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MEDICAL STAFF EMPATHY AND CREDIBILITY OF MEDICAL INFORMATION AS COMPONENTS OF HUMAN CAPITAL IN PUBLIC HEALTHCARE: A COMPARATIVE ANALYSIS BY GENDER AND AGE

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Purpose: This article highlights the importance of medical staff empathy and the credibility of medical information as essential components of human capital in public healthcare, with particular emphasis on differences in patient assessments by gender and age. The analysis contributes to the discussion of the role of soft factors in the management of healthcare organisations, particularly given the growing importance of communication, trust, and interpersonal relations between patients and staff.
Design/methodology/approach: The study is based on the results of a CAWI survey conducted among 247 respondents who used public medical facilities. The questionnaire included an assessment of the credibility of sources and forms of medical information, as well as the level of empathy exhibited by staff. The data were analysed quantitatively using synthetic variables and intergroup comparisons (Mann-Whitney U test, Kruskal-Wallis test).
Findings: The study found that respondents' gender did not influence their assessments of empathy or the credibility of medical information. However, significant differences emerged in empathy ratings across age groups – the youngest patients (18-29 years old) rated it lower than middle-aged patients (50-59 years old). Assessments of the credibility of sources and forms of medical information were relatively homogeneous across the entire sample. The findings, therefore, indicate that the empirical contribution of the study lies in identifying intergroup differences in the assessment of these dimensions, rather than in testing direct correlational relationships between the analysed constructs.
Research limitations/implications: The study included a non-random sample of young respondents, limiting the generalisability of the results to the entire patient population. In the future, it would be worthwhile to include the perspective of medical staff and international comparisons.
Practical implications: Managers of public healthcare entities can use the results to improve their staff's communication skills and standardise the communication of medical information, thereby helping build patient trust.
Social implications: Emphasising the importance of empathy and the credibility of information improves patients' quality of life and strengthens social capital in healthcare. It can also be a reference point for health policy and ethical standards in patient–staff relations.
Originality/value: The article combines perspectives on human capital management with the issue of medical communication, highlighting the interdisciplinary links among health economics, occupational psychology, and human resource management. Its value also lies in

adopting a comparative perspective focused on differences in patient assessments across demographic groups in public healthcare.
Keywords: empathy of medical staff, credibility of medical information, human capital, public healthcare, patient trust.
Category of the paper: Research paper.

1. Introduction

Contemporary public healthcare is based not only on the availability of specialist medical knowledge and technical resources, but also on the quality of human capital, which largely determines the level of patient trust in the system. Two elements are particularly important: the empathy of medical staff and the credibility of the information provided to patients. Both factors influence interpersonal relationships and shape how patients perceive the healthcare system and its ability to meet their information needs.

This article examines how patients evaluate the empathy of medical staff and the credibility of medical information in public healthcare, and whether these assessments vary based on demographic characteristics such as gender and age. The empirical analysis adopts a comparative perspective and focuses on differences between respondent groups rather than on direct correlational relationships between the analysed variables. The analysis provides a better understanding of which elements of human capital are particularly important for building trust and improving communication quality in healthcare organisations. To achieve this objective, two research questions were formulated:

1. How is the empathy of medical staff assessed by patients in public healthcare, and what differences exist in these assessments between demographic groups (based on gender and age)?
2. To what extent do patients differ in assessing the credibility of sources and forms of medical information depending on demographic characteristics?

The CAWI survey of 247 respondents found no significant differences in empathy or in the credibility of information between women and men. The only statistically significant difference concerned empathy assessment: the youngest patients (aged 18-29) scored lower than those aged 50-59. Regarding the credibility of sources and forms of medical information, the differences between age groups were not statistically significant.

