Integrated (acute) Health Care in rural Long-Term Care Facilities

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Table of Contents

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List of Abbreviations

LTCF	Long-term care facility
ED	Emergency Department
GP	General practitioner
QoC	Quality of care
WHO	World Health Organisation
SGB	Social security statute book
EBM	Evaluation scale for medical services
QM	Quality management
SHI	Statutory Health Insurance
PHI	Private Health Insurance
APN	Advanced practice nurses

List of Tables

List of Figures

1.Introduction

Ageing occupies a prominent place in contemporary discourse, attracting (inter)national attention due to its multifaceted relevance and significant societal implications. Global life expectancy at birth has changed significantly, more than doubling in the last century. In prehistoric times, life expectancy was only 20 to 30 years, but by 2020 it reached 84.1 years for women and 79.1 years for men. [2] This trend is evident in Germany, where the proportion of people aged over 65 has risen from 9.72% in 1950 to 21.5% in 2018. [3]

Projections indicate a further increase of 10% by 2050, with rural areas experiencing a more pronounced shift towards an older population structure. [4] As a result, the older cohort is playing an increasingly influential role in shaping societal dynamics at various levels. However, understanding the meaning of ageing, identifying the challenges and opportunities of an ageing society and exploring the prevailing societal perceptions of older people remain important issues. As demographic change continues, healthcare systems face increasing challenges in providing good and seamless healthcare. These unprecedented population changes will also be accompanied by increased demands for care, especially for people living in long-term care facilities (LTCFs). [5]

LTCFs have recently received increasing attention due to the growing need for comprehensive care services among the ageing population. Residents of LTCFs are typically frail, multimorbid and dependent on medical care as chronic incurable diseases and functional disabilities affect their ability to live independently. As a result, LTCF residents often have higher healthcare needs than their age-matched counterparts living in the community.

Recent studies indicate an increase in (re-)hospitalisations and emergency department (ED) visits among LTCF residents, with up to three ED visits per year. Hospitalisation is associated with an increased risk of emotional distress, delirium, infection and mortality in LTCF residents. Factors such as lack of out-of-hours access to general practitioners (GPs), inadequate advance care planning, inadequate palliative care and suboptimal communication among healthcare providers, patients and families contribute to inappropriate hospital transfers.

The location of a person's home has a significant impact on access to and quality of health services. Rural populations face challenges compared to urban populations; these include limited access to healthcare due to factors such as advanced age and a higher prevalence of chronic conditions. In rural areas, inadequate healthcare is attributed to a lack of primary care and specialist staff and economic constraints. The variability of health systems and approaches to care in rural areas, influenced by local infrastructure and distance to medical facilities, further hampers consistent

access to health services. Rural areas face difficulties in allocating resources to prevent the transfer of LTCF residents to hospitals and EDs. The emergency decision-making process is complex and requires efficient, safe, patient-centred alternatives that healthcare professionals and carers perceive as effective.

The increasing demand for complex healthcare services for LTCF residents has led to gaps in care and increased workloads for GPs, specialist nurses and EDs, particularly in rural areas. Alternative care models, such as integrated care, offer an opportunity to address the challenges posed by the diverse needs of the ageing population and ensure continuity and consistency of skilled healthcare provision in LTCF settings.

Integrated care, which aims to improve access, quality and continuity of health services for people with multidimensional needs, encompasses different concepts. Terms such as 'coordinated care' and 'collaborative care' frame the key components of integrated care, emphasising defragmented, demand-driven and person-centred interprofessional health services. The introduction of integrated care in LTCFs can reduce caregivers' workloads and improve the quality of work content, communication and motivation.

Meeting the health and care needs of LTCF residents requires the continuous provision of a variety of services by different stakeholders. Implementing an integrated care model in rural LTCFs can effectively centralise residents in interprofessional collaboration and networking, creating a demand-driven care and living environment under constant supervision. However, the implementation of integrated care and the integration of job satisfaction and quality of care (QOC) have not yet been achieved. Despite a great deal of research on the various components, definitions and emphases of integrated care, no detailed research currently studies the application and possibilities of integrated care in the context of LTCFs in rural areas. Precisely the structural specificity of rural areas and the complexity of the health needs of LTCF residents suggest the potential for implementing integrated care in this setting.

This dissertation aims to address these gaps and consequently to explore the impact of different approaches to integrated care models in rural LTCFs. Knowing whether the implementation of integrated care can meet the individual needs of healthcare providers in acute health risk situations, i.e., LTCF nurses and paramedics, is crucial. Research is also lacking on experiences and desires in acute health risk situations and the decision-making process from the perspective of the professionals involved and how these could be reconciled with a realistic, practicable nationwide application of integrated care. The results of this dissertation can contribute to the development of

professional and informal support frameworks that provide a basis for the implementation of integrated care in rural LTCFs.

Chapter 2 presents the theoretical background and state of research on ageing and health needs. Chapter 3 describes the current status, organisation and provision of outpatient care in LTCFs. Chapter 4 describes the implementation of acute care in Germany and its challenges, with a focus on rural areas and LTCFs. Chapter 5 then introduces the concept of integrated care and shows how integrated care can help to overcome existing challenges in (acute) healthcare. Consequently, the aims and methods of this dissertation, including a summary of the two publications that form its core, are presented in Chapter 6. The publications themselves are presented in Chapter 7. Chapter 8 summarises the findings and provides a framework for integrated care in rural LTCFs. The findings are also further discussed in terms of their significance for understanding the core elements of integrated care in rural LTCFs, with a focus on job satisfaction and QOC. Chapter 9 uses these areas of discussion to identify implications for research and practice. Finally, Chapter 10 discusses the methodological strengths and limitations, and Chapter 11 presents an overall conclusion of the dissertation.

2. Ageing

Defining ageing is a complex task with many dimensions. [6] From a philosophical point of view, ageing can be characterised as "an enterprise in which human beings can fail", framed as a narrative that encompasses the entire life journey from birth to death. [7] Ageing is not limited to a specific age but refers to the whole process of growing older, emphasising an individual's life course perspective.[7]

With biological, emotional, mental, economic, legal and physical aspects, ageing is a highly individualised process. Biologically, ageing involves molecular and cellular deterioration that affects physiological reserves and leads to reduced performance and mortality. Gunther Collatz defines ageing as an irreversible, time-dependent change in the structure and function of living systems, culminating in reduced vitality and increased mortality. [8]

Socially, ageing is embedded in experiences of social orders and institutionalised fields of action, marked by culturally defined stages of life and influenced by social institutions such as school, marriage and retirement. [9,10] In a modern, age-differentiated society, age norms continue to shape experiences, making ageing a transactional experience, an interaction between the ageing individual and their environment. [11,12]

Cohort-specific events, such as wars, economic crises or social movements, also affect the ageing process and shape an individual's life course. As discussed, ageing defies easy definition, exhibiting individual diversity and heterogeneity within social structures, thus, a multidimensional and complex aspect of life.[13,14]

In psychological gerontology, the definition of ageing includes cognitive-mental development, social relationships and critical life events. Meanwhile, the biological response to ageing is often quantified using a numerical approach known as biological age. The WHO uses a numerical age classification system that groups individuals into categories based on specific age ranges: [15]

- 50 to 65-year-olds: ageing people

- 65 to 74-year-olds: elderly/retired people

- 75 to 90-year-olds: old people/very old people

- 91 to 100-year-olds: very old people/elderly people

- > 100-year-olds: long-lived people

However, being critical of such numerical categorisations is important, as the biological ageing process is highly indi[14]vidualised. Pöthig et al. introduce the term "biofunctional ageing", which takes into account the individual's state of health and fitness. [16]

At a biological level, ageing is associated with molecular and cellular deterioration, leading to a reduction in physiological and physical reserves, resulting in reduced performance and ultimately death. Notably, these biological changes are not necessarily linear or chronological, challenging simplistic classifications. [2,17] Collatz defines ageing as an irreversible, time-dependent change in the structure and function of living systems. [8] Physiological mechanisms responsible for maintaining the internal environment no longer function with sufficient speed and precision, leading to a decline in vitality and an increase in mortality. From this perspective, ageing can be seen as a process involving the passage through the physical mechanisms of life and the life cycle. [2]

In addition to biological changes, a person's position within his or her socialisation and society changes during the ageing process. Returning to the life course perspective, ageing takes place in the context of social orders and institutionalised fields of action. Ageing involves culturally defined life stages and shapes an individual's life course through established social institutions such as schooling, marriage and retirement. [18]

In contemporary age-differentiated societies, age norms continue to be shaped by social fields of action. Ageing is thus perceived as a 'transactional experience', highlighting the dynamic interaction between the ageing individual and his or her environment. This emphasises the reciprocal influence between the individual's ageing process and the societal expectations and structures surrounding it. [7] Cohort-specific events such as wars, economic crises or social movements can have a significant impact on an individual's life course and ageing experience. Although these events play a crucial role in shaping the ageing process, they are beyond the scope of this discussion. [18] As emphasised at the outset, defining ageing is a complex task that encompasses many different aspects of life. Ageing is characterised by individual diversity and heterogeneity within social structures, recognising the complex interplay between personal experiences and societal influences. [13]

2.1 Health and morbidity in old age

The lives of older people are often associated with the terms ‘health’ and ‘illness’. With advancing age, the likelihood of being affected by health-limiting impairments increases. In the ageing process, health can be influenced by multidimensional factors such as lifestyle and living situation, aspects of medical and nursing care and social conditions. [19] Ageing in good health is cited by older people as one of the most important goals in life, as healthy ageing is often equated with maintaining autonomy, participation and function, meaning that health in old age is highly valued. [20,21] However, a classification of physiological ageing processes and pathological events cannot always be clearly defined, particularly in old age.

Health was defined by the WHO in 1948 as "a state of complete physical, mental and social well-being and not merely freedom from disease and infirmity".[22] Furthermore, according to the WHO, health in old age is a basic building block that allows people to lead an individually, socially and economically productive life. The foundations for healthy ageing depend on various factors throughout the entire life process, which can be influenced both individually and socially. Sigmund Freud equated health with performance and role fulfilment and thus saw the importance of health as part of social life. vgl. [20] Chronic illnesses and multimorbidity are common phenomena, particularly in the older population, which can restrict everyday competencies. [23] Increasing physical and cognitive limitations can lead to latent-to-pronounced functional losses, which can change the individual’s potential and their role in society. [24]

General human vulnerability is also referred to as 'fragility' in the context of ageing. This term refers to both a person’s physical and mental condition and, as a counterpart, often triggers the association of a person's resulting neediness and, ultimately, susceptibility to care. Although ageing

does not always mean illness and dependency, the increased risk of chronic illness and multimorbidity suggests that vulnerability increases with age.[25]

Taking into account the ageing society, an increasing number of people with chronic (sometimes progressive) diseases and an increase in the number of older people with multimorbidity are also reported for Germany. [26] Multimorbidity is the simultaneous presence of at least three chronic diseases that require equal treatment. These include cardiovascular disease, diabetes mellitus and stroke. Correlations among the coexisting conditions may occur but are not mandatory. [27-29] Existing multimorbidity is often associated with a reduction in quality of life and an increase in mortality, in addition to functional health impairment. [30] As a result, the use of health services in the Federal Republic of Germany has been increasing for several years. On average, people with multimorbidity visit a doctor more than twice as often within a year as people without multimorbidity. Studies analysing the use of healthcare services and their costs often show a correlation between the number of comorbidities and the frequency of use of healthcare services. [28,31]

The care of multimorbid patients requires a holistic approach, not just symptom management. Multimorbidity is not a complex of multiple symptoms and cannot be seen as a simple addition of diseases. Lifestyle, psychosocial and socioeconomic factors can have a significant impact on the course of the disease. To date, no guidelines exist for the medical management of multimorbidity. [32] As a result, existing multimorbidity is often treated by different (specialist) physicians and with different medications, with a high risk of polypharmacy, the "simultaneous use of more than 4-6 medications". [33] Polypharmacy is often the result of curative treatment of individual diseases without a holistic view of multimorbidity. The incidence of polypharmacy also increases with age. [33,34] Most patients with polypharmacy are over 65 years of age; approximately 42% of those over 65 years of age with statutory health insurance had polypharmacy (>five prescription drugs). Some medications, even when used alone, are thought to reduce mobility and increase the risk of falls in older people. [35-37] Drug switching and/or adverse drug reactions may also increase with polypharmacy in older people due to age-related decline in organ function. [38] As a result, medication adherence may be compromised, hospital and emergency admissions may increase (5% of hospital admissions are due to adverse drug reactions), and the course of geriatric diseases such as dementia may worsen. [29] In addition, the risk of delirium increases with age, exacerbated by medication use. [39,40]

Another term used concerning ageing is 'frailty'. Frailty is a geriatric syndrome defined as reduced resistance to stressors. The frailty syndrome is caused by a reduced physiological reserve capacity,

which can lead to an increased susceptibility to typical geriatric complications such as falls, increased hospitalisation, decline in independent living and death. [28,41] Approximately 2.8% of women aged 65-79 years and 2.3% of men of the same age meet the criteria for frailty syndrome. [42] Clinically, frailty syndrome can manifest as mental exhaustion, reduced physical activity, muscle weakness, weight loss of more than five kg per year and reduced walking speed. [43] Although the relationship between multimorbidity and frailty is not clear, frailty is often associated with morbidity and mortality. [29] The geriatric syndromes of multimorbidity and frailty increase the risk of mortality and institutionalisation. [44]

The phenomena of vulnerability, multimorbidity, polypharmacy and frailty described above can change the lives of older people enormously and are no longer rare due to the changing demographic age structure. These phenomena are also associated with a reduction in independence and quality of life and an increase in hospitalisation and institutionalisation. [30,45-47] Isolated geriatric symptoms cannot always be attributed to one of these phenomena, so a holistic approach to the older generation in the healthcare system seems indispensable. The care of older people therefore requires the interaction of different care actors and the networking of different care sectors. [48]

2.2 Medical and nursing care needs in old age

Chronic illnesses, multimorbidity, frailty and increasing vulnerability can jeopardise independence and everyday skills, particularly in old age, and lead to a need for care. As described in the previous chapter, in many cases the ability to cope independently with everyday activities can be limited, so an increasing need for care is also assumed with increasing age. [49,50]

The German care system offers both deficit- and symptom-orientated and resource-orientated care services. The symptom-orientated approaches include, in particular, diagnostic procedures, curative acute care and palliative care, while the resource-orientated approaches can primarily be attributed to rehabilitation. The aforementioned care approaches can be used in the home environment and the outpatient, inpatient and day-care sectors. Geriatrics is responsible for the healthcare of the older patient group. Geriatric healthcare pursues an interdisciplinary approach to care and is interlinked with medical, nursing, rehabilitative and social institutions, among others (see Figure 1).

