Progress, Challenges, and Development Directions of Long-Term Care Policies in Taiwan

Hao-Yang Xiao, Meng-Yun Wang*

GXNU School of Politics and Public Administration, Guangxi Normal University, Guilin, China

*Correspondence email: 2657704501@qq.com

Abstract. Taiwan entered an aging society in 1993 and became a deeply aging society in 2018. It is estimated that by 2025, Taiwan will enter a super-aged society. With the impending arrival of a super-aged society characterized by low birth rates, the old-age dependency ratio continues to rise, and the accompanying issue of long-term care will become a significant burden for the younger population in Taiwan. As the ten-year Long-term Care 1.0 and 2.0 plans near their end, Taiwan introduced the "Long-term Care Iron Triangle Service with Smart Technology Assistance Plan" in 2021 to promote the development of smart long-term care on the island. This article discusses the main long-term care policies in Taiwan and explores future paths for integrating smart long-term care practices across the Taiwan Strait.

Keywords: Super-aged society, Long-term Care 1.0, Long-term Care 2.0, Long-term Care Iron Triangle, Smart long-term care

1 Introduction

When the population aged 65 and above in an area accounts for more than 7% of the total population, it enters an aging society; 14% of the population aged 65 and above is a deeply aging society; If the population aged 65 and above accounts for more than 20% of the total population, it will enter a super-aging society. The total population of Taiwan as of the end of October 2024 was 23,402,804[1], of which 2,749,724 were aged 0 to 14, accounting for 11.75% of the total population. the population aged between 15 and 64 was 16,199,867, accounting for 69.22%; The number of people over 65 years old is 4,453,213, accounting for 19.03%, and they have entered a deep aging society[2].

Population aging refers to the trend of decreasing the number of young people and increasing the number of elderly people in the total population due to the decrease in fertility rate and the increase in life expectancy in a region. Aging is the result of the transformation of the overall structure of the population under the progress of economic, social and medical care, which includes two meanings: first, the proportion of the elderly population in the total population is increasing; Second, the social population structure is in a state of old age and has entered an aging society.

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Due to the ongoing trend of low birth rates and population aging in Taiwan. As shown in Figure 1, it is projected that from 2024 to 2070, the natural decrease in population (deaths exceeding births) will rapidly expand, leading to a continuous decline in the total population.

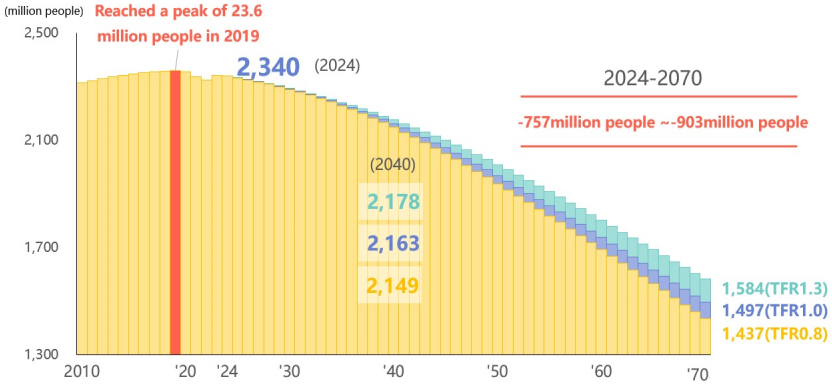

Fig. 1. Overall Population Trends in Taiwan

2 Overview and Impact of Population Aging in Taiwan

The current trend of aging and declining birthrate in Taiwan reflects the results of changes in the marriage and childbearing, education, and employment patterns of Taiwan's population under the evolution of the overall social environment over a long period of time.

Taiwan has entered an aging society in 1993 (the elderly population accounts for more than 7% of the total population), and in 2018 it became a deep aging society (the elderly population accounted for more than 14% of the total population), and it is expected to become a super-aging society (the elderly population accounts for more than 20% of the total population) in 2025. As shown in Table 1, by 2070, more than 3 of the elderly population will be over 85 years old; By 2070, this ratio is expected to increase to 43.6%, and the proportion of the elderly population aged 85 and above will be as high as 31.3% in 2070.

