

Problems of Sustainable Human Capital Development in the Reporting of Teaching Hospitals

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Abstract: Teaching hospitals are healthcare entities that provide medical services to patients. Their highly specialised medical staff not only deliver healthcare services, but also educate future medical professionals, conduct clinical research and support the development of medical technologies. Consequently, qualified personnel are a key asset for teaching hospitals and the foundation of their development. The aim of the article is to analyse the possibilities for presenting and disclosing sustainable development policies in the 'ESRS S1 Own Workforce' area within the current reporting practices of teaching hospitals. The following research question is addressed: To what extent does the current financial statement format of teaching hospitals enable the communication of sustainable development policies related to human capital management to stakeholders? What is the prevailing practice in this area? The analyses conducted indicate that the current format of financial statements or other reports prepared by teaching hospitals allows disclosure of an entity's achievements in human resource management. In practice, however, these entities do not consider characteristics related to the development of human capital to be material for inclusion in reports presented to stakeholders. The analyses are expert opinions by nature and conducted from the perspectives of a statutory auditor and a long-standing researcher specialising in the functioning of medical entities, particularly hospitals. The considerations presented in the article constitute an important contribution to identifying the determinants influencing the development of teaching hospitals as entities with valuable intellectual capital to address international health challenges. The article continues the author's research on the development of the intellectual capital of employees of teaching hospitals in Poland.

Keywords: Intellectual potential of hospital employees, Sustainable development, Accounting in teaching hospitals, Reporting in teaching hospitals

1. Introduction

One entity involved in providing healthcare services is a hospital. Hospitals can be classified in various ways, and the criterion for classification typically refers to the form of ownership (public or private) and to the entity that establishes them (local government units, the State Treasury represented by the minister, a central government administrative body, the voivode, or medical universities). In the provision of health services, clinical hospitals play a special role.

The mission of teaching hospitals is to provide health services and promote health, but they also carry out educational and research tasks. In addition, these institutions educate medical staff and implement health tasks and programs. They execute tasks commissioned to them by scientific institutions, social organisations, local government units, and other entities. Furthermore, teaching hospitals serve as consultative, advisory, and reference bodies for other entities. Finally, they provide assessments and opinions about health status and fulfil tasks for defence purposes.

For most teaching hospitals, the establishing bodies are medical universities. Medical universities educate future healthcare professionals, including doctors and other medical personnel. Their training and practical skills development take place in teaching hospitals. Thus, teaching hospitals are specific economic entities in which human resources, knowledge and employee skills are key assets.

2. Human as the Most Important Resource of the Teaching Hospital: Literature Review

Key characteristics that set teaching hospitals apart from other healthcare entities include numerous legal regulations governing their functions, their affiliation with medical universities, and the performance of both medical and scientific responsibilities. Furthermore, they are distinguished by employing top-class medical specialists, educating future medical staff, and operating without a profit motive, which often results in a lack of incentives to identify and improve efficiency, limited opportunities for financial analysis of operations, and primary reliance on public funds for their activities.

Following the discussion of operational aspects, it is necessary to highlight the most significant legal acts that define, among other things, the remuneration and working procedures of medical staff. These include:

- Act of 15 April 2011 on Medical Activity,
- Act of 5 December 1996 on the Professions of Doctors and Dentists,

- Act of 15 July 2011 on the Professions of Nurses and Midwives,
- Act of 8 June 2017 on the Method of Determining the Minimum Basic Salary of Certain Employees Employed in Medical Entities.

These regulations govern not only the principles of practising particular medical professions, education, and obtaining qualifications entitling one to practice, but also professional responsibility, working hours, and methods of calculating remuneration, including the minimum wage for employees in medical entities. Furthermore, the coefficients that differentiate the minimum wage across individual groups of medical workers range from 0.86 to 1.45.

Regulatory and organisational factors create recurring trends in teaching hospitals. These trends, seen in both teaching and other hospitals, result from the scope of activity, staff education, and the legal foundation of hospital operations.

Revenue for Polish teaching hospitals relies on National Health Fund contracts, which require qualified staff and specialised equipment. Consequently, medical personnel's competence directly drives core operational revenue growth.