Figure 1: Geriatric healthcare (author's illustration based on Polidori & Häussermann) [29]

The concept of geriatric healthcare is therefore fundamentally holistic, but the levels of care in geriatrics in Germany still exist mostly in strictly sectorised structures due to systemic templates. No geriatric levels enable an interface between the different care sectors and funding centres. [51] In particular, the long-term illnesses of the older generation require complex healthcare that can fulfil the goal of maintaining autonomy, independence and quality of life despite functional limitations. [52] Socially, the holistic and continuous care of the ageing population is having an impact on the healthcare system through increasing utilisation of healthcare services. [53-55] The aim of healthcare for older people is therefore to prevent the progression of illnesses and the need for care and to maintain activity in everyday life and participation in social life. [56]

Responsibility for the objectives, organisation and financing of the healthcare system lies primarily with the Federal Ministry of Health, health insurers, quality assurance institutions, associations and patient representatives, health-related service providers and suppliers of medical products. The complex task of ensuring standardised living conditions, health opportunities and the needs of an ageing society is attributed to the state, associations and committees. [57] The challenges posed by the increased utilisation of medical care services are highly topical in an ageing society. The acute medical care sector is already characterised by the increasing use of inpatient services with increasing age. [52,58,59] However, medical care in the outpatient sector is also characterised by challenges. For example, the use of GP visits also steadily increases in old age. According to the Robert Koch Institute, among patients over 65 years of age, [60] around 94% have had contact with

an outpatient medical provider within a year. The GP is still the first point of contact for questions about health-related problems [61]. Around 50% of GP services are utilised by people over the age of 60. GP care is highly relevant for the older generation and appears to play a key role in their lives. [62] However, an increasing relevance of specialists can also be assumed due to the increasingly complex course of diseases in old age. [17,63]

Not only medical care is increasingly coming into focus. In 2015, 2.9 million people required long-term care as defined by the Long-Term Care Insurance Act [59]. The original concept of the need for long-term care under Section 14 (1) sentence 1 SGB XI had its legal justification in the years between 1996 and 2016, according to which people were considered to need long-term care if they had significant limitations due to physical and mental impairments in carrying out everyday activities such as personal hygiene, nutrition, mobility and housekeeping [64]. From 1 January 2017, a new definition of the need for long-term care was introduced in response to the changing needs of an ageing society. According to this, the need for care is no longer equated with the need for assistance in carrying out everyday tasks, but rather as an impairment of independence in carrying out certain activities and areas of life [65]. A special assessment tool is used to categorise the severity of the need for care under Section 14 (1) sentence 1 SGB XI into five different care levels. These determine the entitlement to the respective care services based on six care criteria. The rapid increase in the need for long-term care to date is expected to increase even further as a result of the reform of the care degree concept. [66]

The care sector is organised by various institutions, including (semi-)inpatient care by care facilities, home care with the support of outpatient care services and sole care by relatives. [67] The overall trend is towards ambulantisation in the care landscape: According to the Federal Statistical Office, [68] in 2017, 51.7% of people in need of care were cared for solely by relatives at home, while 24.3% were supported by care services and 24% were accommodated in inpatient care facilities. Inpatient care facilities mostly care for people in need of long-term care who are very old. In many cases, the need for care therefore means a restriction of independent mobility and lifestyle. Consequently, the housing situation may also change as a result of an existing need for care.

2.3 Ageing in social environment

Independent and self-determined living is a central aspect of the lives of older people. The older generation spends a large part of the day in their immediate living environment simply because they are no longer working. [69] In social and socio-political terms, the issue of housing is therefore becoming increasingly important as life expectancy increases. Living in private housing is still prioritised in old age. Around 93% of people over the age of 65 live in private households. [70] This

is followed by nursing and retirement homes (4%) and other forms of housing. In the population group of over 80-year-olds, the proportion of people living in fully residential facilities is already 11%. Given the increasing number of very old people, the relevance of inpatient forms of living and care will not diminish in the future. [71]

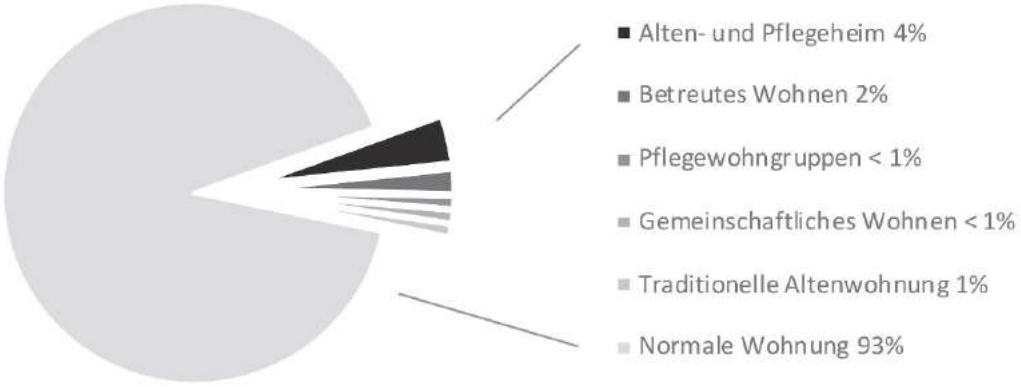

Figure 2: Housing forms for older people in Germany[1]

In the event of a need for care, the majority of respondents would prefer to be cared for in their homes, while the very elderly were more likely to favour accommodation in a care facility [72]. Care facilities therefore represent a realistic form of housing, particularly for the very elderly in need of care[73]. However, despite the variety of forms of housing in Germany's residential landscape, long-term residential care also appears to be the alternative to a private household in the event of a need for care.

3. LTCFs in Germany

Around 4.1 million people in Germany require care. [74] Of these, 818,000 people (20%) are accommodated in 15,400 nursing homes for full residential care. [75] Approximately 70% of nursing home residents have dementia. [76] Demographic projections suggest an increase in the number of people in need of care with multiple health conditions and with dementia.[77] Despite the many attempts to increasingly strengthen the outpatient sector, a significant increase in inpatient care capacities has been observed for years. [78] An LTCF is a fully inpatient form of care for older people with care needs, which specialises in providing comprehensive care for those with a pronounced restriction of independent living and an existing need for nursing care. [73] Despite the guiding

principle of "outpatient before inpatient", which is set out in § 13 SGB XII, the importance of retirement and nursing homes in Germany is steadily increasing.

3.1 Organisation of LTCFs and QOC

How is fully inpatient long-term care defined in Germany, and what are the regulations and requirements in the legislation?

LTCFs, i.e., nursing, are defined as independently operating facilities in which persons in need of care are cared for under the permanent responsibility of a trained carer and can be accommodated and catered for all day (full inpatient care). [79]

The infrastructure of inpatient care facilities in Germany is regulated by three organisations. The minority of care homes are under the public responsibility of municipalities and districts (4.8%), while the majority are run by non-profit (52.7%) and private (42.6%) organisations. [68] The non-profit operators mainly belong to church organisations. Some private operators are individual facilities run by private individuals or care home chains operated by companies. The provision and financing of services and care are therefore entirely the responsibility of the respective operators. The care facilities also differ in terms of whether they are considered to be exclusively inpatient LTCFs or also offer day and night care and short-term care. As described above, the majority of care facilities are purely inpatient LTCFs. If full inpatient care services are utilised, the care home contract is concluded between the resident in need of care or their guardian and the provider. [80]

If outpatient or semi-residential care services are no longer sufficient to cope with everyday life, inpatient accommodation in an LTCF is usually unavoidable. As a result, the majority of people in need of long-term care and the very elderly live in full inpatient facilities. The residents of inpatient LTCFs are characterised by a need for care, which can manifest itself in both physical-functional and psychosocial impairments. [3,81]

The majority of care home residents have mobility restrictions that are relevant to everyday life [29,78]. In addition to the risk of falling, typical age-related illnesses such as multimorbidity, frailty, and visual and hearing impairments dominate the physical illness spectrum of nursing home residents. Furthermore, the proportion of cognitive disorders (e.g., attention and memory impairment) in nursing home residents is estimated at around 60-80%. [78] Dementia clearly dominates among the mental health impairments of nursing home residents. [82,83] In older people without dementia, the risk of moving to an inpatient care facility increases eightfold if depression is present, so in addition to dementia, depressive illnesses characterise the picture of nursing home residents. Other psychological impairments in care homes include anxiety and addiction disorders in particular. [84] However, in addition to the numerous clinical pictures, another phenomenon is

becoming apparent in the resident population: One in five residents of an inpatient LTCF dies within a relatively short period, even in this facility. [82,85] Around 22% of residents die within the first six months of being admitted to a care home; after a year, this figure almost doubles. Care homes are therefore increasingly becoming places where people die. [82] This trend is reinforced by structural requirements to reduce the length of inpatient hospitalisation. Patients with a reduced general condition are increasingly being admitted to a nursing home after hospitalisation. [86,87] This further changes the needs of nursing home residents and poses new challenges for society and care providers. [87]

The current shortage of carers in Germany numbers over 30,000, and the demand for professional care services will continue to rise in the future. [88] At the same time, the younger generation's interest in pursuing this profession is declining significantly. If we assume the same staffing requirements as in 2017, considering the increasing need for inpatient care, around 100,000 additional carers would be needed in the fully inpatient care sector over the next 11 years, and as many as 700,000 by 2060. [89] The facilities themselves are already severely overstretched in terms of staffing, and rural regions are particularly affected by this care shortage. [90] Against the backdrop of the current skilled labour problem, the burden on nursing staff will remain unaddressed for the time being, which could jeopardise the QOC. [66,91] At the same time, stress in care can have enormous effects, as research continues to show. [92-94] In addition to the constant physical strain that carers are exposed to daily, psychological aspects such as stress and burnout play a non-trivial role in everyday working life. Employees in the care sector are increasingly taking sick leave throughout the year, which can extend over more than six weeks. Compared to other occupational groups, they are also disproportionately affected by musculoskeletal disorders, psychological complaints and respiratory diseases. [92]

In the research landscape, the background to stress is widely discussed: In particular, objective, structural components of everyday working life are considered; however, individual coping strategies for dealing with stressful factors are also increasingly coming into focus. Accordingly, almost half of the nursing staff in an expert survey by Ehegartner et al. [95] rate their ability to work as critical to moderate and expressed a need for training on the topics of stress (80%), coping with conflict situations and teamwork (70%). A further need expressed was for information in the areas of dealing with relatives, demanding nursing staff and back training.

The problem is becoming more acute against the backdrop of the ageing of carers. In addition, the carers' ability to work is significantly restricted by the particular stresses and challenges of the nursing profession, which often leads to early retirement. At the same time, the shortage of junior

staff continues, which emphasises the urgent need for action to maintain the quality of inpatient long-term care in the care sector. [95]

Another aspect of the topic of care quality is nursing responsibility. The concept of nursing responsibility is made up of the collective and personal responsibility of carers: an interplay between the nursing team's understanding of responsibility for improving the well-being of residents and the personal responsibility of individual carers for their professional actions. [96,97] Recognising professional skills, competencies and appropriate induction phases are beneficial factors, as they can strengthen the sense of responsibility in the profession in the long term. Working together to establish a caring culture within the team enhances the conceptual understanding of professional subjectivity and promotes teamwork. [97] This can cultivate a collective culture of care that promotes consistent adherence to a defined standard of quality. [98] The organisation of the collective is important here. Nursing cultures with unclear responsibility structures have a comparatively negative influence on a person's nursing responsibility due to unclearly defined areas of responsibility. Discrepancies between informal and formal structures within a nursing culture, e.g., management tasks being allocated based on personal sympathy, increase mistrust within the team. The reaction is often a culture of blasphemy, in which constructive criticism of the collaboration is considered inadmissible. Furthermore, a lack of division of responsibilities and overly rigid hierarchies can lead to insecurity in one's actions. [99,100]

In the interests of the welfare of people in need of care, in addition to statutory staffing levels and organisation, efforts should be made to strengthen internal staffing structures and the care culture so that the care profession can become more attractive and gain prestige.

3.2 Medical care in inpatient long-term care

Ageing is one of the most decisive determinants for the utilisation of the healthcare system.[101] The morbidity of this vulnerable group of people requires a high level of medical and nursing care. While the nursing responsibilities, structures and cost bearers in the inpatient care sector are clearly defined, the medical care situation in care facilities is still unclear in some cases and not adapted to the special and yet very different care needs of care home residents.