Table 1. Overview of Total Population in Taiwan

Project	At the end of 2024	At the end of 2030	At the end of 2040	At the end of 2070
High estimation - population size	23.41 million people	22.95 million people	21.78 million people	15.84 million people
(Compared to 2024)	-	Reduce 450000 people	Reduce 1.63 million people	Reduce 7.57 million people
Mid estimation - population size	23.4 million people	22.93 million people	21.63 million people	14.97 million people

(Compared to 2024)	-	Reduce 470000 people	Reduce 1.77 million people	Reduce 8.44 million people
Low estimation - population size	23.4 million people	22.9 million people	21.49 million people	14.37 million people
(Compared to 2024)	-	Reduce 500000 people	Reduce 1.91 million people	Reduce 9.03 million people

Source: Taiwan Population Estimation (2024 to 2070).

According to the latest statistics of Taiwan's "Ministry of the Interior", due to the rapid increase in the elderly population and the dual impact of fewer children, at the end of February 2017, Taiwan's aging index exceeded 100 for the first time, and the number of elderly people over 65 years old has exceeded the number of young people aged 0-14. At the end of January 2021, the aging index in Taiwan reached 128.7, and at the end of January 2021, the elderly support ratio in Taiwan was 22.7, which is equivalent to 1 elderly person being supported by 4.4 working people (15-64 years old), and the elderly support ratio in 2022 was 24.9%, and by the end of 2023, the elderly support ratio in Taiwan climbed to 26.4%, of which the main caregiver was over 65 years old and reached 34.47%. 32.21% of the carers were affected by their work; It is estimated that by 2070, the ratio of elderly support to the elderly on the whole island of Taiwan will rise sharply to 91.3%.[3]

As shown in Table 2, from 2024 to 2070, the total population of Taiwan will decrease by 8.44 million, including 1.71 million children aged 0-14, 9.2 million young adults aged 15-64, and 2.48 million elderly people aged 65 and above. As shown in Figure 2, the population of young and middle-aged people is gradually decreasing, while the elderly population is increasing, and the phenomenon of aging will become more severe[4].

Table 2. Age Population and Structure in Three Stages in Taiwan

	Project (Ten thousand people)	At the end of 2024		At the end of 2070		Changes at the end of 2024-2070	
		Number of people	Proportion of total population (%)	Number of people	Proportion of total population (%)	Number of people	Change rate (%)
Highly estimated	Juvenile population (0-14 years old)	275	11.7	137	8.7	-137	-49.9
	Young and middle-aged population (15-64 years old)	1,617	69.1	750	47.3	-867	-53.6
	Elderly population (over 65 years old)	449	19.2	697	44.0	248	55.2
Mid estimation	Juvenile population (0-14 years old)	274	11.7	103	6.9	-171	-62.6
	Young and middle-aged population (15-64 years old)	1,617	69.1	697	46.6	-920	-56.9

	Elderly population (over 65 years old)	449	19.2	697	46.5	248	55.2
Low estimation	Juvenile population (0-14 years old)	274	11.7	81	5.6	-193	-70.6
	Young and middle-aged population (15-64 years old)	1,617	69.1	660	45.9	-957	-59.2
	Elderly population (over 65 years old)	449	19.2	697	48.5	248	55.2

Source: Taiwan Population Estimation (2024 to 2070).

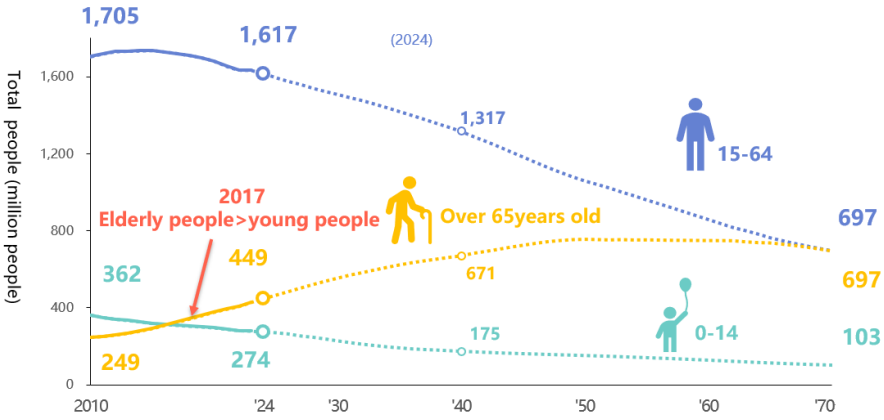

Fig. 2. Population Age Structure Projections for Taiwan Region (2010–2070)

