


Strategies for General Practitioners to Enhance Cancer Care: Insights from a Patient-Centered Questionnaire Survey in Southern China

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Background: The incidence of cancer is increasing, and cancer survivors are also growing exponentially. Cancer is defined as a new chronic disease. Nevertheless, the management of cancer in the form of chronic diseases in China is still in its infancy, without a standardized care model.

Objective: This study aimed to explore the current status of management of cancer care from the patient's perspective.

Methods: This cross-sectional study was a questionnaire survey of patients diagnosed with cancer, including information of the current situation of daily medical consultation, status of comorbidity, and expectations of seeking cancer care in future. Chi-square test and logistic regression analysis were used to explore the factors influencing patients' choice of cancer management mode.

Results: A total of 200 cancer patients were included in the study. The majority (n = 150) of cancer patients chose an oncologist in a tertiary hospital for cancer care. Difficulty in registration (45%), time-consuming (34.5%), repeated examinations (34.5%) and different treatment opinions (12.0%) were the main difficulties they encountered currently during tertiary hospital visits. In community hospital, lack of trust in general practitioners (n = 33) and the necessary drugs or testing items in community hospitals (n = 47) were the main difficulties during their visits. Logistic regression analysis showed that male (OR = 2.737, 95% CI, 1.332–5.627, p = 0.006) and elderly patients (OR = 3.186, 95% CI, 1.172–8.661, p = 0.023) were more likely to choose general practitioners (GPs) in community hospitals. Twenty-nine (14.5%) patients hope to have an integrated multidisciplinary management in tertiary and community hospitals with the active participation of GPs for cancer care.

Conclusion: Improving drug availability, equipment and quality of cancer care services can help to increase cancer patients' recognition of community hospital. In addition, the multidisciplinary management integrated tertiary hospitals and communities with the participation of GPs is a worth exploring mode that improves the management of cancer care.

Keywords: cancer care, chronic disease management, general practitioners, GPs, multidisciplinary

Introduction

In recent years, the incidence of cancer has significantly increased globally. In developed countries, for example, approximately half of all North Americans will be diagnosed with cancer at some point of their lifetimes.¹ This situation is even more severe in China. According to the Cancer Statistics 2023, cancer incidence and mortality rates of China rank first in the world. In China, there were 4.57 million newly diagnosed cancer patients, accounting for 23.7% of the world's total, and 3 million cancer deaths, accounting for 30% of cancer deaths in 2020.² These have become an important public health problem for China. World Health Organization (WHO) has categorized cancer as a chronic disease, and the management of cancer is now a slow and progressive.³

Cancer survivor is defined as an individual who has completed curative-intent therapy, need ongoing care on surveillance, prevention of adverse treatment-related effects and maintenance treatments.⁴ In recent years, patients living with incurable cancer and living for years with chronic treatments were considered to the new survivor population. From this perspective, cancer has the characteristics of chronic diseases, that are developed slowly, last a long time (from months to years), be incurable, and be progressive and/or life-limiting.⁵ Owing to improved screening, early detection and improved treatment modality, the number of cancer survivors grows exponentially in developed countries. There was estimated 18 million cancer survivors in the United States by 2022.⁶ In Canada, 63% of patients diagnosed with cancer were expected to survive for five or more years.¹ According to the Norwegian Cancer Registry, in 2020, the relative 5-year survival of all cancer patients was about 77%.⁷ This poses enormous demands on the healthcare system. Therefore, a series of guidelines for chronic disease management mode for cancer patients have been issued in developed countries. The influential US Institute of Medicine report from 2006 emphasized four broad goals that the follow-up of cancer patients should provide: 1) prevention of recurrent and new cancers, and of the late effects of cancer treatments; 2) surveillance for cancer recurrence or other cancers and possible late effects; 3) interventions to deal with consequences, such as symptoms, distress and concerns related to practical issues such as return to work; and 4) coordination between all providers to ensure that survivors' needs are met.⁸ In Australia, there were principles of Cancer Survivorship by Cancer Australia, and recommended Models of Cancer Survivorship Care by Clinical Oncology Society of Australia (COSA).⁹

