

Article

How Socially Sustainable Is the Institutional Care Environment in China: A Content Analysis of Media Reporting

Kun Wang ¹, Yongjian Ke ^{2,*} and Shankar Sankaran ²

¹ School of Civil & Environmental Engineering and Geography Science, Ningbo University, Ningbo 315211, China; wangkun@nbu.edu.cn

² School of Built Environment, University of Technology Sydney, Ultimo, NSW 2007, Australia; shankar.sankaran@uts.edu.au

* Correspondence: yongjian.ke@uts.edu.au

Abstract: The multiple changes in population, economy, and social structure have significantly impacted China's traditional home-based elderly care and social welfare. The importance of institutional care is becoming increasingly prominent. One of the critical considerations for the development of institutional care is its social sustainability, which pursues the realization of human well-being and aims to bring about good quality of life. However, this issue has not received due attention. The purpose of this paper is to investigate the social sustainability of the institutional care environment. Based on stakeholder theory and content analysis, this research identified and discussed the problems of the institutional care environment mentioned in the news coverage on eight major Chinese portal websites. The results indicate that seven of the eight problems that employees, the elderly, and their relatives encounter in providing and receiving elderly care services in the institutional environment are related to social sustainability. Employees' health and safety is a concern; they lack education and training opportunities and have been unequally treated in the employment process. The elderly's psychological, physical, and safety needs should also be further satisfied. Unequal access to institutional care and the inaccessibility of elderly care institutions is another problem that needs to be solved urgently. These findings will help government departments and investors become aware of the issues and implement countermeasures to create a successful, socially sustainable institutional care environment. They can also provide valuable insights for the elderly and their relatives in choosing appropriate elderly care institutions.

Keywords: social sustainability; institutional environment; quality of life; China; content analysis



Citation: Wang, K.; Ke, Y.; Sankaran, S. How Socially Sustainable Is the Institutional Care Environment in China: A Content Analysis of Media Reporting. *Buildings* **2024**, *14*, 2953. <https://doi.org/10.3390/buildings14092953>

Academic Editor: Haifeng Liao

Received: 4 September 2024

Revised: 16 September 2024

Accepted: 17 September 2024

Published: 19 September 2024



Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

In China, the rapid aging of the population has led to a swift increase in the demand for elderly care. However, the one-child policy, changes in people's attitudes toward childbirth, urbanization, the rising social status of women and their increased participation in the labor market, the growing demand for professional care among the elderly, their economic independence, and the improvement of living standards challenge China's traditional home-based care and social welfare mode. Institutional care has thus become an essential supplement to home-based and community-based care to meet the growing needs of the ageing population with respect to receiving adequate care. Home-based care refers to services provided by adult children or a hired carer in the homes of the elderly. Community-based care refers to the provision of services for seniors in a community environment, such as via daycare centers. Institutional care means that an organization is responsible for providing various forms of accommodation and a range of support and care services for seniors at designated locations. By the end of 2023, there were 216.76 million elderly individuals aged 65 and above, accounting for 15.40% of the total population in China [1].

Institutional care is a service provided by the employees of elderly care institutions to elderly residents in an institutional environment. Accepting institutional care means the elderly would be transferred from a familiar home environment to unfamiliar institutions, and the service providers would change from close relatives to unknown employees. Concerns about the declining quality of life are inevitable [2]. In addition, the quality of life of the service providers, i.e., the employees, cannot be ignored because a high-quality workforce is a prerequisite for the quality of life of the elderly residents [3]. Good quality of life is the center of social sustainability, which pursues the realization of human well-being and aims to foster good quality of life [4,5]. Therefore, social sustainability is particularly critical for the institutional care environment.

Although few studies are specifically aimed at social sustainability, there are many global studies on the elderly and employees in elderly care institutions, some of which discuss certain aspects pertaining to quality of life, such as equity, education and training, safety, etc. Existing clues indicate that the elderly in institutional environments have a lower quality of life than those who do not live in these institutions [6]. The employees' quality of life is also low [7–9], which leads to concern about how the employees could provide a good-quality service.

A socially sustainable elderly care institution can achieve stakeholders' well-being and promote social justice [10]. A literature review will indicate that many problems exist in China's institutional care environment, and that both the elderly residents and the employees are experiencing low quality of life. However, these studies usually analyze certain aspects of quality of life from the perspective of specific stakeholders. They are sporadic and intended for other research purposes, and they are unable to provide information on the social sustainability of institutional care as a whole. There is a lack of research undertaken to interpret the problems of the institutional care environment from the perspective of social sustainability in the Chinese context. This leads to the research question of this paper, i.e., how is the social sustainability of the institutional care environment in China? To the best of the authors' knowledge, academic publications have not discussed this issue. One of the reasons for this is that the development history of institutional care in China is short and the consideration of social sustainability is not yet embedded in the development and operations of institutional care. Social sustainability assessment needs to be strengthened urgently [11]. There is a big gap between practice and theory [12]. Even the definition of social sustainability in the care sector is vague [13]. This study tries to fill this knowledge gap.

The purpose of this paper is to investigate the social sustainability of the institutional care environment. A content analysis was adopted to identify problems related to institutional care in news reports from major Chinese portals. This method effectively infers, describes, and quantifies specific phenomena from written data [14]. It was found that the social sustainability of the institutional care environment in China is poor. Seven of the eight problems faced by employees, the elderly, and their relatives in the process of providing and receiving elderly care services in this environment are related to social sustainability. The findings of this paper are expected to contribute to knowledge and practice. This in-depth analysis of the problems will help government departments and investors become aware of the issues and implement countermeasures to create a successful, socially sustainable institutional care environment. It can also provide valuable insights for the elderly and their relatives in choosing appropriate elderly care institutions.

2. Literature Review

2.1. The Development of Institutional Care in China

China's traditional arrangement for elderly care has been home-based, shaped by Confucian values and collectivism, which have persisted for thousands of years. However, due to various factors such as shifts in the population, economy, and social structure, this tradition needs to be reformed. By the end of 2023, there were 41,000 elderly care institutions with 8.201 million beds in China. The significance of institutional care is self-evident [15].

Initially, institutional care provided only basic living care such as meals, hygiene, and cleaning for the elderly. Now, the services are beginning to diversify. In addition to living care, seniors can enjoy care services such as chronic disease management and specialized medical treatment, as well as supportive services like social interaction, education, and cultural entertainment [15–18].

2.2. Quality of Life in China's Institutional Care Environment

2.2.1. Elderly Residents' Quality of Life

There have been many attempts to measure the quality of life of elderly residents in elderly care institutions in mainland China, most of which have limited their scope to health-related areas [2,19]. Elderly residents are generally frail and many suffer from Alzheimer's disease [20]. They have unmet healthcare needs [21] and often feel lonely and fearful [22,23]. In addition, elderly residents face many other problems such as unequal access to care services [24,25], limited autonomy and trampled human dignity [26], threatened security [27], etc. Accessibility is a challenge that family members of elderly individuals must face when visiting their loved ones [28].