3 The Historical Policy of Long-Term Care Planning in Taiwan

Long term care for the elderly refers to the comprehensive services provided to individuals who suffer from chronic diseases or physical or mental disabilities that prevent them from fully or partially taking care of themselves and require long-term assistance from others to achieve maximum independence and meet their basic living needs. These services include daily care, psychological comfort, rehabilitation care, healthcare, and end-of-life care.

The overall population structure in Taiwan is rapidly aging, leading to an increase in the demand for long-term care . In order to develop a sound long-term care system, in 2007, the administrative department of Taiwan approved the Ten Year Plan for Long term Care (referred to as "Long term Care 1.0"), implemented the "Ten Year Plan for Long term Care 1.0" from 2007 to 2016, and launched the "Ten Year Plan for Long term Care 2.0" from 2017 to 2026.

With the expiration of the plan period, and in line with the trend of "smart long-term care" of technology, digitalization, Internet plus combined with telemedicine, Taiwan launched the "Building a Long term Care Iron Triangle Service to Import Smart

Technology Assistance Plan" in 2021 to gradually improve the supply side of long-term care services in the island[5].

(1) Long term Care Ten Year Plan 1.0 (2007-2016)

The "Long term Care Ten Year Plan 1.0" policy refers to the establishment of a long-term care system and service network through encouraging private participation in service provision, joint financial responsibility between the government and the private sector, the development of home services, day care, home care, community and home rehabilitation, purchase (rental) of assistive devices and improvement of home accessible environments, nutritional catering, respite services, transportation and transportation services, as well as long-term care institutions and other diversified services.

1. Plan objectives

As shown in Table 3, the basic goal of Long-term Care 1.0 is to "build a complete Long-term Care system in Taiwan, ensure that people with physical and mental disabilities can access appropriate services, improve their independent living ability, improve their quality of life, and maintain dignity and autonomy".

2. Service recipients

(1) Elderly people aged 65 and above
(2) Mountain indigenous people aged 55 to 64
(3) Individuals aged 50 to 64 with disabilities
(4) Elderly individuals who are disabled and living alone due to IADLs only

3. Service Items

Table 3. Ten year Plan for Long-term Care in Taiwan 1.0 Service Items and Subsidies

Service Items	Subsidy content
(1) Care services (including home services, day care, and home daycare services)	1. Subsidy of service hours based on the degree of disability on a case by case basis: Mild: The maximum monthly subsidy limit is 25 hours. Only elderly people with IADLs who are disabled and living alone can apply for this standard. Moderate: The maximum monthly subsidy limit is 50 hours. Severe: The maximum monthly subsidy limit is 90 hours. 2. Subsidy funds: calculated at 180 yuan per hour (adjusted according to the price index). 3. Those who exceed the government subsidy hours will be fully responsible for their own expenses.
(2) Home care	In addition to the current national health insurance payment of 2 home care services per month, for those assessed to have a need, a maximum of 2 additional services per month will be provided. Subsidy for home care visit fees, calculated at NT $1300 per visit.
(3) Community and Home Rehabilitation	This service is provided for those who are unable to use health insurance rehabilitation resources through transportation. The cost of each visit is calculated at NT $1000, with a maximum of one visit per person per week.

