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Sopron, 2025. november 6.
6 November 2025, Sopron

FEJLŐDÉSI PÁLYÁK ÉS ÚJ TÖRÉSVONALAK A FENNTARTHATÓSÁGI ÁTMENET IDŐSZAKÁBAN

DEVELOPMENT TRAJECTORIES AND NEW DIVIDES IN TIMES OF SUSTAINABILITY TRANSITIONS

Szerkesztők / Editors:
RESPERGER Richárd, SZÉLES Zsuzsanna, TÓTH Balázs István

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Sustainable Management in Inpatient Long-Term Care in Germany Through Competence-Based Staffing

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Abstract:
Despite care being an economic sector, there is still only limited scientific knowledge about the deployment of competence-based and academically qualified nursing staff and its impact on the quality of care and costs in long-term care facilities. The aim of this study is to systematically identify, analyse and evaluate the external factors influencing long-term inpatient care using the PESTEL analysis. The results show that political measures are increasingly aimed at professionalising the nursing profession, while economic conditions have so far provided insufficient funding for highly qualified nursing work, especially in qualification level 6-8. Sociocultural, clear role and task profiles alongside academic qualifications are becoming increasingly important. Technological developments in the field of digitalisation and robotics unlock the potential for increased efficiency. Ecological sustainability requires the targeted deployment of qualified staff to ensure resource-efficient nursing processes. From a legal perspective, there is considerable potential for development in international comparison. The study contributes to the discussion on sustainable management in inpatient long-term care and outlines key areas of action for preparing existing structures for the future. All eight international qualification levels are necessary to meet the complex requirements of high-quality, sustainable care provision in the long term.

Keywords: long-term care, sustainability, management, qualification levels, nursing
JEL Codes: I11, I15, I19, J24, J28

1. Introduction

The care sector in Germany is a cross-sector field with economic and social implications and is a highly topical political and social issue (Bayerisches Staatsministerium für Gesundheit und Pflege [StMGP], 2024).With an annual gross value added of €73.1billion in short-term and long-term care, it accounts for a significant share of employment and a strong economic performance in the German healthcare sector (Bundesministerium für Wirtschaft und Klimaschutz [BMWK], 2024). Outpatient care accounts for €21.5 billion of this, inpatient care for €24 billion, andclinical care for €27.6 billion (BMWK, 2024). Nursing staff are a key factor in this economic power. The declining proportion of nursing professionals with at least three years of training (PflBG, 2024) from 65% to 63% and the proportion of nursing experts and specialists (Schober & Affara, 2008, p. 58) from 8% to 7%, as well as an increase in the proportion of

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nursing assistants from 27% to 30% (Statista, 2024a), has an impact on the care provided to people and thus also on the costs (Kreitzer, Monsen, Nandram, & Blok, 2015). These also affect inpatient long-term care as an economic factor, which can be claimed from nursing care insurance as nursing care services provided over a longer period of time (SGB XI §14).

Inpatient long-term care as an economic factor has strengths and weaknesses, as well as opportunities and risks. One of the weaknesses of inpatient long-term care is dealing with the shortage of skilled workers. Despite the shortage of skilled workers, personnel costs are rising, which can also be attributed to the untargeted deployment of people with different qualifications (Kreitzer et al., 2015). Sticking rigidly to qualification levels 1-5 (Rothgang et al., 2020) also detracts from the attractiveness of nursing professions.

The strengths of inpatient long-term care for staff lie in job security. Added to this is the rising demand for long-term care places, often as a final residence or at home with a dependency on car (BMWK, 2024). Practice partners can respond to this demand professionally with flexible deployment options and a targeted mix of staff qualifications (Deutscher Berufsverband für Pflegeberufe [DBfK], 2021). The risks of inpatient long-term care include demographics, which bring with them an increasing need for care, including an increase in chronic diseases and complex disease progression (BMWK, 2024), but also an increase in the average age of caregivers. Added to this are the high costs of nursing home places and professional care, and the financing of long-term care, which depends on the priorities of funding bodies. Secure funding and sufficient staffing, but above all qualified personnel, are necessary to provide high-quality care for people in need of care. The opportunities for inpatient long-term care lie in current legislative amendments and legal foundations, competence-based staffing (Rothgang et al., 2020), and a targeted mix of qualifications in nursing care. In addition, more and more nursing degree programs are being developed to produce highly qualified nursing staff who can provide care tailored to people's needs and meet their individual requirements.