2.2.2. Employees' Quality of Life

Studies have shown that employees in elderly care institutions are experiencing low quality of life. They have a poor professional image, face heavy workloads, and receive low pay [15,29]. Many of them lack education and training [30,31]. In addition, the employees experience high physical and psychological burdens, leading to occupational burnout. This pressure is increasing due to the impact of the COVID-19 pandemic.

Table 1 summarizes the methodologies and main findings of existing research.

Table 1. Summary of existing research.

References	Methodology	Main Findings
[32]	Questionnaire survey and statistical analysis	Elderly residents are physically frail.
[22]		Elderly residents feel lonely and fearful.
[26]		The autonomy of elderly residents is restricted, and their dignity is trampled.
[2]		The health condition of elderly residents is poor.
[19]		The health condition of elderly residents is poor.
[20]	Field survey and statistical analysis	The elderly residents have a higher prevalence of dementia.
[27]		The safety of elderly residents is under threat.
[25]	Field survey, accessibility analysis, spatial autocorrelation analysis	The accessibility of care services is unequal.
[28]	case study	Elderly care institutions are inaccessible.
[15]	Delphi method	Employees have a low professional image, heavy workloads, and low salary.
[30]	Cluster randomized controlled trial	Employees lack education and training.
[33]	Interviews	Employees experience high physical and psychological pressure.

2.3. Social Sustainability in a Chinese Context

A project's social sustainability refers to the satisfaction of the needs of its stakeholders, for example, potential end users, local communities, project workforce, local authorities, etc.

Many scholars agree that social sustainability comprises two major dimensions, i.e., satisfaction of basic needs/well-being/quality of life, and social justice/equity. For example, it is believed that when a society can meet a wide range of human needs and achieve

social justice, it is socially sustainable. Shelter, food, employment, and so on are the basic requirements for the sustainability of individuals and communities, while a society with a higher degree of equity brings longer life expectancy, lower crime rate, higher citizen participation, etc. The same is true for any project. When it improves the quality of life and reduces social inequity, it is socially sustainable [34].

Further, social sustainability is context-dependent. Political, institutional, and cultural backgrounds have an impact on its interpretation [35]. Therefore, research on the social sustainability dimensions and themes must first clarify the context. Based on the above two ideas, a conceptual framework of social sustainability composed of well-being and social justice in a Chinese context was developed [36] (see Figure 1). Well-being includes physical well-being and social well-being. The former is related to social sustainability themes such as health, safety, etc., while the latter is related to the themes of education, training, social cohesion, etc. Social justice refers to the fair distribution of all resources, power, and opportunities in the process of achieving well-being. It is related to the themes of equity, equal access to services and opportunities, participation, etc.

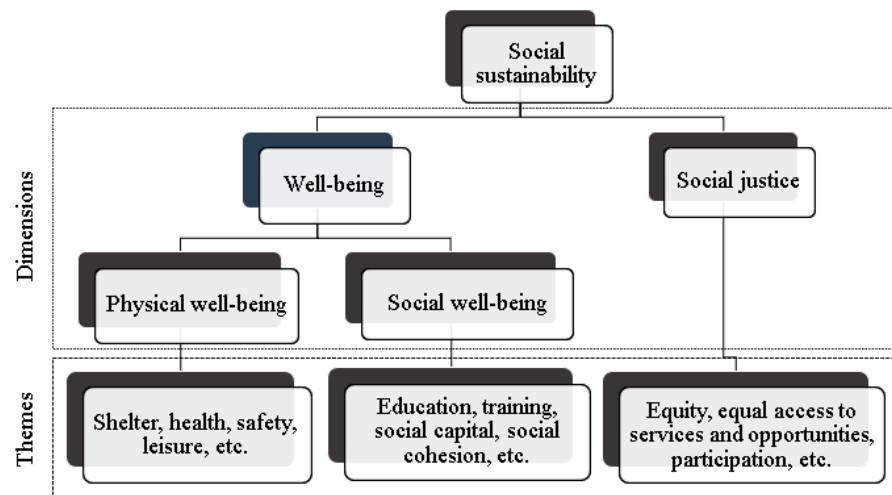


Figure 1. The conceptual framework of social sustainability in the Chinese context (adapted from [Liu, Dijst, Geertman and Cui [36]]).

3. Research Method

The entire research process of this paper is shown in Figure 2.

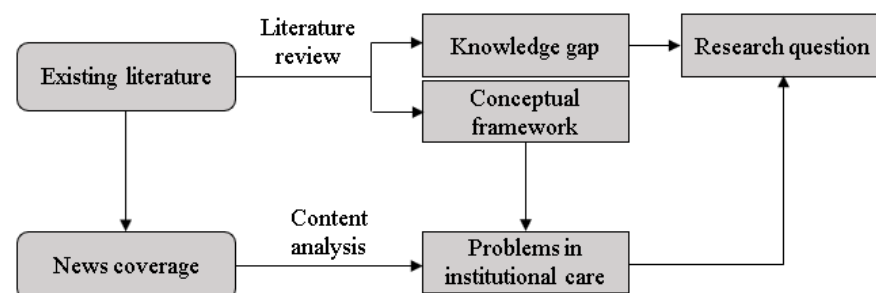


Figure 2. Research process of this paper.

A content analysis focused on media reports was used to analyze how socially sustainable the institutional care environment in China is. This method can effectively use oral, visual, or written data through systematic and objective means to describe and quantify specific phenomena [14]. As a result, more objective and reliable outcomes can be presented with the premise of consuming fewer resources [37]. This method has been widely used in the field of elderly care research [38–40].

Media text, such as newspaper articles and TV reports, often describe the current state clearly. They are usually the object of content analysis. A large amount of texts can provide extensive information on a particular topic and highlight important issues that need to be considered [41]. Some scholars have used textual media as subjects for content analysis to study issues in the field of elderly care [16,42]. China's mainstream media has reported extensively on problems related to institutional care, which provides useful and reliable information for the analysis of this paper.

Figure 3 shows the research flow of content analysis. Specific explanations are as follows.

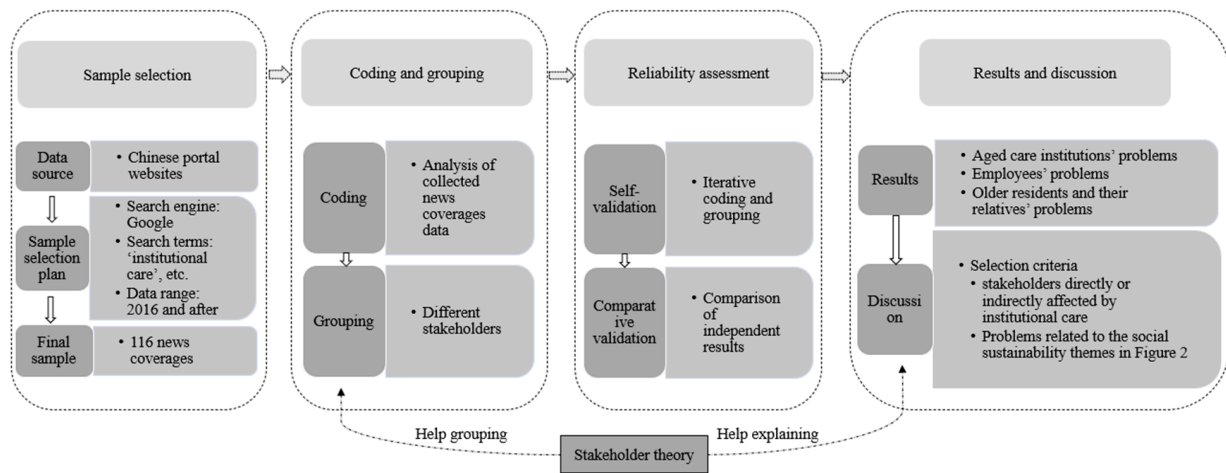


Figure 3. Research flow of content analysis.