Medical care in nursing homes falls under outpatient medical care and is primarily provided by GPs. [102] As inpatient care homes are considered residential facilities, medical care is generally no different from that provided to people living in private homes, as inpatient LTCFs are obliged to ensure that all residents receive medical care. [61,102] Nursing home residents also have the right to a free choice of doctor. In reality, this is rather difficult due to the residents' limited ability to communicate and cooperate and the structural organisation by carers and doctors. [61,103] As a rule,

care facilities conclude cooperation agreements with GPs, specialists and dentists, in which information on the frequency of medical visits and the organisation of medical on-call duty is to be regulated. In legal terms, doctors are therefore considered external partners of the care facilities. [102,104] The costs of medical care services for care home residents are therefore billed via the statutory health insurance (SHI) or private health insurance (PHI) companies. [105,106]

On closer inspection, however, medical care for nursing home residents differs in some respects from ordinary households. Due to increasing physical and mental functional limitations, self-determined utilisation of medical care services is often not (or no longer) feasible, so these often take the form of visits to the home. [107] According to a survey of 782 care service managers of inpatient care facilities, around 3% of residents can make doctor's appointments independently and around 16% require support to make a doctor's appointment outside the facility. The majority of visits to the doctor are therefore home visits. [108] As several studies show, residents in care facilities have higher contact rates with GPs than with specialists, such as orthopaedists, gynaecologists and ophthalmologists. [61,105,109] The frequency of contact between neurologists and nursing home residents in need of care is also proving to be inadequate. According to the guidelines of the German Society of Neurology, the frequency of contact between neurologists and nursing home residents who frequently have dementia and other (neuro-) psychological impairments should be optimised. [110] A home visit by a neurologist should take place at least once a quarter, which is not realised. [111] In fact, 15% of nursing homes do not receive any care from neurologists and in 24% no residents are cared for by psychiatrists. [108] Nevertheless, some results show that despite this underuse, possibly for compensatory reasons, more extensive drug treatments with psychotropic drugs and antidepressants are conducted in long-term inpatient care. [105,112] Whether the pharmaceutical treatment is also appropriately controlled remains to be seen.

Nursing home residents receive an average of four or more medication prescriptions per quarter. [105] Approximately two-thirds of nursing home residents are polymedicated (taking >five medications) when long-term and on-demand medications are included. [113,114] In the medical care of nursing home residents, this situation already presents a high risk. [115] The actual medication given to 11.3% of residents differed from the doctor's orders. Nursing documentation showed that the wrong medication or the wrong dosage was given. Inadequate documentation of medication requirements by doctors may be a major contributor to this situation. [36] Further attempts at explanation are based on the assumption of insufficient inter- and intra-professional communication between various medical and nursing care providers. [105]

Poor communication between care homes and hospitals is also recognised as a major cause of medication errors, poor follow-up and avoidable hospitalisations. [116] In most cases, the nursing staff is responsible for administering home residents' daily medications. Only in rare cases are residents able to take their medication as required by themselves or with the help of relatives. [117] Against this background, the need to strengthen interdisciplinary communication is urgent. Another aspect is the delayed diagnosis of diseases in very old people who are treated exclusively by their GP without specialist care. [118] Due to inadequate documentation in the residents' files by the medical profession, nursing staff have doubts about the timeliness and accuracy of documented diagnoses. [108]

In summary, the medical care of nursing home residents is characterised in particular by a lack of or unsatisfactory specialist medical care. [119] Medical care is largely delegated to GPs, so in many cases, care cannot be provided according to need. Another problem is inadequate communication and documentation of long-term and as-needed medication in care facilities. This often leads to discrepancies between the actual medication therapy and the instructions given by the healthcare provider. This can lead to both overuse and underuse of medication for nursing home residents. [119,120]

4. (Acute) healthcare in Germany

As described above, demographic trends mean that the number of people in need of care, and therefore the need for emergency medical services, will continue to increase. [121], [122] Due to increasing vulnerability, medical emergencies among residents are common in residential care facilities. Carers often call the emergency service out of necessity when the GP cannot guarantee a home visit, or when the carer cannot wait for a home visit based on a subjective assessment of the resident's health. [123,124]

The following chapter begins with a recapitulation of acute healthcare in Germany in terms of definitions and organisational and socio-political functions. A special section is devoted to the structurally poorer rural regions of Germany. In addition, the challenges posed by demographic change to (acute) healthcare are analysed and the current situation in inpatient care facilities is discussed in particular.

As the most important element of public services of general interest, (acute) healthcare in Germany pursues the goal of comprehensive, needs-based medical care. [125] So-called demand planning aims to provide comprehensive, needs-based medical care close to where people live. Certain key figures

define areas of overuse or underuse in the medical care landscape and show these in the regional planning areas. Nationwide, a ratio of 1 doctor per 1671 inhabitants is considered optimal for GPs and family doctors. Exceeding this ratio by approximately 10% is classified as overprovision; falling short by 25% is considered undersupplied. [126]

Globally, (acute) healthcare is organised into the areas of prehospital (acute) healthcare and clinical (acute) healthcare. Prehospital (acute) healthcare includes all emergencies outside the hospital. This includes the areas of first aid, often also referred to as lay assistance, first responders, the rescue service and the medical on-call service or emergency service. Clinical (acute) healthcare includes the in-clinic interfaces of (acute) healthcare, i.e., the emergency outpatient department or emergency room. [127] The areas have in common, however, the guarantee of nationwide access to healthcare services for all citizens, which is why emergency medicine in the Federal Republic of Germany enjoys a high reputation both nationally and internationally. [128]

In the Federal Republic of Germany, (acute) healthcare is organisationally based on historical structures and exhibits regional differences due to the different responsibilities that exist at the federal and state levels. Effectiveness and efficiency problems have dominated (acute) healthcare since 1991. The system is not fully transparent due to closed organisational subsystems. The interface problems and the nationwide lack of unity in the overall (acute) healthcare system represent a significant proportion of the risk to patients.

As a general rule, ‘simple emergencies’ are the responsibility of GPs in private practice or the statutory health insurance emergency service, while serious emergencies are dealt with by the emergency services and hospitals. What, though, do the terms ‘emergency’ and ‘emergency patient’ actually mean? The following section defines some of the key terms used in emergency care and provides an overview of the various players involved in (acute) health care.

The definition of an emergency patient is based on the DIN 13050 standard, which defines an emergency patient as a "patient who is in immediate or expected danger of death due to illness, injury or other reasons, requiring (acute) healthcare and/or monitoring and, if necessary, appropriate transport to further diagnostic facilities or medical treatment" (Cf. DIN 13050). The Duden dictionary defines an emergency as "an unexpected situation in which help is needed quickly". [129]

A more specific definition of an emergency is "a sudden event that poses an immediate threat to the life and health of the patient. The vital functions are threatened, disturbed or failed due to injury or acute illness." A differentiation from an acute case is that in the latter, the suddenly occurring condition does not have to represent a vital threat. Such an assessment of a supposed acute case is

usually the responsibility of the medical (emergency) on-call service. [130] A further classification of medical emergencies can be differentiated according to the type of treatment location: If an emergency patient is discharged back home after extensive diagnostics and the necessary treatment and, if necessary, continues to be cared for by registered doctors during regular consultation hours, this is an outpatient emergency, regardless of the actual place where the emergency service is provided (e.g., the on-call medical service or the hospital ED). Patients who require urgent, unplanned hospitalisation due to acute danger to life are considered inpatient emergencies. [131]

Emergency medical care therefore includes the immediate medical and nursing care of people who find themselves in a life-threatening situation due to an acute emergency or who consider themselves in urgent need of treatment. The provision of emergency medical care during regular consultation hours is the responsibility of GPs and specialists in private practice. Outside of regular consultation hours, i.e., in the evenings, at weekends and on public holidays, the on-call medical service/emergency service of the Associations of Statutory Health Insurance (SHI) Physicians, the ambulance service and the EDs of hospitals are the points of contact in emergencies. The spectrum of emergency care ranges from care needs that can consist of simple counselling services to acutely life-threatening treatment options. [132]

As mentioned above, numerous players are involved in the provision of emergency medical care. The three pillars of emergency care in the Federal Republic of Germany are therefore the outpatient care provided by the Association of Statutory Health Insurance Physicians , the ambulance service and the hospital ED. These pillars are organisationally structured and financed largely independently of each other. [133(p261)]

To provide immediate care to people with urgent illnesses outside of consultation hours, Germany has an on-call service or emergency medical service. Every panel doctor is obliged to participate in the medical on-call service. [134]

The medical on-call service or emergency service is organised by the Association of Statutory Health Insurance Physicians and aims to provide medical care outside of surgery opening hours. In acute cases of illness (not life-threatening), this service has been available to every citizen nationwide since 16 April 2012 on the free telephone number 116117. This service is obliged to provide the patient with appropriate and adequate care based on the symptoms described until the next possible outpatient or inpatient treatment. For life-threatening emergencies such as a heart attack or stroke, emergency patients and/or first responders continue to dial the nationwide ambulance service via the EU-wide number 112. [135]

Life-threatening emergencies that require immediate emergency rescue with emergency medical care and/or urgent transport to a hospital are dealt with by the rescue service in Germany. The specific legally defined task of the rescue service is to preserve the life or health of emergency patients, to make them fit for transport and to transport them under specialised care to a suitable facility for further treatment (North Rhine Westphalia Rescue Service Act). As rescue services in Germany are regulated at the federal-state level, each federal state has its own rescue service law. They are therefore organised and supervised by the responsible state ministries. In almost all federal states, however, the task of ensuring the provision of rescue services has been transferred to the local authorities, meaning that the planning and regulation of rescue service provision is the responsibility of local authorities. The financing of rescue services from the scene of the emergency to the hospital door often follows a dual principle: Running costs are borne by SHI or PHI, while investments in rescue services are funded by the municipalities. [127,131,136]

In hospital EDs, emergency patients generally undergo the necessary initial diagnostics and subsequent stabilising initial treatment. After treatment, a decision is made as to whether the emergency patient requires inpatient treatment or whether further outpatient care should be considered. Most hospitals in Germany have several specialised emergency units to ensure targeted emergency care around the clock. Hospitals can then bill the regional health insurance funds for emergency services provided with the help of a calculation of the so-called "standardised assessment scale" (EBM). [131]

In the event of an emergency, patients and/or relatives or first responders in Germany can therefore turn to a registered contract or on-call doctor, the ambulance service or the hospital ED.

4.1 Challenges facing (acute) healthcare provision in Germany

In the status quo, acute healthcare in Germany is characterised by various inefficiencies. As described above, emergency care in the Federal Republic of Germany is organised into different sectors. [131]

However, the system is overwhelmed by the demands of directing emergency patients to the appropriate structure. The number of ambulance call-outs is constantly increasing, waiting times in hospital EDs are rising and hospital admissions are growing. [131,137,138]

The strict separation of sectors means no or insufficient coordination between the areas involved in emergency care. In some cases, clear and uniform definitions of responsibilities are lacking for a joint cross-sector organisation of the various areas of responsibility in emergency care.

The responsibilities and areas of responsibility for emergency care are anything but transparent for the end user, i.e., for patients and relatives. At present, the institutional emergency care centres are freely selectable for every citizen. In an emergency, the affected person or lay helper decides which sector to turn to without prior contact. The layperson therefore defines the emergency from their subjective assessment at the time. Patients are expected to find their way through the jungle of sectors, a service that not even the providers involved can provide in full. Ultimately, in certain medical situations, patients have to make use of several emergency care providers at once until they reach the appropriate authority. [127,139]

Patients with a low urgency of treatment are increasingly being held responsible for the rising numbers of emergency patients in EDs. [140-142] In a survey by Somasundaram et al., [143] 37% of patients had tried to see a registered doctor in the outpatient sector before visiting the ED, but in most cases, this was not possible due to closed practices or holidays. Only 11% of patients had contacted the KV on-call service in advance. Over half of those affected were not even aware of this service. This confirms the widespread assumption that awareness of the 116117 number is still relatively low. In some cases, the availability of this service is also limited and not guaranteed around the clock. Many emergency and on-call practices are already located in or near hospitals to minimise the number of services required by medical providers within hospitals. [139] However, no uniform organisation of spatial allocation or even opening hours exists here either. In addition, the range of services offered by hospital EDs without an emergency practice continues to exist. [144] Due to a lack of patient management, the existing care sectors do not always appear to be targeted in an emergency. As a result, patients are often directed to the appropriate level of care very late or not at all. As a result, Eds are increasingly treating patients who arrive as so-called self-presenters but could be treated in the outpatient sector. [145]

In some rural regions of Germany, a drastic population decline can hardly be averted and will have a major impact on the sustainability of emergency medical care in the affected regions [146(p37)]. A reduction in the overall population in rural areas has been a fact for years; it is characterised by an exodus of the younger generations, whereas the proportion of older people remains constant and is therefore increasing proportionally. [147] In the affected regions, this is having a significant impact on infrastructure facilities for public services such as schools, roads and inpatient and outpatient emergency care. [4,148] The medical profession in private practice in rural areas is also affected by geodemographic change. A decline in medical care structures is exacerbated in rural regions in particular by the migration of younger generations and the age-related retirement of medical service providers.[125] Doctors in rural regions are faced with an increasing number of older patients. At the same time, the level of infrastructure and thus the attractiveness of the location and/or place of

residence is subjectively declining for younger providers. The ageing trend in rural regions is having a huge impact on the provision of medical services.

Emergency doctor services at hospitals in rural regions are also increasingly struggling with the shortage of doctors. Additional emergency services have to be provided alongside regular hospital services, pushing medical providers to their limits. In rural areas, adequate utilisation of the medical infrastructure only appears to be possible through cooperation between the various sectors, i.e., cross-sectoral care models. [125]

The ageing clientele also has a far-reaching impact on the structures of emergency care. [149] Around a third of patients in German EDs are 70 or older [150]. Due to demographic trends, an increase in elderly patients is also to be expected in the field of emergency medicine. Emergency care must therefore adapt to the special needs of this multimorbid patient group. [151] As explained in Chapter 3, many elderly people are subject to physical and psychological geriatric syndromes. Geriatric syndromes such as delirium often remain unrecognised in hospital EDs due to the complexity of the symptom complex. Increased mortality and prolonged hospitalisation can result from incorrect identification of these conditions.