2. Theoretical background

On the one hand, there is fierce competition for skilled workers in long-term care, while on the other hand, the shortage of skilled workers affects employer attractiveness (Kuhlmann & Larsen, 2013). Kuhlmann and Larsen (2013) call for a shift towards competence-based staffing due to this shortage of personnel. Professional quality compensates for the shortage of nursing staff and leads to savings in working time of up to 60% thanks to these qualifications (Kreitzer et al., 2015). In order to provide high-quality care, it is also necessary to regulate the ratio of staff to care recipients and the necessary qualifications of staff (Rothgang et al., 2020). Overall, management in nursing needs to be aware of these influencing factors. In order to deal with staff shortages and staffing requirements in inpatient care facilities, the PeBem care assessment tool was introduced on July 1, 2023 (SGB XI, 113c (1)). PeBem is based on staffing levels that specify the number of staff required, including the necessary qualifications (Rothgang et al., 2020). These values are based on the care levels of the people to be cared for, and the staffing agreements of the individual care facilities should be based on these values in the future (Rothgang et al., 2020). Against this theoretical background, the aim of this study is to identify, analyse, and evaluate external factors that influence inpatient long-term care. Furthermore, it aims to determine whether the use of academically trained staff in inpatient long-term care can lead to more efficient work and more professional nursing care.

In order to achieve the objective and sub-objective, the following research questions will be answered:

- Which external factors influence inpatient long-term care in Germany?
- What influence does the implementation of qualification levels (QN) 1 to 8 in the context of competence-based staffing have on nursing care in inpatient long-term care?

3. Method

An inductive approach was chosen to answer the research question. Prior to analysing the environment, a comprehensive literature review covering the period from 2014 to 2024 was conducted based on a systematic examination of influencing factors along PESTEL, political, economic, sociocultural, technological, and ecological factors. The Cinahl and GeroLit databases were screened for freely available full texts on external influencing factors in inpatient long-term care in connection with the qualification mix at the international and national level. The search terms nursing home, long-term care, gerontology care, geriatric care, gerontological care, skill mix, skill and grade mix, staff*, quality care, scale mix, role development were used in various combinations. The database search was supplemented by an exploratory search on the internet, which included projects, conference reports, and political programs. To this end, the search terms mentioned were supplemented with the keywords political development, laws in nursing care, economics in nursing care, ecology in nursing care, technology in inpatient long-term care, developments in the field of inpatient long-term care, and care assessment.

The studies were analysed and interpreted in relation to their content on long-term care and competence-related deployment with reference to PESTEL. Study content was summarized and used with reference to the relevant context. The study from Kreitzer et al. (2015) about the outpatient and international sector was used for the theoretical background due to the evidence of lack of study data on savings through qualification in inpatient long-term care in Germany.

The results of the research are presented along the PESTEL analysis as a strategic tool. The analysis includes a systematic examination of external factors influencing the macroeconomic environment of inpatient long-term care.

The discussion focuses on the steps taken by PESTEL in the area of sustainable management and is based on a comparison of the quality of care and care as a cost factor.

The conclusion provides a systematic summary of the identified factors and further requirements, which are presented in the form of recommendations for action.

4. Results

The results of sustainable management in inpatient long-term care through competency-based staffing are presented below using PESTEL analysis.

P - Politics

For sustainable management in inpatient long-term care, the topic of politics encompasses international guidelines for the organization of cooperation in care, national health policy, and the current professional policy environment (Kaufmann, 2021).

Legal regulations and binding definitions that specify both the scope of professional practice and responsibilities in nursing form the basis for political decisions. The Nursing Professions Act defines the reserved tasks that may only be performed by nursing professionals with at least three years of training. This legal anchoring contributes to the professionalization and differentiation of the nursing profession from other occupational groups.

At the international level, the International Council of Nurses (ICN) responded in 2025 to changing global requirements in the health and nursing sector by revising the definitions of nursing and nursing professionals. This update strengthens the international comparability of professional role profiles and underscores the need for a clear professional identity (White et al., 2025).

The creation of suitable conditions for multi-professional cooperation is also proving to be central to sustainable management in inpatient long-term care. The analysis shows that various concepts are used to describe the composition of nursing and care teams. These include

the skill-grade mix, which encompasses different levels of training, ranks, professional experience, and competencies (DBfK, 2021; Gebhart & Zenzmaier, 2023; SBEGP, 2024), as well as the qualification mix, which refers to formal degrees, specializations, and professional development steps (Butler et al., 2019; DEKV, 2023; Keinath, 2019; Rieder-Hintze, 2018; Weidner, 2016; Wientjens, Nothacker, & Schöllhorn, 2021). The skill mix integrates specific roles such as nurse practitioners (NP), physician assistants (PA), and registered nurses (RN) (Lovink et al., 2019), thus describing the functional distribution of competencies within a team (Rappold, 2012). The personnel mix expands this approach to include other professional groups such as psychologists, physical therapists (Koopmans, Damen, & Wagner, 2018), social workers, and domestic staff (Brandenburg & Kricheldorff, 2018). Finally, the care mix includes not only professional caregivers but also informal caregivers such as relatives and volunteers, thus illustrating the breadth of the care landscape (Görres, Böttcher, & Schumski, 2019).