(4) Purchase and rental of assistive devices and improvement services for residential accessibility environment	Within ten years, the subsidy is limited to NT $100000, but after evaluation, those with special needs may have their subsidy amount increased accordingly.
(5) Elderly catering services	The service targets low-income households and elderly people with disabilities (including those who are only disabled by IADLs and live alone); Each person is entitled to a maximum subsidy of one meal per day, calculated at NT $50 per meal.
(6) Breathing service	Mild and moderate disabilities: up to 14 days of subsidy per year. 2. Severe disability: up to 21 days of subsidy per year. 3. Provide daily care allowance of NT $1000 to the caregiver. 4. It can be used in combination with institutional and home breathing services. 5. The institution's respite service will also subsidize transportation costs by NT $1000 per trip, up to a maximum of 4 trips per year.
(7) Transportation shuttle service	Subsidize severely disabled individuals to use transportation services similar to rehabilitation buses, with a maximum subsidy of 4 times per month (8 round-trip trips), calculated at NT $190 per trip.
(8) Long-term Care institution services	1. The total household income is distributed equally among the entire family, and severely disabled elderly people who do not reach 1.5 times the minimum living allowance stipulated by the Social Assistance Law per person per month are fully subsidized by the government. 2. The total household income is distributed equally among the entire family, and for moderately disabled elderly individuals who have not reached 1.5 times the minimum living allowance stipulated by the Social Assistance Law per person per month, project subsidies may also be provided if it is necessary to move in after evaluating the family's support situation. 3. The maximum amount per person per month is NT $18600.

(2)Long-term Care in Taiwan 2.0 (2017-2026)

With the aging population and diversified demand for care services in Taiwan, in order to cope with the demand for long-term care derived from the increase of disabled and dementia population, provide diversified and continuous services from supporting families, at home, communities to residential care, and establish a community-based long-term care service system. In December 2016, the administrative department of Taiwan approved the Ten Year Plan for Long term Care 2.0 (referred to as Long-term Care 2.0), and implemented the Long-term Care 2.0 plan from January 2017 to 2026 to respond to the long-term care problem in an aging society.

The goal of Long-Term Care 2.0 is to integrate front-end services such as preventive healthcare, active aging, and disability mitigation, aiming to enhance the health and

well-being of the elderly and improve their quality of life. Additionally, it provides multi-objective community-based support services at the back-end, including end-of-life hospice care at home, thereby alleviating the caregiving burden on family members and reducing the overall long-term care load. Furthermore, efforts are focused on actively promoting pilot programs for comprehensive community care models, developing innovative services, and establishing a community-based healthcare team system. These efforts also extend to providing services such as discharge preparation and home medical care. Notably, Long-Term Care 2.0 builds upon the existing service offerings of Long-Term Care 1.0, expanding the service targets from 4 to 8 categories and increasing the service items from 8 to 17[6].

1. Plan objectives

As shown in Table 4, in order to achieve local aging, Long-Term Care 2.0 provides diversified and continuous services from supporting families, residences, communities to residential care, popularizes the care service system, establishes community-based care communities, and hopes to improve the quality of life of Long-term Care demanders and caregivers.

The core goal of Long Term Care 2.0 is to implement the long-term care policies of "community aging" and "local aging", so that elderly people can obtain good economic life, health care, and social services, and construct a "Long Term Care 2.0 Iron Triangle" that improves the pension, long-term care, and health insurance systems for the elderly.

1. Patients over 50 years old with dementia
2. Indigenous people aged 55 and above on flat land
3. Individuals under the age of 49 with disabilities
4. Weakened individuals aged 65 and above

3. Service Items

Table 4. Ten Year Plan for Long-term Care 2.0 Expanded Services

	Ten Year Plan for Long-term Care 1.0	**Ten Year Plan for Long-term Care 2.0**
service object	4 categories 1. Disabled individuals aged 65 and above 2. Persons with disabilities aged 50 and above who are disabled 3. Indigenous people aged 55 and above in mountainous areas 4. Elderly people aged 65 and above who live alone and have only IADL disability	Long-term Care 2.0 added service objects from 4 categories to 8 categories 5. Dementia patients over 50 years old 6. Indigenous people aged 55 and above on flat land 7. Persons with disabilities under the age of 49 8. Weakened individuals aged 65 and above
service content	8 items 1. Care services (home	Long-term Care 1.0 service items were added to Long-term Care 2.0 from 8 items to 17 items.