General practitioners (GPs) are known as the health gatekeepers of the community residents.¹⁰ The concept of GPs' service emphasizes patient-centered, family-based, community-based, prevention-oriented, and provides continuous, comprehensive, accessible and coordinated and holistic care for patients. The long-term management of cancer participated by GPs in community hospitals plays an important role in the whole process of cancer diagnosis and treatment.^{11,12} Furthermore, the GPs played a very important role in the management of cancer comorbidities,¹³ a disease status that needed coordinated and holistic care. In developed countries, a series of guidelines for chronic disease management mode for cancer patients have been issued, which all emphasize the important role of GPs. The geriatric multidisciplinary integration team (GIT) was the chronic disease management mode emerging in the 1990s. This mode underlines holistic management of patients, and emphasizes the dominant position of geriatric medicine and GPs, which has been used in the management of chronic diseases such as cancer.¹⁴ In Australia, a series of guidelines for chronic disease management mode for cancer patients also emphasize the important role of GPs. For example, the long-term management of breast cancer patients was recommended to be conducted together by oncologists and GPs through shared post-treatment care.^{15,16} Studies also showed that cancer survivors could be managed safely and effectively by GPs.¹⁷

In China, due to the relatively slow and backward development of community hospitals, there is a significant gap in their service capabilities compared to developed countries. Patients can freely choose health care facilities without being referred by community general practitioners. This results in overcrowding in higher-level hospitals and low utilization of primary care facilities, and undermines the effectiveness and efficiency of the health system.¹⁸ In order to solve the above problems, China has been committed to strengthening the service level of community hospitals, improving the hardware facilities configuration of community hospitals, and cultivating general practitioners in recent years.¹⁹ China has introduced a policy to establish a general practitioner department in comprehensive tertiary hospitals, whose main function is to cultivate more qualified general practitioners for community hospitals. In recent years, community hospitals have improved their ability to manage chronic diseases such as hypertension, diabetes, stroke, chronic obstructive pulmonary disease and other common diseases.²⁰ However, the management of cancer in the form of chronic diseases in China is still in its infancy, without an accepted and effective care model. Even in Guangzhou, a first-tier city in China, cancer has not yet been included in the standard community chronic disease management. There are few studies on the management of cancer, let alone those involving GPs, and fewer rare clinical studies focusing on the patients' perspective on current situation in cancer management as a chronic disease.

This study aimed to explore the current status of management of cancer from the patient's perspective and provide clinical basis for exploring a more optimal management model from the general practitioner's (GP) point of view and how GP could be integrated into the cancer care management in the future.

Methods

Patients

This study was a cross-sectional questionnaire, which included the cancer patients attending the inpatient or outpatient clinic from different departments in Sun Yat-sen Memorial Hospital, and the questionnaire collection was completed electronically from March 2023 to November 2023. Inclusion criteria included age >18 years old, diagnosed with cancer /malignant tumor, understood and finished the questionnaire by themselves or with help of family members. Exclusion criteria included the patients who refuse to participate. Informed consent was obtained from patients throughout the course of the questionnaire. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the ethics committee of Sun Yat-sen Memorial Hospital (SYSKY-2023-850-01).

Questionnaire

The questionnaire covered three major parts, with 15 items in total.

- 1) The first part was informed notification and filling instructions.
- 2) The second part was the basic information of patients, which included gender, age, educational background, type of medical insurance, the type of cancer, comorbidity.
- 3) The third part is the current status of cancer management and the patients' expectation of cancer care in future. The detailed questionnaire information was shown in [supplement file](#).