3.1. Theoretical Base

This study is based on stakeholder theory. This theory and social sustainability support each other. On the one hand, stakeholder theory takes sustainability as a key element [43]. It argues that business should create value, including social value, for all stakeholders in a sustainable manner [44]. On the other hand, social sustainability requires contributions from stakeholder theory. This theory focuses on the interests and well-being of stakeholders [45]. It is believed that only when the social needs and desires of stakeholders are met or expected to be met will they make sufficient contributions to the project to deliver on the project's goal [46].

Stakeholder theory contributes to this study in two ways: (a) it helps in grouping the problems identified after coding, i.e., to group them into different stakeholder groups; and (b) it helps to explain the significance of the emergence of these groups in the discussion of social sustainability.

3.2. Sample Selection

Samples will only be selected after determining the data sources and sample selection plan [47]. The sources of news coverage used here were determined based on the list of "Top Sites in China" published by Alexa, a website-ranking service provider [48]. The supplier ranks the top websites in each country and region annually, while also listing their reliability, usefulness, and acceptability [49]. This study selected eight out of the top fifty Chinese websites ranked by Alexa in 2021 (see Table 2). The remaining forty-two sites were excluded due to their focus on specialized services, for example, internet search, social media, forums, and shopping.

Table 2. The eight major Chinese portal sites for content analysis.

No.	Website	Rank in Alexa List
1	Qq.com	3
2	Sohu.com	4
3	Sina.com.cn	9
4	Xinhuonet.com	10
5	Huanqiu.com	17
6	17ok.com	20
7	163.com	22
8	Rednet.cn	33

Then, Google was used to retrieve news reports about institutional care from the eight portals. The reason for using Google is that it is the most influential and comprehensive search engine in the world. News reports often use different Chinese phrases to refer to institutional care, mainly including “institutional care (机构养老)”, “aged care institutions (养老机构)”, “care homes (养老院)”, “respected senior homes (敬老院)”, “nursing homes (养护院)”, “social welfare homes (福利院)”, “senior community (老年社区)”, “senior real estate (老年地产)”, “senior apartments (老年公寓)”, “elderly apartments (养老公寓)”, “elderly community (养老社区)”, and “elderly real estate (养老地产)”. Different types of institutions have varying functions, target audiences, and ownership, but they all provide institutional care. In October 2022, searches were conducted using these twelve phrases on each selected portal site. Since the research focuses on the problems related to institutional care, specific keywords such as “problems (问题)”, “dilemma(困境)”, or “difficulty (难点)” were added during the search. Moreover, the data range is 2016 and after. The purpose of this is to retrieve issues that have emerged in recent years. For example, to search the “qq.com” site, enter [“机构养老” OR “养老机构” OR “养老院” OR “敬老院” OR “养护院” OR “福利院” OR “老年社区” OR “老年地产” OR “老年公寓” OR “养老公寓” OR “养老社区” OR “养老地产”) AND (“问题” OR “困境” OR “难点”) site: qq.com after:2016] in the Google search bar. The search results were restricted to “Google News”. A total of 5427 news reports were retrieved. After carefully screening the titles and content of the reports, we selected news articles that provide detailed coverage of problems related to institutional care (defined as having at least one paragraph dedicated to problem analysis). This criterion ensures that the selected news reports provide substantial coverage of the problems, rather than brief mentioning (i.e., a problem is only mentioned in a report without details or discussion, e.g., “The shortage of staff in elderly care institutions needs concern”). Ultimately, one hundred and sixteen news reports were selected for further analysis. Please see the details in the Supplementary file.

3.3. Coding and Grouping

Predefined systems, frameworks, or analysis of collected data can be used for coding and grouping [50]. This study analyzed the collected news coverage data to accomplish this task. We summarized and described the problems present in the institutional care environment in China based on a literature review and preliminary data analysis, categorizing them according to the stakeholder groups to which they belong.

3.4. Reliability Assessment

The two co-authors in this article independently coded and classified the one hundred and sixteen news stories. The coding and grouping process is iterative. The authors alternated between text and outputs of content analysis, gradually refining and validating the category scheme. However, due to factors such as fatigue, personal bias, and perception, human errors are inevitable. Therefore, in addition to self-validation, the two independent coding and classification results were compared. Inconsistencies were discussed and revised.

4. Results

The problems in the institutional care environment were categorized into three main types based on the different stakeholders: problems faced by elderly care institutions, problems encountered by the employees, and problems experienced by the elderly and their relatives. All data in this section were from relevant news coverages.

4.1. Problems Faced by Elderly Care Institutions

The problems that elderly care institutions face are summarized in Table 3. Frequency represents the number of times a problem is discussed in news reports.

Table 3. Problems encountered by elderly care institutions.

No.	Category (Total Frequency)	Specific Problems	Frequency
(1)	Professionals (80)	Shortage of professionals	44
		Low quality of professionals	36
(2)	Finance (41)	Low return rate	30
		Difficulty in financing	11
(3)	Resistance (29)	Resistance of the elderly and their relatives to institutional care	20
		Resistance of the community to institutional care	9
(4)	Policies (25)	Lack of preferential policies	14
		Imperfect combined healthcare and elderly care policies	11

(1) Professional related problems

The biggest challenge facing elderly care institutions is a shortage of talent: (a) Direct care staff shortage: Data reported in the news indicates that currently, there are approximately 200,000 direct care staff in China providing services to over 2 million elderly individuals living in care institutions, with an average of around 10 residents per caregiver. According to international norms, the ratio of caregivers to disabled elderly people is usually one to three. Based on this standard, China currently requires over ten million caregivers for the forty-four million disabled and semi-disabled seniors. In addition, most direct care staff are migrant workers. This leads to a greater shortage of caregivers during the Lunar New Year or busy farming seasons, as they need to return home to celebrate or to farm. (b) Management talent shortage: Most existing managers have transitioned from other industries like catering, healthcare, or housekeeping, lacking an understanding of the elderly care sector; for example, they are neither proficient in applying the relevant laws and regulations nor do they fully understand the operational principles of elderly care institutions. (c) Other specialized talent shortages: Elderly care institutions are severely lacking in talent for specialized services such as rehabilitation, healthcare, emotional support, and end-of-life care.

