

Study on the Inheritance and Development of the Yellow River Delta (YRD) Traditional Chinese Medicine (TCM) School: Exploration Based on the "TCM +" Model

Huikai Wang^{1,*}, Min Shi¹, Shuhan Zheng²

¹Binzhou Traditional Chinese Medicine Hospital, Binzhou, Shandong, 251400, China

²Puji Traditional Chinese Medicine Gynecology Research Institute of Binzhou City, Binzhou, Shandong, 251400, China

*Corresponding author

Abstract: The Yellow River Delta (YRD) TCM School is an important branch of the Qilu TCM School. Relying on the regional culture and herbal resources of the Yellow River Delta, it has formed distinctive schools such as Zheng's Gynecology, Niu's Miscellaneous Diseases, Mao's TCM, and Zhang's Ophthalmology, accumulating profound academic achievements in fields like TCM specialist diagnosis and treatment, epidemic prevention and control, and health preservation. Through literature review, field research, and case analysis, this paper systematically sorts out the historical context and core characteristics of the school, analyzes the challenges it faces in inheritance, including "impact of modernization, outdated inheritance methods, talent gap, and insufficient academic transformation", and combines the 14th Five-Year Plan for the Development of Traditional Chinese Medicine and local practices in Binzhou to propose a development path centered on "TCM + Academic Inheritance", "TCM + Talent Cultivation", and "TCM + Industrial Integration". Its innovation lies in embedding "regional characteristic diagnosis and treatment experience" into a "multi-field cross-border integration" framework, solving the problems of "fragmented experience and closed inheritance" of traditional schools. Research shows that this path can promote the school to achieve an 80% digital coverage rate of core techniques and a 30% industrial transformation rate of characteristic empirical prescriptions within 3 years. Only through the dialectical unity of "upholding the essence" and "pursuing innovation" can the YRD TCM School achieve the dual improvement of academic value and social value, and provide a "Binzhou Model" for the inheritance and innovation of TCM in the Yellow River Delta.

Keywords: Yellow River Delta (YRD); TCM School; Inheritance and Development; TCM +

1. Introduction

As a "living carrier" of Chinese civilization, the inheritance and innovation of TCM is an important support for the construction of a Healthy China. The Government Work Report of the Third Session of the 14th National People's Congress clearly states that "we will improve the mechanism for the inheritance and innovative development of TCM, and promote the high-quality development of TCM undertakings and industries"[1]. As a central city in the Yellow River Delta, Binzhou, relying on the regional characteristics of "convergence of rivers and seas, coexistence of saline and alkaline land", has nurtured the YRD TCM School represented by Zheng's Gynecology and Niu's Miscellaneous Diseases. This school not only inherits the core concepts of "holism and syndrome differentiation and treatment" from Qilu TCM but also integrates the diagnostic and therapeutic wisdom of "preventive treatment of diseases and adaptation to regional conditions" of the Yellow River Delta, making it a typical representative of northern regional TCM schools. Existing studies mostly focus on the overall inheritance of the Qilu TCM School, with insufficient exploration of the "regionally adaptive techniques" of the YRD branch; moreover, the application of the "TCM +" model is mostly concentrated on the industrial end (such as TCM planting and health tourism), lacking systematic design for the entire chain of "academic inheritance - technological innovation - industrial implementation" [2]. Currently, with the expansion of the modern medical system and the diversification of health needs, the YRD TCM School is facing difficulties such as "loss of traditional techniques, insufficient academic exploration, and lagging industrial transformation". Against this background, how to break the inheritance barriers and

activate academic vitality through the "TCM +" model has become a key issue for the sustainable development of the school. Combining Binzhou's TCM development practices in the past five years (2020-2024), this paper conducts research from three dimensions: history, current situation, and path, aiming to provide theoretical reference and practical insights for the inheritance of regional TCM schools.

2. Historical Context and Core Characteristics of the YRD TCM School

The formation of the YRD TCM School is the result of the long-term integration of "regional culture + clinical practice + academic innovation". Its history can be traced back to the Ming and Qing Dynasties, and after the inheritance of several generations of physicians, it gradually formed a systematic school after the mid-20th century. Its core characteristics are reflected in three dimensions: "specialized research, regional adaptation, and combined use of acupuncture and medication".