Statistical Analysis

We analyzed the data of the questionnaire, summarized the responses to the different questions, and described them by the number of cases (percentage). The percentage was compared with the chi-square test. In the multivariate logistic regression analysis, age, educational background, and medical insurance type were transformed into binary data, and then included in the independent variables for analysis. OR value indicated the risk ratio, and p-values <0.05 were considered statistically significant.

Results

Participant Characteristics

A total of 200 patients diagnosed with cancer were included. The largest number was breast cancer cases (n = 92), followed by hepatobiliary pancreatic malignant tumor (n = 32), gastric-colorectal cancer (n = 27), lung cancer (n = 11), urinary system tumor (n = 7), gynecological system tumor (n = 12), thyroid cancer (n = 5), nasopharyngeal carcinoma (n = 2), lymphoma (n = 2), and other malignant tumors (n = 10), including melanoma, sarcoma, oral cancer, etc. Fifty-six of the 200 patients had comorbidity, the most common of them were endocrine and metabolic system (n = 31), cardiovascular system (n = 18), digestive system (n = 15), chronic obstructive pulmonary disease (n = 5), osteoarthritis (n = 4), and neuropsychological (n = 3). The results are shown in [Table 1](#).

The Current Status of Cancer Management

One hundred fifty (75%) patients chose the oncologists in tertiary hospitals for cancer care, while only 47 visited GPs, among which 42 are GPs in tertiary hospitals and five are GPs in community hospitals. There was no significance in the patients' choice between various cancer type ($X^2 = 4.171$, $P = 0.525$), as illustrated in [Figure 1](#). The percentage choice of GPs was highest in malignant tumors of the urinary system, followed by malignant tumors of the digestive system, breast cancer, lung cancer, and gynecological malignant tumors ([Figure 2](#)).

When we asked these patients on their expectation on their future management model, 103 patients chose oncologists in tertiary hospitals, 52 patients chose GPs in tertiary hospitals, 14 patients chose GPs in community hospitals. Twenty-nine patients anticipated a multidisciplinary and integrated management between tertiary and community hospitals with the active participation of GPs ([Table 1](#)).

Table I Characteristics of Patients Who Completed the Questionnaire (n = 200)

Characteristic	N (%)
Gender	
Male	74 (37.0)
Female	126 (63.0)
Age (years)	
< 40	51 (25.5)
40–60	102 (51.0)
> 60	47 (23.5)
Education	
Junior high school or below	66 (33.0)
Senior high school	53 (26.5)
University or above	81 (40.5)
Medical insurance type	
Self-funded	14 (7.0)
Employee medical insurance	114 (57.0)
Resident hospitals insurance	66 (33.0)
Commercial insurance	6 (3.0)
Cancer type	
Lung cancer	11 (5.5)
Gastrointestinal cancer	27 (13.5)
Liver, gallbladder, pancreatic cancer	32 (16.0)
Breast cancer	92 (46.0)
Malignant tumors of the urinary system	7 (3.5)
Gynecological malignant tumors	12 (6.0)
Nasopharyngeal carcinoma	2 (1.0)
Thyroid cancer	5 (2.5)
Lymphoma	2 (1.0)
Other (Melanoma, sarcoma, oral cancer)	10 (5.0)
Comorbidity	
Yes	56 (28.0)
No	144 (72.0)
Other inherent chronic diseases	
Endocrine and metabolic diseases	31 (55.4)
Cardiovascular diseases	18 (32.1)
Digestive diseases	15 (26.8)
Chronic obstructive pulmonary disease	5 (8.9)
Osteoarthritis	4 (7.1)
Neuropsychological diseases	3 (5.4)
Current choice for current cancer care	
Oncologist in tertiary hospitals	150 (75)
General Practitioner in tertiary hospitals	42 (21)
General Practitioner in Community Hospital	5 (2.5)
Others	3 (1.5)
Expectation in future cancer care	
Oncologist in a tertiary hospital	103 (51.5)
General Practitioner in a tertiary hospital	52 (26)
General Practitioner in a community hospital	14 (7)
The multidisciplinary management integrated tertiary hospitals and communities with the participation of general practitioners	29 (14.5)
Others	2 (1)

