

Healthcare Transformation and Challenges in Mountainous Towns: A Case Study of the Integrated Outpatient Care in Xiu Lin Township

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Introduction

In recent years, Taiwan has been facing the challenges of declining birth rates, resulting in an aging population since 1993. It is estimated that by 2025, Taiwan will enter into a super-aged society. The changing demographic structure directly impacts the heavy burden of medical care, especially in remote rural areas where medical resources are relatively scarce. Mountainous regions, in particular, face even more limited healthcare manpower and resources. However, they bear the significant responsibility of providing medical and health care services to the entire rural population. Therefore, Taiwan's National Health Insurance Administration launched the "Mountainous Region Integrated Care Plan" in 2022, transitioning from a fee-for-service payment system to a capitation-based payment system. The aim is to reduce inefficient use of medical resources and allocate more resources to healthcare.

Methods

This project, launched in Xiu Lin Township, Hualien County, Taiwan, in 2022, targeted 7,888 individuals (47% of the township's population). Using 2021 medical diagnosis data, subjects were assessed for high risk using the Charlson Comorbidity Index, high consumption based on the top 80% of outpatient expenses, and high utilization through outpatient visit frequency. Subsequently, subjects were categorized into four risk levels: healthy, low, medium, and high risk. Five strategies were implemented:

1. Reduce medical consumption and focus on preventive healthcare: Real-time monitoring of health data in nine village areas, integrating screening operations, enhancing health literacy with digital tools, and establishing family health consultation clinics to improve coverage.
2. Integrate resources for early-stage healthcare: Implement early detection and treatment to improve local healthcare access.
3. Strengthen management of chronic diseases to slow progression.
4. Utilize data warehousing and BI visualization to aid health authorities in effective township resident management.
5. Forge strategic alliances with clinics and hospitals, implement tiered healthcare, and establish a referral green channel for continuous care and medical convenience for township residents.

Results

1. Analysis based on the 2021 data of the 7,888 subjects revealed: healthy group (67.9%), low-risk group (20.8%), medium-risk group (9.3%), and high-risk group (2%).
2. Total medical expenses in 2022 decreased by 2.5% compared to 2021.
 - A. Analysis of risk-level groups: The healthy group increased by 32.1%, while the low-risk, medium-risk, and high-risk groups decreased by 15.4%, 11.4%, and 16.2% respectively. Healthcare utilization decreased, allowing for future investment in preventive healthcare.
 - B. Outpatient and inpatient healthcare expenses: Outpatient expenses rose by 1.1%, while inpatient expenses fell by 7.6%. Integrating resources in outpatient care effectively reduced inpatient healthcare use.
 - C. Annual medical expense analysis: In 2023, amidst the pandemic peak, expenses grew by 4.9% compared to the first halves of 2021 to 2023. Despite decreases in medium and high-risk groups, costs rose for the healthy and low-risk groups. This indicates a post-pandemic focus on health, affirming the strategy's correctness. Efforts continue to reduce healthcare use among medium and high-risk groups, prioritizing resources for preventive healthcare.(Table 1)