2.1 Historical Context: From Folk Experience to a Systematic School

The development of the YRD TCM School in Binzhou can be divided into three key stages, and its formation is closely related to the unique geographical environment, historical accumulation, and policy support of the Yellow River Delta region:

Embryonic Foundation Period (Han-Jin to Ming-Qing Dynasties): The accumulation of folk medicine and the formation of the embryonic form of the official medical system. During the Han-Jin Dynasties, famous physicians such as Shi Yuan and Li Daokong from Yangxin were renowned for their medical ethics and skills, laying the foundation for TCM traditions in northern Shandong. During the Tang-Song Dynasties, the Zhao Zihua family in Huimin practiced medicine for generations; Zhao Zihua served as the Chief Medical Officer and wrote *Four Seasons Health Preservation Record* (later renamed *Dietary Regulation and Health Preservation Illustrations* by Emperor Zhenzong of the Song Dynasty), reflecting the initial establishment of the official medical system. During the Yuan-Ming Dynasties, ganoderma from Zouping was presented as a tribute to the imperial court; Zhou Zongyue from Binzhou wrote *Lecture Notes on Pulse Diagnosis*, and Si Ke from Yangxin was known for "diagnosing diseases by pulse and curing illnesses miraculously", highlighting the development advantages of pulse diagnosis in this region. The school reached its peak during the Ming-Qing Dynasties: ancient herbal medicine fairs lasted for more than 300 years, and places like Zouping and Huimin became regional herbal medicine trading centers, where folk medicine and official medicine promoted each other. According to *A Brief History of TCM in Binzhou (1368-1911)*, the ancestors of the Yellow River Delta accumulated folk therapies such as "herbal fumigation" and "acupoint application" in response to diseases like "bi syndrome (arthralgia)", "spleen-stomach diseases", and "gynecological miscellaneous diseases" caused by the saline-alkali climate. The existing medical records of the Mao's TCM family from the Guangxu period (1875-1908), *Mao's Collection of Dampness Treatment*, records that Mao Jinglan, the ancestor of the family, created the "Dampness-Removing and Spleen-Strengthening Prescription" to address "dampness pathogen in saline-alkali land", which had an effective rate of 76% in clinically treating spleen-stomach dampness retention syndrome, laying a practical foundation for later schools.

Embryonic Stage of the School (Late Qing Dynasty to the Republic of China): The emergence of famous physicians and the initial establishment of the academic inheritance system. Cao Guangxun from Yangxin wrote *Concise Medical Records*; Yang Yuke from Huimin was famous for surgery; Yang Jianzhi from Putai specialized in gynecology and pediatrics; Meng Fandi from Wudi was proficient in both internal and external medicine, forming regional academic characteristics. During the cholera epidemic, the Mao's TCM family from Yangxin saved people on a large scale by "boiling medicine in large pots"; Mao Jifeng wrote *Summer Cholera* to summarize prevention and treatment experience, demonstrating the contribution of folk medicine to public health. Private school education was combined with family inheritance of medicine: for example, Zheng Changsong studied under Cui Yutian, a scholar of the late Qing Dynasty, laying a foundation in medical literature; Mao Zongkong abandoned Confucianism to practice medicine, extensively read classics, and formed a family inheritance model of "father passing on to son".

Formation Stage of the School (Since the Founding of the People's Republic of China): The modernization of TCM and the establishment of education and scientific research systems. With policy support and academic organization, the characteristics of the school became more prominent. For example, Zheng Changsong, the founder of Zheng's Gynecology, proposed the theory of "qi transformation syndrome differentiation" based on in-depth research on gynecological theories, emphasizing the treatment of gynecological diseases by regulating human qi movement. For instance, he

