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The analysis of disease spectrum of traditional Chinese medicine of outpatient visitor to the contracted family doctor in Shenzhen community health centers☆

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ABSTRACT

Background: The development plan of traditional Chinese medicine (TCM) has been integrated into the national development strategy, with a focus on significantly enhancing the TCM service capabilities of primary care facilities. However, researches on the disease spectrum of TCM diagnosis and treatment in community health centers is lacking.

Objective: To understand the TCM diagnosis and treatment capabilities of Shenzhen's community health centers by analyzing the disease spectrum of TCM diagnosis and treatment among outpatients signed with family doctors at these centers.

Methods: From May to June 2022, records of family doctor-signed residents who visited the outpatient departments of community health centers in 10 districts of Shenzhen from January 1, 2021, to June 30, 2021, and incurred diagnosis and treatment costs were extracted from the "Hangchuang Community Health Service Center Business System," a unified information platform of the Shenzhen Health Commission. Records for which TCM was the purpose for the visit, which had corresponding diagnosis and treatment costs, as well as a primary diagnosis coded according to the "Classification and codes of diseases and patterns of traditional Chinese medicine" (TCD) were included in the study (n=385,138). The disease spectrum was analyzed based on the TCD, mainly involving specialty category, sub-specialty system classification and TCM term of disease and pattern.

Results: Among the 385,138 records included, there were 170,077 male visits (44.16 %) with an average age of 37.5 ± 8.2 years; and 215,061 female visits (55.84 %), with an average age of 36.7 ± 9.4 years. The disease spectrum covered all seven specialty categories of TCD: internal medicine (219,445, 56.98 %), pediatrics (79,201, 20.56 %), otorhinolaryngology (47,965, 12.45 %), gynecology (30,620, 7.95 %), surgery (5,797, 1.51 %), orthopedics (1,407, 0.37 %), and ophthalmology (703, 0.18 %). The spectrum covered all sub-specialty system classifications under the seven specialty categories except for tumor diseases, cancer diseases in each specialty category, and certain eye disease classes such as diseases of the canthus, diseases of the cornea, pupil diseases, and traumatic eye diseases. In each specialty category, several diseases accounted for ≥90.00 % of the total diagnostic and treatment volume for that specialty category. The top five system diseases were respiratory system diseases (208,701, 54.19 %), musculoskeletal system diseases (73,369, 19.05 %), gynecological system diseases (30,620, 7.95 %), cardiovascular and cerebrovascular system diseases (27,539, 7.15 %), and digestive system diseases (19,162, 4.98 %). Patients under 15 and those aged 15 to 24 primarily had diseases related to the respiratory system and digestive systems. As age increased, the number of patients with paralysis, dizziness, headache, insomnia, and fatigue gradually increased; before the age of 45, the leading disease was the common cold, and after 45, it was muscle and joint pain caused by paralysis.

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Conclusion: The TCM diagnosis and treatment disease spectrum at Shenzhen's community health centers is broad but concentrated and singular, predominantly involving internal medicine. The disease spectrum is mainly concentrated in five major systems: respiratory, musculoskeletal, gynecological, cardiovascular and cerebrovascular, and digestive systems. There is a need to further enhance and expand the TCM diagnosis and treatment capabilities of community health centers to better meet the diverse health needs of residents.