	services, day care, family daycare) 2. Home care 3. Home rehabilitation 4. Delivery service 5. Transportation pick-up and drop off 6. Assistive equipment services 7. Breathing service 8. Institutional services	9. Dementia Care Services 10. Integrated community services in indigenous areas 11. Small scale multifunctional services 12. Family caregiver support service center 13. Establish community integrated service centers, composite service centers, and alley long term stations (ABC) 14. Community Preventive Care 15. Services for preventing or delaying disabilities 16. Discharge preparation services 17. Home healthcare
ABC Community Integrated Care Model	not have	The development of the overall care model in the community is led by units with service capabilities within the region, integrating and connecting services to develop convenient long-term care resources in the area. The role description of service units at all levels of Long term Photo ABC is as follows[7]: **A-level** unit (community integrated service center): Develop care service plans and connect or provide long-term care services for disabled individuals. **B-level** unit (composite service center): Responsible for providing long-term care services, such as home services, day care, home care, community and home rehabilitation, transportation, catering services, assistive device services, respite services, etc. **C-level** unit (alley chief care station): provides social participation, health promotion, shared meal services, prevention and delayed disability services. Units with capacity can provide additional respite services (temporary care).

4 The Auxiliary Application of Smart Technology in Long-Term Care: Introducing Smart Technology into The Long-Term Care 2.0 "Iron Triangle" Plan

In implementing the Long-Term Care 2.0 (LTC 2.0) policy, the Taiwanese government has progressively extended diversified home and community care services to the living environments of elderly individuals. This approach aims to strengthen health promotion and the prevention of functional decline at the early stages, adopting the strategy of "aging in place." The goal is to enable elderly individuals to enjoy their later years in familiar surroundings, prolonging the time they can age at home and reducing the demand for institutional care facilities.

This policy objective aligns with the key principles outlined in the World Health Organization's (WHO) "World Report on Aging and Health" and the "Integrated Care for Older People" (ICOPE) framework. Both documents emphasize the importance of promoting healthy and active aging, making this approach a significant goal in global efforts to improve health and longevity.

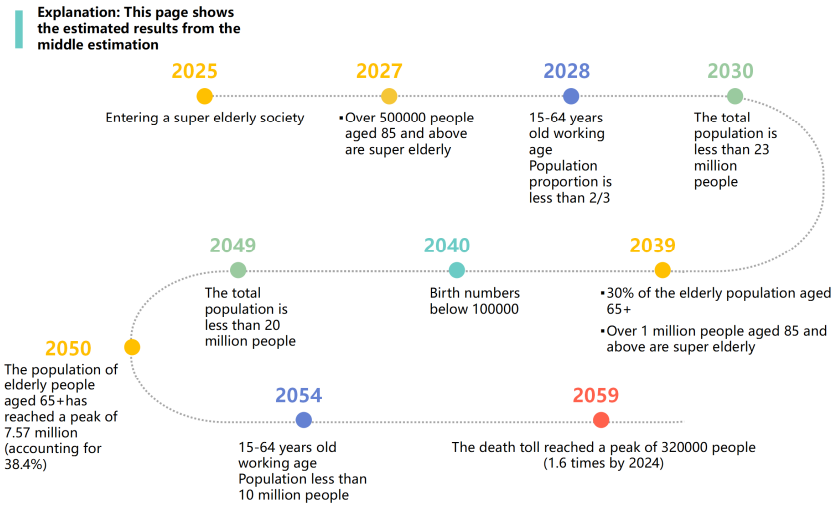

Fig. 3. Important Population Chronology of Taiwan

In recent years, the rapid development of IoT (Internet of Things) and artificial intelligence (AI) technologies, such as facial recognition systems, GPS wireless tracking devices, telemedicine, wearable devices, service robots, IoT-enabled care solutions, 5G mobile broadband communication, big data analysis, and AI-related applications, has gradually integrated into personal lives. These technologies are increasingly utilized to assist elderly individuals in daily living and caregiving.

By leveraging smart technology products such as intelligent mattresses and GPS wireless trackers, these solutions provide appropriate care, enable timely abnormality alerts and preventive interventions, and support aging in place for seniors. This approach not only improves the quality of life for the elderly but also reduces the burden on caregivers, maximizing the efficiency of caregiving resources.

Such strategies are critical for addressing the challenges of deep aging in Taiwanese society, particularly in terms of life support and health care. Furthermore, they resonate with the World Health Organization's (WHO) ICOPE framework, which advocates for "mobile Ageing" (mAgeing) as a key concept in fostering active and healthy aging through mobile and smart technologies.