Entities providing healthcare services are characterised by a high level of intellectual capital in all its areas. A special feature of these important resources is the top-class medical staff. As a result, teaching hospitals constitute a knowledge management environment for intellectual capital (Bose, 2003). Furthermore, the development of employees' intellectual potential is a long-term process and is part of the strategic management system.

For many years, Poland has experienced an outflow of medical personnel, both to the private healthcare sector and through migration abroad. In 2023, the healthcare system employed 700,000 staff. Among them were 163,000 doctors (23%), 315,000 nurses (45%), 45,000 dentists (6%), 42,000 midwives (6%), 39,000 pharmacists (6%), 18,000 laboratory diagnosticians (3%), and 78,000 physiotherapists (11%). Among doctors working directly with patients, in 2024, the largest group (23.1%) was aged 30–39 (compared with approximately 22.5% the previous year). Among men, the largest group was in the 50–59 age bracket – 21.5% (1.4 percentage points fewer than in 2023), whereas among women, the largest group in 2024 was aged 30–39 (24.6% - 0.4 percentage points more than the year before). In the nursing profession in 2024, the dominant group, accounting for over 30% of the total, was aged 50–59. This profession was overwhelmingly female (96.8%). Another serious systemic issue is the insufficient inflow of younger doctors and nurses to replace the ageing workforce (Human resources, pp 2, 5).

As intellectual capital, a highly qualified workforce drives intrinsic value, competitive advantage, and reputation in teaching hospitals (Falk and Gordon 1977; Low and Kalafut 2006, pp. 5, 53–55).

Human capital comprises knowledge, experience, skills and social abilities related to colleagues, clients, suppliers and other partners. Capital associated with the organisation, in a certain sense, remains in the organisation's possession and is not directly linked to any specific employee, but rather stays with the institution after their departure (Sveiby, 1997; Mroziowski, 2008). Selected definitions of intellectual capital are presented in Table 1.

Table 1: Selected definitions of intangible assets and intellectual capital

Roos, Roos, p. 415	1997	Intellectual capital is the sum of an enterprise's hidden assets not included in its financial statement, encompassing both what resides in employees' minds and what remains after their departure.
Nahapiet, Ghoshal, p. 245	1998	Intellectual capital comprises knowledge, related potential, and social abilities, such as organisational skills, intellectual community, professional skills, and experience.
Steward, p. 10	1999	Intellectual capital is knowledge, information, intellectual property, and experience that generates wealth through collective brainpower.
Petty, Guthrie, p. 158	2000	Intellectual capital corresponds to the economic value of two fundamental types of intangible resources: organisational and human capital.
Bratnicki, Strużyna, p. 69	2001	Intellectual capital is the sum of the knowledge of the individuals who form the organisation's community and the practical transformation of this knowledge into components of the organisation's value.

Urbanek, p. 44	2008	Intellectual capital consists of technological, organisational, relational and human assets.
Chang, Chen, La, p. 300	2008	Intellectual capital comprises the knowledge-related intangible resources of an enterprise and consists of three fundamental elements: structural capital, human capital and relational capital.
Herman, p. 41	2008	Intellectual capital consists of three elements: human capital, structural capital, and customer capital, also referred to as relational or social capital.

Source: Self-compilation based on relevant literature.

To ensure high-quality healthcare services and patient safety, a law on healthcare quality and patient safety was enacted (Act on Quality in Health Care, 2023). In Poland, this came into force in 2023. This legislation establishes the principles and procedures for accreditation to confirm whether the entity providing healthcare services meets the standards for delivering appropriate healthcare and for its operations. The law also applies to teaching hospitals. The specific objectives of accreditation include improving organisational management efficiency and promoting professionalism among medical staff. Compliance with accreditation standards contributes to more effective functioning and better management of limited resources.

3. Human Capital Management as a Component of Teaching Hospital Strategies

Teaching hospitals are unique economic entities in which human resources, knowledge and employee skills constitute key assets. Long-term operations and hospital development are not feasible without strategic planning.