used the "Fetal Protection Decoction" (containing *Cuscuta chinensis*, *Taxillus chinensis*, *Asini Corii Colla*, etc.) to treat habitual abortion with remarkable efficacy. He successively wrote *Selected Gynecological Medical Records of Zheng Changsong* and *Collection of Zheng Changsong's Gynecological Experience*, published more than 40 academic papers, and his experience was included in *National Research on TCM Gynecological Schools*. While saving lives, Zheng Changsong organized the "TCM Talent Recruitment Campaign" in the Yellow River Delta region, rescued and sorted out a large number of handwritten manuscripts of folk empirical prescriptions, and promoted the development of regional TCM academics. Based on summarizing clinical experience, Zheng Changsong explored clinical "four types of prescriptions" by selecting the best from prescriptions, choosing effective medicines, exploring the profound and subtle, eliminating the dross and retaining the essence, appropriately increasing dosages, and striving to shorten the treatment course: "effective prescriptions" for acute diseases, "quick-acting prescriptions" for common diseases, "obviously effective prescriptions" for chronic diseases, and "fixed prescriptions" for highly effective ones. In 2020, the "Qilu Medical School TCM Academic School Construction Project" included Zheng's Gynecology in the provincial inheritance project. In 2023, the "Tongdu-Yishen Acupuncture Therapy for Post-Stroke Sequelae" of Binzhou Municipal Hospital of TCM was selected into the Shandong Provincial TCM Excavation and Collation Project, marking the school's transformation from an "experience-based" model to an integrated system of "theory-practice-technology". In 1956, Zheng Changsong was awarded the title of "National Model Worker" and became one of the founders of TCM undertakings in the Yellow River Delta region after the founding of New China. The Zheng's Gynecology of Qilu has been inherited for five generations, proposed the theory of "syndrome differentiation and treatment of gynecological diseases based on qi transformation", and was selected into the provincial intangible cultural heritage (ICH) in 2020, becoming the first ICH TCM gynecological school in Shandong. The Mao's TCM has been passed down for six generations and is famous for treating diseases with simple prescriptions as the "Mr. Liuwei" (referring to the use of simple formulas); its family-inherited ancient books were listed as a provincial research project in 2021.

The development of the YRD TCM School in Binzhou presents a context of "folk accumulation - official system - modern innovation": from the foundation laid by famous physicians in the Han-Jin Dynasties to the prosperity of herbal medicine trade in the Ming-Qing Dynasties; from the rise of a group of famous physicians in the Republic of China to the construction of an education and scientific research system driven by policies after the founding of New China. It has formed a regional medical system characterized by pulse diagnosis, gynecology, and epidemic prevention, with the integration of TCM and Western medicine as the path. Its development not only reflects the historical and cultural heritage of the Yellow River Delta region but also serves as a microcosm of the development of Qilu TCM and even national TCM undertakings.

2.2 Core Schools and Academic Characteristics

The YRD TCM School in Binzhou is characterized by "specialized subdivision". Various schools complement each other in the field of diagnosis and treatment, jointly forming the academic system of the school.

Zheng's Gynecology advocates that "women take blood as the foundation and qi as the function"; it has established a "four-prescription exploration" diagnosis and treatment system ("effective prescriptions" for acute diseases, "quick-acting prescriptions" for common diseases, "obviously effective prescriptions" for chronic diseases, and "fixed prescriptions" for empirical ones); at the same time, it insists that the spleen and stomach are the foundation of gynecology and opposes the excessive use of cold and cool medicines.

Niu's Miscellaneous Diseases has established the theory of "pathogens invading the triple energizer" for epidemics; it advocates treating miscellaneous diseases mainly by "regulating qi and activating blood circulation" while considering regional dampness pathogens; it also emphasizes the concept of "preventive treatment of diseases" and pays attention to health preservation according to solar terms.

Zhang's Ophthalmology combines the "Five Wheels and Eight Regions" syndrome differentiation with modern anatomy; it treats eye diseases by combining "medication for the root cause and acupuncture for the symptom", and innovatively proposes the idea of "treating dry eye syndrome from the lung".

Mao's TCM, combining regional characteristics, puts forward the pathogenesis of "intermingled dampness and stasis" for diseases in saline-alkali land, advocates the combination of external treatment and internal regulation, and attaches importance to the localization of herbs.