Another professional-related problem is the low quality of professionals. According to reports, most direct care staff in elderly care institutions in major cities like Beijing come from rural areas and are around forty to fifty years old. Their education level is low, their professional knowledge is lacking, their caring ideas are outdated, and their skills are limited. The situation for care staff in other cities is even worse.

(2) Finance related problems

The second problem has to do with finance. First, elderly care institutions have a low return on investment. Many of them operate on thin profit margins or incur losses. It was reported in 2015 over half of China's private elderly care institutions can only maintain a balance between income and expenses, with forty percent of these institutions operating at

a loss for many years, and less than nine percent being able to turn a profit. Among them, seventy-eight percent are slightly profitable, with a profit margin of around five percent. Second, elderly care institutions face difficulties in financing. Private lending is the main source of funding for these institutions, while formal market financing channels such as bank loans are often not accessible.

(3) Resistance related problems

The third problem is resistance. First, the elderly and their relatives have a psychological aversion to institutional care. Elderly people are unwilling to go to care facilities. "Only childless people go to a care home." "Going to a care home is like telling others that one's children are unfilial." Family members of the elderly also reject elderly care institutions. Traditional filial piety often makes them feel guilty if their relatives transition to an institution. This choice seems to imply that they have not fulfilled their duty to care for their elders. Second, communities reject such institutions. Resistance stems from the "neighbor avoidance effect." Community residents tend to believe that: (a) it would occupy public space in the community; (b) the noise, air pollution, and medical waste generated will affect the community environment; (c) the death of the elderly would bring panic to local residents; and (d) it would lead to a decline in property values in the community, resulting in financial losses for residents.

(4) Policy related problems

Elderly care institutions are facing policy challenges. First, private elderly care institutions can only enjoy limited preferential policies and incentives from the government. The Civil Affairs departments have introduced several preferential policies, such as discounts on land and water prices, as well as temporary exemption from corporate income, etc. However, many policies have been formulated without considering the difficulties in actual implementation, resulting in many private elderly care institutions not benefiting from them. Second, the combination of healthcare and elderly care policy is difficult to implement. Elderly care institutions can achieve the combination of healthcare and elderly care either by establishing internal medical stations or by collaborating with external medical institutions. However, the complexity of the application and acceptance process for internal medical stations, along with difficulties in cooperation with external medical institutions, hinders the implementation of the policy.

4.2. Problems Encountered by the Employees

Table 4 displays the problems. In news reports, "employees" usually refers to direct care staff.

Table 4. Problems encountered by the employees.

No.	Category	Specific Problems	Frequency
(1)	Compensation	Low income with heavy workloads	31
(2)	Status	Low social status	21
(3)	Development	Limited education and training	19
(4)	Pressure	High psychological pressure	10

(1) Compensation related problems

Direct care workers face severe wage exploitation. They typically work six days a week for ten to twelve hours each day. Night shifts are a common occurrence. The workload of caregivers is more intense when serving elderly individuals with disabilities or dementia. In comparison, their salaries are not proportional to the hard work they put in. Even in a large city like Beijing, care staff can only earn about 4000 to 5000 CNY per month, and there are no additional benefits to expect. Wages are lower in other cities.

(2) Status related problems

Direct care workers have a low social status. Most members of society look down on caregivers, considering their work to be menial. When contempt comes from elderly individuals receiving care services and their families, the psychological impact on caregivers is even greater. This leads to a lower sense of social identity among them.

(3) Development related problems

The lack of vocational training and professional education limits the capacity development of professionals. There is a severe shortage of specialized education aimed at cultivating talent for the operation and management of elderly care institutions in China. Reports indicate that a junior college diploma is currently the highest level of education in the field of elderly care in China.

(4) Pressure related problems

The pressure faced by care staff comes from three aspects: (a) the abnormal behavior exhibited by some elderly residents; for example, elderly residents with Alzheimer's often engage in behaviors that cause physical or emotional harm to caregivers; (b) cross-gender care; approximately eighty-eight percent of the care staff are women, and some of them experience stress when providing physical care for the elderly men; and (c) blame from elderly individuals and their relatives. Care staff are often blamed when elderly individuals feel uncomfortable or their families are dissatisfied.

4.3. Problems Experienced by the Elderly and Their Relatives

Table 5 demonstrates the problems.

Table 5. Problems encountered by the elderly and their relatives.

No.	Category	Specific Problems	Frequency
(1)	Services	Neglected psychological needs and monotonous life	24
		Imperfect combined healthcare and elderly care	22
(2)	Charge	Unguaranteed safety	9
		High charges	20
(3)	Admission	Discrimination against some elderly	9
(4)	Location	Remote location of elderly care institutions	6

(1) Service related problems

The biggest challenge faced by the elderly is the low quality of services.

First, elderly people usually experience psychological issues and lead monotonous and dull lives. When transitioning from a familiar home to an unfamiliar institutional environment, many elderly individuals find it difficult to adapt. Various problems arise, such as insomnia and bodily pain. On the other hand, elderly individuals who live in care facilities for a long time also face a range of psychological barriers, such as loneliness, the threat of illness, and fear of death. They are just passing the time in care institutions, lacking both hope and goals. In other words, the diverse needs of elderly individuals in institutional settings are not being met, or even recognized, beyond basic physiological needs—food, drink, accommodation, etc.

Second, elderly people find it difficult to enjoy combined healthcare and elderly care service. According to reports, nursing beds account for only twenty percent of the total beds in elderly care facilities, leaving most seniors unable to access medical and rehabilitation services provided by the facilities themselves. Furthermore, existing policies do not adequately support external medical institutions from entering care facilities to provide services. For instance, current regulations do not allow medical personnel to provide injections or prescribe medication on site. They are only permitted to perform basic tasks such as measuring blood pressure.

Third, elderly individuals often feel unsafe. Some elderly care institutions lack appropriate safety measures, leading to frequent incidents such as falls and wandering among seniors, and even resulting in violent events between elderly individuals. Furthermore, some elderly care facilities lack age-friendly design in their hardware. For example, bathrooms have glass partitions, and rooms are missing emergency call devices and interfaces for first aid equipment installation.

(2) Charge related problems

The second problem is the high charges. This mainly occurs in private elderly care institutions. A survey in Beijing showed that expenses of 7000 to 8000 CNY per month discourage many elderly from entering institutions. Even the elderly in Beijing can hardly afford the high charges, let alone the elderly in other cities.

(3) Admission related problems

The issue of admission primarily arises when elderly individuals with disabilities or dementia enter care facilities. Discrimination often occurs. Some institutions attempt to exclude such elderly individuals through strict admission assessments. Reports indicate that there are currently fewer than twenty institutions in Shanghai willing to accept elderly individuals with moderate dementia. The situation is even more severe in other relatively less economically developed cities.

(4) Location related problems

Many elderly care institutions are in remote areas. Taking Beijing as an example, only thirty-two percent of public beds for the elderly are in urban districts, while a large number of beds are in the outskirts. This is even more pronounced in private institutions.