This mix of degrees and qualifications leads to professional policy demands that include uniform curricula in education as well as qualification frameworks. Uniform curricula are intended to ensure the comparability of training qualifications, while qualification frameworks precisely describe competence levels, thereby enabling the transparent assignment of professional roles. Legal foundations such as the Nursing Assistance Act and corresponding training regulations form the normative framework for this.

At the international level, the ICN (2013b) has defined competencies, responsibilities, and standards for practice, education, and professional roles. At the same time, the ICN (2013b) has defined the tasks and roles of nursing based on legal and regulatory frameworks and emphasized the importance of evidence-based knowledge in nursing practice. In Europe, the European Federation of Nurses Associations EFN (2015) has formulated a competency framework for nursing professionals that includes competencies in the areas of ethics, health promotion, decision-making, communication, research, and nursing, the European Qualification Framework (EQR).

Political developments in the nursing sector are intentional and set the course for a professional basis and development of the nursing profession. The ICN's (2025) adaptation and redefinition are also relevant for inpatient long-term care in Germany. In addition, the requirements of international and national qualification frameworks offer the opportunity to network and compare on an international level.

E - Economy

The economic perspective of the PESTEL analysis takes into account the economic situation of inpatient long-term care both nationally and in international comparison (Kaufmann, 2021). As a significant economic factor, inpatient long-term care in Germany achieved a gross value added of around €24 billion in 2021 (BMWK, 2024) . In 2024, there were a total of 16,115 inpatient long-term care facilities in Germany. These are divided into 42.7% private, 4.5% state, and 52.8% non-profit institutions (Federal Statistical Office of Germany (Statistisches Bundesamt) [DESTATIS], 2025). In the context of sustainable management with competence-oriented personnel deployment, the economic perspective particularly encompasses the availability of nursing staff and the mix of qualifications within the nursing teams.

The professional quality of staff is considered an economic factor, as qualified nursing staff can save up to 60% in working hours (Kreitzer et al., 2015). However, high-quality care requires an appropriate ratio between the number of people in need of care and the qualifications of the staff employed (Rothgang et al., 2020).

Inpatient long-term care is subject to considerable competitive pressure. Nursing homes compete with clinics and outpatient care services, as well as with each other. Differences in cost structures and services result from the different types of providers. Remuneration also varies depending on private law agreements or collective agreements in the public sector. Here,

the TVöD offers better conditions than the TV-L, which intensifies the competitive situation (Bayerische Staatskanzlei, 2006; ISAR S.A.S., 2023).

In Germany, the German Qualifications Framework (DQR) describes the requirements for the various qualification levels, thereby enabling national comparability. To supplement the DQR, Knigge-Demal and Hundenborn (2013) developed a technical requirements and qualifications framework with eight qualification profiles for quality assurance and structuring of vocational training processes. Darmann-Finck (2021) also specifies eight qualification levels with the Qualification Mix Model (QMM) and assigns specific nursing qualifications to them.

For inpatient long-term care, Rothgang et al. (2020), based on the QMM, defines the qualification levels relevant for practice as nursing staff with 3 years of training (QN 4), assistants with 1-2 years of training (QN 3), and support staff without training or with a basic course (QN 1-2). The other qualification levels QN5-7 according to Knigge-Demal and Hundenborn (2013) are not highlighted in this context.

Despite an 11% increase in the number of employees subject to social insurance contributions in the care sector within five years, the Federal Employment Agency reported around 37,000 vacancies in 2023 (Bundesagentur für Arbeit, 2023, p. 7ff). In the short term, the shortage of skilled workers is often offset by temporary work and temporary agency workers. However, as these are usually not bound by collective agreements and generate high costs, professional associations are increasingly calling for restrictions on their use (Heeser, 2024).

Other strategies to compensate for the shortage of skilled workers include the use of semi-skilled personnel and the recruitment of international nursing staff. However, international studies indicate that this substitution can jeopardize the quality of care (ICN, 2013a, 2013b).

For sustainable team development and long-term staff retention, vacancies should not only be filled within the QN 1–4 spectrum, but also specifically with more highly qualified specialists at QN 5. Looking ahead, it will also be necessary to develop teams toward higher qualification levels (QN 6–8) in order to increase efficiency, quality, and satisfaction.

Investing in academically qualified nursing staff (QN 6–8) is an important part of this. Bachelor's (QN 6), master's (QN 7), and doctoral (QN 8) degrees enable nursing professionals to take on more advanced tasks such as managing highly complex nursing processes, leadership roles, or scientific development (Knigge-Demal & Hundenborn, 2013). In practice, however, the lack of clearly defined role profiles and job descriptions in inpatient long-term care often means that academically qualified national or international nursing staff cannot be deployed adequately (Hastedt, Erchinger, Koch, & Schlemminger, 2018).

International comparisons show that more highly qualified nursing staff and a balanced mix of qualifications improve the quality of care in the long term. The use of temporary workers without collective bargaining agreements is viewed critically from both a quality and an economic perspective. In addition, nursing professionals recruited internationally must be integrated into the German system of inpatient long-term care in a structured manner and in line with their qualifications in order to make effective use of their potential.