The common characteristic of these schools is their adaptation to the regional needs of the Yellow River Delta: different from the Lingnan School (which focuses on "clearing heat and removing dampness to cope with the hot and humid climate") and the Wumen School (which focuses on "gentle and soothing to adapt to the mild and humid environment in the Jiangnan region"), the YRD School addresses the unique climate and environment of the local area ("cold in winter and humid in summer, saline-alkali damaging the spleen") and mostly adopts the triple treatment methods of "warming yang and dispelling cold, removing dampness and strengthening the spleen, and resolving stasis and dredging collaterals" in diagnosis and treatment. It also makes good use of unique herbs in the Yellow River Delta (such as saline-alkali land wolfberry, Binzhou *Scutellaria baicalensis*, and Bohai Sea *Morus alba* root bark). According to Pharmacopoeia of Medicinal Plants in the Yellow River Delta (2021), the content of active ingredients (such as baicalin in Binzhou *Scutellaria baicalensis*) in these local herbs is 12%-18% higher than that in non-saline-alkali land varieties, reflecting the practical wisdom of "using local materials and adapting to local conditions".

3. Current Inheritance Situation and Practical Challenges of the YRD TCM School in Binzhou

In recent years, Binzhou has promoted the inheritance of the school and achieved certain results through policy support, platform construction, and activity promotion. However, it still faces multiple contradictions between "tradition and modernity" and "inheritance and innovation", which can be analyzed from two aspects: "current inheritance situation" and "core challenges".

3.1 Current Inheritance Situation: Diverse Paths and Partial Breakthroughs

The traditional "family inheritance + mentor-apprentice inheritance" remains the mainstream: for example, Zheng's Gynecology continues its techniques through "selection within the family + accepting apprentices from outside", with the current inheritor Zheng Shuhan (grandson of Zheng Changsong) having an annual outpatient volume of over 10,000. At the same time, "educational inheritance" is gradually gaining momentum: Binzhou Municipal Hospital of TCM has collaborated with Binzhou Medical University to offer "characteristic courses on TCM schools". The "Yellow River Delta TCM Academy" is being established to promote the inheritance and innovation of TCM. Some buildings of the Bohai Advanced Technology Research Institute have been renovated to build teaching venues and training bases for the "Yellow River Delta TCM Academy", creating a cutting-edge platform that implements the goal of fostering virtue through education, practices the concept of all-round education, and explores general education, so as to strengthen TCM mentor-apprentice education. 3-5 inheritance studios for renowned senior TCM physicians and veteran pharmacists will be built to promote the construction of the Xinglin Pioneer Research Program and the promotion of TCM characteristic therapy projects, and strengthen the research and utilization of TCM classics and the excavation and inheritance of academic schools. Binzhou has built "2 provincial-level TCM culture publicity and education bases and 44 municipal-level demonstration units". The "Yellow River Delta TCM Research Center" has been established to promote scientific and technological innovation. 1-2 high-level talents will be introduced, and 1-2 national-level TCM scientific research achievements will be incubated. 5-10 folk TCM technical methods will be collected, screened, and promoted to form a long-term mechanism for promoting appropriate TCM technologies. Efforts will be made to strengthen TCM disciplines and give play to the important role of TCM in disease rehabilitation.

3.2 Core Challenges: Inheritance Gap and Development Bottlenecks

The "standardized and quick-acting" diagnosis and treatment model of Western medicine has squeezed the development space of the school [3]. From September to December 2023, the research team conducted a "survey on medical treatment preferences of chronic disease patients in Binzhou". Using a multi-stage stratified sampling method, 2,000 chronic disease patients (35% with hypertension, 30% with diabetes, and 35% with coronary heart disease) were selected from 6 counties (districts) in Binzhou. The results showed that only 38% of patients chose TCM treatment. At the same time, a cognitive survey of young people aged 18-35 (sample size: 1,000) showed that only 21% of respondents understood the theory of "syndrome differentiation and treatment", and 15% understood the theory of "Five Wheels and Eight Regions". The insufficient cognition of young people has led to the shrinking audience base for the school's techniques. Outdated inheritance methods and insufficient digitalization and standardization [4]. Most schools still rely on "oral teaching and mental comprehension + handwritten medical records", resulting in fragmented academic organization. More than 40 academic papers of Zheng's Gynecology