5. Discussion

The results presented in Section 4 are discussed in this section to shed light on how socially sustainable institutional care environment in China is. It should be noted that not all identified stakeholders and corresponding problems are related to social sustainability. Two selection criteria are shown in Figure 3. Regarding the selection of stakeholder groups, according to the research of [51], social sustainability requires paying attention to the needs of stakeholders directly or indirectly affected by a project. There is no doubt that employees, the elderly, and their relatives meet this requirement. Although the elderly care institution is also an important stakeholder, such institutions are not the objects of social sustainability but significant forces to achieve it. Therefore, the discussion does not include elderly care institutions and the problems they encounter. In addition, the problems to be discussed are selected based on the conceptual framework of social sustainability established by [36] in a Chinese context (see Figure 1). Problems related to the social sustainability themes included in stakeholders' well-being and social justice are discussed. The reason for choosing this framework is that it would allow us to look at problems from the lens of social sustainability and provide meaningful discussions towards the research aim. In Figure 4, the arrow from "problems" to "themes" is intended to represent a categorization or belonging relationship rather than a direct impact relationship. This means that we only highlight problems that fall within the scope of social sustainability. While "charges" could affect aspects of social sustainability, such as equity and accessibility, it is not directly included in our social sustainability framework because it primarily pertains to economic sustainability.

The social sustainability of the institutional care environment in China is shown in Figure 4. The details are discussed as follows.

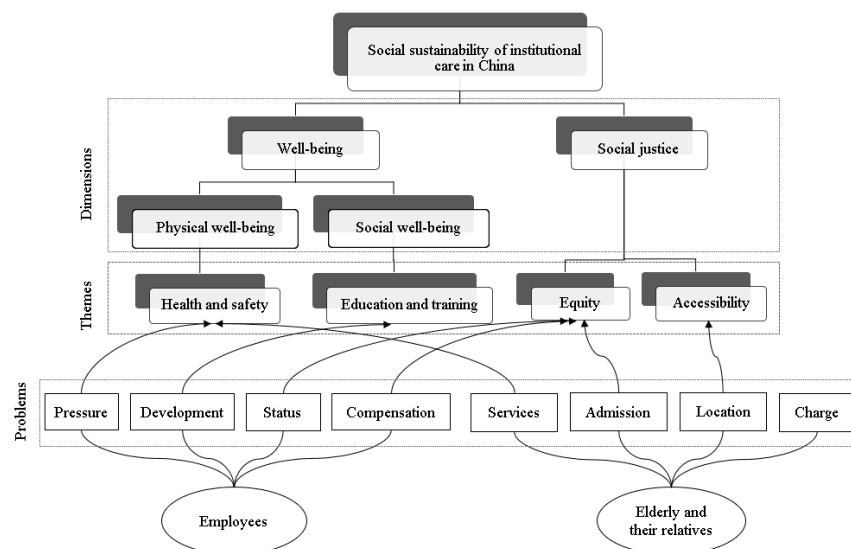


Figure 4. Social sustainability of institutional care in China.

5.1. Social Sustainability of the Employees

Employees are always important stakeholders in social sustainability studies [52,53]. Qualified employees in elderly care institutions hold key resources such as skills, friendliness, and patience. Their contributions are essential for the good experience of elderly residents and their relatives. However, they will not make sufficient contribution unless their needs and expectations are met or expected to be met [54]. The problems identified in Section 4.2 indicate that the needs of employees are not met well. All four problems are related to social sustainability themes.

(1) Threatened health and safety

The problem of pressure indicates that employees are experiencing health and safety risks. Health and safety are necessary human needs for preserving a good health state. They are core themes of social sustainability [12,55]. They are fundamental to quality of life [6]. High pressure is widespread in the world [56,57]. Particularly during the COVID-19 pandemic, employees experienced very high levels of burnout, moral distress, and compassion fatigue [7,58].

(2) Limited education and training

The problem of development indicates that employees do not receive adequate education and training. Social sustainability focuses on training employees, providing career guidance and higher education opportunities to promote their career development [59]. The lack of education and training leads to unmet care needs of residents [6] and increased pressure of the employees [60]. Limited education and training for employees are common worldwide.

(3) Unequal treatment

The problem of status and compensation means that employees are not treated equally. Equity is a core theme of social sustainability. It involves all the basic human rights and addresses social, environmental, and economic justice and fairness issues [12]. It is believed that fair compensation is an important aspect of equity [61]. Discrimination, however, is a manifestation of social exclusion [62]. Unequal compensation and discrimination of employees is also a common phenomenon worldwide [15,63,64].

5.2. Social Sustainability of the Elderly and Their Relatives

Consumers are often identified as an important stakeholder in social sustainability research [52,53,65,66]. The elderly and their relatives are the end users of institutional

care. They have key resources such as funding, the right to choose, and the right to recommendation, which are critical for producing project outputs. The problems identified in Section 4.3 indicate that the needs of the elderly and their relatives are also not well met. Three of the four problems are related to social sustainability themes.

(1) Unsatisfied health and safety needs

The problem of services means that the health and safety needs of the elderly, which are core themes of social sustainability, are not satisfied.

First, the satisfaction of psychological needs corresponds to mental health, which is an important factor influencing quality of life [67,68]. Obviously, elderly residents' psychological needs have been ignored, and elderly residents tend to live a monotonous life [10]. Mental health problems among elderly residents are common worldwide [69,70]. Elderly care institutions are paying more attention to the satisfaction of their elderly residents' physical needs, while ignoring their psychosocial needs [71].

Second, the availability of healthcare services determines a person's health status to a large extent, which has been proven to be an important factor influencing the quality of life [67]. Unfortunately, the healthcare needs of China's elderly residents are not well met. In fact, elderly care institutions around the world have not been able to cope with this challenge well. There are many problems, such as the lack of a diverse, sufficiently knowledgeable, and well-equipped healthcare team [72], the inability to coordinate health and social care [73], etc.

Third, safety is a prerequisite for positive social activities and it enhances trust and reciprocity among residents [62]. However, elderly residents' safety is threatened in many ways.

(2) Unequal access

The problem of admission indicates that there is a lack of equal access for elderly residents. Equity is a core theme of social sustainability [12]. The elderly have the right to equal access to elderly care services. However, it is obvious that they may be treated unequally due to their physical conditions. A study on institutional care in Australia found that educational attainment and geographical isolation also contribute to inequities in access [24].

(3) Inaccessibility

The problem of location indicates that the accessibility needs of the elderly are not met. Accessibility is a fundamental theme in improving social sustainability [34]. The geographical location of the institution, whether it is close to public transportation and convenient for family visits, is crucial for maintaining social activities among the elderly and improving their quality of life [17,68]. This problem has been echoed in other studies [25,28,74].