The hospital's strategy should be coherent, understandable to staff, and focused on shaping an organisational culture. According to the "Accreditation Standards," a hospital should possess, among other things, an employment plan that includes the current and projected employment structure; a description of the desired qualifications of staff, along with the expected levels of quality and efficiency for all job positions; and clearly defined principles for evaluating these expectations.

Significant areas of human resource management encompassed by the "Accreditation Standards" include job descriptions detailing qualifications and scopes of duties, an annual assessment of staff numbers and qualifications, and an effective communication system with staff regarding professional matters. Additionally, these standards provide for staff skill development in handling challenging situations, such as crises or emergencies, and incorporate comprehensive training systems and professional adaptation programs. Finally, they require the systematic analysis of staff feedback on personal development, the work environment, ethics, and effective team communication, as well as a commitment to continuous professional development through both mandatory and supplementary training.

The "Accreditation Standards" were developed in accordance with legal provisions issued by the Minister of Health (Notice of the Minister of Health of 6 September 2024, pp 158–168). Accreditation is granted for a period of three years to entities achieving at least 75% of the total attainable score. As of 2 December 2025, 218 healthcare entities have obtained accreditation. Notably, three of the ten highest-rated hospitals were teaching hospitals, indicating a high standard of management within these institutions.

Teaching hospitals maintain accounting records in compliance with the Accounting Act, which specifies the required components of financial statements and defines the scope of information to be presented in each section. According to Article 45 of the Accounting Act, a complete financial statement consists of the following elements:

- a balance sheet,
- a profit and loss account,
- supplementary information, including an introduction to the financial statements, additional notes and explanations.

Teaching hospitals, which are legally required to audit their financial statements annually, must also include a statement of changes in equity (fund) and a cash flow statement. The supplementary information section, which enables the hospital to describe economic events, consists of an introduction to the financial statements along with additional notes and explanations. This section requires disclosure of the average number of employees for the financial year, broken down by occupational groups (Accounting Act of 29 September 1994, Annex No. 1).

The profit and loss account is a key source of information regarding employed staff. In its comparative version, it presents the costs of remuneration, employer-paid social security contributions, and other benefits incurred by the hospital in connection with staff employment.

Reports on the economic and financial situation, prepared in accordance with the Act on Medical Activity, are among the primary sources of information for teaching hospitals. These reports are compiled by the head of the unit, based on the financial statement for the preceding year, and are made available in the Public Information Bulletin. The information in these reports is intended primarily for the founding bodies, which use it to plan actions and inform decision-making processes. Economic and financial indicators, along with their calculation methods and analytical scoring systems, are standardised across all healthcare providers. This standardisation ensures transparency and consistency in the analysis of economic and financial conditions and enables comparisons of indicators across selected areas.

This significantly enhances the knowledge base of founding bodies regarding the developmental potential of their subordinate entities. Reports on the economic and financial standing of healthcare providers, including teaching hospitals, are published on their respective websites, as mandated by Article 59 of the Act of 15 April 2011.

Teaching hospitals are not required to prepare a formal management report, nor are they subject to statutory regulations concerning sustainability reporting. Nevertheless, this does not imply that sustainability issues are absent from the operations of teaching hospitals as economic entities. The principles and objectives included in sustainability standards are inherently applicable to their activities.

Particular attention should be paid to the workforce sustainability standards specified in Commission Delegated Regulation (EU) 2023/2772 (ESRS S1: Own Workforce). The ESRS S1 standard requires disclosure of specific characteristics in sustainability reporting, including, but not limited to, the entity's own employees and workers who are not hired. Furthermore, reporting must cover the scope of collective bargaining and social dialogue, diversity indicators, and remuneration policies. You must also disclose information on social protection, the employment and integration of people with disabilities, and training and skills development. Finally, the disclosure must encompass occupational health and safety, work-life balance opportunities, and any incidents, complaints, or severe human rights impacts (Commission Delegated Regulation 2023/2772, p. 164).

The convergent objectives of the "Accreditation Standards" and "ESRS S1 Own Workforce" mean that achieving hospital accreditation serves as evidence of effective, sustainability-aligned human resource management.