have not yet been included in a digital database, and the "Qingwen Jiedu Decoction" (Anti-Epidemic Detoxification Decoction) of Niu's Miscellaneous Diseases has not formed a unified diagnosis and treatment standard, making it difficult to promote the techniques on a large scale. In addition, the "mentor-apprentice system" is inefficient: for example, Sun's Surgery has only 3 inheritors, facing the risk of "loss of techniques with the passing of inheritors" [5]. Disconnection between local TCM planting and the school's needs: The planting area of herbs in the saline-alkali land of the Yellow River Delta is only 23,000 mu (1 mu $\approx$ 0.0667 hectares), which is insufficient to meet the "local medication" needs of the school, leading to the inability to promote some empirical prescriptions due to raw material shortages.

4. The "TCM +" Model: Development Path of the YRD TCM School in Binzhou

4.1 TCM + Academic Inheritance: Building a "Digital + Systematic" Inheritance System

The YRD TCM School Research Center will be established. In collaboration with the TCM College of Binzhou Medical University and the TCM Literature Research Institute of Shandong University of Traditional Chinese Medicine, it will systematically organize the school's literature: conduct digital indexing of Zheng's Gynecology's Selected Gynecological Medical Records of Zheng Changsong and Niu's Miscellaneous Diseases' "manuscripts on epidemic prevention and control", and build an "AI-assisted learning platform" to realize functions such as medical record retrieval and syndrome differentiation simulation. It will integrate "clinical data (medical records, efficacy) + herbal data (planting, processing) + patient data (follow-up)", and use AI to analyze the school's medication rules—for example, verifying the efficacy of "Sangju Granules" (Mulberry Leaf and Chrysanthemum Granules) on dry eye syndrome of different types through big data to optimize the formula. For the dominant diseases of different schools (such as infertility in Zheng's Gynecology and optic atrophy in Zhang's Ophthalmology), it will collaborate with top-tier hospitals inside and outside Shandong Province to conduct randomized controlled trials (RCTs) and form national standard diagnosis and treatment protocols [6].

4.2 TCM + Innovative Talent Cultivation

A composite model of "college education + mentor-apprentice education + modern technology training" will be implemented: a "targeted class for the YRD TCM School" will be set up at Binzhou Medical University, and outstanding students will be selected to study under the school's inheritors; a "special fund for inheritance talents" will be established to provide young inheritors with "housing subsidies + scientific research start-up funds" [7-8].

4.3 TCM + Industrial Integration: Building a "Technology-Product-Service" Industrial Chain

We suggest that Binzhou City promote the development of "Food-Medicine Homology" products, rely on the saline-alkali land planting bases in the Yellow River Delta, and develop school-characteristic herbal diets—such as Zheng's Gynecology "Antenatal Care Congee" and Niu's Miscellaneous Disease "Dampness-Removing Tea"—to be incorporated into the "Binzhou Youli" (Binzhou Gifts) regional public brand. Binzhou City should advance the "grain farmers to medicinal herb farmers" transition: in the first phase, build a 20,000-mu (1 mu $\approx$ 0.0667 hectares) intercropping base for wolfberry and scutellaria baicalensis in Bincheng District and Zhanhua District; in the second phase, construct a 20,000-mu single-crop base for scutellaria baicalensis in Wudi County and Yangxin County; and in the third phase, establish a 10,000-mu single-crop base for wolfberry in Boxing County and Zouping City. The above-mentioned base construction will ultimately achieve a total planting area of 50,000 mu and ensure that the self-sufficiency rate of medicinal materials for the (Traditional Chinese Medicine) schools reaches over 95%. Meanwhile, Binzhou City should cooperate with Binzhou Medical University to formulate the Technical Regulations for Standardized Cultivation of Wolfberry and Scutellaria Baicalensis in Saline-Alkali Land of the Yellow River Delta, and the Technical Regulations will ensure that the quality of medicinal herbs meets the standards specified in the Pharmacopoeia of the People's Republic of China (2020 Edition). Additionally, Binzhou City should develop cultural and creative products as well as popular science products, cooperate with intangible cultural heritage inheritors to transform the stories of the (TCM) schools into cultural and creative works [9]—for example, Zheng's Gynecology-themed blind boxes and Mao's TCM "Dampness-Removing and Spleen-Strengthening" picture books—produce the documentary "TCM Schools in the Yellow River Delta", and broadcast it on provincial-level media to enhance social recognition of the schools.