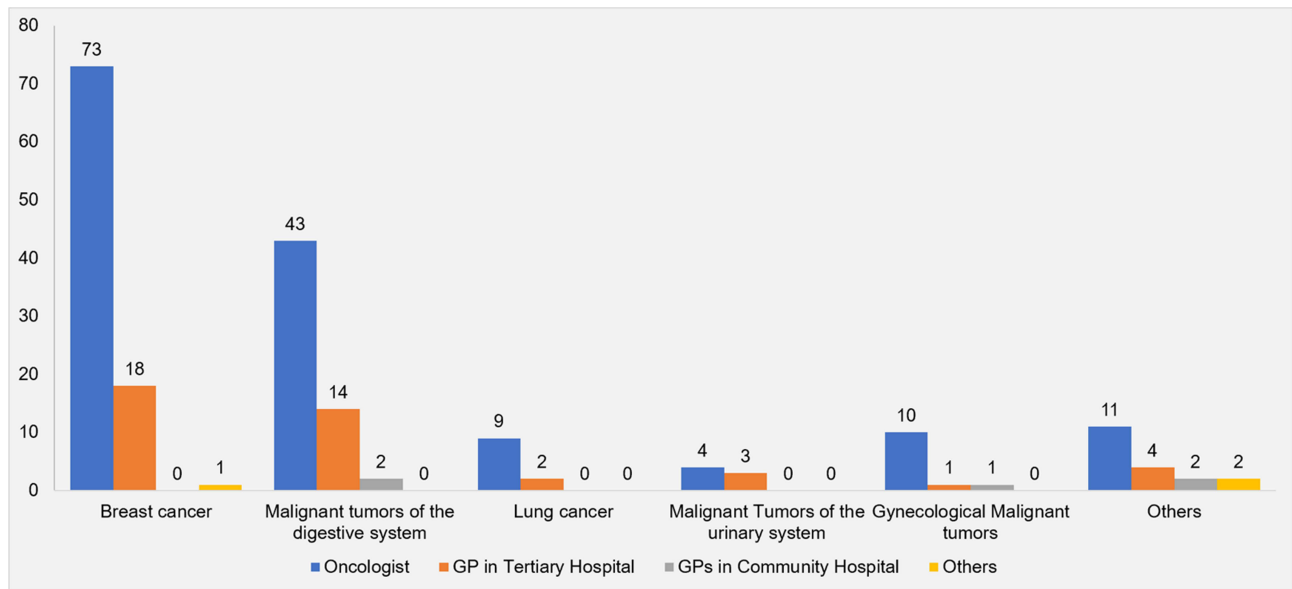


Figure 1 Patient preferences for oncology care based on cancer type. This figure illustrates that patients predominantly preferred oncologists affiliated with tertiary hospitals for cancer treatment across various cancer types. A minority of patients opted for general practitioners within tertiary hospitals. The proportion of patients selecting general practitioners at community hospitals was notably low.