2. Research methodology

This study employed a quantitative approach using the CAWI online survey technique. The research tool was developed in-house and included closed-ended, scaled, and cafeteria questions. The questionnaire covered a wide range of issues related to the functioning of the medical information system in public healthcare. However, the analysis focused on three key areas: the credibility of medical information sources, the credibility of forms of medical information, and the empathy of medical staff. Respondents rated individual aspects on a five-point Likert scale (from "very low" to "very high"), with the option of selecting "no opinion".

The survey was conducted in February and March 2025 among 247 adult respondents who used public healthcare services in Poland. Non-random selection was used: (1) purposive – including students and employees of the Wrocław University of Economics and Business, (2) convenient – based on the author's personal network of contacts, and (3) voluntary – by sharing a link to the survey on social media (Facebook, LinkedIn). The sample structure showed a predominance of women (68.4%) and young people, with the 18-29 age group accounting for 81% of respondents.

For the analysis, three synthetic variables were developed, created as the arithmetic means of the points assigned to the response categories in a given question: very low (1), low (2), average (3), high (4), very high (5), and no opinion (0). The following synthetic variables were distinguished:

- "Credibility of medical information sources" – assessment of the credibility of sources such as attending physicians, nurses, pharmacists, websites of the National Health Fund and medical facilities, e-registration and patient portals, social media, health forums, mobile applications, brochures and leaflets, educational programmes, scientific articles, WHO recommendations, and patient organisations.
- "Credibility of forms of medical information" – assessment of forms including oral and written recommendations, websites, patient portals, SMS reminders about appointments, telephone and video consultations, educational brochures and mobile applications.
- "Empathy of medical staff" – assessment of the ability to listen to patients, show understanding and support, devote appropriate attention, patience, courtesy and respect, and provide clear and understandable explanations.

Comparative analyses were used to examine differences in the perception of medical staff empathy and the credibility of medical information. In the first stage, the Mann-Whitney U test was used to assess differences between two groups of respondents (women and men). Next, the Kruskal-Wallis test was used to compare average ratings across age groups. The measurement scale and the non-normality of the variable distributions justified the use of non-parametric tests. For significant results, post hoc tests (Mann-Whitney with Bonferroni correction) were also performed, enabling the precise identification of pairs of groups that differed.

This research approach enabled the empirical verification of how patients assess the empathy of medical staff and the credibility of the information provided as dimensions of human capital in public healthcare, with particular emphasis on differences across gender- and age-defined respondent groups. It did not aim to test direct correlational relationships between the analysed constructs.

3. Literature review

The functioning of public healthcare depends not only on the availability of appropriate material, infrastructural, and technological resources, but also on the quality of human capital, which comprises medical and administrative staff (Drucker, 1999; Armstrong, Taylor, 2020). It is the competences, attitudes and behaviours of staff that are a significant factor determining patients' experiences and their assessment of the healthcare system (Becker, Huselid, 2006; Leggat, 2007). In this context, intangible elements related to interpersonal relationships and the communication and sharing of medical information are becoming increasingly important (Parasuraman, Zeithaml, Berry, 1988; Mazur-Wierzbicka et al., 2025).

One of the key dimensions of human capital in healthcare is the empathy of medical staff (Mercer, Reynolds, 2002; Hojat, 2007). The ability to understand patients' emotions, sensitivity to their needs, and the ability to communicate in an understandable and supportive manner play a fundamental role in the treatment process (Derksen, Bensing, Lagro-Janssen, 2013). Patients who experience empathetic attitudes from doctors and nurses are more likely to trust them and rate the quality of care more highly (Stepien, Baernstein, 2006). A lack of empathy, on the other hand, deepens the sense of distance, fosters uncertainty and exacerbates information asymmetry, in which knowledge and competence are intensely concentrated on the part of the staff (Halpern, 2001).