The treatment of emergency patients begins with the assessment of the emergency, which proves to be non-trivial in geriatric patient groups due to existing cognitive impairments. In addition, many of the patients have pre-existing acoustic and visual impairments, which can influence the independent transfer of information and lead to an information deficit. This procedure is often resource-intensive and leads to hospitalisation of the patient. [152]

Given the increasing number of emergency patients and the heterogeneity of the changed care requirements, cooperation between outpatient and inpatient care providers is urgently required. The current structures must be adapted to the changing requirements of emergency care. The aim is to efficiently organise the necessary service structures and enable needs-based management and care for patients.

4.2 (Acute) healthcare provision in LTCFs

The population of nursing home residents is characterised by vulnerability and frailty. Physical and mental health impairments and multimorbidity pose particular challenges in medical and nursing care. Older people in particular show an increased prevalence of (fall) injuries, fever, infections and other symptoms that require complex healthcare. However, a clear decision in favour of the "right" care structure cannot always be made, particularly in an emergency, due to existing comorbidities and vulnerability. [153,154]

The problems of inadequate primary medical care for nursing home residents described in Chapter 4 also have an impact on emergency care. Nursing home residents are increasingly exposed to the risk of hospital transfer in emergencies, primarily due to problematic medical care in inpatient facilities. [155,156] For years, increasing emergency medical services interventions and hospitalisations have determined the picture of emergency medical care in inpatient care facilities. [157] Several studies confirm both the increasing number of hospital transfers in many parts of Germany over the years and that nursing home residents are increasingly being treated in hospital EDs. [108,158] According to federal health reporting data, a total of 922,969 ambulance call-outs in 2005 involved nursing home residents. This corresponds to 7.6% of all call-outs; ten years previously, this rate was still 3.3%. [105] The MUG IV study found that 30-40% of nursing home residents were transferred to the hospital at least once a year. [159] According to analyses of the 2018 Care Report, [160] as many as one in five residents of an inpatient care facility was admitted to hospital once a quarter. A high proportion (around 40%) of these hospital visits are categorised by experts as potentially avoidable. [154,160,161] Kada et al. [162] conducted a mixed-methods study to investigate this phenomenon. According to the authors, 31% of hospitalisations of nursing home residents lasted no longer than two days, while 21% lasted less than 24 hours and could have been treated by outpatient care services. According to Balzer et al., [105] in particular inpatient admissions and ambulance transports were carried out for diagnostic purposes. Hospitalisations, ambulance call-outs and recurrent visits to EDs can represent a considerable health risk for nursing home residents. [163,164] They are often considered to be the cause of iatrogenic and nosocomial infections of the urogenital tract and pneumonia. [105,160] In addition to other clinical reasons for hospitalisation such as strokes, pneumonia and cardiac insufficiency, Bleckwenn et al. [124] cited the overburdening and relief of care staff, the wishes of relatives and residents and the improvement and maintenance of residents' quality of life. Certainly, the aim should continue to be to recognise acute health crises in good time and, if necessary, to initiate a transfer to acute inpatient care without unnecessary delay. On the other hand, the legitimate question arises as to whether numerous hospitalisations and emergency service deployments cannot be avoided in future, on the one hand from an economic perspective, but primarily in the interests of the residents.

Increased transitions among various care settings can represent a considerable stress factor for nursing home residents. The side effects of a hospital transfer or stay are also confirmed by the nursing and medical professions. The majority of the medical professionals surveyed stated that hospital transfers are associated with high to very high levels of stress for senior citizens. The respondents cited agitation and nervousness, particularly in residents with dementia, as the main signs of the aforementioned "stress". [105] In patients with dementia, increased transitions are also

considered to promote delirium. [165] Another study stated that residents who are hospitalised often require a long recovery period and return to the nursing home in a deteriorated state: "(...) they come back much worse than when they went in and then the nursing staff usually need two months to bring the resident back to the same level mentally, because they are completely confused by this change (...)". [162]

Ultimately, nursing home residents in hospitals are subject to a greatly increased risk of mortality: 1-5% of residents die in the ED and a further 5-34% during their inpatient stay. [105,165] Even after discharge from the hospital, mortality remains at a very high level, with up to 52% of patients dying within three months of acute hospital admission. [123] In addition, around 30-40% of nursing home residents are re-hospitalised within the first two weeks after discharge, resulting in the so-called revolving door effect.

The admission rate in the last 12 months before the death of nursing home residents increases significantly again [166]: They spend 6% of their last year of life in hospital. Ultimately, the hospital is a place of death for many nursing home residents. [167-169] Sommer et al. [170] investigated whether patients in 11 nursing homes in Germany had living wills, whether they were meaningful and whether these were communicated accordingly with the staff in the facilities. In only 11% of cases were living wills available; they were usually not comprehensibly meaningful and remained unnoticed by the nursing staff. Evans et al. [171] confirmed this information on living wills in care facilities. This suggests that nursing home residents may still be exposed to hospital transport and/or hospitalisation at the end of life or in the last phase of life due to a lack of documentation of the patient's wishes.

While some GPs can be reached almost 24 hours a day via a private mobile phone number, some doctors are not available even after repeated calls to the practice. Carers frequently call the emergency services in such cases due to their high level of responsibility towards the residents. In addition, waiting for a doctor's surgery to call back is not uncommon. In some cases, care facilities are confronted with such long waiting times that acute cases even have to be handed over until the shift change, at the expense of the patient, who risks a deterioration in their condition as a result. [123]

A registered doctor not arriving at the nursing home despite an emergency would be because the GP rates lower the urgency of emergencies the carers consider to be highly critical.[172] The outpatient on-call service tends not to be biased in this respect due to the patient's unfamiliarity, but in rural areas in particular, long delays are due to long journey times, which means that carers

often end up having to call the emergency services. In addition, the on-call doctors often do not know the patients, which in many cases would lead to increased hospital admissions [173].

Seeger et al. (2019) used an analysis of health insurance data to show a high utilisation of medical services within the first year of moving into a care facility. Over a fifth (22.5%) of nursing home residents were presented to EDs without prior contact with a GP, meaning that the question of possible hospitalisation was delegated to the EDs. Around 60% of contacts with the on-call medical service took place at the weekend. Closer GP and specialist visits to care facilities during the week could therefore lead to a reduction in the presentation rates of residents to the emergency medical service at weekends.

4.3 Challenges of (acute) healthcare in Germany

However, the high demand for medical care services in nursing homes conflicts with the shortage of medical specialists described earlier in this chapter. In addition, ever-larger on-call service districts are responsible for long journeys, which make rapid accessibility significantly more difficult [123,174]. Added to this is the challenge that immobile, cognitively impaired patients cannot always undergo outpatient diagnostics. The lack of specialist expertise of emergency physicians in dealing with "difficult patient groups" can also lead to an increase in ambulance call-outs and hospitalisations of nursing home residents. [175] Barriers to medical care in nursing homes include economic and organisational reasons. In economic terms, providers criticise the unattractive remuneration rates for home visits according to the current standardised evaluation scale for medical services (EBM). In addition, the care of care home residents is at the expense of the practice budget.

In organisational terms, doctors describe communication with carers and the structures in care facilities as problematic. Specialists who are dependent on technical equipment for medical examinations are often limited in their options. [107] Cooperation between doctors and carers in inpatient facilities is also difficult. In an interview study with GPs on home visits in retirement homes by Bleckwenn et al., [124] some of the medical providers stated that a carer was not always available to answer questions about a patient or if a handover was required. In some cases, patients were referred to different carers, which on the one hand led to an information puzzle, and on the other hand, was time-consuming: "(...) you often find an auxiliary nurse or the employee who hands out the food, but it can take time to find a competent nurse or a nurse responsible for this patient. Sometimes 15 minutes can pass quickly." [124] Since some doctors make home visits during lunch breaks or in the evening, this situation is unsatisfactory.

Another aspect is the lack of standardised documentation of health parameters and therapies, so needs-based care is difficult to provide. In the case of multiple treatments by different medical providers, this can lead to medication errors and adverse drug reactions. [176]

In addition to the economic and organisational challenges described above, deeper cultural dimensions could also be responsible for the shortcomings in emergency care in care facilities. The socio-cultural change towards an ageing society and the precarious care situation, which will continue to become the focus of society in the coming years due to a lack of successor providers and will become increasingly acute in rural areas, reveal the acute need for action in emergency medical and nursing care. [119,177] At present, neither the challenges of providing information nor the changing care needs of the ageing population can be adequately met. [178] Care is currently primarily focused on acute illnesses and does not meet the multidimensional requirements of the multimorbid population in need of care. [179,180] As a result, a restructuring of the services and service providers is needed. [181] Integrated care concepts without sectoral boundaries could represent an opportunity here to meet the multi-layered needs of a needs-orientated care landscape. An integrative multi-professional network seems unavoidable and calls for a social discourse on the joint organisation of the care landscape. [180,182]

5. Integrated healthcare

Over the past two decades, the issue of Integrated Healthcare has risen to prominence for numerous governments and healthcare systems. [183-185] Faced with limited financial resources, ageing populations, and the prevalence of comorbid chronic diseases, [186-188] many nations have realised the need to shift from fragmented and discontinuous care models towards a more unified and integrated healthcare system. [189]

Research indicates the potential of integrated care to enhance the continuity, accessibility, quality, safety, and cost-effectiveness of healthcare services. [190-192] Recognised as a fundamental aspect of integration, care coordination centred around patients' needs plays an important role in delivering comprehensive and seamless care. [193] Primary healthcare has been identified as a key player in assuming this responsibility, especially as the complexity of healthcare needs increases. [194] Strengthening primary healthcare becomes imperative to provide more community-based care and to coordinate care within and across different levels of healthcare services. [195,196] Overall, integrated care is widely recognised for its potential to enhance accessibility, quality, and continuity in healthcare services, particularly for individuals with multifaceted needs.

The intricate nature of the underlying concepts within integrated care poses a challenge in its precise definition. Consequently, various terms, including "coordinated care" and "collaborative care," are employed to delineate the fundamental elements of integrated care. [197] These terms primarily convey the notions of defragmented, demand-orientated, and person-centred interprofessional healthcare services. [198]

The multitude of definitions associated with integrated care is a well-recognised phenomenon. [199] This diversity stems from the various yet legitimate purposes attributed to the term by different stakeholders within care systems. The divergence in perspectives is often driven by factors such as contrasting professional viewpoints (e.g., clinical versus managerial, professional versus patient) or the disciplinary orientation of the observer (e.g., public administration, public health, social science, or psychology). [200]

These principles highlight two fundamental characteristics of integrated care as a concept. Firstly, the key elements in the design and implementation of care systems that are otherwise fragmented must be amalgamated, aiming to integrate disparate parts into a cohesive whole. Secondly, the concept must entail the provision of 'care,' referring to the delivery of attentive assistance or treatment to individuals in need. Integrated care, therefore, materialises when the process of integration is essential to optimise the delivery of care. [180,201]

As this research focuses on the viewpoints of healthcare providers within the healthcare system, the following definition is preferred, representing the perspective of decision-makers: *"Initiatives seeking to improve outcomes for those with (complex) chronic health problems and needs by overcoming issues of fragmentation through linkage or coordination of services of different providers along the continuum of care."* [201]

This definition focuses on integrated care concerning chronic illness and multiple care needs. However, integrated care is a broader concept that extends to various other domains, including acute care and public health. [202]

Through sectoral networking and the reduction of sector boundaries, the aim is to increase cooperation among the various players in emergency care and to increase openness towards care facilities. Personal and cultural barriers and prejudices should be overcome. [5]

Overcoming organisational and structural barriers (information gaps, documentation errors) can be achieved through digitised patient records that are available to relevant healthcare partners in emergencies. [202] This can lead to improved communication among healthcare stakeholders and a reduction in misinformation. [203] This is expected to help improve the ability to act in an emergency.

In addition, access to patient information will also ensure that patients' wishes and needs are realised. [203,204]

The aim is to strengthen the skills of carers in emergencies concerning assessing the urgency of emergencies. [199,205] Telemedical procedures can offer support to carers by delegating emergency care tasks to them and allowing them to carry them out under the supervision of available medical expertise. [206,207] This strengthens personal and collective caring responsibility, giving carers more responsibility and enabling them to expand their skills. [207] The quality of life and the trust of those in need of care and their relatives increases as safety and security are conveyed. Carers do not feel ignored by doctors, which strengthens the collective awareness and image of the care facility. [208,209]

Primary care and integrated care are essential components of modern healthcare systems, embodying the principles of accessibility, comprehensiveness, coordination, continuity and patient-centredness. By integrating these key elements, healthcare organisations can improve the delivery of care, improve health outcomes and promote health equity across diverse populations. Future research and policy efforts should focus on advancing primary care and integrated care models to meet the evolving needs of individuals and communities in an increasingly complex healthcare landscape.

To date, no studies are known to have systematically synthesised integrated healthcare models in rural LTCFs and explored the perceptions and practice reality of healthcare providers in (acute) healthcare delivery in rural LTCFs. In conclusion, further investigating characteristics of (acute) healthcare provision in rural LTCFs from the perspective of healthcare providers and exploring their preferences for the future healthcare landscape can help us to better understand what influences their job satisfaction and well-being and how their perceptions might influence the actual provision of health services to the older people.

The following unanswered questions arise from the analysis of the current state of research on (acute) healthcare delivery in rural LTCFs and the impact of integrated care models:

- What approaches to integrated (acute) healthcare exist for rural LTCFs?
- What are the characteristics and the practical reality of integrated (acute) healthcare models in rural LTCFs?
- What is the impact of integrated (acute) healthcare on the job satisfaction and well-being of healthcare providers in rural LTCFs?
- What are the wishes and preferences of healthcare providers for the future (acute) healthcare landscape in rural LTCFs?