Introduction

Traditional Chinese medicine (TCM) is known for being "simple, convenient, effective, and economical," making it suitable for primary care facilities lacking advanced equipment. In 2009, the "Guidelines of the State Council on Supporting and Promoting the Development of Traditional Chinese Medicine" proposed strengthening the construction of TCM departments in community health centers.[1] The "Twelfth Five-Year," "Thirteenth Five-Year," and "Fourteenth Five-Year" plans also call for the significant development of TCM services in primary care facilities. The "Thirteenth Five-Year Plan for the Development of Traditional Chinese Medicine" aims for all community health centers to have TCM service capabilities by 2020, with TCM diagnosis and treatment accounting for an attempt to reach 30 % of the total diagnosis and treatment volume; the "Fourteenth Five-Year" National Plan aims to increase this ratio to strive for 35 % by 2025.[2,3] The development of TCM has become an important strategy in China, and enhancing the TCM service capabilities of primary care facilities is one of its key components. Disease spectrum analysis is one of the better indicators for measuring diagnostic and treatment capabilities. ICD-10 and GB/T 15,657–1995 "Classification and Codes of Diseases and Patterns of Traditional Chinese Medicine" (TCD) are currently the standards for managing the medical records of Western and Chinese disease spectrum separately in hospitals and are also commonly used as bases for disease spectrum analysis.[4,5] Researches of China on the TCM disease spectrum is concentrated in hospitals; however, researches on the disease spectrum in community health centers often employ ICD-10 codes for Western medical diagnoses,[6,7] with few studies on the TCM disease spectrum.[8,9] To better explore the actual TCM diagnostic and treatment capabilities of community health centers in the context of developing TCM services in primary care, this study analyzes the TCM disease spectrum of community outpatients based on the TCD standards and big data from outpatient visits by residents signed with family doctors at Shenzhen's community health centers, aiming to understand the TCM diagnostic and treatment capabilities of Shenzhen's community health centers and provide evidences for promoting the development of TCM in primary care in China.

Method

Study data

From May to June 2022, records of residents signed with family doctors who visited the outpatient departments of community health centers in the ten districts of Shenzhen and incurred diagnosis and treatment costs from January 1, 2021, to June 30, 2021, were extracted from the "Hangchuang Community Health Service Center Business System" (developed by Chuangyihuike Technology Co., Ltd.) of the Shenzhen Municipal Health Commission's unified information platform.

These records included gender, age, and diagnosis. Inclusion criteria were as follows: (1) TCM consultation was the purpose of the visit, and matching diagnosis and treatment costs were incurred; (2) the primary diagnosis was coded according to TCD. The exclusion criteria included: (1) primary diagnoses containing both TCD disease names and ICD-10 disease diagnoses, such as "common cold (upper respiratory tract infection)"; (2) TCM preventive healthcare activities, i.e., TCM health care packages not charged or charged not matching the diagnosis, TCM decoctions, or free TCM health care treatments; (3) services listed under the "National Basic Public Health Service Project (Third Edition)," such as TCM constitution identification and related treatments for the elderly, and TCM care services for children aged 0 to 36 months.[10] A total of 385,138 eligible records were finally included in this study.

Age grouping

For comparison with relevant studies in the Hong Kong Special Administrative Region of China, the age grouping in this study was based on the standards of the "China Health Statistics Yearbook," categorized as: <15, 15–24, 25–44, 45–64, and ≥65 years old.[11,12]

Disease classification and coding

The TCD standards used in this study were issued by the National Technical Supervision Bureau and represent the current standard for classification of TCM case data in China. The TCD includes classifications of diseases and syndromes. Due to irregularities in the writing of syndrome classifications in this study, only the disease name classification within the TCD was analyzed, primarily involving specialty categories, sub-specialist system classifications, and TCM terms of disease and pattern.[4] The classification of Western diseases follows the currently universal ICD-10 standard.[5]

Matching TCD and ICD-10 diagnoses

TCM and Western medicine derive from different theoretical systems, leading to significant differences in disease naming. To better understand the disease name classification in the TCD, the research team reviewed extensive literature and matched the TCD disease name classifications with ICD-10 disease diagnoses. In each of the ten districts of Shenzhen, one general practitioner with TCM qualifications was selected to modify and verify the matching based on their daily work habits, resulting in the final matching outcome.

Statistical methods

The collected data were entered into an Excel spreadsheet, and preliminary processing such as filtering, splitting, and categorization was conducted according to research needs using Excel software. The data were then statistically analyzed using Python scripting for frequency statistics and other methods. Descriptive statistical analysis of the data was performed using SPSS 19.0 statistical software(SPSS, Inc., Chicago, IL, USA), with count data represented by relative numbers and measurement data represented by mean±standard deviation.