The second important element shaping the patient–healthcare system relationship is the credibility of medical information (Mayer, Davis, Schoorman, 1995; Hoffman, Podgurski, 2013). In the age of digitalisation, patients have access to numerous sources – from consultations with doctors, through hospital websites and educational brochures, to telephone helplines and electronic patient accounts (Tapuria et al., 2021; Papadopoulos, von Wyl & Gille, 2024). However, the diversity of these sources does not always go hand in hand with their consistency and transparency (Metzger, Flanagin, 2007). Patients often have to verify the data themselves, which can lead to confusion and, consequently, to a decrease in trust in the healthcare system (Diviani et al., 2015; Yin, Law, Neyens, 2021). The credibility and comprehensibility of the message thus become key factors influencing the assessment of the quality of medical information and the decisions patients make (Sillence et al., 2007; Savitz et al., 2020).

The combination of staff empathy and information credibility forms the foundation of a modern approach to human capital management in the healthcare sector (Halpern, 2001; Hojat, 2007). Both of these elements not only support the treatment process, but also build social capital within the organisation, strengthening relationships between patients and staff and reducing the risk of conflicts arising from misunderstandings or insufficient communication (Putnam, 2001; Stepien, Baernstein, 2006). Their importance is growing, especially amid rising social expectations of the healthcare system and the dynamic organisational and technological changes that have occurred in recent years (Catapan et al., 2025; Wamala Andersson, Gonzalez, 2025).

Recent studies emphasise the development of digital competences among healthcare professionals, which are becoming as important an element of human capital as clinical or interpersonal competences. Ferreira et al. (2025) indicate that strengthening skills related to using digital tools, such as electronic medical records and telemedicine platforms, significantly improves the quality of care and the efficiency of staff work. In turn, Luetke Lanfer et al. (2024) show that empathy can also be effectively communicated in digital environments, e.g., during online chat consultations. However, this poses new challenges in communication and the reception of emotional signals. Although these aspects were not directly analysed in this study, they provide important context for further research on communication quality in healthcare.

At the same time, studies focus on the use of advanced digital technologies to develop empathy and emotional competence among medical professionals. Pira et al. (2025) argue in a literature review that immersive technologies, such as virtual reality, can be effective for empathy training, especially in medical education. Litendahl et al. (2025), on the other hand, highlight the growing importance of emotional intelligence in remote counselling, which medical staff perceive as a key factor in ensuring effective communication and quality relationships with patients. As with digital competence, these issues are addressed here within a broader theoretical framework rather than as the direct subject of empirical research.

In recent years, a growing number of studies have focused on the factors that influence how patients evaluate the credibility of online medical information, both in terms of content and source. Lim et al. (2025) indicate that accuracy, clarity of language, references to scientific research, and transparency regarding authorship and sources significantly increase trust in online health information. Zhao et al. (2024) identify source reputation, audience educational level, and social media's interactive features as key determinants of the credibility of online medical information in a meta-analysis.

New challenges related to the perception of content credibility are also emerging in the context of artificial intelligence and generative tools. Chen, Kuo and Chang (2024) analyse the reception of ChatGPT in health education, highlighting concerns among patients and medical professionals about the risk of errors and the lack of transparency in algorithmic operations. In turn, Nong and Ji (2025) emphasise that regulatory issues and privacy protections strongly influence expectations of AI systems in healthcare. The lack of clear standards and transparent policies can undermine trust, even if the technology offers high analytical capabilities.

In summary, the literature review indicates that medical staff empathy and the credibility of medical information are key components of human capital in healthcare. These two elements complement each other – empathy strengthens interpersonal relationships and builds trust, while credible and transparent information reduces knowledge asymmetry and supports patient decision-making. This study focused on staff empathy and information credibility as empirically verified dimensions of human capital. In the face of dynamic technological changes, the digitisation of medical processes and growing social expectations, the importance of these factors is becoming even more apparent. Current research also highlights the growing importance of digital skills and artificial intelligence, which present new opportunities and challenges for human capital management in public healthcare.

4. Results

Comparative analyses allowed for the assessment of differences in perceptions of medical staff empathy and the credibility of medical information by gender and age.

