospital to be accredited is to have a strategic plan, while taking into account the fact that the results of the health needs analysis, while also

the need to act on the requirements and financial feasibility of the plan. The strategic plan should include a description of the policy for improving the quality of services provided and this plan should be updated periodically. It is also an important requirement to have a staffing plan and human resource management to carry out tasks such as the following:

1. Implementation of a policy of continuous improvement of staff qualifications,
2. Identification of the educational needs of specific professional groups,
3. Establishment of a training plan for employees, including, among others, quality management,
4. Provision of financial resources for training,
5. Assessment of staff qualifications and professional activity,
6. Employee evaluation,
7. Actions taken on the basis of the conclusions of the staff evaluation (Standards, p. 122).

The CMJOZ periodically assesses the level of implementation of the applicable standards. As the results of the analyses, which are included in the document 'Level of fulfilment of accreditation standards in hospitals in 2022', show, the highest score achieved by a hospital is 96% and the lowest is 42% in terms of the fulfilment of the requirements of accreditation standards. In terms of human resource management, almost 40% of the surveyed accredited hospitals achieved a score of above 90% with regard to meeting the accreditation requirements. The high level of fulfilment of the standards means that the tasks of effective human capital management and human resources are important management areas for these entities. The published results are in the form of a median and are not attributed to specific hospitals. (Levels of fulfilment of standards, pp. 2, 15)

4. Knowledge as a Resource in the Development of the Hospital - Research Findings

Teaching hospitals are distinguished among medical entities not only by the type of specialized health services as an object of activity, but also by their important tasks in the training of medical staff, the performance of teaching, research, consultation, opinion-forming functions, and other tasks assigned by scientific institutions, local government units, or central authorities. Hospitals may carry out economic activities if they do not impede the basic tasks for which they have been established. Such a wide range of activities, educational, research, and scientific tasks is conditioned by a very high level of knowledge and skills of medical staff. Therefore, this group of healthcare entities was chosen as research subjects. Teaching hospitals constitute a knowledge management environment for the intellectual capital (Bose, 2003). Medical universities are also such an environment. Employees of teaching hospitals continuously develop their intellectual potential, which is a long-term activity of strategic importance. The place for the education and continuous training of medical staff is primarily the medical universities. Medical employees are at the same time academics, hence the knowledge they possess is not only developed, but also transferred between different entities.

These strong personal ties justify the link between the missions and strategies of teaching hospitals and their founding bodies, namely, medical universities. The mission of a teaching hospital and its founding medical university was examined, using selected examples. The results of the analyses are presented in Table 2.

Table 2: Teaching hospitals and medical university - missions and strategies

Pos.	Mission of the teaching hospital	Mission of the medical university (the founding body)
		Medical university development strategy
1.	The highest level of treatment, education, research - the constant pursuit of excellence in the field of healthcare	We provide high quality education and research in medical and health sciences. We make a significant contribution to the development of the healthcare system. We are an efficiently managed university whose foundation is people - talented students, excellent teachers, passionate scientists, and professional managers.
Strategic objective 2: Promotion of employee performance and engagement		
Operational objective 1: Development of internal and external recruitment		
Operational objective 2: Promotion of the culture of continuous improvement		
Operational objective 3: Improvement of management competences, leadership, and ability to develop innovative attitudes among employees		
Operational objective 4: Improvement of the teaching staff competences		

Pos.	Mission of the teaching hospital	Mission of the medical university (the founding body)
2.	Our vocation is to treat, educate and conduct research	Creating and strengthening the intellectual capital of the country and the region based on highly qualified medical staff, modern teaching facilities and high-quality educational methods. State-of-the-art pre-graduate and post-graduate medical staff training, combined with the recruitment of new and upskilling of existing academic staff. Raising - nationally and regionally - the level of knowledge, skills, and competences in the field of health sciences.
Strategic objectives 1. Provision of modern and effective education for students in the first and subsequent 6-year teaching cycles 2. Continuous improvement of the quality of education in terms of acquiring the latest medical knowledge, practical professional skills, but also shaping and creating the highest, appropriate ethical and social attitudes 3. Acquisition of new medical staff 4. Upgrade of the skills of existing medical staff 5. Initiating postgraduate training and education 6. Liaising with the medical community and local government in the region		
3.	The highest ethical imperative for us is the welfare of the patient	The mission is to carry out teaching, research, staff development, and health care activities of the highest standards
Strategic objective: Achieving and maintaining a high scientific position in Poland and worldwide Operational objectives: 1. High scientific potential. 2. Systematizing and expanding activities related to the commercialization of knowledge. 3. Development of activities aimed at implementing innovative research projects and conducting commercial scientific research. 4. Development of activities aimed at implementing innovative basic research. 5. Scientific development of staff. 6 Effective management of scientific activities.		
4.	Over 100 years of tradition and modernity in providing the highest quality health services in the care of women, newborns and children.	Our mission is to provide the best education based on innovative medicine and top-level research.
Strategic objectives: Support and development of innovative research and achievement of research university status 2. Strong academic treatment base to ensure effective collaboration in teaching and learning. 3. Modern human capital management - development of staff qualifications and work organization culture		
5.	The mission of the hospital is to provide health services at the highest level and to promote health in conjunction with teaching and scientific research tasks.	Creating a welcoming environment for the academic community, within which high quality modern educational, scientific, and commercial offerings are created
Strategic and operational objectives –Teaching hospital capacity: 1. Using the knowledge and experience of teaching hospital experts in the teaching process a. Maintenance of existing staff resources in teaching units b. Creation of an incentive mechanism to encourage teaching activities among the teaching hospital staff c. Standardization of employment contracts in teaching units by taking clinical and teaching tasks into account d. Supporting the development of the teaching competences of the teaching hospital staff		