6. Conclusions and Limitations

The social sustainability of the institutional care environment is crucial. It refers to an improvement in the quality of life of the stakeholders who are directly or indirectly affected by the environment. This is not only conducive to the realization of the well-being of stakeholders but also to the development of institutional care and the realization of the Chinese government's strategic aim of assisting the elderly in actively coping with aging.

The content analysis of news coverage on eight portal websites indicates that elderly care institutions, employees, the elderly, and their relatives are important stakeholders of institutional care. They face many problems in the process of providing and receiving services in the institutional environment. Institutions often encounter problems in professionals, finance, resistance, and policies. For employees, low income with heavy workloads, low social status, limited education and training, and high psychological pressure are the most common problems. For the elderly and their relatives, problems such as unsatisfied services (e.g., neglected psychological needs and a monotonous life, imperfect combined

healthcare and elderly care, and unguaranteed safety), high charges, discrimination, and being forced to work in a remote location often occur.

It seems that the social sustainability of the institutional care environment in China requires more attention. Seven of the eight identified problems related to employees, the elderly, and their relatives are related to social sustainability themes (see Figure 4). Specifically, employees' health and safety are threatened, and they lack education and training opportunities. They are unequally treated in the employment process too. The health and safety of the elderly is also threatened. Their psychological, physical, and safety needs need to be further addressed. In the meantime, unequal access to institutional care and the inaccessibility of elderly care institutions also needs to be concerned.

The findings of this paper will enable institutional care providers, including public sector and private investors, to understand what matters to employees, the elderly, and their relatives. This understanding can inform the implementation of appropriate measures to enhance the social sustainability of the institutional care environment and ensure successful service delivery. Additionally, this study serves as a useful reference for the elderly and their relatives when choosing elderly care institutions.

The limitation of this paper is that it only analyzes the second-hand data in the news coverage and undertakes a descriptive study of the problems existing in China's institutional care environment and the social sustainability issues reflected by them. News reports generally tend to focus on negative coverage of events, which may introduce bias into this study. Therefore, future research should aim to collect primary data and conduct a more systematic and comprehensive study on the composition and realization status of the social sustainability of the institutional care environment. In addition, this study serves as a preliminary exploration of the social sustainability of the institutional care environment in China. Merely identifying existing problems is insufficient; future research should focus more on strategies and interventions for achieving social sustainability in this context.

Supplementary Materials: The following supporting information can be downloaded at <https://www.mdpi.com/article/10.3390/buildings14092953/s1>.

Author Contributions: Conceptualization, K.W.; Methodology, Y.K.; Investigation, K.W.; Formal analysis, K.W. and Y.K.; Validation, Y.K.; Funding acquisition, K.W.; Writing—original draft, K.W.; Writing—review and editing, Y.K. and S.S.; Supervision, S.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Zhejiang Provincial Philosophy and Social Science Planning Project, grant number 24NDJC062YB.

Data Availability Statement: The original contributions presented in the study are included in the Supplementary Material. Further inquiries can be directed to the corresponding author.

Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyzes, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

References

1. National Bureau of Statistics. *Chinese Statistical Bulletin of National Economic and Social Development*; National Bureau of Statistics: Beijing, China, 2024.
2. Liu, C.; Feng, Z.; Mor, V. Case-mix and quality indicators in Chinese elder care homes: Are there differences between government-owned and private-sector facilities? *J. Am. Geriatr. Soc.* **2014**, *62*, 371–377. [[CrossRef](#)] [[PubMed](#)]
3. Miller, E.; Devlin, N.; Buys, L.; Donoghue, G. The happiness initiative: Changing organizational culture to make b'rilliance' mainstream in aged care. *J. Manag. Organ.* **2020**, *26*, 296–308. [[CrossRef](#)]
4. Karji, A.; Woldesenbet, A.; Khanzadi, M.; Tafazzoli, M. Assessment of social sustainability indicators in mass housing construction: A case study of Mehr housing project. *Sustain. Cities Soc.* **2019**, *50*, 101697. [[CrossRef](#)]
5. Weingaertner, C.; Moberg, Å. Exploring social sustainability: Learning from perspectives on urban development and companies and products. *Sustain. Dev.* **2014**, *22*, 122–133. [[CrossRef](#)]