6. Objectives and methods

To address the outlined gaps in understanding integrated (acute) healthcare in rural LTCFs, the overall research question for this dissertation was: *What matters in developing (acute) healthcare for rural long-term care facilities?*

The dissertation was based on two projects dealing with existing integrated (acute) healthcare models in rural LTCFs. Also, perspectives, experiences and wishes for the future healthcare landscape focusing on integrated (acute) healthcare were addressed. After systematically summarising research on (acute) healthcare models in rural LTCFs, a qualitative design was chosen to meet the exploratory nature of the research question. In the following, the methodological approaches used in the two projects will be summarised. Table 1 presents an overview.

Table 1 Methodological overview of dissertation projects

Project	Objective	Data collection	Data analysis
Project 1 (Özkaytan et al., 2023) [210]	To synthesise and systematically present an overview of the large, diverse body of integrated (acute) healthcare and map the full range of elements used in the field in rural LTCFs	Systematic review of quantitative, qualitative, and mixed-methods full research reports; search conducted in electronic databases, additional electronic and hand searches, forward and backward citation tracking; inclusion of studies from all countries	Narrative synthesis using the meta-summary technique by Sandelowski and Barroso [211]
Project 2 (Özkaytan et al., 2024) [212]	To explore the perceptions and practical reality of LTCF nurses and paramedics in (acute) health risk situations and extract wishes and preferences for the future healthcare landscape based on elements of integrated (acute) healthcare	Qualitative interviews using a semi-structured interview guide	Thematic analysis using inductive methodology by Braun and Clarke [213]

Dissertation Project 1:

A systematic review of full research reports was conducted to answer the following research question: *What matters in developing (acute) healthcare for rural long-term care facilities?* Electronic bibliographic databases were systematically searched for qualitative, quantitative and mixed-methods studies that met the selection criteria. The search was completed by a forward and backward citation search and a keyword search in Google Scholar. The retrieved abstracts and full texts of results were independently screened against the eligibility criteria by two researchers. The synthesis compromised extracting, grouping and formatting the results, and statements were grouped by outcome category to create major topics using MAXQDA Analytics Pro 2020 (verbi software, Berlin). [214] An aggregation and synthesis of findings were conducted according to Sandelowski and Barroso. [211] The meta-summary results can be used as an empirical foundation for developing qualitative research projects as results of the summary can be seen as indexes of the included studies' participants' experiences.

Dissertation Project 2:

Drawing on the results and the outlined research gaps of the systematic review, a qualitative interview study was conducted to *(1) explore perceptions and practical realities of (acute) healthcare provision in rural LTCFs in Germany, (2) examine the presence of integrated healthcare elements in rural LTCFs in Germany, and (3) identify preferences for future acute healthcare provision from the perspective of LTCF nurses and paramedics.*

Twenty semi-structured individual interviews were conducted. The interview guide was based on the results of Dissertation Project 1. Participants were selected purposefully and audios of the interview were recorded and transcribed verbatim. Two researchers analysed a sample of transcripts according to the thematic analysis by Braun and Clarke, [213] an inductive method that aims to find patterns in the meaning of data to create content-driven themes. The codebook was developed in an iterative process of independently interviewing and analysing a core set of transcripts by two researchers to minimise subjectivity. Data coding was performed using MAXQDA Analytics Pro (verbi software, Berlin), [214] and data saturation, defined as the point at which no new themes emerged, was reached after 12 interviews.

7.Publications and results

In the following, the abstracts of publications resulting from the dissertation projects are listed. The original publications are available in the appendix.

1. Acute Healthcare Provision in Rural Long-Term Care Facilities: A Scoping Review of Integrated Care Models

Yasemin Özkaytan, Frank Schulz-Nieswandt, Susanne Zank. *Journal of the American Medical Directors Association*, Volume 24, Issue 10, October 2023, Pages 1447-1457.e1 https://doi.org/10.1016/j.jamda.2023.06.013

Two-year journal impact factor at the time of publication: **7.6**

Abstract

Objectives:

We aimed to map integrated care models for acute healthcare in rural LTCFs for future investigation.

Design:

A systematic scoping review.

Setting and participants:

Residential LTCFs in rural areas worldwide.

Methods:

The common health-related online databases were systematically searched, complemented by a manual search of the grey literature. Following the five-stage framework of Arksey and O'Malley, the extent of included literature was identified and findings were summarised using a qualitative meta-summary.

Results:

A total of 35 references were included for synthesis, predominantly primary research on completed and ongoing projects reporting on integrated healthcare services in rural LTCFs. Incorporating previous research, we extracted five approaches of integrated acute healthcare models: (1) availability of specialists, (2) networks, (3) quality management (QM) and organisation, (4) telemedicine, and (5) telehealth.

Conclusions and implications:

This research presents the result of a literature review examining integrated care models as a way to improve acute healthcare in LTCFs in rural areas. Integrated care models in rural settings can help face the challenging situation and fulfil the complex healthcare needs of LTCF residents by reducing fragmentation and thereby improving continuity and coordination of acute healthcare

services. These results can guide policymaking in creating interventions and support adequate implementation of care models by knowledge translation in healthcare.

2. **We need a radical change to take place now´- The Potential of Integrated Healthcare for Rural Long-Term Care Facilities.**

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   Two-year journal impact factor at the time of publication: **2.7**

Abstract

Objectives:

This study explores healthcare professionals' perceptions in rural German LTCFs, focusing on integrated health systems. The aim is to understand experiences, challenges, and preferences.

Methods:

Twenty nurses and paramedics participated in in-depth interviews. Thematic analysis was applied to transcripts, revealing key themes: acute healthcare provision, interdisciplinary collaboration, telemedicine use, and preferences for the future healthcare landscape.

Results:

Themes highlighted factors influencing acute care situations and the crucial role of interdisciplinary collaboration. Integrated (acute) healthcare was infrequently encountered despite high demand in rural LTCFs.

Conclusions:

Though uncommon, integrated healthcare remains crucial in addressing LTCF residents' complex needs. Healthcare professionals express a strong demand for integrated care in rural areas, citing potential benefits for resident well-being, healthcare effectiveness, and job satisfaction. The findings guide healthcare organisations in developing institutional-level strategies for integrated care integration, emphasising its importance in rural settings

8. Discussion of results

This dissertation aimed to reconstruct integrated (acute) healthcare models and investigate the perspectives of LTCF nurses and paramedics to understand what matters in the development of integrated (acute) healthcare in rural LTCFs. Different approaches were used to describe and

analyse the current reality of (acute) healthcare and the views, experiences and priorities of both groups in-depth.

Project 1 delivered the first comprehensive approach to synthesise quantitative, qualitative and mixed-methods reports on integrated (acute) healthcare models worldwide, enabling the mapping of relatable care models systematically and the extraction of essentials of integrated (acute) healthcare for rural LTCFs. This is important since considerable changes in healthcare and challenges are occurring because demographic change is increasingly becoming a reality and a focal point, and society is attempting to respond with innovations. As a result, the systematic review revealed that integrated care is multivarious and takes place in different ways. Within rural LTCFs, the implementation of integrated healthcare services offers an opportunity to deliver patient-centric support, meeting residents' needs while upholding care quality. In this context, acute healthcare remains pivotal, particularly in emergencies. Nevertheless, the strategic deployment of recent care innovations has the potential to sustainably impact the workloads of healthcare professionals and enhance patient satisfaction within rural LTCFs. Healthcare policy initiatives play an essential role in building capacities in LTCFs by improving access to (tele)communication, fostering collaboration, and ensuring the seamless continuity of healthcare delivery in rural regions. These endeavours aim to realise a demand-driven, high-quality care environment for LTCF residents. To our knowledge, this is the first study mapping out the huge range of integrated acute healthcare models in rural LTCFs.

To investigate the practice and the reality of integrated (acute) healthcare models in rural LTCFs, the interview study was subsequently conducted.

8.1 Understanding integrated (acute) healthcare for rural LTCFs

Drawing from the results of the systematic review, five different approaches of integrated (acute) healthcare models emerged: (1) availability of specialists, (2) organisation and QM, (3) networks, (4) telemedicine, and (5) telehealth.[210] However, no consensus was found on the typology of integrated healthcare in rural LTCFs. Our results show that different innovative constituents are applicable for use and go beyond previous regulatory healthcare supply in rural areas all over the world. These findings reflect the polymorphic character of integrated (acute) healthcare and underline the need for defragmentation in healthcare provision to reduce acute health conditions in LTCF residents ending in ED transfers and hospitalisations. [194,195,215]

While one goal is to reduce factors contributing to ED transmissions, the challenge is to establish an organisational and cultural change in existing structures within healthcare by focusing on

continuity, communication, coordination, and collaboration in healthcare delivery as the main characteristics of integrated (acute) healthcare.

Integrated (acute) healthcare interventions are complex interventions, with multiple interacting elements (e.g., different healthcare providers) and multiple levels targeted (e.g., organisational level or patient-level).[180] Integration operates across various levels, encompassing the macro level involving governmental formulation of policies to facilitate integrated (acute) healthcare in healthcare. Moving through the meso level, organisations play a crucial role in establishing connections and networks among healthcare service providers and other stakeholders. The micro level involves agencies and individuals directly delivering services to patients and service users. [180,216] The interdependence of these macro, meso, and micro levels is important. For instance, integrated (acute) healthcare provided by a team of healthcare professionals at the micro level relies on support and leadership from various provider organisations at the meso level, both of which are facilitated by policies established at the macro level. Consequently, significant convergence exists among these levels and across different jurisdictions. [74,217] The findings of the systematic review primarily refer to the meso and micro level of integrated (acute) healthcare.

LTCFs mostly employ person-centred integrated (acute) healthcare as a holistic approach, considering not only the medical needs of residents but also their psychosocial well-being. [218] Person-centred care involves understanding residents' preferences, values, and individual circumstances to tailor care plans accordingly. Person-centred integrated systems aim to follow principles of participatory care and governance, aligning their coordination with the needs of service users. These systems and strategies provide a balance between population health and well-being and preventing illness. [218-220] Approaches within integrated healthcare encompass individualised needs, disease-specific interventions, and integral initiatives focusing on population health within regulatory interdisciplinary meetings in LTCFs. [220]

Care coordination and information sharing

Across Europe, countries are at different stages of integrating their integrated (acute) healthcare services, with the common goal of delivering better care outcomes through collaboration. [221]

LTCFs can benefit from integrated care by implementing systems that facilitate care coordination and information sharing. [222] Achieving integrated care at the meso level in LTCFs requires breaking down barriers between different healthcare providers within a facility, including hospitals, primary care clinics and specialist services. [222,223] A fundamental tenet of this approach is to foster effective communication and collaboration among these entities. [224,225] Further, integrated care requires breaking down the silos that traditionally separate healthcare providers within an institutional

framework and involves fostering seamless collaboration and communication channels between entities such as hospitals, primary care clinics and specialist services. [223,225] The emphasis is on crossing organisational boundaries to facilitate a holistic approach to patient care. These points align with aspects identified in the systematic review [210] (availability of specialists and networks) and correspond to the preferences for the design of the future care landscape (skilled expertise and successful networks) as derived from the interview study.

Implementing integrated care within LTCFs requires overcoming the conventional barriers that segregate healthcare providers within an institutional structure. This process involves fostering seamless collaboration and communication channels among entities such as GPs, hospitals, specialist services and LTCFs. [226]

Another key aspect of integrated care is the promotion of streamlined workflows and care pathways. [227,228] This strategic focus aims to reduce redundancies within the healthcare system and ensure that the patient's journey through the various facets of care is characterised by efficiency and coherence. [228] By optimising processes, integrated care aims to enhance the overall patient experience and improve healthcare delivery. Integral to the realisation of integrated care is the establishment of robust health information exchange mechanisms. [221] These systems play a critical role in securely sharing relevant patient data between healthcare providers. This exchange of information contributes to a more complete understanding of a patient's health status and medical history, enabling providers to deliver tailored and informed care. The emphasis on secure information exchange underscores the importance of privacy and confidentiality in the exchange of sensitive health information. [221,222,229]

Similar to the two projects, recent research also underscores the significance of technological services. Especially rural areas can benefit from using health information technology, e.g., for seamless information exchange across different institutions. [230-232] Electronic health records and other digital tools play a vital role in supporting integrated care initiatives. [233]

The integration of technical services beyond traditional analogue settings such as physician networks can be beneficial to improve care by adopting technology solutions such as telemedicine services for remote consultations and digital health monitoring tools in LTCFs. Technology integration can facilitate communication between LTCF staff and external healthcare providers, facilitating timely interventions and reducing transitions of care due to rapid and readily available expertise in a perceived medical emergency. [232-234] Facilitating the improvement of patient-centred care is achieved through the availability and accessibility of health data, including medication plans

and advanced directives. [234-236] Furthermore, it ensures rapid documentation and data transmission to other healthcare professionals. [209,237]

In summary, integrated care in nursing homes emphasises collaboration, person-centred care, information sharing, community engagement, and the use of technology to provide a higher QOC for residents. [221,222,227,233] By integrating with the broader healthcare system and community resources, nursing homes can better meet the diverse needs of their residents and enhance their overall well-being. [222,227]

In conclusion, achieving integrated care at the meso level involves collaborative efforts, streamlined workflows, and effective information sharing among healthcare providers. [229] By breaking down traditional silos, optimising workflows, and fostering secure information exchange, the healthcare system can move towards a more cohesive and patient-centred approach, ultimately improving the overall QOC. [202,238 239]

8.2 Preferences for the future healthcare landscape regarding integrated (acute) healthcare in LTCFs

Looking at the results of the interview study, high demand for integrated (acute) healthcare was selected from the perspective of acute healthcare providers (LTCF nurses and paramedics). The future healthcare landscape preferences and wishes can be categorised into five main areas: (1) skilled expertise, (2) successful networks, (3) telemedicine services, (4) QM, and (5) public recognition. No discernible differences appeared between the two groups regarding their preferences.