S – Social

Sustainable management in inpatient long-term care through competence-based staffing is significantly influenced by sociocultural factors. These include the age structure and educational level of caregivers, their understanding of their role, and societal expectations of professional care. These aspects influence both supply and demand and thus determine the framework conditions for personnel management (Kaufmann, 2021).

Demographic change poses profound challenges for inpatient long-term care. An increasingly aging population is being cared for by an equally aging nursing staff, while at the same time there is a shortage of young people entering the profession. The number of people in need of care has risen by 150% over the past 25 years and now stands at over 5.6 million (BMG, 2024).

Although nursing is the largest occupational group in the German healthcare system, with around 1.75 million employees, inpatient facilities have been unable to meet their staffing needs for years. The demographic composition of the occupational group exacerbates this problem. 74.6% of employees are women, and 15.5% of employees are 60 years of age or older. At the same time, there is also a clear gender-specific distribution in the area of young talent, as three-quarters of trainees are women (Statista, 2024a, 2024b).

Against this backdrop, working and life-stage-oriented conditions in inpatient long-term care are becoming increasingly important in order to both increase the attractiveness of the profession and ensure the retention of qualified specialists (Auffenberg & Heß, 2021).

Modern nursing management requires a willingness to innovate, a structured approach, and openness to change. This includes, in particular, a clear definition of roles and tasks, the targeted involvement of academically trained nursing professionals, and the creation of supportive framework conditions (Arnold, Schmidt, Seegerer-Wolf, & Zöllner, 2023; Sowinski & Esser, 2004; Stuhl & Bader, 2025; Zöllner & Szabó, 2023).

One important approach is the use of academically qualified nursing professionals at master's level (QN 7), for example in the form of advanced practice nurses (APNs). These nurses can take on specialized advisory and coordinating roles, particularly in complex areas such as dementia or palliative care, and support evidence-based decision-making processes (Schober & Affara, 2008).

While qualification levels from 1 to 8 are defined in Germany, levels 1 to 5 are assigned in inpatient long-term care (Rothgang et al., 2020). However, targeted support for employees is essential to ensure sustainable personnel and organizational development and to implement a meaningful mix of qualifications (Darmann-Finck, 2021; Keinath, 2019; Koopmans et al., 2018).

Social expectations or society's demands on professional nursing care are constantly increasing. People expect person-centered, high-quality, evidence-based care, which further promotes the involvement of academically trained nursing professionals (Behrens & Langer, 2010; Stuhl & Bader, 2025).

For needs-based care a key example is the care of people with dementia, whose numbers rose by 138% between 2000 and 2020 (DESTATIS, 2023). Caring for this group of people is particularly challenging and requires specialized expertise, which can be ensured through targeted skills development and academic qualifications (Gohrbandt & Volmar, 2017; Zöllner, 2023).

Dignified aging requires person-centered care provided by competent staff. However, international comparisons show that the ratio of nursing staff to people in need of care in Germany is low (Köppen & Busse, 2023). The workforce is also heterogeneous, ranging from nursing assistants to academically trained nursing professionals with a wide variety of qualifications (Hastedt et al., 2018). This diversity necessitates rigorous competence management in order to ensure consistent, high-quality care.

Overall, it is clear that demographic developments will lead to a further increase in the number of people requiring care. A clear definition of roles and responsibilities and supportive management are key prerequisites for meeting these challenges. The academization of nursing is an important part of the solution, as it improves the quality of care and helps to relieve the burden on care systems in the long term.

T - Technology

The topic of technology covers digitalization, new technologies, and new technological standards and norms that have an impact on the field of nursing care (Kaufmann, 2021).

Technical developments are advancing (Weidner, 2016). Digital and technological solutions are increasingly being integrated into everyday work and are intended to lead to increased efficiency, cost savings, and process optimization (Rösler et al., 2018; Kratky & Kocher, 2024).

As part of sustainable developments in inpatient long-term care, this development requires competent staff (Lydahl & Davidsson, 2024).

The digitalization of documentation is well advanced in inpatient long-term care. Various software solutions support the legally required forgery-proof and traceable care documentation and contribute to quality assurance in accordance with § 113 Social Security Code (SGB) XI. Structured information collection (SIS) serves as a central tool for the standardized recording of care needs and promotes holistic, resource-oriented care planning (Görres et al., 2019).

Reserved tasks and the associated professional documentation are the sole responsibility of qualified nursing staff, which ensures clarity of responsibility and quality (Knigge-Demal & Hundenborn, 2013). At the same time, the use of robotic and technical assistance systems is increasing, the technically sound planning and evaluation of which requires technological expertise and is increasingly becoming part of professional nursing practice (Behrens & Langer, 2010).