Results

Basic information of study subjects

Among the 385,138 medical records included, there were 170,077 male patient visits (44.16 %), with an average age of 37.5 ± 8.2 years; and 215,061 female patient visits (55.84 %), with an average age of 36.7 ± 9.4 years. The patients were grouped by age as follows: under 15 years old accounted for 88,700 visits (23.03 %), 15–24 years old for 24,231 visits (6.29 %), 25–44 years old for 131,203 visits (34.07 %), 45–64 years old for 109,420 visits (28.41 %), and 65 years and older for 31,584 visits (8.20 %).

Classification of TCD names

The diseases diagnosed in outpatient visits by signed residents at community health centers covered all seven depatment categories in the TCD. The top four categories were: Internal Medicine (56.98 %, 219,445/385,138), Pediatrics (20.56 %, 79,201/385,138), Otorhinolaryngology (12.45 %, 47,965/385,138), and Gynecology (7.95 %,

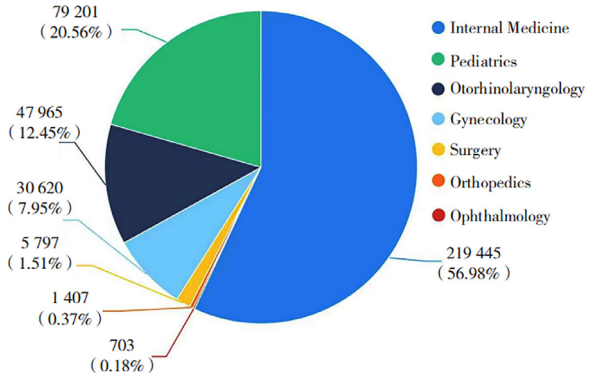

Fig. 1. The composition of the TCD disease spectrum in the 7 TCD specialty categories in outpatient clinics of contracted residents by family doctors in Shenzhen community health service centers.

30,620/385,138), as shown in Fig. 1. Except for tumor diseases, cancer diseases in each specialty category, and certain eye disease classes such as diseases of the canthus, diseases of the cornea, pupil diseases, and traumatic eye diseases, the disease spectrum covered all systematic classifications under the seven categories of the TCD.

Community outpatient TCM disease spectrum based on TCD

Within each of the TCD medical specialty categories, the diseases were listed from highest to lowest in terms of diagnostic and treatment proportions. The cumulative proportion of the concentrated disease spectrum was ≥ 90.00 %. In internal medicine, the concentration included diseases such as paralysis, common cold, cough, dizziness, insomnia, debility, diarrhea, and gastric fullness, with a cumulative proportion of 93.95 % (206,165/219,445). In pediatrics, the concentration included pediatric common cold, pediatric cough, pediatric diarrhea, pediatric abdominal pain, pediatric vomiting, and pediatric anorexia, with a cumulative proportion of 97.60 % (77,299/79,201), as shown in Table 1.

TCM disease names being categorized to Western medical system

All TCM disease names were categorized, and the top five Western medical systems involved were: respiratory system diseases (208,701 cases, 54.19 %), musculoskeletal system diseases (73,369 cases, 19.05 %), gynecological system diseases (30,620 cases, 7.95 %), cardiovascular and cerebrovascular system diseases (27,539 cases, 7.15 %), and digestive system diseases (19,162 cases, 4.98 %), as shown in Table 2.

Top 10 TCM disease names among different age groups

In the population under 45 years old, the most common disease was the common cold, while in the population aged 45 and older, the leading disease was paralysis caused muscle and joint pain. In the age groups under 15 and 15–24 years, diseases related to the respiratory and digestive systems were predominant. As age increases, the incidence of diseases such as paralysis primarily associated with cervical spondylosis and lumbar disc herniation, dizziness and headaches triggered by hypertension, sleep disorders and other types of insomnia, and debilitation or fatigue gradually increases, as shown in Table 3.