As Taiwan transitions into a deeply aging society. In Figure 3, the dependency ratio of the working-age population has significantly increased, necessitating a rapid expansion of government-provided long-term care services. However, the integration of smart technology products into the daily lives and care of elderly individuals in

Taiwan remains limited. There is a clear gap between the needs of the elderly and the development of existing smart technology products for living and care support.

This disparity may be attributed to the high costs of implementing smart technologies and equipment, which hinder improvements in overall care quality and operational efficiency. At the same time, reducing the reliance on caregivers remains a critical consideration for institutional management. Despite these challenges, Taiwan has a solid foundation for developing the smart health industry, supported by experienced and skilled health care professionals. This provides an opportunity to devise competitive solutions that not only facilitate the transformation of domestic industries but also foster the emergence of new, star industries, achieving economies of scale and encouraging innovative operational and financial models.

The promotion of the smart health industry in Taiwan focuses on leveraging cloud computing and big data technologies to advance towards key trends, including connected health, personalized services, predictive and preventive benefits, and the establishment of comprehensive ecosystems. This strategic approach positions Taiwan to play a leading role in the smart health industry, addressing pressing needs while driving innovation and economic growth.

To promote the application of smart technology in the lives and care of elderly individuals, adopting the perspective of service providers could be an effective strategy. Initially implementing these technologies in care institutions and community care settings to gather experience and refine practices before extending their use to personal home care would facilitate a smoother transition. As shown in Table 5, by integrating AI and big data analytics, a health risk prediction model can be established to identify at-risk groups, adjust lifestyle behaviors, and provide life-assistance applications, thereby creating a comprehensive technology-driven care network.

The application of smart care technology will expand from serving individuals with disabilities and long-term care needs to include sub-healthy and even healthy elderly individuals. This aligns with the trend of intelligent long-term care development. The goal of the "Long-Term Care Iron Triangle Smart Technology Integration Plan" is to leverage big data analysis, IoT, cloud computing, and smart technologies to develop applications for dementia, functional disabilities, and elderly care. These advancements aim to improve the health care of seniors, prevent and delay the onset of functional decline, and more effectively implement aging in place[8].

Table 5. Application Scope of Smart long-term care Technology in Taiwan

Categry	Detailed Explanation
IoT Basic Platform	4G/5G mobile communication
	Wireless transmission technology
	Digital modeling of spatial field
Space, field, environment	Friendly universal design
	security staff
	Smart Life

	Indoor air quality
Perception, monitoring, and measurement	wearable computer
	Remote physiological measurement
	Wear IoT patch
	Wear IoT sensing insoles
	Inductive floor mat
	Smart mattress
	Anti lost positioning function, Global Positioning System (GPS), mobile location base Two modes of LBS system
	Fall prevention investigation
	Electronic fence
assistive technology	High tech and low tech
	Lifestyle aids (positioning and movement)
	Rehabilitation aids (communication and reading)
	Hardware Technology and Software Technology
Automation technology	Service Robot
	Humanoid robot
	Voice service robot
Intelligent Services	artificial intelligence
	Big data applications
	Open Data
	Intelligent APP
	Care manpower dispatch management platform
	Resource Sharing Management Platform
Interactive game rehabilitation	Cognitive Promotion Games
	Preventing and Delaying Dementia Games

5 Future Development Trends of Smart Technology Care in Taiwan

In 2017, Taiwan introduced and implemented the "Long-Term Care 2.0" plan to address the challenges of an impending super-aged society. This plan offers diverse and continuous services, ranging from family support and home care to community-based and residential care. However, due to the significant gap between the demand for long-term care and the availability of caregivers on the island, the future must rely on

smart technology combined with Taiwan's strengths in healthcare to address the urgent issues of elderly long-term care.

(1)Shortcomings and Challenges of the Long-Term Care 1.0 and 2.0 Plans

Taiwan's previously implemented Long-Term Care 1.0 and 2.0 plans have achieved certain successes but also face notable shortcomings and challenges.