Differences based on gender

The Mann-Whitney U test was used to examine differences between women and men. The results did not show statistically significant differences in terms of:

- the credibility of medical information sources ($U = 6876$, $p = 0.475$),
- the credibility of forms of medical information ($U = 7050$, $p = 0.294$),
- empathy of medical staff ($U = 6303$, $p = 0.694$).

This means that women and men assessed staff empathy and medical information credibility similarly, indicating the homogeneity of perception of these components of human capital in the sample studied. Figure 1 shows that the average scores in both groups are almost identical – both for empathy and for the credibility of sources and forms of medical information. The error bars indicate a relatively large variation in individual responses; however, the lack of apparent differences between the sexes confirms the results of the statistical tests.

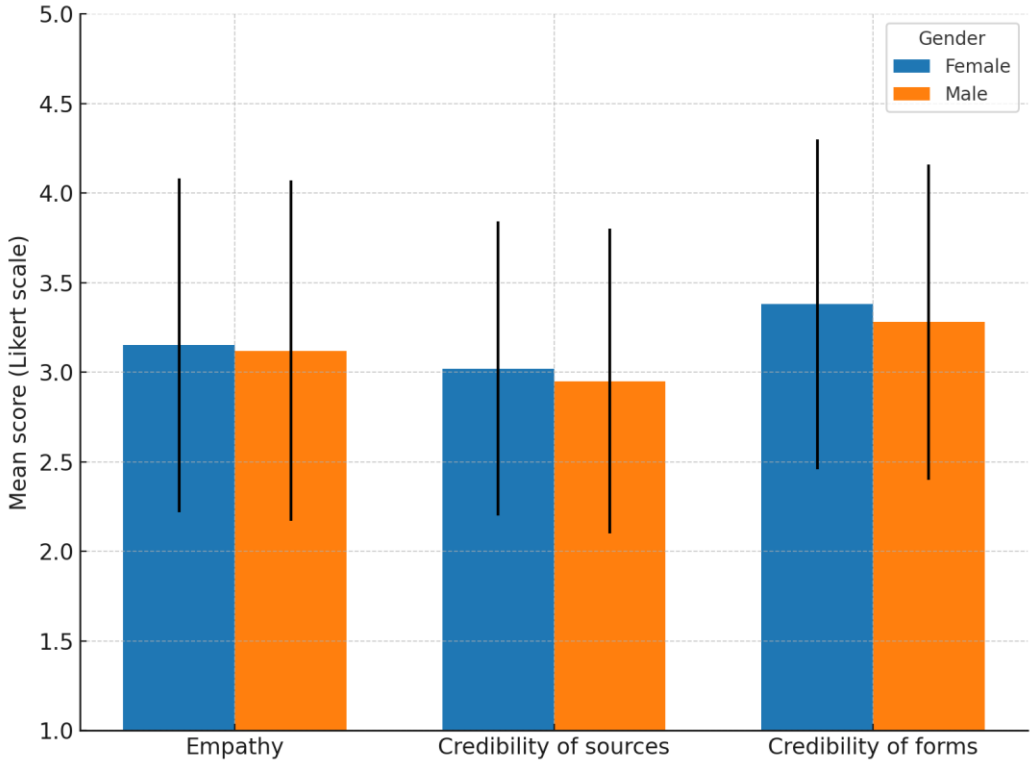

Figure 1. Average ratings of empathy and credibility of sources and forms of medical information by gender.

Source: own study.

Differences due to age

The Kruskal-Wallis test was used to examine differences between age groups. The results showed that:

- there were no significant differences in the assessment of the credibility of information sources (H = 3.29, p = 0.655),
- there were no significant differences in the assessment of the credibility of forms of medical information (H = 3.43, p = 0.634),
- there were significant differences in the assessment of the empathy of medical staff (H = 18.48, p = 0.002).

Post hoc analysis (Mann–Whitney tests with Bonferroni correction) showed that:

- the 18–29 age group rated empathy significantly lower than the 50–59 age group (U = 952.0, p_adj = 0.039),
- no statistically significant differences were found between the other groups (30-39, 40-49, 60-69, 70+).