Conclusion

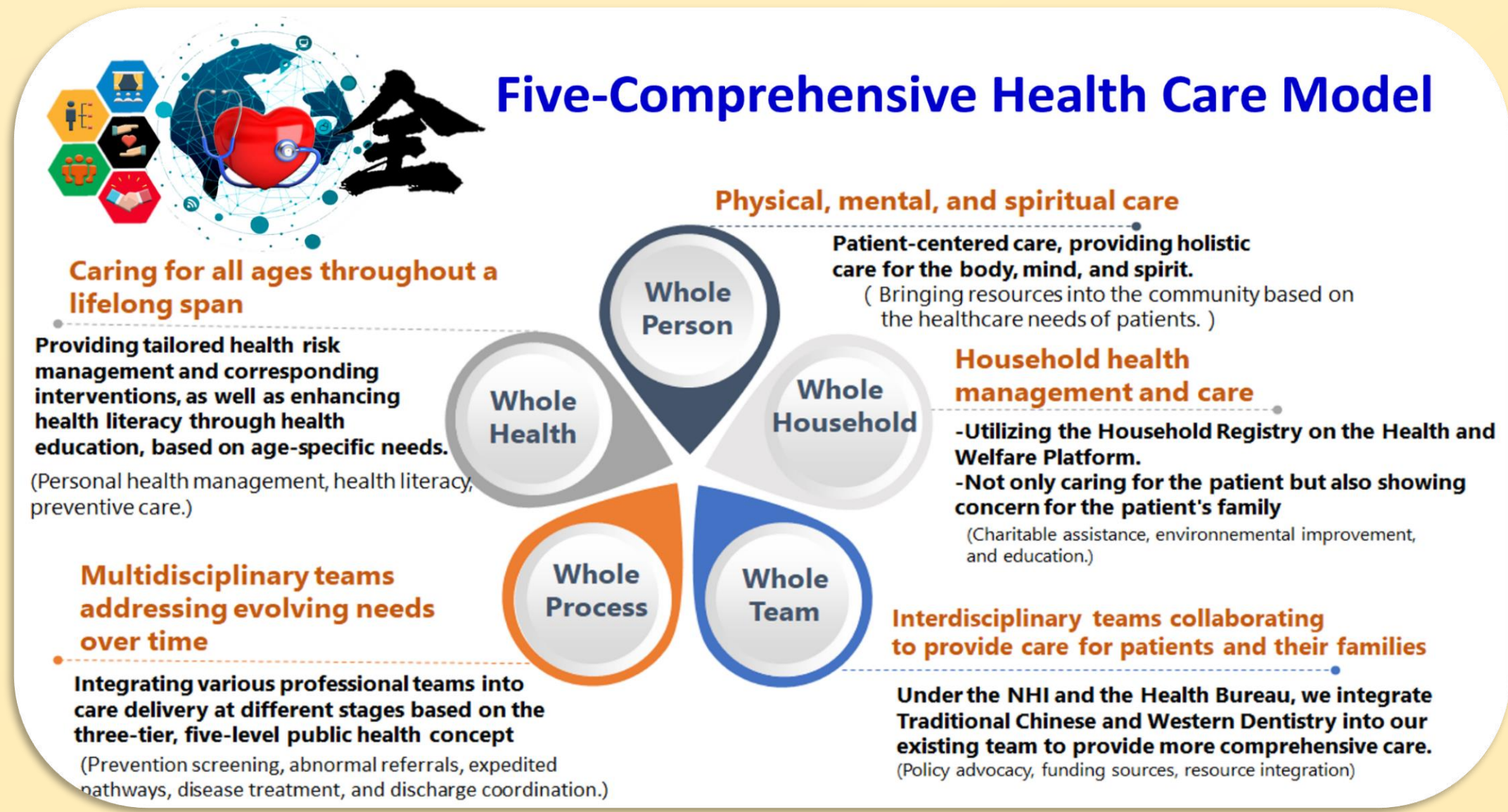
The transformation of Taiwan's National Health Insurance to a capitation-based payment system aims to reduce medical consumption and invest resources in preventive healthcare to improve population health. Risk-stratified management allows for tailored healthcare and health management strategies for different risk groups, reducing resource consumption and care disparities. Utilizing visualized data management can enhance the efficiency of care teams and reduce operational costs. In Xiu Lin Township, Hualien County, we are committed to integrating medical care and precision health with a holistic approach, aiming to improve the health and well-being of township residents and provide policy references for Taiwan's capitation-based payment system planning.

Conference

MOHW. (2022). Request for Proposal for the Integrated Care Program in Mountainous Areas under the National Health Insurance Mountainous and Remote Areas Healthcare Benefit Enhancement Project.
Charlson, M. E., Pompei, P., Ales, K. L., & MacKenzie, C. R. (1987). The Charlson Comorbidity Index Can Be Used Prospectively to Identify Patients Who Will Incur High Future Costs. Journal of Chronic Diseases, 40(5), 373-383.

Table 1 : Annual medical expense analysis (2021~2023)

RISK GROUP	2021 Population	First half of 2021 Total medical expenses	First half of 2022 Total medical expenses	First half of 2023 Total medical expenses	First half of 2022 Same period comparison	First half of 2023 Same period comparison
Healthy group	5,356	57,400,913	61,853,235	77,541,506	7.8%	25.4%
Low-risk group	1,644	69,155,153	57,566,442	66,729,895	-16.8%	15.9%
Medium-risk group	730	57,514,882	51,881,382	40,658,678	-9.8%	-21.6%
High-risk group	158	26,780,560	21,303,156	17,141,713	-20.5%	-19.5%
Total	7,888	210,851,508	192,604,215	202,071,792	-8.7%	4.9%



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