Source: Self-study.

The missions of teaching hospitals are dominated by objectives such as:

1. Achieving the highest quality of medical services,
2. Comprehensive implementation of treatment, teaching and development tasks,

3. Comprehensive patient care,
4. Health promotion.

These tasks cannot be fulfilled if there is no medical staff with the right competencies and skills.

Medical universities see the following as their mission:

1. Ensuring that staff are trained to the highest possible standard,
2. Research and development,
3. Building and developing intellectual capital,
4. National and international knowledge development and transfer,
5. Commercialization of educational offerings.

The missions of the teaching hospitals are reflected in the development strategies of the universities. In the refinement of the strategic goals, great emphasis is placed on the education and development of the staff and the development of research. This means that the transfer of knowledge and skills of medical staff between the medical university and the teaching hospital contributes to the mission of teaching hospitals.

The analysis of the missions and strategies of teaching hospitals and their founding bodies - medical universities - indicates a close link and coherence in terms of intellectual capacity development and knowledge transfer. This creates a comprehensive dimension of the knowledge transfer strategy.

5. Discussion on Results and Implications for Practice: Directions of Change for Knowledge Transfer in Teaching Hospitals

The alignment between the strategic goals and missions of teaching hospitals and medical universities identified in the research is a very positive phenomenon. The great importance of this coherence was particularly confirmed in an emergency situation, namely, the COVID-19 pandemic. Medical and scientific staff focused their efforts on containing the pandemic, identifying its causes, combating the effects, while also preventing its spread.

Although millions of patients died during the pandemic, there would certainly have been more victims had it not been for the scientific and research achievements of doctors and scientists. In these difficult, complex and unpredictable times, there will be more crises. The development of knowledge resources and new treatment techniques should be a necessary strategic objective. The existing legal and information environment of teaching hospitals in Poland provides a basis for stating the existence of the intellectual potential of employees and the management of the intellectual capital (Chluska, 2021).

In order to achieve the ambitious strategic goals of teaching hospitals and medical universities, the support and cooperation of the socio-economic environment are needed and these activities should be systemic. An increase in salaries (labour costs) as a motivating factor for improving efficiency and developing goodwill, primarily personal goodwill, results in new opportunities for health services and higher operating revenues. Attention to maintaining and developing the intellectual potential of employees results in an increase in the economic potential of teaching hospitals in the form of increasingly larger contracts for the provision of health services (Chluska 2023).

In order for knowledge resources to develop and for their multi-directional transfer to take place properly, material and financial resources are required. This is confirmed by one of the SWOT analyses of the teaching hospital. The weaknesses included the following: "*the inability to make full use of flexible forms of employment, the lack of a fully integrated IT system, the difficult situation on the labour market - especially the shortage of doctors, which limits the possibility of negotiating rates, the lack of full predictability of the functioning of the new model of health care financing, the increasing costs associated with running the core business, while also the need to invest in modern medical equipment, infrastructure*...".

6. Conclusions and Future Directions

An analysis of the relationship between the two organizationally and scientifically related knowledge entities, namely teaching hospitals and their founding medical universities, showed a consistency in the mission and strategic goals of both entities. Teaching hospitals possess and develop the intellectual capital of their employees, which is confirmed by reliable publicly available data of a financial nature (Chluska 2021, 2022, 2023). In addition to the data indicating the development of knowledge resources in teaching hospitals, the high potential for the development of the intellectual capital is confirmed by the missions and development strategies

of teaching hospitals and their founding bodies, namely, medical universities. Thus, it can be concluded that it was possible to outline the determinants of knowledge transfer and intellectual potential of employees of both entities. The coherence and mutual complementarity of the missions and strategic objectives have, in effect, one main goal –'patient welfare'. The conclusions of the analyses demonstrate that the aim of the article has been achieved and that the research questions posed have been answered.

It remains to be further researched and analysed what the role of health sector legislators should be in terms of stimulating and facilitating the development of the intellectual capacity of teaching hospitals and medical universities as the foundation for healthcare transformation and development strategies, in the face of the challenges of the 21st century. The decision-making processes of both specific teaching hospitals, medical universities and the policies of the health sector as a whole may also provide answers to a number of questions in this regard.

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