With regard to process optimization, it is clear that digitization, robotics, and technical assistance systems offer great potential benefits, but at the same time are subject to legal restrictions. In Germany, data protection requirements in particular mean that parallel data infrastructures have to be set up, which limits the availability of relevant health-related data (DSGVO, 2018; Gematik, 2024; Roemheld, 2021). This has a particular impact on artificial intelligence (AI) applications, which rely on extensive and diverse data.

Digital documentation solutions enable more comprehensive and faster information exchange between professional groups, thereby increasing patient safety. AI-based systems also support the analysis and networking of patient-related information and offer potential for decision support in the care process.At the same time, the results show the limitations of AI application, limited data access and a lack of data diversity restrict the reliability of algorithmic decisions, especially in sensitive care situations (Waring, Lindvall, & Umeton, 2020).

In addition, it is becoming apparent that nursing professionals are increasingly being required to have technical skills (Venkatesh & Bala, 2008). To avoid acceptance. problems and qualification deficits, ongoing training, coaching, educational support, and the integration of scientific findings are necessary. The combination of technological knowledge, practical experience, and nursing science expertise forms the basis for the safe and responsible use of digital applications.

The professional use of technological innovations in inpatient long-term care requires qualified personnel with technical, ethical, and social skills (Fachinger & Mähs, 2019). Key tasks include the evidence-based selection of technical systems, critical reflection on their application, and the planning and management of nursing care processes using digital solutions. Advanced practice nurses (APNs) with qualification level (QN) 7 play a particularly important role in this regard, as they are able to systematically integrate and evaluate technical developments in care practice (Schober & Affara, 2008).

The results show that digital technologies, robotics, and technical assistance systems can make a contribution to process optimization and efficiency gains in inpatient long-term care. However, in order to exploit this potential, qualified personnel with digital, analytical, and nursing skills are required. Only through sound professional application can an appropriate cost-benefit ratio be ensured and the quality of care be improved in the long term care.

E - Ecology

Ecological considerations include topics such as sustainability in business operations and legal requirements such as occupational safety and quality standards (Kaufmann, 2021).

Conceptual approaches to sustainable management emphasize different focal points. While Hornung (2013) highlights the importance of lifelong learning, appropriate task and organizational design, and strategic human resource management, ESG-based models (Erchinger, Koch, & Schlemminger, 2022) systematically integrate environmental, social, and governance

aspects into business decisions. Institutions that successfully implement such concepts develop an organizational culture characterized by clear values, reflective leadership, and efficient use of resources (Arnold et al., 2023; Sepetis, Rizos, Pierrakos, Karanikas, & Schallmo, 2024).

Climate change poses additional challenges for long-term care, such as heat waves, changing infection risks, and increasing care needs (BMWK, 2021). At the same time, care facilities themselves contribute to environmental pollution through energy consumption, waste generation, and material use. Initiatives such as Green Nursing and Green Hospital illustrate possible paths to ecological transformation (Haas, 2023). In addition, measures such as promoting public transportation can help reduce emissions and improve employee satisfaction (Health Care Without Harm, 2019).

The environmental factors are providing significant impetus for the further development of long-term care. Sustainable management and qualified personnel are essential prerequisites for ensuring high-quality, resource-efficient, and sustainable care.

L - Legal

The legal factor encompasses regulations and legislation (Kaufmann, 2021) and, in this paper, focuses on the legal foundations relevant to inpatient long-term care, in particular the binding expert standards and the supervisory authorities responsible for auditing and quality assurance.

The political will to integrate academically trained nurses is evident in the fact that politically initiated incentive programs aim to support academically trained nursing professionals through scholarships, loans, or other financial or non-material support measures (LfP, 2024; PflStudStG, 2024). With a view to international harmonization, politicians have integrated nursing professionals with university degrees into the German system with the Nursing Study Strengthening Act and specified the requirements for the academization of nursing, which can be found in the Nursing Professions Act (PflBG, 2024).

In addition, the Nursing Professions Act specifies activities that may only be performed by nursing professionals with three years of professional nursing training or a primary qualifying nursing degree, known as reserved tasks (PflBG, 2024).

The Care Support and Relief Act (PUEG), which established a uniform staffing assessment procedure for inpatient long-term care, came into force in July 2023 to strengthen the nursing care infrastructure (Rothgang et al., 2020). This procedure provides for an individual staffing mix for inpatient long-term care facilities based on the resident structure and their care needs. With a focus on nursing tasks in accordance with the current definition of care needs, more nursing professionals and qualified nursing assistants and aides are to be integrated into inpatient long-term care facilities in the future (Geschäftsstelle Qualitätsausschuss Pflege, 2023).