Table 1
The disease spectrum with cumulative diagnosis and treatment volume ≥ 90 % in each specialty category of TCD.

Specialty category	Sub-specialty system classification	TCM terms of disease and pattern		Corresponding ICD-10 name
		Name	Record of medical treatment [term(%)]	
Internal medicine	Other Diseases in Internal Medicine	Paralysis	71,254(32.47)	Lumbar Disc Herniation, Cervical Spondylosis and Osteoarthritis
	Exogenous Febrile Diseases	Common cold	56,171(25.60)	Upper Respiratory Tract Infection
	Lung System Diseases	Cough	38,895(17.72)	Bronchitis and Chronic Obstructive Pulmonary Disease
	Liver System Diseases	Dizziness	16,012(7.30)	Hypertension, Hypotension and Dizziness
	Heart System Diseases	Insomnia	7753(3.53)	Sleep Disorders
	Spleen System Diseases	Debility	6223(2.84)	Fatigue
		Diarrhea	5949(2.71)	Gastroenteritis and Gastrointestinal Dysfunction
		Gastric Fullness	3908(1.78)	
Pediatrics	Pediatric Epidemic Diseases	Pediatric Common Cold	41,256(52.09)	Upper Respiratory Tract Infection
	Pediatric Miscellaneous Diseases	Pediatric Cough	30,121(38.03)	Bronchitis
		Pediatric Diarrhea	1853(2.34)	Gastroenteritis, Gastrointestinal Dysfunction
		Pediatric Abdominal Pain	1450(1.83)	
		Pediatric Vomiting	1367(1.73)	
		Pediatric Anorexia	1252(1.58)	
Otorhinolaryngology	Pharyngolaryngeal Diseases	Throat paralysis	36,979(77.10)	Pharyngitis
	Dental Diseases	Mouth Ulcer	3562(7.43)	Oral Ulcer
	Pharyngolaryngeal Diseases	Mastitis	1865(3.89)	Tonsillitis
	Dental Diseases	Toothache	1513(3.15)	Toothache and Acute Pulpitis
		Dental Abscess	1243(2.59)	Periodontitis
	Nasal Diseases	Nasal Congestion	1195(2.49)	Sinusitis
		Sinusitis	987(2.06)	
Gynecology	Leucorrhea Diseases	Leucorrhea	18,292(59.74)	Vaginitis and Cervicitis
	Menstrual Diseases	Oligomenorrhea	5384(17.58)	Menstrual Disorder
		Dysmenorrhea	5229(17.08)	Dysmenorrhea
Surgery	Dermatological Diseases	Eczema	2857(49.28)	Allergic Dermatitis
		Dermatitis	1846(31.84)	Eczema
	Breast Diseases	Mammary Lump	428(7.38)	Fibrocystic Breast Disease
	Ulcer Diseases	Furuncle	318(5.49)	Furuncle
Orthopedics	Tendon Injury Diseases	Muscle Strain	771(54.80)	Soft Tissue Injury
		Stiff Neck	590(41.93)	Stiff Neck
Ophthalmology	Scleral Diseases	Acute Conjunctivitis	257(36.56)	Hemorrhagic Conjunctivitis
		Sudden Onset Fever	239(34.00)	Allergic Conjunctivitis
	Eyelid Diseases	Stye	158(22.48)	Meibomian Gland Dysfunction

Table 2
The top 5 systemic diseases of Western medicine involved in the TCD disease spectrum in outpatient clinics of contracted residents by family doctors in Shenzhen community health service centers.