The first four outcomes relate specifically to the application of integrated healthcare elements, as described in the previous chapter.

To enhance the quality and accessibility of healthcare while reducing emergency services such as ED transfers and hospitalisations, apart from GPs, further skilled expertise in acute health conditions of LTCF residents should be made available. Recent research has confirmed that easy and prompt access to healthcare specialists during emergencies results in significant reductions in transfers, particularly outside regular practice hours. [120,155,240,241] Outside the GPs' office hours, emergency services must be contacted. However, they may not know the residents and may not have the necessary information to support their transfer decisions. [154] Additionally, nurses may be required to make transfer decisions without physician presence. [162,242,243] The coordination of GPs operating in LTCFs, which can often involve a large number of individuals, [102] may contribute to

communication gaps and a lack of capacities and facilitate hospitalisations. [244,245] The lack of geriatric education among nurses and GPs and the nursing shortage problem are core factors. [155,156,228] Additionally, the high prevalence of polypharmacy, which is facilitated by fragmented medical care, contributes to adverse events and hospital transfers. [114,154,246] The prevalence of the theme of inappropriate or unwarranted transfer from nursing homes to EDs in the literature may be attributed to the decision-making process concerning transfers. This is often performed by ED physicians or other emergency personnel. [247,248] Also, this dissertation examines the process from the perspective of healthcare professionals through the interview study. From the perspective of LTCF nurses and paramedics, specific information on significant events and detailed knowledge of patient information are factors that influence decisions regarding the transfer of patients from nursing homes to EDs. Furthermore, the process of collaborating with residents in LTCFs and their intricate medical histories, along with experience in handling medical emergencies, can frequently impact decision-making. Disparities in the definition of emergencies were prominently identified in the interview study. LTCF nurses and paramedics frequently reported inconsistencies between their definitions of emergencies and non-emergencies. However, the ultimate decision for a hospital transfer must be made by the affected individual or their guardian, if applicable, or by an emergency physician. Therefore, nursing staff often feel that their competence is overlooked in many cases. [249] Moreover, communication and collaboration between the two professions are generally deemed acceptable. However, disagreements, misunderstandings, and hierarchical issues can quickly arise, leading to frustration on both sides. In an acute emergency, both parties desire collaboration on equal terms, with a partnership marked by mutual respect and equality. [249-251]

Furthermore, well-defined emergency plans, effective QM within a facility, and a clear roadmap for action during emergencies can enhance safety in managing acute health risks. This, in turn, can result in a reduced rate of hospitalisation and transfers. These aspects have also been investigated in the literature on integrated care models. [252] Research outcomes appeared to offer stronger evidence of effect: Firstly, the use of integrated care approaches has been carefully constructed to be simple and illustrative to assist healthcare providers in making decisions about hospital transfer and other interventions such as cardiopulmonary resuscitation and gastrostomy tube feeding. [227,237,245,253] Evidence indicated that improving care capacity within LTCFs with different care specialists could reduce the need for transferring residents to EDs. The decision-making process for such transfers is influenced by various factors to improve clinical outcomes while maintaining the quality of life for LTCF residents. Changes in health status can be context-specific. Not only the resident's immediate condition but also the available resources in the facilities must be considered. Furthermore, considering the preferences of the resident and their family members

regarding care and access to advanced directives in case of acute health risk situations is crucial. To establish a definition for 'avoidable' or 'unnecessary' transfers, reliable measurement and clinical pathways are required. [5,238] One example of the success of integrated care depends on adopting a single point-of-entry system, especially when creating comprehensive service packages for clients with high needs. A strong emphasis on care navigation and case identification during interactions between providers and clients was focused on the care models examined in these investigations. [181,219] Clients could access multiple services and clinical pathways through a single provider. Services were available on-demand, often around the clock, in both residential and community settings. Instead of being predetermined, activities and clinical pathways were developed dynamically during provider-client interactions based on clinical assessments and dialogues with the client. Providers could activate reactive and preventative services tailored for specific individuals, such as those enrolled in care plans, or standardised according to clinical guidelines for individuals experiencing an episodic event. This trend suggests a societal preference for more efficient access to diverse care pathways. Therefore, the implementation of single point-of-entry system designs to address a wider range of population needs should be considered. However, this should be adaptable enough to apply to various care facilities and meet the diverse needs of nursing home residents while safely managing their required care. [254] Conducting thorough research to improve primary care for nursing home residents is crucial for informing health policy reform and educating those who provide care in nursing homes. Recent research also suggests that, for example, prehospital emergency physicians frequently need to justify their actions in LTCFs and sometimes cannot fully use their professional competencies. Strengthening decision-making confidence is therefore crucial in preventing unnecessary emergency medical service deployments and hospital transports. [255] Moreover, legal certainty is essential for decision-making confidence in case of acute health risk situations. Most of the nurses surveyed in the dissertation's interview study stated that they usually call emergency services and decide to hospitalise a resident when their health declines. This decision is often motivated by a desire for legal protection and a reluctance to take on the responsibility of managing such situations independently.

In the future, a focus on the ethical and legal aspects of decisions in acute health risk situations is important. Providing a transparent clarification of legal frameworks and internal or organisation-specific regulations is necessary to help nursing care professionals better understand their options for action. [256] The consideration of residents' expressed or advance wishes must take priority over the desires of third parties and are legally binding. [170,256] Agreements should also be established with all stakeholders (e.g., residents, family members, GPs, LTCF nurses) regarding procedures in acute health risk situations at the time of admission, based on the recommendations provided. [256,257]

With a focus on reducing hospitalisations and ED visits among residents, an evidence base for the use of telemedicine in nursing homes was established. The research assessed the impact of different technology solutions, workflows and telemedicine on ED visits, showing a reduction of between 8.8% and 37%. [206,258,259] Other studies evaluated the effectiveness and positive impact of telemedicine in reducing hospital admissions and ED use. [260-262] A nursing home reported that 29% of patients seen by a physician for after-hours care through a telehealth programme avoided hospital visits, resulting in estimated savings of more than $1.5 million. [263] In addition, an innovation project implemented a telehealth after-hours care programme and estimated that 51% of telehealth consultations prevented hospital readmissions. [260] Internationally, the experience of telehealth in home care varies, but a positive trend towards supporting conventional acute healthcare through the implementation of telemedicine and telehealth has been seen in LTCFs. These technologies help nurses and residents seek medical advice and care through digital channels, eliminating the need for a physical visit to a healthcare facility. The interview study also revealed a strong desire to implement telemedicine services. Teleappointments and teleservices such as electronic medication plans, e-prescriptions and video consultations in acute cases were widespread during the COVID-19 pandemic. However, these services have been almost universally discontinued. The main reasons cited for this strong desire were accessibility and time efficiency, as the use of telemedicine provides immediate access to medical care regardless of geographic location. This can have a significant impact, particularly in rural or underserved areas with limited access to healthcare. In addition, telemedicine allows LTCF residents, nurses and physicians to interact and exchange medical advice from the comfort of their own homes, eliminating travel time and long waits. The LTCF nurses and paramedics interviewed expressed that, particularly in emergencies, telemedicine can provide a rapid initial assessment and, in some cases, initiate life-saving measures before the patient physically arrives at an ED. Many paramedics see great value in telemedicine in facilitating the ongoing monitoring and care of patients, especially those with chronic conditions. Doctors can regularly assess the health of their patients and intervene when necessary. Telemedicine is meant to supplement rather than replace traditional medical care. Healthcare systems worldwide are adopting an integrated approach to telemedicine to enhance the quality of healthcare services and make them more responsive to patients' needs.

8.3 Effects of integrated (acute) healthcare on rural LTCFs

The implementation of integrated healthcare has a profound impact on healthcare providers, influencing various aspects of their practice, workflow and overall service delivery. One significant impact is the promotion of improved care coordination, which encourages collaboration between

healthcare professionals to ensure comprehensive and seamless patient care. This collaborative approach minimises fragmented or duplicated services and streamlines communication channels.

Compared with usual care, research indicates that multidisciplinary integrated care resulted in substantially higher QOC for elderly people in residential care facilities regarding functional ability, number of hospital admissions and health-related quality of life. For example, positive health effects on residents have been reported as a result of interdisciplinary geriatric primary care. Our model of multidisciplinary integrated care resulted in improved QOC for elderly people in residential care facilities compared with usual care. [264]

Apart from the fact that integrated healthcare can lead to improved patient satisfaction and access to services, this integration increases perceived QOC and job satisfaction. [222,265] Along with the increased use of integrated healthcare approaches in LTCFs, a growing evidence base for the correlation between the integration of care and the job satisfaction of nurses working in LTCFs is shown. [266] Studies reported that the job satisfaction of LTCF nurses affected the quality and coordination of healthcare by influencing their job performance, job stability, and teamwork. [267,268] Other findings explored the inconsistent influence of integrated care on the job satisfaction of LTCF nurses: Some studies found that the integration of care enhanced nurses' job satisfaction by improving their working conditions, career development, and interpersonal relationships. [269] In particular, evidence shows that in LTCF settings, participation in teams, including interdisciplinary teams, can lead to increased empowerment of caregivers. [270-272] Further, the importance of quality teamwork in healthcare has been the subject of numerous studies, citing improvements in job satisfaction, QOC, patient safety, and patient satisfaction. [272-274] However, to date, most of the evidence demonstrating the benefits of team-based approaches has come from acute care settings, where team-based, interdisciplinary care is not a new concept but has been standard practice for many years. [275] In acute care settings, high-functioning and cohesive teams tend to produce more empowered clinicians, resulting in higher quality care and reliability in work. [97,275]

In addition, the results of a multiple embedded case study by Antypas and Kirkevold[276] confirm the positive impact of the use of new professional roles on interdisciplinary collaboration. According to these authors' findings, the work of a highly qualified nurse (e.g., an advanced geriatric nurse) in a care model supported collaboration with physicians through a higher level of trust in each other's abilities. Stronger patient-centredness in the care provided was further described as a result of the nurses' additional time and close collaboration with the patients. [74,276] This is consistent with the described components at the process level obtained from the qualitative results and discussions in the interview study.

While no clear consensus exists on the best integrated model of nursing home care, agreement has been reached on interventions that can improve outcomes, such as staff training and promoting collaboration between health and home care through integrated models. Expert involvement in advanced frailty care has also been shown to be effective. [239] Previous studies suggest using outcomes such as indicators related to medication, out-of-hours care, ED use, hospital admissions, and resident and family experience to assess how a care model is working. [97,239,277]

The use of technological modalities such as wireless tools, email, two-way video, smartphones, digital physical assessment, electronic image transmission and vital signs monitoring facilitates the delivery of acute healthcare services in rural areas. This technological approach overcomes geographic barriers and promotes continuity of care. [258,278,279] Empirical studies have consistently shown positive attitudes and satisfaction with telecommunication devices among stakeholders. These findings underscore the potential of telemedicine and telehealth interventions to improve the accessibility and effectiveness of healthcare in the context of rural LTCFs. [209,234,280-283] The escalating prospects associated with telemedicine and telehealth interventions point to a future trajectory of increased opportunity, necessitating the expansion of comprehensive networks in currently underserved rural areas. [284,285]

The results of the two dissertation projects suggest a complex landscape and a high demand for analogue and digital healthcare services to support the continuous improvement of healthcare needs in the rural LTCF environment. From an organisational perspective, an appropriate culture, leadership, relevant members and a clear purpose for the team to make integrated care the norm in the acute healthcare landscape for LTCFs are needed.

However, the transition to integrated healthcare is not without challenges. Providers may face resistance to change and the need to adapt to new technologies and may experience disruptions to established workflows. In summary, while integrated healthcare offers multiple improvements for healthcare providers, overcoming these challenges requires careful consideration and strategic implementation. [286]

8.4 Feasibility of integrated (acute) healthcare

The pursuit of integrated healthcare in LTCFs represents a transformative approach aimed at improving the overall well-being of residents through seamless coordination and collaboration among healthcare providers. Despite the potential benefits, the feasibility of integrated healthcare in LTCFs is fraught with challenges. This discourse explores the intricacies of these challenges, with a particular focus on the profound impact of cultural change and the inherent barriers associated with the integration of healthcare services in rural LTCFs.

The implementation of integrated care in nursing homes requires a fundamental cultural change within the healthcare system. Traditionally, healthcare has been compartmentalised, with different disciplines working independently. The cultural change required for integrated healthcare involves fostering a collaborative mindset among healthcare professionals, administrators and nursing home staff. Overcoming resistance to change and instilling a shared vision of patient-centred care are central to this cultural change.

Integrated care requires a move away from the siloed approach to medical care and encourages interdisciplinary communication and collaboration. This cultural metamorphosis involves breaking down traditional hierarchies, fostering open channels of communication and promoting a shared commitment to improving patient outcomes. The challenge is not only to adopt new practices but also to foster a collective belief in the value and effectiveness of integrated healthcare.