The Nursing Training Initiative (2023) also recommends integrating academically trained nursing staff into the qualification mix of nursing facilities, citing the increasingly complex nursing situations that are sometimes characterized by highly dynamic changes. Through case responsibility as a principle of nursing organization, academically trained nursing staff can address these highly complex care situations by applying scientific knowledge. Case responsibility includes reserved tasks, management, coordination, monitoring, and evaluation of nursing and health care, including support and activation. In addition, the case manager is the contact person and coordinator for complementary support services, such as palliative care or social work (Diakonie Deutschland, 2023; Kemser & Kerres, 2019).

The Nursing Care Development Act of mid-2008 transferred responsibility for developing and updating expert standards at the federal level to representatives of nursing care facilities and nursing care insurance funds (Bundesamt für Justiz, 2008). According to Section 113a SGB XI, expert standards are binding for all nursing homes and nursing services in Germany. These standards set quality benchmarks and are intended to ensure that nursing services are provided at a high level (Nieder et al., 2014).

Despite these developments, there is still no clear legal basis in Germany for the specific role of academically trained nursing professionals with QN 6-8 in inpatient long-term care. As a result, their potential has only been exploited to a limited extent so far. Overall, however, the analysis shows that legislation is increasingly aimed at strengthening nursing expertise and creating a differentiated qualification structure in nursing homes.

The results of the PESTEL analysis are summarized graphically in *Figure 1*.

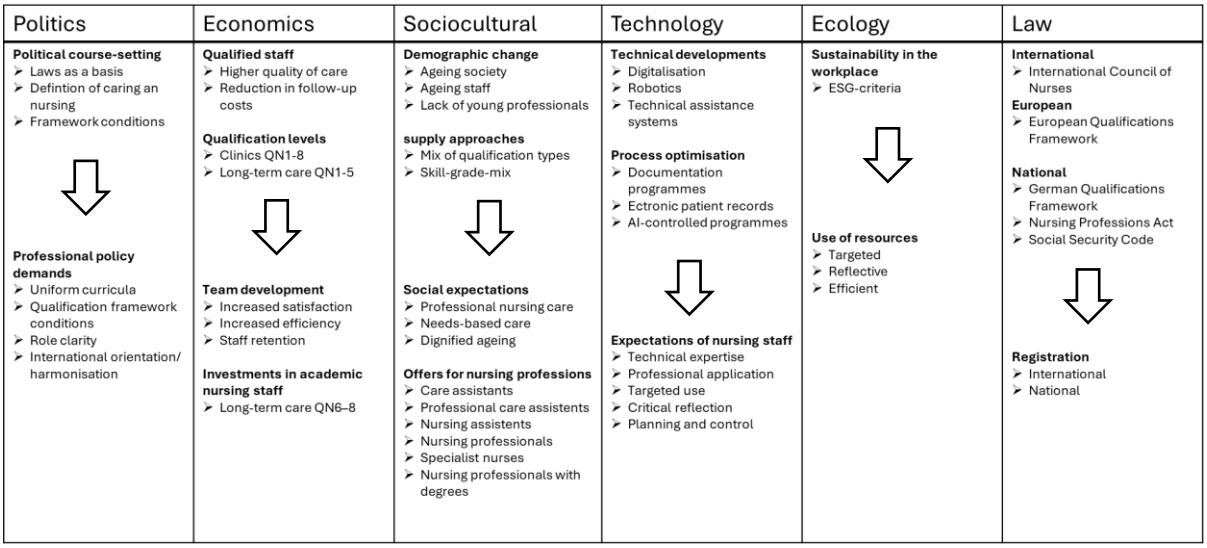

Figure 1: Results – PESTEL Analysis (own presentation)
Source: Own presentation

5. Discussion

Alongside the quality of care and the costs of care, the external factors that influence inpatient long-term care are discussed with regard to the effects of the introduction of qualification levels (QS) 1 to 8 on care within the framework of competence-based staffing. Finally, each section of PESTEL is assigned an area of action for sustainable management.

Quality of care versus costs of care

The discussion of the quality of care in comparison to the costs of care is presented along the PESTEL analysis.

P - Politics

The development of the care sector is a matter of political interest. New role definitions and legal frameworks are intended to strengthen and further develop the care professions. However, legal adjustments alone are not enough to achieve true professionalization. Clear title protection and comprehensive change processes are necessary to secure the transformation of the care professions in the long term.

Sustainable management in inpatient long-term care requires a clear prioritization of quality over quantity. International research shows that quality levels are closely linked to qualifications, personnel structure, and thus also to costs. Aiken et al. (2017) demonstrate that a dilution of the qualification mix, for example through the increased use of less qualified personnel leads to significant quality deficits. Similarly, Staggs, Olds, Cramer, and Shorr (2017)) show that a lower level of qualification within nursing teams is associated with an increase in measures that restrict liberty.

Lerner (2013) also shows that a higher proportion of hours worked by nurse assistants (NAs) correlates with fewer deficiencies, while a higher proportion of hours worked by registered nurses (RNs) reduces the severity of deficiencies identified. In addition, Dixon, Kaambwa, Nancarrow, Martin, and Bryan (2010) point out that greater diversity in the workforce, i.e., a wider range of different qualification levels, can also have cost-reducing effects.