Order	Western medicine system diseases	Corresponding TCD diseases and number	Diagnosis and treatment records	Composition ratio (%)
1	Respiratory System Diseases	Common Cold Disease(56 171),Cough Disease(38 895),Pediatric Common Cold Disease(41 256),Throat Paralysis(36 979),Pediatric Cough Disease(30 121),Asthma Disease(365),Milk Curd Disease(1 865),Nasal Crust Disease(1 195),Nasal Polyps Disease(987),Pediatric Milk Curd Disease(654),Nasal Congestion Disease(213)	208 701	54.19
2	Musculoskeletal System Diseases	Paralysis(71 254),Gout Disease(754),Muscle Injury Disease(771),Stiff Neck Disease(590)	73 369	19.05
3	Gynecological System Diseases	Leucorrhea Disease(18 292), Scanty Menstruation Disease(5 384), Dysmenorrhea Disease(5 229), Heavy Menstruation Disease(1 232), Vulvar Pruritus Disease(333), Infertility Disease(94), Prolonged Postpartum Bleeding Disease(28), Insufficient Postpartum Lactation Disease(28)	30 620	7.95
4	Cardiovascular and Cerebrovascular System Diseases	Insomnia Disease(7 753), Headache Disease(2 540), Dizziness Disease(16 012), Palpitation Disease(462), Tinnitus Disease(421), Chest Pain Disease(351)	27 539	7.15
5	Digestive System Diseases	Diarrhea Disease(5 949), Stomach Distension Disease(3 908), Flank Pain Disease(854), Abdominal Pain Disease(512), Pediatric Diarrhea Disease(1 853), Pediatric Abdominal Pain Disease(1 450), Pediatric Vomiting Disease(1 367), Anorexia Disease(1 252), Food Stagnation Disease(856), Constipation Disease(330), Vomiting Disease(831)	19 162	4.98

Table 3
The top 10 TCD names in different age groups of the residents contracted with family doctors.

Order	<15(n=88 700)		15–24(n=24 231)		25–44(n=131 203)		45–64(n=109 420)		≥65(n=31 584)	
	TCD names	Diagnosis and treatment records	TCD names	Diagnosis and treatment records	TCD names	Diagnosis and treatment records	TCD names	Diagnosis and treatment records	TCD names	Diagnosis and treatment records
1	Pediatric Common Cold Disease	41 256(46.51)	Common Cold Disease	8 042(33.19)	Common Cold Disease	27 125(20.67)	Paralysis	39 467(36.07)	Paralysis	11 475(36.33)
2	Pediatric Cough Disease	30 121(33.96)	Cough Disease	5 854(24.16)	Paralysis	20 302(15.47)	Common Cold Disease	17 548(16.04)	Dizziness Disease	4 657(14.74)
3	Throat Paralysis	8 768(9.89)	Throat Paralysis	3 657(15.09)	Cough Disease	18 024(13.74)	Cough Disease	10 404(9.51)	Cough Disease	4 613(14.61)
4	Addiction Rash Disease	1 968(2.22)	Diarrhea Disease	2 041(8.42)	Paralysis	14 217(10.84)	Throat Paralysis	8 925(8.16)	Common Cold Disease	3 456(10.94)
5	Pediatric Diarrhea Disease	1 853(2.09)	Mouth Ulcer Disease	1 557(6.43)	Leucorrhea Disease	12 707(9.69)	Dizziness Disease	5 055(4.62)	Throat Paralysis	1 412(4.47)
6	Pediatric Abdominal Pain Disease	1 450(1.63)	Milk Curd Disease	845(3.49)	Dizziness Disease	5 412(4.12)	Leucorrhea Disease	4 593(4.20)	Insomnia Disease	1 344(4.26)
7	Pediatric Vomiting Disease	1 367(1.54)	Vomiting Disease	547(2.26)	Dizziness Disease	4 713(3.59)	Insomnia Disease	3 844(3.51)	Stomach Distension Disease	1 200(3.80)
8	Anorexia Disease	1 252(1.41)	Dysmenorrhea Disease	465(1.91)	Scanty Menstruation Disease	4 707(3.59)	Debility Disease	2 555(2.34)	Headache Disease	1 034(3.27)
9	Food Stagnation Disease	856(0.97)	Dysmenorrhea Disease	317(1.31)	Debility Disease	2 658(2.03)	Gastric Fullness Disease	2 080(1.90)	Insomnia Disease	1 006(3.19)
10	Pediatric Milk Curd Disease	654(0.74)	Eczema Disease	234(0.97)	Insomnia Disease	2 560(1.95)	Headache Disease	1 204(1.10)	Thirst Disease	547(1.73)