6. European Centre for Social Welfare Policy and Research. *Measuring Progress: Indicators for Care Homes*; European Centre for Social Welfare Policy and Research: Vienna, Austria, 2010.
7. Blanco-Donoso, L.M.; Moreno-Jiménez, J.; Amutio, A.; Gallego-Alberto, L.; Moreno-Jiménez, B.; Garrosa, E. Stressors, job resources, fear of contagion, and secondary traumatic stress among nursing home workers in face of the COVID-19: The case of Spain. *J. Appl. Gerontol.* **2021**, *40*, 244–256. [[CrossRef](#)]
8. Martín, J.; Padierna, Á.; Villanueva, A.; Quintana, J.M. Evaluation of the mental health of care home staff in the COVID-19 era. What price did care home workers pay for standing by their patients? *Int. J. Geriatr. Psychiatry* **2021**, *36*, 1810–1819. [[CrossRef](#)]
9. Rivett, E.; Hammond, L.; West, J. What influences self-perceived competence and confidence in dementia care home staff? A systematic review. *Psychogeriatrics* **2019**, *19*, 440–456. [[CrossRef](#)]
10. Wang, K.; Ke, Y.; Sankaran, S. The social pillar of sustainable development: Measurement and current status of social sustainability of aged care projects in China. *Sustain. Dev.* **2024**, *32*, 227–243. [[CrossRef](#)]
11. Bahador, A.; Bavar, C. Creating private and semi public open spaces to achieve social sustainability in residential complexes. *Facilities* **2022**, *40*, 757–773. [[CrossRef](#)]
12. Eizenberg, E.; Jabareen, Y. Social sustainability: A new conceptual framework. *Sustainability* **2017**, *9*, 68. [[CrossRef](#)]
13. Olmsted, J.C. Care labor, intergenerational equity, and (social) sustainability. *Rev. Soc. Econ.* **2021**, *82*, 51–75. [[CrossRef](#)]
14. Riffe, D.; Lacy, S.; Watson, B.R.; Fico, F. *Analyzing Media Messages Using Quantitative Content Analysis in Research*, 4th ed.; Routledge: New York, NY, USA, 2019.
15. Shi, C.; Zhang, Y.; Li, C.; Pan, L.; Zhu, H. Using the Delphi method to identify risk factors contributing to adverse events in residential aged care facilities. *Risk Manag. Healthc. Policy* **2020**, *13*, 523–537. [[CrossRef](#)] [[PubMed](#)]
16. Wang, K.; Ke, Y.; Sankaran, S.; Xia, B. Problems in the home and community-based long-term care for the elderly in China: A content analysis of news coverage. *Int. J. Health Plan. Manag.* **2021**, *36*, 1727–1741. [[CrossRef](#)] [[PubMed](#)]
17. Cheng, Y.; Rosenberg, M.W.; Wang, W.; Yang, L.; Li, H. Access to residential care in Beijing, China: Making the decision to relocate to a residential care facility. *Ageing Soc.* **2012**, *32*, 1277–1299. [[CrossRef](#)]
18. Su, S.-W.; Wang, D. Health-related quality of life and related factors among elderly persons under different aged care models in Guangzhou, China: A cross-sectional study. *Qual. Life Res.* **2019**, *28*, 1293–1303. [[CrossRef](#)]
19. Wu, M.; Yang, Y.; Zhang, D.; Zhao, X.; Sun, Y.; Xie, H.; Jia, J.; Su, Y.; Li, Y. Association between social support and health-related quality of life among Chinese rural elders in nursing homes: The mediating role of resilience. *Qual. Life Res.* **2018**, *27*, 783–792. [[CrossRef](#)]
20. Xu, S.; Jin, X.; Liu, C.; Jin, Y.; Xu, Y.; Chen, L.; Xu, S.; Tang, H.; Yan, J. Investigating the Prevalence of Dementia and Its Associated Risk Factors in a Chinese Nursing Home. *J. Clin. Neurol.* **2017**, *13*, 10–14. [[CrossRef](#)]
21. Han, Y.; He, Y.; Lyu, J.; Yu, C.; Bian, M.; Lee, L. Aging in China: Perspectives on public health. *Glob. Health J.* **2020**, *4*, 11–17. [[CrossRef](#)]
22. Ji, J.; Zhang, L. Research on satisfaction and influencing factors of rural elderly in community support: An empirical analysis based on multinomial logistic regression model. *Zhejiang Soc. Sci.* **2021**, *4*, 68–80.
23. Lan, X.; Xiao, H.; Chen, Y. Psychosocial reactions to relocation to a nursing home among Chinese older adults. *Arch. Gerontol. Geriatr.* **2020**, *91*, 104230. [[CrossRef](#)]
24. Yu, S.; Byles, J. Waiting times in aged care: What matters? *Aust. J. Aging* **2020**, *39*, 48–55. [[CrossRef](#)] [[PubMed](#)]
25. Cheng, T.; Liu, C.; Yang, H.; Wang, N.; Liu, Y. From service capacity to spatial equity: Exploring a multi-stage decision-making approach for optimizing elderly-care facility distribution in the city centre of Tianjin, China. *Sustain. Cities Soc.* **2022**, *85*, 104076. [[CrossRef](#)]
26. Li, Y.; Wang, Y.; Gu, Y.; Gong, D.; Jiang, S.; Li, J.; Xu, H. Knowledge, Attitude, and Practice of Nursing Home Staff Regarding Physical Restraint in China: A Cross-Sectional Multicenter Study. *Front. Public Health* **2022**, *10*, 815964. [[CrossRef](#)] [[PubMed](#)]
27. Li, C.; Shi, C. Adverse Events and Risk Management in Residential Aged Care Facilities: A Cross-Sectional Study in Hunan, China. *Risk Manag. Healthc. Policy* **2022**, *15*, 529–542. [[CrossRef](#)]
28. Cai, E.; Liu, Y.; Jing, Y.; Zhang, L.; Li, J.; Yin, C. Assessing spatial accessibility of public and private residential aged care facilities: A case study in Wuhan, central China. *Int. J. Geo-Inf.* **2017**, *6*, 304. [[CrossRef](#)]
29. Chen, X.; Tang, L.; Liu, L.; Bai, Z.; Chen, R. Factors related to turnover intention among staff of elderly caring social organizations in Anhui Province, China: A cross-sectional study. *BMC Health Serv. Res.* **2021**, *21*, 1265. [[CrossRef](#)]
30. Feng, H.; Li, H.; Xiao, L.D.; Ullah, S.; Mao, P.; Yang, Y.; Hu, H.; Zhao, Y. Aged care clinical mentoring model of change in nursing homes in China: Study protocol for a cluster randomized controlled trial. *BMC Health Serv. Res.* **2018**, *18*, 816. [[CrossRef](#)]
31. Chan, T.; Luk, J.K.; Chu, L.; Chan, F.H. Low education level of nursing home staff in Chinese nursing homes. *J. Am. Med. Dir. Assoc.* **2013**, *14*, 849–850. [[CrossRef](#)]
32. Liu, W.; Puts, M.; Jiang, F.; Zhou, C.; Tang, S.; Chen, S. Physical frailty and its associated factors among elderly nursing home residents in China. *BMC Geriatr.* **2020**, *20*, 294. [[CrossRef](#)]
33. Zhao, S.; Yin, P.; Xiao, L.D.; Wu, S.; Li, M.; Yang, X.; Zhang, D.; Liao, L.; Feng, H. Nursing home staff perceptions of challenges and coping strategies during COVID-19 pandemic in China. *Geriatr. Nurs.* **2021**, *42*, 887–893. [[CrossRef](#)]
34. Chan, E.; Lee, G.K.L. Critical factors for improving social sustainability of urban renewal projects. *Soc. Indic. Res.* **2008**, *85*, 243–256. [[CrossRef](#)]