The International Council of Nurses (ICN) also emphasizes that supplementing nursing teams with more highly qualified nursing staff offers measurable benefits for the quality of care. Studies from hospital settings show that increasing the proportion of academically trained nursing staff can reduce mortality among stroke patients within the first 30 days by 11–28% while also achieving better patient outcomes.

Career paths in nursing require remuneration that is based on the respective qualifications. This leads to higher personnel costs. At the same time, the financing and refinancing of highly qualified nursing activities at levels QN 6–8 is a prerequisite for establishing demanding and expanded areas of responsibility in practice. These expanded roles go hand in hand with increased decision-making authority and responsibility, which necessitates appropriate remuneration.

For sustainable nursing management, it is important to make use of political leeway and establish binding training and study structures in terms of professional policy. Clear role definitions form a basis for ensuring high-quality care, promoting career paths, and strengthening the professionalization of the occupational field in the long term.

E - Economic

Qualified personnel have an impact on cost efficiency in inpatient long-term care, which is evident in savings of up to 60% in working hours (Kreitzer et al., 2015). This development opportunity for staff leads to improved care quality and better care for care recipients, while also reducing follow-up costs and complications. However, the direct competition between inpatient long-term care and clinics and outpatient services is intensified if the inpatient long-term care sector offers no or insufficient career opportunities. In addition, there are financial differences in sponsorship, remuneration, and collective bargaining agreements that influence the attractiveness of long-term care facilities (Bayerische Staatskanzlei, 2006; ISAR S.A.S., 2023). While the public sector often offers better collective bargaining conditions, there are greater fluctuations in private and non-profit facilities.

Due to their qualifications, QN 6-8 require higher pay scales, which, however, have been insufficiently financed and refinanced to date. Failure to take the financing of these qualification levels into account could further exacerbate competitive dynamics.

A shortage of skilled workers leads to waiting lists, admission freezes, or bed closures. To avoid this, temporary workers are used, which is expensive. It is therefore becoming increasingly important for care recipients to critically compare the services offered by providers and to choose their long-term care facility carefully. A shortage of skilled workers therefore poses economic risks. Facilities not only lose revenue, but also their long-term competitiveness. Maintaining a stable core staff instead of resorting to temporary work counteracts this and reduces costs.

From an economic perspective, a value-based remuneration system is necessary to enable investment in qualified personnel. Protected job titles are necessary to ensure quality. Quality, for example for nursing experts, initially incurs higher costs, but leads to potential savings through high-quality care.

Sustainable care management requires an expansion of the mix of qualifications, including QN levels 6–8, and the adjustment of the associated remuneration structures.

S - Social

Professionalization is important at the national level, especially with regard to the international arena. On the one hand, this is important for the attractiveness of the profession to new entrants, but also for the attractiveness when recruiting staff from the international arena. Existing structures must be made future-proof. Clarity of roles in nursing practice is necessary. The roles and tasks of nursing staff should serve the professional care of people and correspond to their respective qualifications (Darmann-Finck, 2021). A shortage of nursing staff, cuts in healthcare, and an unequal global distribution of nursing professionals give cooperation between differently qualified professional groups a health policy significance and prompt the testing of alternative task and role profiles with a changed mix of qualifications. The demand for concrete role definitions in the field of nursing, tailored to the respective qualifications, reflects the intra- and interprofessional characteristics of nursing in healthcare (ICN, 2013b). In addition, it is necessary to establish clear responsibilities according to qualification and to monitor their implementation.

One area of action for sustainable management in the social sector is to enhance the image of the nursing profession through campaigns.

T – Technology

The use of technology in long-term care is a key component of sustainable development (Rösler et al., 2018; Kratky & Kocher, 2024; Lydahl & Davidsson, 2024). Digital assistance systems, care documentation, sensor technology, and robotics can reduce the burden on care processes and improve quality. However, this requires implementation, application, and ongoing training. These requirements demand a high level of qualification among staff so that technology can be used sensibly and safely.

Although the introduction of technical solutions and the necessary training initially incur costs, these can be offset by long-term relief for employees and more efficient work processes. This results in sustainable benefits for both care recipients and facilities.

The integration of technical, planning-related, and management-relevant expertise into training and study programs is considered an area of action for sustainable management.

E – Environmental

Sustainable management in inpatient long-term care requires a holistic approach to processes and in-depth knowledge of ESG (environmental, social, governance) issues (Sepetis et al., 2024). Care workers need experience, analytical skills, and practical expertise, which are particularly relevant at higher qualification levels.

By acting in a resource-oriented manner, facilities can achieve considerable savings potential for example, through efficient use of materials, sustainable procurement, or optimized work processes (Erchinger et al., 2022). Such measures not only support ecological objectives but also have a positive economic impact.