Discussion

The development of TCM has been highly valued in Guangdong Province and Shenzhen City. Since 2017, a project has been undertaken to enhance TCM service capabilities in primary care.

HUANG et al[13] analyzed the development of the TCM medical service system in Guangdong Province during the "Thirteenth Five-Year" National Plan period and found that by 2019, all community health centers in Guangdong Province could provide TCM services, effectively establishing a TCM service network in primary care. Policies such as the "Shenzhen Traditional Chinese Medicine Development Plan (2013–2020)" were introduced in Shenzhen, the first national comprehensive reform pilot area for TCM in Guangdong Province, significantly improving the accessibility and service capabilities of TCM services in primary care.[14] Consistent with previous research findings, this study also showed that the TCM diagnostic and treatment capabilities of Shenzhen's community health centers are improved. This differs significantly from the Western medicine disease spectrum previously used in community health service centers.[8,15]

The study focuses on the period of COVID-19 pandemic prevention and control. According to research by GE et al[6], the practice of emergency department of Shenzhen Traditional Chinese Medicine Hospital had returned to normal after the COVID-19 epidemic by August 2020, with the number of visits roughly equal to the same period in 2019, which is consistent with the findings of this study. During the selected time period, Shenzhen was considered a low-risk area for an extended duration, and community health centers were limited to treating patients with fever. Additionally, due to the public's fear of hospitals and

the preference for signing up with family doctors, more residents chose to visit community health centers.[6,16] Therefore, in this study, diseases and symptoms related to the respiratory system still occupy the first place, consistent with previous studies.[6,16] The second to fifth ranks include musculoskeletal system diseases related to cervical spondylosis and back pain, gynecological system diseases such as vaginitis and dysmenorrhea, cardiovascular and cerebrovascular system diseases like dizziness and sleep disorders, and digestive system diseases such as gasteremphraxis and diarrhea. This may related to the recent efforts in Guangdong Province and Shenzhen City to promote the use of proprietary Chinese medicines, Chinese herbal slices, acupuncture, massage, cupping, and other appropriate techniques.[17]

Due to the lack of research on the disease spectrum of TCM diagnosis and treatment in community health centers in China, to further explore the TCM diagnostic and treatment capabilities of Shenzhen's community health centers, this study chose to compare with TCM clinics in primary care facilities in the Hong Kong Special Administrative Region (SAR), which is adjacent to Shenzhen and has similar customs and climate conditions.[12] In the Hong Kong SAR, mental illnesses were included in the under 15 age group, and acne leads in the 15–24 age group, which also includes patients with sleep disorders, whereas in this study, both age groups still primarily involve respiratory and digestive diseases; for patients aged ≥65, in addition to musculoskeletal, respiratory diseases, dizziness, headaches, and sleep disorders covered in this study, TCM diagnosis and treatment in primary care in the Hong Kong SAR also involves symptoms or diseases such as paralysis or weakness, neurological diseases, and edema. This highlights that in the Hong Kong SAR, younger patients during childhood and adolescence, as well as older individuals, are more likely to choose primary care facilities for the treatment of appropriate TCM diseases, which may be related to residents' medical habits, recognition of community health centers, and the diagnostic and treatment capabilities of the community health centers. The results also suggest that community health centers in Shenzhen should strengthen their promotional efforts, expand the range of diagnoses and treatments, and improve the capabilities of TCM diagnosis and treatment, especially for the children and older adults, to enable community health centers to serve a wider range of populations and disease spectrum.