The first issue is that the long-term care service resources and delivery system have not been fully deployed across the island. Currently, among the various long-term care services, only home care services are operated and provided stably by local governments in each county and city. However, the development of other long-term care service resources is inconsistent across counties and cities. In particular, remote areas often face challenges such as special geographical conditions, inconvenient transportation, and difficulty in recruiting long-term care personnel, which affect the investment and expansion of service resources.

The second issue is the instability and insufficiency of caregiving staff. In Taiwan, caregivers (referred to as "care service workers") are the main force in long-term care services. However, among those who have obtained a caregiver certificate, less than a quarter are actually engaged in home care services or working in elderly welfare institutions. The high turnover rate of caregivers and the lower-than-expected proportion of workers continuing in caregiving roles have created a shortage of long-term care staff in Taiwan.

Finally, there is still insufficient promotion and communication regarding public awareness and access to long-term care services. Many elderly individuals on the island are still unaware of the content of home care and day care services. Some people's understanding and usage of related services still need significant improvement. Additionally, some individuals lack a correct understanding of the professional nature and scope of caregiving services, leading to unrealistic expectations and demands. This, coupled with unfamiliarity with the payment mechanisms, has caused controversies and issues, affecting the provision of services and the harmony of relationships.

(2)Let the benefits of "intelligence" and "long-distance" long-term illumination be realized

Establishing an intelligent information management platform, integrating the long photo service network, and allowing intelligent and technological long photos to play a role can solve many of the shortcomings of Taiwan's current long photo 2.0, such as the imbalance between urban and rural areas, and achieve rapid dissemination of policy information. The application of intelligent technology in the field of Long-term Care has multiple applications. For example, the face recognition system can be used to carry out a variety of services, such as access control system, personnel identification, access and movement tracking and other common functions. In addition, the analysis of the elderly's expression, mood and gait can also help to care for long-term care cases.

Through the evolution of communication technology, the development of Internet of Things or wearable devices, sensors, the Internet and other technologies, and the accumulation of multiple personal health data, new strategies can be generated to change the way of care, and through the exchange of information platforms, personal health data can be generated into larger applications, and personalized medicine can gradually

take shape. In terms of Long term Care 2.0, using the intelligent Long term Care Service Integration Platform, care managers can use the management module to real-time grasp the current situation of individual case services, care manpower scheduling, unit revenue and inventory status of A-level community integrated service centers, B-level care service units, and C-level care bases in their responsible areas.

The shortage of manpower in medical care institutions in Taiwan, coupled with the increasing number of retired population and the trend of declining birth rates, has led to a gradual increase in the dependency ratio, while the proportion of working population has decreased. The average responsibility of supporting the elderly per working population has also increased year by year with the increase of the elderly population. Developing customized intelligent long-term care systems is a direction that Taiwan can strive for in the future. In the future, the care of elderly people in Taiwan must be integrated through various intelligent and communication technologies, allowing big data and AI artificial intelligence to amplify long-term radiation energy, digitize and technologize various software, hardware, systems, and processes in the medical care service process, and work together to maximize the benefits of medical resources.

(3)A new path for the integrated development of intelligent long-term lighting across the Taiwan Strait

The main data of the seventh national population census released by the National Bureau of Statistics shows that in the past 10 years, the mainland has passed the first period of rapid population aging, and will soon face the next period of faster population aging. The proportion of the elderly population increased by 5.4% in the 10 years from the sixth national population census in 2010 to the seventh national population census in 2020. By the end of 2023, the elderly population aged 60 and above in mainland China will reach 297 million, accounting for 21.1%; The elderly population aged 65 and above is 217 million, accounting for 15.4%, and has entered a moderately aging society. The Taiwan community leader emphasized the "accessibility" of services, and the community governance in mainland China is aimed at improving and developing home-based community elderly care services. The governance methods for aging and low birth rates are worth emulating and referring to in Taiwan.