4. Human Capital in Clinical Hospital Reporting: Research Findings

Adopting the premise that financial statements should serve as a communication tool between an economic entity and its broadly defined stakeholders, the research question arises whether the current framework of financial reporting for teaching hospitals allows for the effective communication of a hospital's sustainability policy regarding human capital management, and what the prevailing practice is in this regard.

The objective of this article is to analyse the potential for presenting and disclosing sustainability policies within the scope of "ESRS S1: Own Workforce" in the contemporary reporting of teaching hospitals.

The study was based on reliable socio-economic and financial data extracted from financial statements through a research process that comprised several sequential stages. It began with an analysis of the legal acts regulating the principles of operation and human resource management (HRM) in healthcare entities, with specific reference to teaching hospitals, followed by an assessment of the HRM environment in hospitals as healthcare providers, which encompassed a literature review, an examination of healthcare entity registers, a review of teaching hospital websites, an analysis of statistical data, and synthesis. Next, data was acquired from financial statements sourced from the National Court Register, focusing on the selection of specific information from profit and loss accounts, notes to the accounts, and other reporting disclosures. This was followed by the collation and selection of specific data characterising human resources, costs, revenues, and other performance indicators of teaching hospitals. Finally, the process concluded with the application of selected measures of structure and dynamics to characterise the relationship between the analysed costs and revenues, which was then subjected to an expert analysis of the correlations within the financial statement data.

The study encompassed ten teaching hospitals characterised by robust financial performance. The primary selection criterion for the entities was a ranking of teaching hospitals, which was compiled and published based on their financial standing and the quality of medical services provided (Kozera, Kozera, 2025). An additional criterion was the availability of comprehensive financial data, specifically profit and loss accounts and descriptive

supplementary notes for the years 2023 and 2024. Furthermore, all analysed teaching hospitals hold valid accreditation certificates.

The analysis of the legal regulations governing reporting and accreditation for teaching hospitals indicates that information regarding human resources and human capital management policies originates from specific operational activities and managerial decision-making processes. However, this information is not explicitly presented to the users of financial statements or the entities' broader stakeholders. Conclusions regarding workforce development and its significance as a key resource in teaching hospitals can be drawn only indirectly.

The following factors were adopted as proxies for identifying the significance of human capital:

- a comparative analysis of the growth rates of the balance sheet total and total revenue;
- the ratio of labour costs to operating revenue;
- the share of medical staff within the total employment;
- revenue per employee.

The balance sheet total of a teaching hospital reflects the value of its assets and the sources of financing for those assets. Both tangible and intangible resources are essential for the proper functioning of the economic entity and the delivery of healthcare services. An appreciation in asset value indicates the modernisation and expansion of equipment, medical apparatus, and other essential assets.

Teaching hospitals derive their financial resources primarily from contracts with the National Health Fund (NFZ) and other entities. The procurement of healthcare service contracts is contingent, among other things, on possessing the requisite technical infrastructure and employing highly qualified medical personnel. A simultaneous increase in revenue and the balance sheet total indicates the hospital's growth. The growth rates of total assets and revenues for the analysed hospitals are shown in Table 2.

Table 2: Balance sheet total and revenues in 2022-2024

Hospital	Item	Year, thousands PLN			Growth (%)	
		2022	2023	2024	(2023–2022)/2022	(2024–2023)/2023
Hosp 1	Total assets	51 637	52 886	55 798	2	6
	Revenue	45 521	53 462	63 268	17	18
Hosp 2	Total assets	202 267	226 004	235 781	12	4
	Revenue	271 167	334 042	394 884	23	18
Hosp 3	Total assets	281 035	346 587	413 081	23	19
	Revenue	594 571	769 527	905 283	29	18
Hosp 4	Total assets	246 336	433 810	522 066	76	20
	Revenue	567 057	718 959	872 921	27	21
Hosp 5	Total assets	334 528	423 746	498 685	27	18
	Revenue	431 150	550 548	662 970	28	20
Hosp 6	Total assets	62 970	99 267	155 800	58	57
	Revenue	137 679	166 912	191 088	21	14
Hosp 7	Total assets	378 619	456 279	500 867	21	10
	Revenue	679 685	853 228	1 033 532	26	21
Hosp 8	Total assets	144 507	190 591	248 330	32	30
	Revenue	222 598	282 461	347 271	27	23
Hosp 9	Total assets	1 500 656	1 754 938	2 040 832	17	16
	Revenue	1 353 590	1 780 049	2 168 097	32	22
Hosp 10	Total assets	371 103	488 730	612 297	32	25
	Revenue	576 289	724 570	845 605	26	17

Source: Author's own compilation based on data from the teaching hospital.