The challenges of integrated care exacerbate the feasibility dilemma in nursing homes. Coordination among healthcare professionals, from doctors and nurses to therapists and social workers, requires seamless information sharing and standardised protocols. Achieving interoperability between different healthcare systems and electronic health records is a significant technological challenge that hinders the fluid exchange of critical patient data. [74,287]

In addition, integrated healthcare requires a restructuring of payment models and reimbursement mechanisms. Current financial frameworks often incentivise volume-based care rather than value-based outcomes, making the transition to integrated models focused on holistic patient well-being difficult. In Germany, healthcare financing is predominantly based on a dual system consisting of SHI and PHI. [105] The SHI system covers the majority of the population and is financed through contributions from both employers and employees, supplemented by government subsidies and tax revenues. The PHI system serves a smaller, primarily higher-income population and is funded through risk-based premiums and government subsidies for specific groups.[105,109,288] The financing of integrated care presents significant challenges within this dual financing framework.[289] Current reimbursement mechanisms in both the SHI and PHI systems often incentivize volume-based care over value-based outcomes, hindering the transition to integrated care models focused on holistic patient well-being. [290-292] The financial implications and uncertainties surrounding reimbursement for integrated care services act as barriers to the widespread adoption and implementation of integrated care practices, complicating efforts to improve healthcare quality, patient outcomes, and cost-efficiency. The financial implications and uncertainties surrounding reimbursement are a barrier to the widespread adoption of integrated healthcare practices in nursing homes. [293]

In conclusion, the feasibility of integrated healthcare in nursing homes is a complex endeavour, characterised by the challenges of cultural change and the intricate nature of healthcare integration. The cultural change required involves changing mindsets, fostering collaboration and cultivating a shared commitment to patient-centred care. At the same time, overcoming the challenges of information sharing, interoperability and financial restructuring is essential to the successful implementation of integrated care in care homes. Despite these challenges, the potential benefits for resident health outcomes underscore the importance of continued efforts to overcome these barriers and advance the integration of healthcare services in nursing homes. To overcome the challenges identified, an entrenched nursing unit culture is needed. Further problems include a lack of clarity about the role of the lead nurse or the aims of the model, poor communication between professionals, high turnover rates, leadership changes, inadequate staff training, lack of time, resources and funding, lack of support from managers or primary care providers, and high complexity of resident care. [294]

The interview study in this dissertation highlighted several challenges regarding the feasibility of integrated care in rural LTCFs. These obstacles encompassed factors such as the entrenched culture within care units, a lack of clarity regarding the roles of leading nurses and model goals, insufficient communication among professionals, high turnover rates, leadership changes, inadequate staff training, a shortage of time, resources, and funding, and a lack of support from managers and primary care providers.[295,296] The intricate nature of resident care added another layer of complexity to the implementation process. All interviewed participants emphasised that improved communication with other stakeholders is crucial. To ensure successful communication among stakeholders, using a common language is crucial when conveying health information.[295] For example, recommendations should be based on an interdisciplinary applied assessment instrument in case of acute health risk situations. This will enable the derivation of decisions and actions necessary for successful implementation. The existence of recommendations must be communicated to all stakeholders.[297] In addition, a culture of dealing with healthcare providers can be established based on recommendations through accompanying measures. This can be achieved through roundtable discussions or other formats that facilitate interprofessional exchanges at the local or regional level. Training sessions and competency-deepening formats may also be suitable for this purpose. [298]

A strong demand for interdisciplinary education settings was mentioned by a majority of the LTCF nurses and paramedics interviewed. Cooperation with and understanding of each other's activities and behaviour can be achieved by significantly increasing interdisciplinary cooperation during training. In particular, joint training modules and placements in interdisciplinary departments were

explicitly mentioned as a means of improving interdisciplinary cooperation and overcoming hierarchies. These principles should prioritise residents' well-being and wishes in shared decision-making.[295,298] Cooperation between emergency services (paramedics) and LTCF nurses is necessary to avoid unnecessary emergency interventions and hospital transfers.[299] Coordination of guidelines and recommendations from both professions is needed. A cross-sectoral and cross-professional case management system is also needed to coordinate the integration of all healthcare providers in the care process of an LTCF resident in terms of prevention, in which the general state of health is always monitored and even the smallest deviations are checked by the responsible providers before acute health risk situations arise.[300,301] Further research should explore what such a system could look like in the German healthcare system, taking into account organisational, ethical and health economic aspects. [302]

Another crucial element for the realisation and implementation of integrated healthcare in rural LTCFs is the use and management of telemedicine services. Using health information technology is crucial at the macro level for seamless information exchange across different institutions.[283] Electronic health resources and other digital tools play a vital role in supporting integrated care initiatives. The integration of healthcare services in nursing homes is intrinsically linked to the adoption of innovative practices, including telemedicine. [279,283] Understanding healthcare providers' attitudes towards innovation and telemedicine is crucial in evaluating the feasibility of integrated healthcare within the nursing home setting. Healthcare providers' attitudes to innovation play a key role in shaping the trajectory of integrated care initiatives.[303] Traditional healthcare settings can be resistant to change due to entrenched practices, professional autonomy and concerns about the impact on established workflows. Overcoming these attitudinal barriers requires targeted interventions such as educational programmes, fostering a culture of continuous improvement, and demonstrating the tangible benefits of innovation in improving patient outcomes.[303] Advanced practice nursing (APN) programmes have gained prominence as they equip nurses with advanced clinical skills and knowledge to provide comprehensive care and to work autonomously or in collaboration with other healthcare professionals. These programmes prepare nurses to take on expanded roles in patient assessment, diagnosis and management, contributing to the delivery of integrated and patient-centred care.[304] In addition, there is a growing recognition of the need for specialised nursing roles to meet the complex health needs of patients.[305] Specialist programmes, such as geriatric nursing, palliative care and mental health nursing, are being developed to prepare nurses to provide specialised care and to work effectively with other healthcare professionals in multidisciplinary teams.[306-308] This specialisation improves the quality of care provided to patients and supports the integration of nursing services with other health services.[309]

In the context of care homes, where the care landscape is evolving, the attitudes of healthcare providers towards embracing innovation are particularly critical. Establishing a positive and proactive attitude towards change is essential for the successful integration of healthcare services and the realisation of improved patient-centred care in these settings.[310]

Telemedicine, as a subset of healthcare innovation, has gained prominence in recent years, offering opportunities to improve accessibility, efficiency and patient engagement.[280,311] However, the adoption of telemedicine has been met with resistance due to concerns about technological competence, patient privacy and the perceived erosion of the doctor-patient relationship. The attitudes of healthcare providers towards telemedicine are critical to the success of its implementation in care homes.

While telemedicine can address the challenges associated with geographical barriers and limited resources, especially in rural LTCFs, its acceptance depends on the willingness of healthcare providers to adapt their practice. Educational initiatives, practical training and clear communication of the benefits of telemedicine can help to change attitudes towards acceptance and integration into routine care practice. [97]

Healthcare providers' attitudes to innovation play a key role in shaping the trajectory of integrated care initiatives. Traditional healthcare settings can be resistant to change due to entrenched practices, professional autonomy and concerns about the impact on established workflows. Overcoming these attitudinal barriers requires targeted interventions such as educational programmes, fostering a culture of continuous improvement, and demonstrating the tangible benefits of innovation in improving patient outcomes.[279,312] In the context of care homes, where the care landscape is evolving, the attitudes of healthcare providers towards embracing innovation are particularly critical. Establishing a positive and proactive attitude towards change is essential for the successful integration of healthcare services and the realisation of improved patient-centred care in these settings. Telemedicine, as a subset of healthcare innovation, has gained prominence in recent years, offering opportunities to improve accessibility, efficiency and patient engagement. However, the adoption of telemedicine has been met with resistance rooted in concerns about technological competence, patient privacy, and the perceived erosion of the doctor-patient relationship.[259,313] The attitudes of healthcare providers towards telemedicine are critical to the success of its implementation in care homes.[303]

Providers' attitudes towards both innovation and telehealth have a significant impact on the overall feasibility of integrated care in care homes. Integrated care relies on effective collaboration, communication and the seamless integration of technology into established workflows. Addressing

attitudinal barriers creates an environment conducive to the successful implementation of integrated care models and ensures that providers see change as an opportunity to improve patient outcomes rather than a disruption to routine practice.[303]

In conclusion, understanding and addressing providers' attitudes towards innovation and telehealth are critical steps in advancing the feasibility of integrated care in nursing homes. By fostering a culture of openness to change, providing appropriate training and emphasising the benefits of innovation, healthcare providers can play a central role in shaping the success of integrated healthcare initiatives. The integration of telehealth further underscores the need for a positive attitude towards technology as a transformative tool for overcoming traditional barriers and improving the overall QOC in nursing homes.

9. Implications

Integrated care, broadly defined as "an organizing principle for care delivery that aims to improve patient care and experience through improved coordination", [314] is widely recognised as a priority for care systems, policymakers and users globally. [239] Society as a whole needs to discuss ways of providing high-quality healthcare to LTCF residents to ensure their well-being and the job satisfaction of healthcare providers. Integrated healthcare approaches should be considered to define implications for practice, theory and policy.

Exploration of integrated care models in German LTCFs reveals significant potential benefits but also highlights critical factors that warrant attention for both research and practice. Among the influential elements, funding strategies and legal requirements for task-orientated practice in specific models emerge as key considerations. [195] In the context of German LTCFs, challenges related to financing options and legal requirements for task-orientated practices by highly qualified nurses remain unclear and represent potential limitations for the effectiveness of integrated care models. [77] The lack of clarity in these areas is particularly significant and hinders the realisation of the holistic, person-centred and multidisciplinary approach that integrated care models led by highly qualified nurses can offer to the care of complex residents. [315] In the context of a nursing shortage in Germany and other European countries, the role of highly qualified nurses in integrated care models goes beyond specific interventions. Instead, these models, which involve autonomous decision-making for both medical and nursing aspects of care, represent an attractive way to advance nursing practice and provide comprehensive care. [315,316] The level of qualification of nurse leaders (master's, bachelor's or postgraduate) needs to be discussed in the context of specific roles, the complexity of care and the overarching goal of sustainable implementation, considering both

funding options and regulatory requirements. [317] To address these challenges and to identify relevant outcomes for German LTCFs, a proposed contextual analysis will be conducted, involving stakeholders in the development of integrated care models. The findings from this analysis will be integrated into the construction of case studies and discussions with stakeholders.

This dissertation provides an initial overview and deeper understanding of the essential elements, outcomes and challenges associated with integrated care models in rural LTCFs. As demographic trends contribute to the increasing complexity of resident care, the need for more integrated care models becomes apparent. The use of highly qualified nurses with expanded roles in line with evolving needs is envisaged to enhance role development, promote interdisciplinary collaboration and facilitate early identification and management of resident problems. Given the shortage of highly qualified nurses in German LTCFs, defining their specific tasks and roles and addressing funding and legal requirements are of paramount importance for the long-term improvement of clinical nursing practice. [74]

Tensions between professional groups within LTCFs can be reduced through collaborative initiatives, including shared learning, job shadowing and job rotation opportunities. The creation of interdisciplinary career pathways, as exemplified by the Emergency Care Practitioner role in the UK, could provide a convergent pathway for nurses and paramedics. However, care must be taken to avoid the introduction of new designations that could undermine the flexibility of a single-tier, generalist workforce.

A cross-cutting service organisation could play a key role in addressing service gaps within well-designed systems. Such an organisation, equipped to work across silos, could enhance collaboration through appropriate governance mechanisms. Research emphasises the importance of a loose collaborative structure with health and social care organisations that promotes regular meetings to identify and address gaps in care. The organisation should have a clearly defined mission, strategic framework and shared understanding of its role in the system.

Further, research highlights the challenges of adapting service provision to local needs due to legal and regulatory constraints. [251] This calls for legislation and regulation to adopt a permissive approach, allowing local systems flexibility in the design of care pathways. This permissive regulatory framework would allow for local adaptation while ensuring oversight and safeguards. The balance between safety, system-level equity and local integration can be achieved by focusing on broad, negotiable performance measures rather than overly standardised regulations. [318]

Assessing system-level cost-effectiveness and value is crucial for integrated care. Payment models often fail to capture the value of new programmes and services. [318,319] The study suggests that funding models need to consider factors such as the complexity of clients' needs and the duration of services. Sustainable funding for services, particularly those provided by paramedics to diverse populations, may require a mix of payment mechanisms, including core funding, capitation and fee-for-service. [319] Further research is needed to explore sustainable funding models and assess the value of the wider system.

Improving the QOC in rural LTCFs requires a concerted effort to adopt multidisciplinary integrated care models. These models have demonstrated remarkable results, including improved functional capacity, reduced hospital admissions and overall improvements in the health-related quality of life of elderly residents. [97,239] To ensure the integration of these models, resources must be allocated and robust support for comprehensive training programmes provided. [274] These programmes should be designed to equip health professionals with the skills and knowledge necessary for effective interdisciplinary collaboration.

Another critical aspect is the link between integrated care and increased job satisfaction, particularly among nurses. Recognising this link underlines the importance of investing in initiatives that promote teamwork, professional development and improved working conditions. By addressing these factors, we can positively influence job satisfaction and consequently improve the QOC provided. [226,274]

In addition, considering the inclusion of advanced geriatric nurses or other specialised roles can further enhance collaboration with physicians, build trust and promote patient-centred care. [320] Supporting this initiative means providing tailored training programmes and the necessary resources to facilitate the development of these new roles within the healthcare system. [272]

A key component of ensuring the success of integrated care models is the establishment of comprehensive evaluation mechanisms. These mechanisms should use outcome indicators such as medication-related outcomes, ED use, and resident and family experience. [278,321] Regular review and adjustment of care strategies based on measured outcomes are essential to ensure continuous improvement in the delivery of healthcare services.

In the context of rural LTCFs, embracing technological advances such as telemedicine and digital health services can help overcome geographic barriers and improve accessibility. [235,279,322] Investing in training programmes for health professionals to effectively use and adapt to these technologies is critical for successful implementation.

Furthermore, recognising the potential of telemedicine and telehealth interventions to address health inequities in underserved rural areas is imperative. [259,260] Advocating for the development of comprehensive health networks in these regions will ensure equitable access to the benefits of telemedicine and other technological solutions.

Recognising the diversity of integrated care models for long-term care is essential, as their effectiveness may vary according to local contexts. Encouraging healthcare providers to adapt and tailor these models to the specific needs and characteristics of their populations is important for successful comprehensive implementation. [323]

Integrated care in German LTCFs requires a comprehensive approach that addresses professional tensions, promotes cross-sectoral service organisations, adopts permissive regulations and develops effective payment models. By adopting these strategies, the healthcare system can move towards a more integrated, collaborative and patient-centred model, ensuring better outcomes for diverse populations within LTCFs.