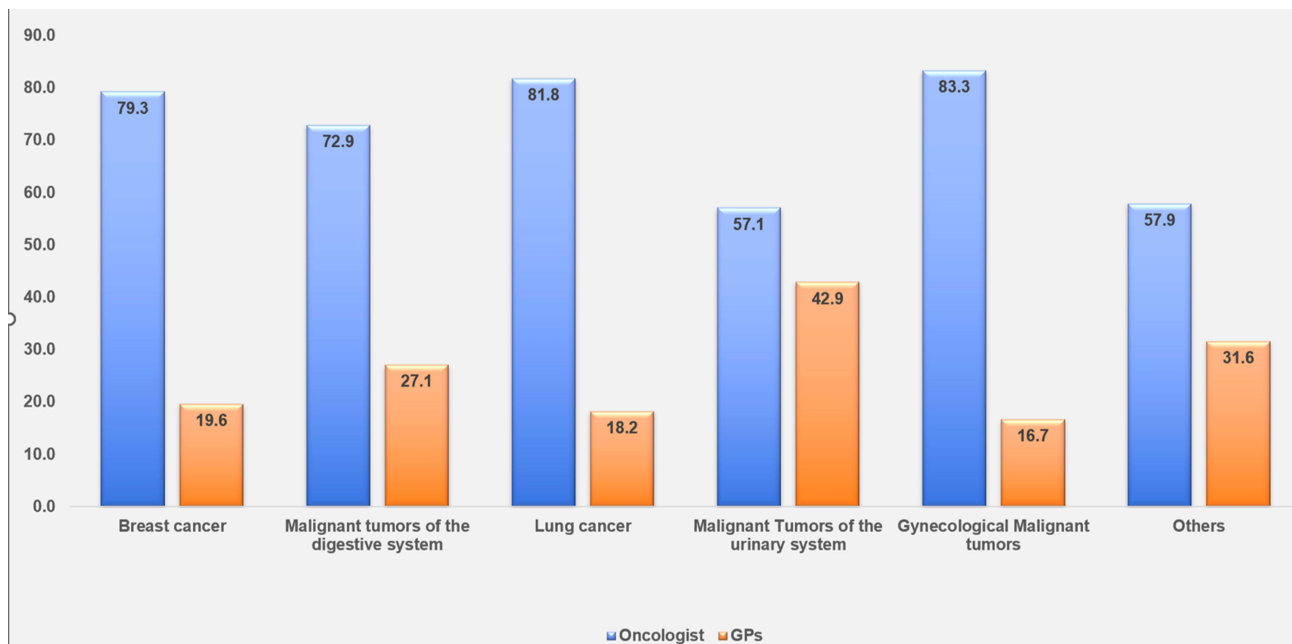


Figure 2 Patients' choice of oncologist vs GP based on cancer type (%). The figure demonstrated that 57.1–83.3% patients were more inclined to choose oncologist over GP, with only 16.7–42.9% opting for GPs.

Note: Despite differences in experience and skills between GPs in tertiary hospitals and community hospitals, they are collectively categorized under the GP group. Due to the significantly low numbers, general practitioners from both tertiary and community hospitals have been consolidated into a single group for analysis.

Although cancer patients preferred oncologists in tertiary hospitals for cancer care, they encountered many difficulties during hospital visits. There were 45% patients faced difficulty in registration, resulting from too many patients and scarce specialist physicians in tertiary hospitals, 34.5% patients thought that it was time-consuming, which meant longer waiting time for consultation, examination, getting medication, and treatment in tertiary hospitals and repeated examinations in different tertiary hospitals also resulted in resource waste. In tertiary hospitals, specialists offered different