The growth in the balance sheet total at the analysed teaching hospitals fluctuated between 2% and 76% in 2023 and between 6% and 57% in the subsequent year. Revenue increased in 2023 relative to 2022 by 17% to 32%, and in 2024 by 14% to 23%. In several instances (e.g., hospitals 1, 2, 5, 7, and 9), revenue growth exceeded asset appreciation. A more rapid increase in revenue relative to total assets may indicate the growing importance of human capital among hospital resources.

A remuneration policy is a fundamental element of personnel management. According to statistical data, as of 1 July 2024, the minimum basic salary for various healthcare professional groups was set at PLN 10,375.45 for a specialist physician (under the Act of 8 June 2017). For comparative purposes, the average monthly salary in the enterprise sector in Poland during the first quarter of 2025 amounted to PLN 8,736.49 (Statistics Poland, 2025).

Legal regulations concerning remuneration indicate a systematic upward trend in salaries within the healthcare sector. Furthermore, contractual agreements with teaching hospital staff and performance-related bonus systems remain significant factors. Assuming that medical staff constitute over 80% of the workforce in a substantial majority of the analysed hospitals, the period-on-period salary increases demonstrate the considerable share of labour costs within the revenue generated from healthcare services. These relationships are presented in Table 3.

Table 3: Labour costs versus revenue in teaching hospitals

Specification / Year		2022	2023	2024
Share of medical staff in the total workforce	60%–80%	5	4	4
	over 80%	5	6	6
Share of labour costs in revenue	<40%	2	4	4
	41%–50%	5	3	3
	>50%	3	3	3

Source: Author's own compilation based on data from the teaching hospital.

As shown in Table 3, labour costs—comprising gross salaries, social security contributions, and other benefits—account for more than half of teaching hospitals' revenue. Therefore, it is essential to assess staff efficiency by analysing revenue per employee. This method considers all occupational groups, assuming that each staff member contributes to the hospital's operational success, as detailed in Table 4.

Table 4: Revenue generated per employee

Hospital	Specification / Year	2022	2023	2024	Growth (%)	
		(thousands PLN)	(thousands PLN)	(thousands PLN)	(2023-2022)/2022	(2024-2023)/2023
Hosp 1	Revenue	45 521	53 462	63 268	17	18
	Number of Employees	201	211	212	5	-
	Revenue per Employee	226	253	298	12	18
Hosp 2	Revenue	271 167	334 042	394 884	23	18
	Number of Employees	1213	1195	1208	-1	1
	Revenue per Employee	224	280	327	25	17
Hosp 3	Revenue	594 571	769 527	905 283	29	18
	Number of Employees	1665	1665	1751	-	5
	Revenue per Employee	357	462	517	29	12
Hosp 4	Revenue	567 057	718 959	872 921	27	21
	Number of Employees	2765	2824	3011	2	7
	Revenue per Employee	205	255	290	24	14

Hospital	Specification / Year	2022	2023	2024	Growth (%)	
		(thousands PLN)	(thousands PLN)	(thousands PLN)	(2023-2022)/2022	(2024-2023)/2023
Hosp 5	Revenue	431 150	550 548	662 970	28	20
	Number of Employees	1623	1670	1675	3	-
	Revenue per Employee	266	330	396	24	20
Hosp 6	Revenue	137 679	166 912	191 088	21	14
	Number of Employees	956	926	926	-3	-
	Revenue per Employee	144	180	206	25	14
Hosp 7	Revenue	679 685	853 228	1 033 532	26	21
	Number of Employees	2743	2967	3089	8	4
	Revenue per Employee	248	288	335	16	16
Hosp 8	Revenue	222 598	282 461	347 271	27	23
	Number of Employees	820	821	834	0	2
	Revenue per Employee	271	344	416	27	21
Hosp 9	Revenue	1 353 590	1 780 049	2 168 097	32	22
	Number of Employees	2707	3028	3142	12	4
	Revenue per Employee	500	588	690	18	17
Hosp 10	Revenue	576 289	724 570	845 605	26	17
	Number of Employees	2241	2293	2220	2	-3
	Revenue per Employee	257	316	381	23	21

Source: Self-elaboration based on data from teaching hospitals.