Based on the distribution of responses in Figure 2, the youngest group of respondents (aged 18-29) reported lower empathy values more often, confirming the greater criticality of young patients towards medical staff communication. The highest values were recorded in the 50-59 age group, where high and very high ratings predominated. In the 60+ group, the responses

were more diverse, but the means and medians indicated a moderately positive assessment. These results confirm that patient age significantly differentiates their perception of empathy from medical staff.

Due to the very small number of respondents in the oldest category (70+, only 1), it was combined with the 60-69 age group (3 respondents) into a single 60+ category, which improved the reliability of the rating distribution.

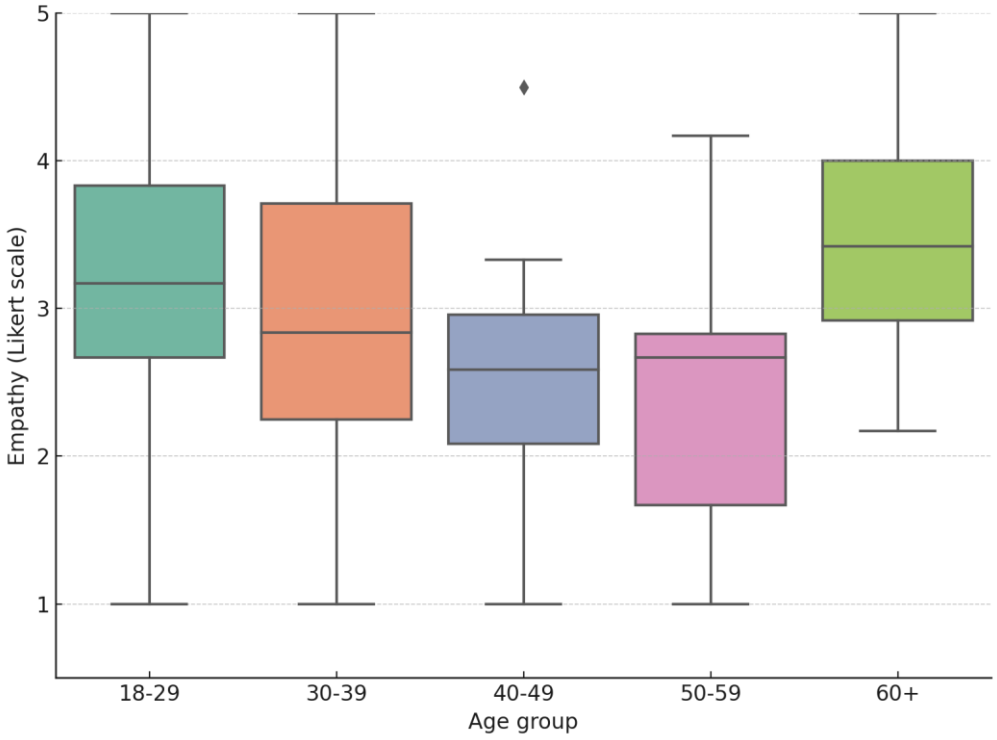

Figure 2. Distribution of empathy ratings of medical staff in age groups (with the combined 60+ category).

Source: own study.

5. Discussion

The analyses show that gender does not differentiate the perception of empathy or the credibility of medical information. This result is consistent with previous studies, which indicated that assessing communication quality in healthcare is universal, regardless of patients' gender (Mercer, Reynolds, 2002; Hojat, 2007). This suggests that measures to improve the quality of interpersonal relationships can be addressed to patients in general, without the need to differentiate by gender.

Different conclusions were drawn regarding age, which proved to be a factor in distinguishing perceptions of empathy among medical staff. The youngest patients (18-29 years old) made more critical assessments, while middle-aged people (50-59 years old) were more

likely to notice the positive aspects of empathetic behaviour. This phenomenon is consistent with the observations of Derksen, Bensing and Lagro-Janssen (2013), who emphasised that patients' communication expectations vary depending on their life experiences and cultural context. Stepien and Baernstein (2006) noted that a lack of empathy deepens information asymmetry and distance between patients and staff, which can strongly affect younger people accustomed to partnership-based relationships in other areas of social life.