At present, the Taiwan Industrial Technology Research Institute is targeting elderly people who can walk healthily. Through the "whole-body gait testing system", it can track the gait and posture changes of the elderly, detect the degree of decline in advance, and once gait abnormalities occur, further use the remote "fitness energy measurement system" to provide exercise prescriptions by coaches and physicians, achieving the effect of early detection and correction. For elderly people who are semi bedridden or bedridden, the "Silver Hair Care Information Station" in the non-contact disability monitoring area can integrate relevant data and provide care for the elderly 24/7. In order to grasp the real-time situation of the elderly being cared for, the Taiwan Industrial Technology Research Institute has also developed long-range, non wearable detection technologies such as "WiFi physiological measurement system", "infrared posture recognition system", "smart bed sheets", "smart light boxes", "smart wheelchairs", etc; When elderly people fall, have abnormal heartbeat or breathing, the monitoring center will immediately notify caregivers and provide real-time support to the elderly.

The research and development of intelligent elderly care equipment and product efficiency in the mainland are far superior to those in Taiwan. If the advanced Smart long-term care equipment in Taiwan can be introduced into the guidance of the technical team in the mainland, or if the two sides cooperate in the research and development of Smart long-term care equipment production, there will be a lot of room for expansion of use scenarios in the future. The urgent need for both sides of the Taiwan Strait to actively respond to population aging is unprecedentedly highlighted. Smart long photos can become a new direction for exploring cooperation and common development in the development of people's livelihoods and social security across the Taiwan Strait. The exchange and interaction of smart long photos can not only promote mutual understanding, but also promote the integrated development of cross-strait relations.

6 Conclusion

With the aging population on both sides of the Taiwan Strait, the need for the deepening and optimization of long-term care services is increasingly urgent. Smart technology care is the future development trend, and it is hoped that it can be implemented more widely in the field of long-term care to optimize administrative and service processes, improve care quality, and address the pressing issues of elderly long-term care through technological and medical advantages. This is the goal of using smart technology to assist long-term care.

In rural areas of Taiwan, the implementation of smart long-term care services is relatively limited. This is because such services require the simultaneous activation of smart devices by both the medical side and the public to enable data transmission. However, many elderly people in rural areas are not familiar with using smart devices. To address this, the Taiwanese government has increased the number of social workers and case managers in rural regions, who conduct regular home visits. These social workers or case managers upload the data of elderly individuals living alone to the long-term care cloud platform, and, when necessary, assist in referring them to medical institutions.

Currently, the funding for smart long-term care services in Taiwan comes partly from the Taiwan Health Insurance Administration budget and partly from out-of-pocket contributions by the public. For the long-term and widespread implementation of smart long-term care, it will be necessary for local governments to allocate a certain percentage of their tax revenues to support this initiative sustainably.

In the future, there will be significant potential for the cross-strait exchange and integration in areas such as people's livelihood issues, social security system exchanges, and mutual learning. In recent years, mainland China has made great strides in grassroots community governance[9], including the establishment of street and township elderly care service unions, the active exploration of "cloud" service platforms, digital elderly care services, home-based elderly care services, the promotion of community embedded facilities, senior meal assistance services, and the establishment of elderly care service grids. Many successful experiences have emerged, driven by

party-building leadership, where diverse stakeholders work together to create new models of grassroots governance for the elderly. This is an area that Taiwan is currently lacking.

The grassroots mass self-governance system in mainland China provides a more detailed understanding of the elderly population in local communities or villages, enabling more precise support and care for elderly individuals in need of long-term care[10]. In this area of institutional design, Taiwan currently lacks a comparable system. Taiwan has relatively lenient policies on population mobility management, and it could draw on the mainland's experience to enhance and complement its existing long-term care system. This would allow for better monitoring of the conditions of elderly individuals at the grassroots level and more effectively promote public welfare and quality of life.

In addition to professional caregivers, many universities and vocational schools in Taiwan have started establishing "Elderly Care Departments" to train young, energetic professionals capable of adapting to the future of smart long-term care. Some larger city hospitals in Taiwan have already introduced automated robots into medical care. In the future, these technologies are expected to be more widely utilized in smart home-based long-term care in rural and township areas.

In the future, experts, scholars, and practitioners in the long-term care field on both sides of the Taiwan Strait can enhance exchanges and inspections, hold academic conferences, share experiences and results, leverage their own advantages, and collaborate in using existing smart technology products. By designing usage scenarios based on the needs of the elderly, smart technology products can be integrated into the daily lives and care applications of elderly individuals on both sides of the Strait.

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