Area of action for sustainable management:

Establishment of clearly defined roles and tasks for the implementation of sustainable processes.

L - Legal

Legal frameworks such as the Nursing Competence Act (PKG) or the professional register (e.g., within the framework of the BEEP) are of central importance for the professionalization of the nursing professions. They create transparency regarding qualification standards and ensure responsibilities, for example in the area of medical delegation.

At the same time, a well-organized professional register can reduce bureaucracy and lower costs in the long term. However, it is crucial that legal requirements are consistently implemented and that appropriate remuneration structures, especially for expanded roles and higher qualification levels, are bindingly anchored in collective agreements.

Areas for action for sustainable management include the binding implementation of legal requirements and the integration of remuneration structures into collective agreements.

	P	E	S	T	E	L
Quality of care	**Political interest in the development of the care sector** ➢ Role definition ➢ Laws **Nursing profession development** ➢ Title protection necessary ➢ Change process necessary	**Quality over quantity** ➢ Saving through quality ➢ Saving through staff retention ➢ Permanent staff instead of temporary workers **Care outcomes in relation to** ➢ Staff numbers ➢ Staff quality	**Professionalisation** ➢ International ➢ National **Making existing structures future-proof** ➢ Role clarity ➢ Clear responsibilities based on qualifications	**Use of technology** ➢ Implementation ➢ Application ➢ Training ➢ Consulting ➢ Expertise	**Process thinking** ➢ Knowledge of ESG ➢ Experience ➢ Consulting expertise ➢ Application expertise	**Legal basis** ➢ Care Competence Act – PKG ➢ Federal professional register ➢ State professional register ➢ Qualification standards, responsibilities (transfer of medical treatment)
Care as a cost factor	**Career paths** ➢ Salary based on qualifications **Funding:** ➢ Highly qualified nursing work, QN 6-8 ➢ Career steps ➢ Assumption of responsibility	**Value-based salary** ➢ Saving through investment ➢ Long-term perspective **Professionalism:** ➢ Reducing revolving door effects ➢ Reducing complications ➢ Reducing follow-up costs	**Registered job titles** ➢ Nursing exper, ANP **Comparison of care and costs** ➢ Professional staff versus unskilled staff ➢ Care based on quantity versus quality	**Costs** ➢ for technology ➢ Staff training **Savings** ➢ Staff costs through technology-assisted workload reduction	**Cost savings** ➢ Resource-oriented action ➢ Sustainable management	**Cost factor** ➢ Bureaucracy involved in registration

Figure 2: Discussion - Quality versus Costs
Source: Own presentation

Figure 2 summarizes quality and costs, while *Figure 3* shows areas for action for sustainable management.

P	E	S	T	E	L
Benefits of political framework conditions **Professional policy:** ➢ Binding training and study conditions ➢ Role definitions	**Expansion of the qualification mix** ➢ Including QN levels 6–8 **Adjusted salary**	**Image of Nursing** ➢ Campaigns	**Integrate into training and studies:** ➢ Technical expertise ➢ Planning expertise ➢ Control expertise	**Definitions:** ➢ Clear roles and responsibilities	**Enforceable implementation of laws** **Inclusion of salary structures in collective agreements**

Figure 2: Areas of action for sustainable management
Source: Own presentation

6. Limitation

The limitation of this study lies in the lack of research in the field of long-term care in Germany that examines quality and quantity in terms of cost representation. Overall, the contribution of professional competence to cost savings in Germany is not sufficiently taken into account, which limits the discussion and analysis of the relationships between quality, competence and cost efficiency.

7. Conclusion

The analysis using the PESTEL tool has shown that the factors currently affecting inpatient long-term care in Germany are multifactorial and require complex approaches.

- High quality of care at low cost as a key objective for long-term care in the future.
- Quality as and instead of a saving measure.
- Efficiency through thoughtful action, satisfied staff, personalised care.
- Savings are achieved by avoiding duplicate structures and maintenance errors.
- Mandatory use of the eight international QNs in the qualification mix to ensure sustainable quality.
- Qualified staff as the key to resource-efficient care processes.
- Sustainability requires change!....as a prerequisite for future-proof care.

Sustainability in care also means actively shaping change processes. Such change is essential in order to make long-term care fit for the future and to ensure the quality of care in the long term.

The impact of implementing qualification levels 1-8 on inpatient long-term care can be considered very significant. Currently, implementation of QNs 1-5 is the norm, but analysis has shown that, precisely because of the multidimensional factors influencing inpatient long-term care, investing in more highly qualified nursing staff makes sense in order to meet current and future challenges. We therefore see the mandatory use of the eight QNs in inpatient long-term care as an essential framework for long-term, sustainable, professional, and safe care.

Furthermore, it would be beneficial for the care sector if future research broadened the focus from clinical care to inpatient long-term care. There is currently a lack of studies in Germany that correlate costs with the quality of care and staff qualifications.

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