These results confirm that empathy is a component that is particularly sensitive to demographic factors. Halpern (2001) points out that empathy is not only an interpersonal skill but also an integral part of human capital that can be developed and enhanced through training and practice. In this sense, generational differences can guide the design of educational programmes and training for medical staff to better understand patients' diverse needs.

In turn, the credibility of medical information – in terms of sources and forms of medical information – was perceived relatively uniformly. This finding is confirmed by research by Lim et al. (2025), which indicated that factors such as clarity of language, references to scientific sources, and unambiguous indication of authorship are universally important to patients, regardless of their demographic characteristics. Similarly, Zhao et al. (2024) found in a meta-analysis that the source's reputation and the message's consistency remain key determinants of the credibility of health information, regardless of the audience's age or gender.

The contrast between the results concerning empathy and the credibility of information is worth noting. While the former proved to be a variable sensitive to demographic factors (especially age), the latter was assessed uniformly, confirming its universal importance for patients.

In the context of human capital, the results indicate that empathy and the credibility of information serve complementary functions: the former strengthens interpersonal relationships. At the same time, the latter enhances the credibility of information. At the same time, the latter enhances the credibility of information. At the same time, the latter enhances the credibility of information. At the same time, the latter enhances the credibility of information. At the same time, the latter enhances the credibility of information. At the same time, the latter enhances the credibility of information. At the same time, the latter enhances the credibility of information. At the same time, the latter enhances the credibility of information. At the same time, the latter enhances the credibility of information. At the same time, the latter enhances the credibility of information. At the same time, the latter stabilises the communication process by providing the patient with a sense of trust and certainty about the information. In the face of digitalisation and growing social expectations towards the healthcare system (Catapan et al., 2025), developing empathy and ensuring the credibility of information should be prioritised in human capital management within public healthcare entities.

6. Conclusion

The study allowed for empirical verification of two key areas identified in the research questions within a comparative framework focused on differences between respondent groups: the assessment of medical staff empathy and the credibility of sources and forms of medical information in public healthcare. In response to the first question, the results indicated that respondents' gender did not differ in their perceptions of empathy. In contrast, age proved to be a significant factor – the youngest patients (18-29 years old) made more critical assessments, while middle-aged patients (50-59 years old) more often reported a higher level of empathy among staff. Regarding the second question, it was found that the credibility of sources and forms of medical information was relatively uniform, confirming its universal importance regardless of patients' demographic characteristics. Thus, the empirical contribution of the study lies primarily in identifying differences in the assessment of these dimensions of human capital across patient groups, rather than in testing direct correlational relationships between the analysed variables.

However, the study has certain limitations. First, a non-random sample was used, comprising a vast majority of young respondents (aged 18-29) and women. This excludes the possibility of generalising the results to the entire population of patients using public healthcare in Poland. It should also be emphasised that the study relied on participants' declarations, which entails the risk of subjectivity and the influence of situational conditions on the responses.

In light of the results obtained, practical recommendations were also formulated. Firstly, it is essential to develop medical staff's interpersonal skills, with particular emphasis on empathetic communication tailored to the expectations of patients of different ages. Secondly, it is crucial to standardise and ensure transparency in the medical information provided in order to reduce information asymmetry and build patient trust in the system. Finally, it is advisable to include components on digital skills in training programmes, enabling the effective use of new communication channels and strengthening the credibility of information in the era of digital healthcare system transformation.

The results clearly indicate that empathy and the credibility of medical information should be considered essential elements of quality care and strategic components of human capital. Together, these two factors strengthen patient–staff relationships and can increase both the effectiveness of and public trust in public healthcare entities.

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