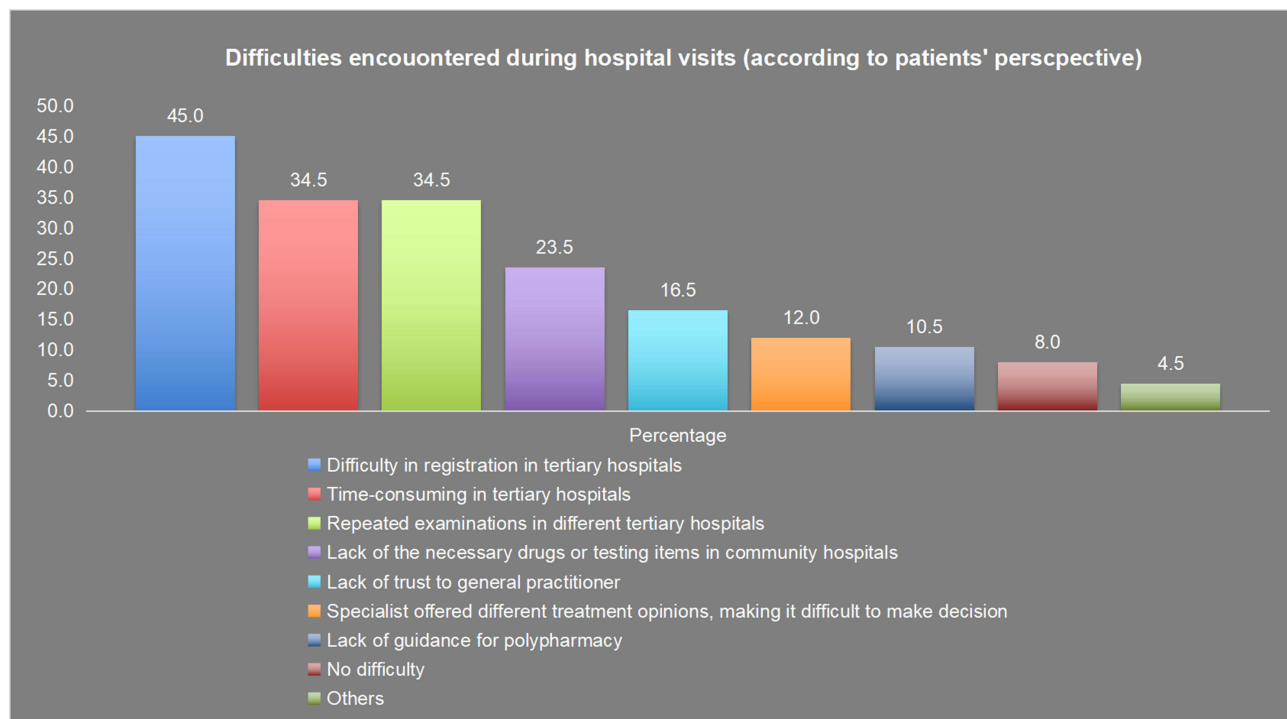


Figure 3 Challenges encountered during hospital visits from the patients' perspective. This figure highlights the primary difficulties faced by cancer patients during visits to tertiary hospitals, including cumbersome registration processes, time-consuming procedures, and repetitive examinations. In community hospitals, the main challenges identified by patients include the unavailability of necessary medications or testing items, and a lack of trust in the capabilities of GPs.

treatment opinions, making it difficult for decision-making (12%). Furthermore, 10.5% patients worried about the lack of guidance for polypharmacy. Lack of the necessary drugs or testing items (23.5% cases) and lack of trust in general practitioner (16.5% cases) were the main difficulties when visiting GPs in community hospitals (Figure 3).

Multivariate Logistic Regression Analysis

We then carried out multivariate logistic regression analysis to analyze the factors that influence the patients choose when seeking for cancer care. The choice of hospital for regular follow-up of cancer was related to gender and age. Male patients (OR = 2.737, 95% CI, 1.332–5.627, $p = 0.006$) and elderly patients (OR = 3.186, 95% CI, 1.172–8.661, $p = 0.023$) were more inclined to visit GPs, regardless of medical insurance and degree of education, with or without comorbidity (Table 2). While in terms of future expectations, older cancer patients were seen to be favoring management mode with participants of GPs in their upcoming cancer care (OR=2.110, 95% CI, 1.010–4.407, $p = 0.047$) (Table 3).

Table 2 Multivariate Logistic Regression Analysis to Analyze Factors That Influenced Patients Seeking General Practitioners (GPs) for Cancer Care

	B	SE	Wald χ^2	P	OR	95% CI
Gender						
Male vs female	1.007	0.368	7.503	0.006	2.737	(1.332, 5.627)
Age						
Above 60 vs below 60	1.159	0.510	5.155	0.023	3.186	(1.172, 8.661)
Education						
Senior high school or below vs University or above	-0.260	0.365	0.507	0.476	0.771	(0.377, 1.577)
Insurance						
Insured vs self-funded	0.640	0.616	1.078	0.299	1.896	(0.567, 6.342)
Comorbidity						
Yes vs no	-0.244	0.399	0.372	0.542	0.784	(0.359, 1.714)