35. Rogers, D.S.; Duraiappah, A.K.; Antons, D.C.; Munoz, P.; Bai, X.; Fragkias, M.; Gutscher, H. A vision for human well-being: Transition to social sustainability. *Curr. Opin. Environ. Sustain.* **2012**, *4*, 61–73. [CrossRef]
36. Liu, Y.; Dijst, M.; Geertman, S.; Cui, C. Social sustainability in an ageing Chinese society: Towards an integrative conceptual framework. *Sustainability* **2017**, *9*, 658. [CrossRef]
37. Xia, B.; Chan, A.; Zuo, J.; Molenaar, K. Analysis of selection criteria for design-builders through the analysis of requests for proposal. *J. Manag. Eng.* **2013**, *29*, 19–24. [CrossRef]
38. Xia, B.; Skitmore, M.; Zuo, J.; Buys, L. Review of community facilities in Australian retirement villages: A content analysis. *Australas. J. Ageing* **2015**, *34*, 144–148. [CrossRef] [PubMed]
39. Hu, X.; Xia, B.; Skitmore, M.; Buys, L.; Hu, Y. What is a sustainable retirement village? Perceptions of Australian developers. *J. Clean. Prod.* **2017**, *164*, 179–186. [CrossRef]
40. Syme, M.L.; Yelland, E.; Cornelison, L.; Poey, J.L.; Krajicek, R.; Doll, G. Content analysis of public opinion on sexual expression and dementia: Implications for nursing home policy development. *Health Expect.* **2017**, *20*, 705–713. [CrossRef]
41. Kovanović, V.; Joksimović, S.; Gašević, D.; Siemens, G.; Hatala, M. What public media reveals about MOOCs: A systematic analysis of news reports. *Br. J. Educ. Technol.* **2015**, *46*, 510–527. [CrossRef]
42. Hu, X.; Xia, B.; Hu, Y.; Skitmore, M.; Buys, L. What hinders the development of Chinese continuing care retirement community sector? A news coverage analysis. *Int. J. Strateg. Prop. Manag.* **2019**, *23*, 108–116. [CrossRef]
43. Freeman, R.E.; Dmytryiev, S.D.; Phillips, R.A. Stakeholder theory and the resource-based view of the firm. *J. Manag.* **2021**, *47*, 1757–1770. [CrossRef]
44. Freeman, R.E. *Strategic Management: A Stakeholder Approach*; Cambridge University Press: Cambridge, UK, 2010.
45. Harrison, J.S.; Bosse, D.A.; Phillips, R.A. Managing for stakeholders, stakeholder utility functions, and competitive advantage. *Strateg. Manag. J.* **2010**, *31*, 58–74. [CrossRef]
46. Harrison, J.S.; Freeman, R.E.; de Abreu, M.C.S. Stakeholder theory as an ethical approach to effective management: Applying the theory to multiple contexts. *Rev. Bus. Manag.* **2015**, *17*, 858–869. [CrossRef]
47. Krippendorff, K. *Content Analysis: An Introduction to Its Methodology*; SAGE Publications: New York, NY, USA, 2019.
48. Alexa, Top Sites in China. 2021. Available online: <https://www.alexa.com/topsites/countries/CN> (accessed on 15 October 2021).
49. Jowkar, A.; Didegah, F. Evaluating Iranian newspapers' web sites using correspondence analysis. *Libr. Hi Tech* **2010**, *28*, 119–130. [CrossRef]
50. Graneheim, U.; Lundman, B. Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. *Nurse Educ. Today* **2004**, *24*, 105–112. [CrossRef]
51. Mathur, V.N.; Price, A.D.F.; Austin, S. Conceptualizing stakeholder engagement in the context of sustainability and its assessment. *Constr. Manag. Econ.* **2008**, *26*, 601–609. [CrossRef]
52. United Nations Environment Programme; Society of Environmental Toxicology and Chemistry. *Guidelines for Social Life Cycle Assessment of Products*; UNEP/SETAC Life Cycle Initiative: Nairobi, Kenya, 2009.
53. Hossain, M.U.; Poon, C.S.; Dong, Y.H.; Lo, I.M.C.; Cheng, J.C.P. Development of social sustainability assessment method and a comparative case study on assessing recycled construction materials. *Int. J. Life Cycle Assess.* **2018**, *23*, 1654–1674. [CrossRef]
54. Eskerod, P.; Lund Jepsen, A.; Dalcher, P.D. *Project Stakeholder Management*; Taylor & Francis Group: Farnham, UK, 2013.
55. Sierra, L.A.; Yepes, V.; Pellicer, E. A review of multi-criteria assessment of the social sustainability of infrastructures. *J. Clean. Prod.* **2018**, *187*, 496–513. [CrossRef]
56. Islam, M.S.; Baker, C.; Huxley, P.; Russell, I.T.; Dennis, M.S. The nature, characteristics and associations of care home staff stress and wellbeing: A national survey. *BMC Nurs.* **2017**, *16*, 22. [CrossRef]
57. Kadri, A.; Rapaport, P.; Livingston, G.; Cooper, C.; Robertson, S.; Higgs, P. Care workers, the unacknowledged persons in person-centred care: A secondary qualitative analysis of UK care home staff interviews. *PLoS ONE* **2018**, *13*, e0200031. [CrossRef]
58. Shahar, I.; Asher, I.; Ben Natan, M. Compassion fatigue among nurses working in a long-term care facility: The Israeli experience. *Nurs. Health Sci.* **2019**, *21*, 291–296. [CrossRef]
59. Institute for Sustainable Infrastructure. *Envision: Rating System for Sustainable Infrastructure*; Institute for Sustainable Infrastructure: Washington, DC, USA, 2015.
60. Costello, H.; Cooper, C.; Marston, L.; Livingston, G. Burnout in UK care home staff and its effect on staff turnover: MARQUE English national care home longitudinal survey. *Age Ageing* **2020**, *49*, 74–81. [CrossRef] [PubMed]
61. Labuschagne, C.; Brent, A.C.; van Erck, R.P.G. Assessing the sustainability performances of industries. *J. Clean. Prod.* **2005**, *13*, 373–385. [CrossRef]
62. Dempsey, N.; Bramley, G.; Power, S.; Brown, C. The social dimension of sustainable development: Defining urban social sustainability. *Sustain. Dev.* **2011**, *19*, 289–300. [CrossRef]
63. Davis, J.; Morgans, A.; Birks, M.; Browning, C. The rhetoric and reality of nursing in aged care: Views from the inside. *Contemp. Nurse* **2016**, *52*, 191–203. [CrossRef]
64. Devi, R.; Goodman, C.; Dalkin, S.; Bate, A.; Wright, J.; Jones, L.; Spilsbury, K. Attracting, recruiting and retaining nurses and care workers working in care homes: The need for a nuanced understanding informed by evidence and theory. *Age Ageing* **2021**, *50*, 65–67. [CrossRef]
65. Popovic, T.; Barbosa-Póvoa, A.; Kraslawski, A.; Carvalho, A. Quantitative indicators for social sustainability assessment of supply chains. *J. Clean. Prod.* **2018**, *180*, 748–768. [CrossRef]

66. Almahmoud, E.; Doloi, H.K. Assessment of social sustainability in construction projects using social network analysis. *Facilities* **2015**, *33*, 152–176. [[CrossRef](#)]
67. Ghența, M.; Matei, A.; Mladen-Macovei, L.; Vasilescu, M.D.; Bobârnat, E.-S. Sustainable Care and Factors Associated with Quality of Life among Older Beneficiaries of Social Services. *Sustainability* **2021**, *13*, 1572. [[CrossRef](#)]
68. Xia, B.; Chen, Q.; Buys, L.; Skitmore, M.; Walliah, J. Sustainable living environment in retirement villages: What matters to residents? *J. Aging Environ.* **2021**, *35*, 370–384. [[CrossRef](#)]
69. Eagar, K.; Westera, A.; Kobel, C. Australian residential aged care is understaffed. *Med. J. Aust.* **2020**, *212*, 507–508. [[CrossRef](#)]
70. Age Cymru. *My Home Life Cymru—Good Practice Guide*; Age Cymru: Cardiff, UK, 2011.
71. Rupel, V.P.; Ogorevc, M.; Majcen, B. *Quality Assurance Policies and Indicators for Long-Term Care in the European Union Quality Country Report: Slovenia*; European Network of Economic Policy Research Institutes: London, UK, 2012.
72. Koopmans, L.; Damen, N.; Wagner, C. Does diverse staff and skill mix of teams impact quality of care in long-term elderly health care? An exploratory case study. *BMC Health Serv. Res.* **2018**, *18*, 988. [[CrossRef](#)]
73. Clough, R.; Manthorpe, J.; Green, B.; Fox, D.; Hay, J. *The Support Older People Want and the Services They Need*; Joseph Rowntree Foundation: York, UK, 2007.
74. Yang, C.; Shi, S.; Runeson, G. Associations between Community Parks and Social Interactions in Master-Planned Estates in Sydney, Australia. *Sustainability* **2022**, *14*, 3496. [[CrossRef](#)]

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.