5. Conclusion

The YRD TCM School is the crystallization of the regional culture of the Yellow River Delta and the wisdom of TCM. Its characteristics of "specialized research and regional adaptation" are not only the result of historical accumulation but also the core advantage in responding to modern health needs. Currently, the school faces challenges such as "inheritance gap, fragmented technology, and weak industrial transformation", and the "TCM +" model provides a solution of "upholding the essence and pursuing innovation" for it—through "digitalization of academic inheritance, intelligentization of technological innovation, integration of industrial integration, and institutionalization of policy guarantees", the school can transform from "traditional techniques" to "modern TCM resources" [10].

In the future, the development of the YRD TCM School in Binzhou needs to focus on three directions: First, it will deepen "interdisciplinary research" by drawing on modern medicine and big data to validate the scientific basis of the school's theories; Second, it will advance "international outreach" by leveraging the "TCM Exchange Center" to showcase practices including acupuncture, TCM gynecology expertise, and TCM ophthalmology techniques to a global audience; Third, it will establish an "ecological development paradigm" and develop a comprehensive industrial chain spanning the entire lifecycle of "cultivation, R&D, medical services, and tourism." Only in this way can the YRD TCM School become a "model" for the inheritance and innovation of TCM in the Yellow River Delta and provide reference for the sustainable development of regional TCM schools across the country.

Acknowledgements

This work was supported by 2025 Annual Social Science Planning Project of Binzhou City (25-XWZX-003).

Author contributions

All authors have designed the study, developed the methodology, and written the manuscript. All authors have read and agreed to the published version of the manuscript.

References

- [1] Zhang S, Wang Y. Reconstruction of the communication system for the philosophical thoughts of the Yanzhao TCM School in the context of media convergence [J]. *Hebei Academic Journal*, 2025, 45(03): 216-224.
- [2] Shandong Provincial Health Commission, Shandong Provincial Administration of Traditional Chinese Medicine. 14th Five-Year Plan for the Development of Traditional Chinese Medicine in Shandong Province [Z]. Jinan: Shandong Provincial People's Government, 2021.
- [3] Ma J, Ge S Q, Zhao H Q. New research on the inheritance context of the Hejian School [J]. *Medical Research and Education*, 2024, 41(05): 30-47.
- [4] Guan H. Research on acupuncture academic of Qilu physicians in the Ming and Qing Dynasties [D]. Shandong University of Traditional Chinese Medicine, 2024.
- [5] Wang J. Research on TCM surgical academic schools based on ancient books and documents [D]. Guangxi University of Traditional Chinese Medicine, 2022.
- [6] Wen C F. Research on the paste conditioning and medication rules of major regional TCM schools in Jiangsu Province [D]. Nanjing University of Traditional Chinese Medicine, 2020.
- [7] Cheng Z G. Research on the status of regional TCM schools based on data mining technology [D]. Shanxi University of Traditional Chinese Medicine, 2019.
- [8] Zhao C L, Gao L. Development context and research status of regional TCM academic schools [J]. *Journal of Gansu University of Traditional Chinese Medicine*, 2018, 35(02): 114-118.
- [9] Jin X M. Research on the inheritance of contemporary Lingnan medical schools and famous physicians [D]. Guangzhou University of Traditional Chinese Medicine, 2010.
- [10] Liu C L, Zhou J J, Huang S Q, et al. Research status of the inheritance and development of TCM academic schools based on bibliometric analysis [J]. *Journal of Practical Traditional Chinese Medicine*, 2025, 41(04): 906-910.