In the analysed teaching hospitals, revenue per employee increases consistently across successive periods. Each hospital showed steady efficiency improvements. While contractual conditions, inflation, and legislative changes contributed, the main drivers were employee engagement—reflected in proactive involvement in organisational goals and the development of intellectual capital.

This is further confirmed by the stable employment levels or their slight increase. In the notes to the financial statements (additional information), all the teaching hospitals analysed described the scope and structure of their employee benefits provisions (retirement and disability severances, jubilee awards, and other benefits, such as unused annual leave).

In the 'Statements of the Financial Position' published on the hospitals' websites, the presented data primarily focused on mandatory information regarding current and projected conditions. Some reports referred to employment policy, most frequently in the context of labour costs (5 hospitals), as well as certification, employee benefit provisions, remuneration and information on significant events impacting the economic and financial situation. The teaching hospitals placed the greatest emphasis on presenting financial determinants. From a cognitive perspective, it was interesting to note that two teaching hospitals conducted SWOT analyses. Among the strengths they identified are, but are not limited to, high-class medical staff and the employment of recognised medical authorities. As weaknesses, the teaching hospitals cited the increasing average age of medical and nursing staff, low salaries for certain personnel groups (compared with other sectors of the economy), and low levels of professional satisfaction among some employees. Furthermore, hospitals perceive threats in staff shortages within certain occupational groups, the rapid rise in wages across the economy—generating a surge in operating costs—continuous wage claims from various groups of medical personnel and a shortage of medical professionals.

5. Conclusions and Future Directions

The observed reporting patterns in teaching hospitals subtly highlight the vital role of human resources in their primary functions. These findings are based on an analysis of financial statements, supplementary reports, and hospital accreditation data. However, there is a clear lack of direct information regarding human resource

management (HRM) practices. To address this gap, institutions should expand their reporting to include specific HRM practices, such as staff training programmes, employee engagement initiatives, and diversity and inclusion policies.

Most institutions limit their reporting to formal legal requirements, though hospitals should be encouraged to adopt broader HR reporting standards to enhance transparency and benchmarking. Despite the general trend, some positive exceptions have been identified, such as four hospitals reporting a staff breakdown by gender detailing the number of employees by both professional group and gender, and two hospitals presenting average salaries for specific occupational groups. Furthermore, four hospitals reported headcount and FTE metrics, showing staff numbers as both total headcount and Full-Time Equivalents (FTE) to account for part-time work. In contrast, one hospital provided details on staff turnover by outlining the specific reasons employees leave the organisation.

Existing legal frameworks do not prohibit the extension of the scope of published financial statements. As stated in the Accounting Act: "Information contained within financial statements may be presented with greater detail than specified in the annexes to the Act, should this be necessitated by the needs or the specific nature of the entity" (Accounting Act of 29 September 1994, Art. 50).

The current format of financial statements and other reports produced by teaching hospitals offers a practical basis for revealing organisational achievements in human resource management. However, in practice, these organisations do not seem to regard the characterisation of human capital development as a key part of their stakeholder reporting.

The findings from this analysis fulfil the article's primary objective and provide comprehensive answers to the formulated research questions.

Managing human capital development in teaching hospitals has both internal and external macroeconomic significance. The public benefits when high-level specialists not only build corporate value (goodwill) but also enhance the quality of healthcare services across the sector. Anticipated sustainability reporting by public-interest entities will likely encourage other organisations, including teaching hospitals, to increase disclosures regarding human capital management. Such changes could play a vital role in addressing the systemic personnel challenges the healthcare sector currently faces.

Ethics Declaration: No ethical permission was required to conduct the research. I conducted the research independently, using data from the National Court Register. The data is public.

AI Declaration: I declare that I have not used AI resources or tools.

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