Moreover, a comprehensive analysis reveals that the distribution of the disease spectrum is quite concentrated. In terms of specialty categories, internal medicine accounts for 56.98 %, while diseases in surgery, orthopedics, and ophthalmology are very rare, mainly focusing on common diseases such as respiratory, digestive, musculoskeletal, and gynecological systems; the variety of diseases treated is rather limited, with more than 90.00 % of the diagnostic and treatment volume in each specialty category concentrated in a few disease spectrums. As the TCM industry develops, Chinese herbal formulas and some unique therapies occupy a dominant or important auxiliary position in the treatment of certain diseases,[18-20] such as stroke, chest pain, palpitations, facial paralysis, constipation, insomnia, pediatric asthma, chronic pharyngitis, menopausal syndrome, infertility, fractures, sexually transmitted diseases, etc. Community health centers, due to their accessibility, continuity, comprehensiveness, and coordination, are highly suitable for carrying out management work during the rehabilitation phase, hospice care, and cancer patient management. The advantage of TCM in improving the quality of life of cancer patients has been fully proven and has become an important supplement to Western medicine treatment.[21] However, this study indicates that diseases such as cancer are not covered in the disease spectrum, and many diseases that could benefit from TCM treatment are either less common or rare, consistent with the findings reported by PAN et al[16], where TCM general practitioners seldom encounter cancer, skin diseases, sexually transmitted diseases, etc., in their daily practice.

This study has the following limitations:

(1)The data originated from residents signed up with family doctors, not the entire population, which could impact on the results. However, the study was conducted based on big data, and since the signed-up residents are the primary visitors to community health centers, this is unlikely to cause a material impact on the outcomes. (2)Although there were no strict restrictions on diseases such as respiratory system diseases during the study period, the COVID-19 pandemic and associated prevention measures may still have influenced consultation behaviors of the patients, especially among the elderly. (3)The naming standardization for TCM disease spectrum is currently nonstandard, and some TCM disease names are obscure, which could lead to some deviation in the disease spectrum. However, as this is a big data study, such deviations are unlikely to materially affect the overall results. (4)As a big data study, it was not possible to verify each case individually. To ensure the research results genuinely reflect TCM diagnostic and treatment capabilities, strict inclusion criteria were applied, which might have affected the inclusion of some eligible cases. (5)The study did not further analyze the impact of different variables such as gender, time periods, different community health centers, or levels of doctors on the disease spectrum. Future steps include refining the data and improving related research to better guide clinical practice.

Conclusion

This study indicates that, through the implementation of "strengthening the primary care system" and various favorable policies in recent years, the TCM diagnostic and treatment capabilities of Shenzhen's community health centers have significantly improved, and the TCM disease spectrum is broad. However, it also shows that while the types of diseases treated are concentrated and singular, many diseases that could benefit from TCM treatments are rare. The spectrum of diseases treated in children, adolescents, and elderly patients is less varied compared to that of TCM clinics in primary care in the Hong Kong Special Administrative Region.

There is a need for further enhancement of TCM diagnostic and treatment capabilities in primary care to better meet the health needs of residents.

Declarations

Not applicable.

Authors' contributions

Conceptualization, Y.Z.; Methodology, K.C. and Z.X.; Data curation, K.C. and Z.X.; Formal analysis, K.C., Z.X. and W.Y.; Funding acquisition, Y.Z., L.C., H.Y. and F.Y.; Project administration, Y.Z., L.C., H.Y. and F.Y.; Resources, not applicable; Supervision, Y.Z.; Validation, G.W.; Writing—original draft, Y.Z.; Writing—review and editing, G.W. All authors have read and agreed to the published version of the manuscript.

Ethics approval and consent to participate

The study received approval from Shenzhen University Health Science Center (IRB-PN-202,200,020).

Consent for publication

Not applicable.

Availability of data and materials

Not applicable.

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Authors' other information

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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