Finally, prioritising staff training programmes to equip health professionals with the necessary skills for successful interdisciplinary collaboration is paramount. Recognising the effectiveness of specialist involvement in advanced frailty care and strategising ways to integrate specialist expertise into LTCFs will further contribute to improving the overall QOC.

Summary

Training and education: For a rethought comprehensive integrated healthcare system that meets the needs of LTCF nurses and paramedics, skills are required that go beyond medical and nursing skills. [324] These include training for health professionals and mandatory courses on how to create a mutual understanding of the practical reality of each profession, cooperation on an equal footing and a common language. Joint training modules could be a way to achieve long-term cooperation and meet the needs of the two professions. [324-326] A German survey revealed the importance of interdisciplinary workforces being integrated into the curricula of medical schools. Some of these medical schools mentioned job shadowing and practical courses. [327] To create a common language within the field of work, high-quality training is essential for both nurses and paramedics. [328,329] Germany is already responding with degree courses in these areas, but even those with many years of professional experience should take part in regular mandatory training and further education courses in emergency medical care to take professional communication to a new level and develop a certain routine and experience for critical situations. [330-332] Training and educational reform should include a scope of practice that enables increased awareness of other professions.

Society and public awareness: The changes in the age structure described above are a major challenge for the healthcare system. An overburdened healthcare system can be compensated by developing and implementing new structures to meet the needs of healthcare providers in (acute) healthcare situations. LTCF nurses and paramedics want to exchange views on (acute) health risk situations and decision-making when discussing ED transfers and hospital admissions (Özkaytan 2024). Community engagement and understanding how to actively contribute to a socially inclusive health system require thinking across organisational and community boundaries. [333,334] The need for integrated social care systems is evident but often not available. [334]

Building awareness not only on a political level but also on a societal level is an important public health and societal issue. [335] At a societal level, findings from the dissertation's interview study underscore a pervasive sentiment among participants regarding the urgent need for increased recognition of healthcare providers and a fundamental shift in public perception. [336] Participants explicitly advocate for an increased focus within the media landscape, similar to the fleeting spike in awareness observed during the COVID-19 pandemic, to highlight the paramount importance of the health professions. [337,338] A notable consensus emerges among participants calling for a more nuanced understanding and increased support from political entities for the health sector. This requires not only a comprehensive understanding of the challenges facing healthcare providers but also a commitment to fostering an environment conducive to their professional growth and well-being. Within this discourse, a subset of participants pronounces the need for a bottom-up approach, arguing that a redistribution of decision-making power to healthcare professionals is crucial. Empowering those directly involved in the provision of healthcare with a more substantial role in decision-making processes is seen as a strategic means of addressing systemic issues and improving the overall effectiveness of health systems.

In summary, the articulated sentiments converge in a multifaceted call for a societal, media and policy recalibration to give due recognition to healthcare providers. This includes not only recognising their pivotal role in times of crisis but also initiating structural changes that empower and support these professionals sustainably.

"We need such a radical change now. Because of COVID-19, there was applause, and suddenly nursing was in the spotlight, but why did it fade away so quickly?" (Transcript_I3, Pos. 178)

Practical support: Supportive forums, networking and educational events can help us to rethink social support at the end of life. The aim should therefore be to enable the community, e.g., nurses, paramedics, relatives of LTCF residents and organisations with an interest in long-term care to

identify the problem in the implementation of integrated care and determine priorities for action. [293,294]

Case management: The integration of case management in rural LTCFs is a key initiative that holds great promise for improving the QOC by focusing on the overall needs of residents. This approach involves the systematic coordination and monitoring of individual patient cases, emphasising a holistic and patient-centred model of care. [239]

In the context of LTCFs, the implementation of case management raises several key considerations and opportunities. Central to this approach is the recognition that each resident's needs are multifaceted, encompassing not only medical requirements but also social, emotional and psychological dimensions. Case management seeks to integrate these different aspects of care to ensure a comprehensive and tailored approach for each individual. [239,339,340]

In addition, the use of technology plays a critical role in modernising case management in long-term care. This not only improves the efficiency of care delivery but also ensures that all members of the care team are well informed and involved in the decision-making process. [341]

Integrating case management into LTCFs is a progressive step toward improving the overall QOC, fostering collaboration among healthcare professionals, and placing the resident at the centre of the care continuum. By adopting this approach, LTCFs can create a more responsive, person-centred and effective healthcare environment for their residents. [239]

Research

To improve understanding of integrated care in rural LTCFs and to motivate policymakers, providers, community stakeholders and the general public to act to implement integrated care approaches, the need is strong for further research to strengthen the evidence base. [205,225] Expanding on this, the call for further research implies the need for in-depth investigations into the dynamics of integrated care in rural LTCFs. This involves exploring the intricacies of how different elements within the health system, the community and the policy framework interact to shape the delivery of care in these settings. Robust research can provide valuable insights into the specific challenges and opportunities unique to rural contexts, contributing to the development of tailored and effective integrated care models.

Strengthening the evidence base also involves consolidating existing knowledge about integrated care in rural LTCFs. This can be achieved through rigorous analysis of current practices, outcomes and the factors influencing the implementation of integrated care. By building a strong evidence

base, researchers can provide compelling and data-driven arguments that can influence policymakers and encourage the adoption of integrated care approaches.

In terms of implications for further scientific inquiry, researchers could focus on conducting empirical studies that examine the impact of integrated care on patient outcomes, cost-effectiveness, and overall health system performance in rural LTCFs. In addition, analyses comparing integrated care models in urban and rural settings could provide valuable insights into the contextual nuances that influence the success of these approaches.

The need for a concerted effort to advocate for the adoption of integrated care is high. [224] Researchers could explore effective communication strategies to convey the benefits of integrated care to different stakeholders, tailoring messages to resonate with different audiences. This could include disseminating research findings through policy briefs, community engagement initiatives and public awareness campaigns.

In summary, advancing the understanding of integrated care in rural LTCFs and advocating for its implementation requires a multifaceted approach. Rigorous research, coupled with strategic communication, can serve as powerful tools to drive positive change in policy, practice and community engagement, ultimately improving the QOC in rural LTCFs.

Research should also focus on the impact of integrated care on the well-being of residents and their families. Including these aspects not only broadens the focus on the structures and processes of integrated care but also allows for an assessment of the actual impact on residents' quality of life and their social environment. This holistic approach ensures that the research covers both the organisational and systemic aspects and the human-centred outcomes of integrated care in rural LTCFs.

10. Strengths and limitations

While the possibilities of application of this dissertation’s results have already been discussed, different strengths and limitations must be considered. As outlined in Chapter 6, two research projects of this dissertation used different research methods to explore the existence and components of integrated (acute) healthcare models and the practice and perspectives of integrated (acute) healthcare approaches in rural LTCFs. The strengths and limitations of the individual studies have already been discussed in the respective articles. [210,212] By taking them together as a whole, this dissertation chapter will discuss overarching methodological issues.

10.1 Integration of meta-summary and thematic analysis

The simultaneous and thorough implementation of both meta-summary and thematic analysis within this dissertation represents a particular strength in exploring the reality of integrated (acute) healthcare models and the perspectives of LTCF nurses and paramedics regarding this topic. The overarching benefit of consolidating findings from multiple designs is suitable to offer a range and depth of meanings, experiences and viewpoints of participants in different healthcare contexts. [342] Consequently, the meta-summary approach used in the systematic review proved particularly valuable in exploring the breadth of phenomena, while the thematic analysis in the interview study investigated the depth of the topic. Both parts of the dissertation produced findings that complemented each other, provided a comprehensive insight into the broad field of integrated (acute) care models, and enabled a specific reconstruction of real practice. Taken together, these findings contribute to the understanding of the practical reality and subjective perspectives of LTCF nurses and paramedics, thereby quantitatively adding to knowledge. [343] However, the findings of the systematic review do not replace the more focused primary studies tailored to their specific objectives, nor do they claim to provide absolute or exhaustive knowledge of the phenomenon. In particular, the systematic assessment of confidence in the evidence presented in the systematic review should be seen as a map illustrating well-researched and under-researched facets, rather than as irrefutable evidence. [210]

10.2 Recruitment and sampling

The interview study relies on the sampling and recruiting of participants. A purposive sampling strategy was used to enable diversity regarding certain sociodemographics (age, sex) and workspaces (LTCF nurses, paramedics). [344,345] Since purposive sampling is considered especially suitable to gain appropriate, rich and useful information, this can be considered a strength in this qualitative study. [345,346] Moreover, as the interviews were conducted online and via Zoom and due to the use of different recruitment strategies with no necessity to transport participants for the interview, the starting position to purposefully select participants was good.

However, the sampling decisions and the final sample do influence the results, [345] although the concept of bias itself is harshly discussed regarding its applicability in qualitative research at all. [347,348] This was inherently expected: A considerable research gap related to this target group exists since prior studies focused more strongly on institutional settings, and one research aim was to provide insight into what these people need to age in place as long as possible. Consequently, the results shall not be considered biased, meaning that they would be less valid or insightful, but when drawing conclusions, these characteristics should be kept in mind.

To reach participants, recruitment was reliant on the cooperation of professional networks and organisations to forward information on the study. As discussed earlier, qualitative research is not

about statistical representativeness; however, who became part of the sample influences the results. As such, especially the role of gatekeepers and participant self-selection should be considered. Overall, more than 50 organisations representing LTCFs and emergency medical services were informed about the study and asked for support. This included the network of paramedical science that could be contacted via email or telephone. Among those reached through the organisations, the actual participants were possibly more open, willing, or interested regarding the topic of the study (self-selection). The results may then be correlated to how the participants act in (acute) health risk situations with LTCF residents, which attitudes they have and how they interact in a team, e.g., experienced nurses and paramedics, may have been more open and interested in participation.

Overall, this qualitative study did not seek statistical representativeness, but broad and deep insights into the participants' perspectives, to understand more about the practice in (acute) health risk situations in rural LTCFs. Although the convenience sampling strategy, and in particular the dependency on gatekeepers, has its difficulties, the chosen design of an anonymous, self-administered, flexible online video interview can be considered a strength. In particular, the design was more open to a range of participants and their practical realities compared to, e.g., interview studies recruiting participants via teaching practices in a decidedly academic research environment. The use of Zoom to conduct interviews, while facilitating remote participation, introduced a technological dimension that may have favoured individuals who are comfortable with technology. This preference could affect the representation of perspectives in the study, highlighting the importance of considering participants' technological literacy when interpreting findings.

Given the relatively modest sample size, the primary aim of this study was to delve deeply into the rural LTCF context, to generate explanatory hypotheses rather than draw generalised conclusions. While the findings of this research may be applicable in analogous settings, the question of whether the sample is truly representative of a broader population remains open. This study specifically presents the perspectives of two key groups, namely LTCF nurses and paramedics. Future research efforts could broaden the scope by exploring the perspectives of additional stakeholders, such as GPs, hospital physicians, LTCF residents and their families. This expanded research would contribute to a more comprehensive understanding of the complexities of acute health risks and integrated care in the broader context of rural LTCFs.

10.3 Summary

This dissertation is based on the implementation of two successive research projects, each using different research methodologies to elucidate the realities and perspectives surrounding integrated (acute) healthcare in rural LTCFs. The methodological approach adopted was provider-centred, and the results of this approach are making a significant contribution to shaping the future healthcare landscape, particularly in rural areas. The combination of research methods and perspectives, together with the sequential structure of the projects, facilitated the generation of

comprehensive results, both in terms of breadth and depth. In particular, the incorporation of innovative designs, transparent reporting and the provision of research materials where feasible coupled with a thorough discussion of current methodological critiques, can advance qualitative research, particularly in exploring stakeholder perspectives.

The results obtained cannot be generalised in a statistical sense. This limitation is partly due to the aim of the dissertation to gain subjective insights, which led to the predominant use of qualitative methods. Nevertheless, the synthesis of findings from both studies provides theoretical insights that, given the contextual considerations of their development, can be extrapolated and applied to improve (acute) healthcare at the micro level within rural LTCFs. This is particularly important in addressing previous research gaps related to acute care in LTCFs, the implementation of integrated care models, and exploring the perspectives of health professionals from different disciplines.

11. General conclusion

This dissertation aimed to describe and explain what integrated (acute) healthcare means in rural LTCFs and for LTCF nurses and paramedics. In two separate research projects, the components of integrated (acute) healthcare models were investigated and the perspectives of LTCF nurses and paramedics working in or with rural LTCFs were presented and discussed to provide an understanding of the necessary elements and developments for the future healthcare landscape in rural Germany.

Integrated (acute) care is multifaceted and consists of different approaches and innovations aiming at coordination, cooperation, communication and consistency in seamless healthcare. However, despite many successful pilot projects confirming the positive impact of integrated (acute) care in rural LTCFs in terms of improved job satisfaction of healthcare providers and safer decision-making in emergencies, we still have a long way to go before we can speak of nationwide integrated healthcare. On the one hand, this dissertation highlights many valuable components of integrated (acute) care and how these are already being successfully applied in rural LTCFs. However, the need for the application of these integrated healthcare approaches is great. The wishes and needs of LTCF nurses and paramedics for the future design of the healthcare landscape in rural areas are very much in line with the content of integrated healthcare approaches and are equated to improving long-term job satisfaction and QOC. A cultural change, which is likely to take a long time, is needed to shape and practice the current healthcare landscape in terms of cross-sectoral and seamless (acute) healthcare.

In this context, the findings of this dissertation challenge the assumption that paternalistic, classically doctor-centred healthcare is the way to provide good healthcare. Applying the findings to the concept of integrated healthcare, LTCF nurses and paramedics emphasise the dimensions of

interdisciplinary relationships and communication. As the new models of healthcare development have mostly focused on the structures of medical care, great potential exists in investing in and exploring stakeholder relationships.

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Appendix

Publication 1

Publication 2