Table 3 Multivariate Logistic Regression Analysis to Analyze Factors That Influenced Patients' Expectation of Seeking General Practitioners (GPs) in Future for Cancer Care

	B	SE	Wald χ^2	P	OR	95% CI
Gender male vs female	-0.359	0.313	1.318	0.251	0.698	(0.378, 1.289)
Age above 60 vs below 60	0.747	0.376	3.940	0.047	2.110	(1.010, 4.407)
Education senior high school or below vs University or above	-0.271	0.313	0.749	0.387	0.763	(0.413, 1.408)
Insurance Insured vs self-funded	-0.527	0.589	0.799	0.371	0.591	(0.186, 1.874)
Comorbidity Yes vs no	-0.157	0.335	0.220	0.639	0.855	(0.444, 1.647)

Discussion

With increasing incidence and mortality, cancer is the leading cause of death in China and has become a major public health problem.²¹ With the growing of aging and the significant improvement of the survival rate of cancer, cancer has been defined as a chronic disease, and cancer care has also become an important content of chronic disease management. This study was a cross-sectional questionnaire study from the perspective of cancer patients to explore the current status and difficulties of management in cancer patients from patients' point. In total, 200 patients were included in the present study, including 56 patients with cancer comorbidity. The study found that majority (75%) of cancer patients chose oncologists in tertiary hospitals for regular follow-up of cancer, even if they were facing many difficulties. Patients expressed lack of trust in GPs, worried about the lack of medical equipment for diagnosis and treatment in community hospitals. Currently, compared with female and middle-aged patients, male and elderly patients are more inclined to choose community hospitals for cancer care. Elderly patients are more expected to visit GPs for cancer care in community hospitals in future. From the patient's perspective, the multidisciplinary management integrated tertiary hospitals and communities with the participation of GPs was worth exploring from patients' perspective.

The types of cancer reported in this study were most common in breast cancer, followed by hepatobiliary pancreas, gastric, colorectal, and lung cancer, which was in line with the cancer types reported by cancer data in China.²¹ In our present study, 56 patients had cancer comorbidity (accounted for 28%), which was lower than previously reported. Previous studies reported the proportion of patients with advanced prostate cancer suffering from one or more chronic diseases was 82%.²² Williams reported 539 elderly cancer patients, of which 92% had one chronic disease.²³ The reason may be a higher proportion of non-elderly patients under 60 years of age in the present study (76.5%). Furthermore, the identification of comorbidity in the present study was patient self-report, and there might be information gaps. The common comorbidities were endocrine and metabolism, cardiovascular system, digestive system disease, chronic obstructive pulmonary disease, osteoarthritis, and neuropsychology, which were similar to the results of previous studies.²⁴ A meta-analysis divided the included comorbidities into three major patterns, namely cardiovascular and metabolic diseases, mental health problems and musculoskeletal muscle disorders and classified cancer into patterns of mental health problems with an incidence of 100%.²⁵ The most common chronic comorbidities in breast cancer patients are muscle and joint bone disease, gastrointestinal disorders, diabetes, and hypertension.²⁶ Diabetes, peptic ulcer and previously reported malignancies were the top 3 common comorbidities in patients with colon cancer.²⁷ The existence of cancer comorbidity was an important reason for frequent medical visits, higher medical expenses, lower quality of life and poorer prognosis of cancer patients. Thus, cancer patients with comorbidity needed coordinated and holistic care, which was the expertise and characteristics of GPs.

The results of this study showed that currently, cancer patients preferred visiting oncologists in tertiary hospitals to GPs in community hospitals both in treatment and follow-up period (shown in Figure 4). This phenomenon was different from previous studies. A survey from Germany pointed to the importance of the GP during cancer therapy from the patient's point of view, and patients wanted their GP to take an active part in the cancer therapy.²⁸ The above survey

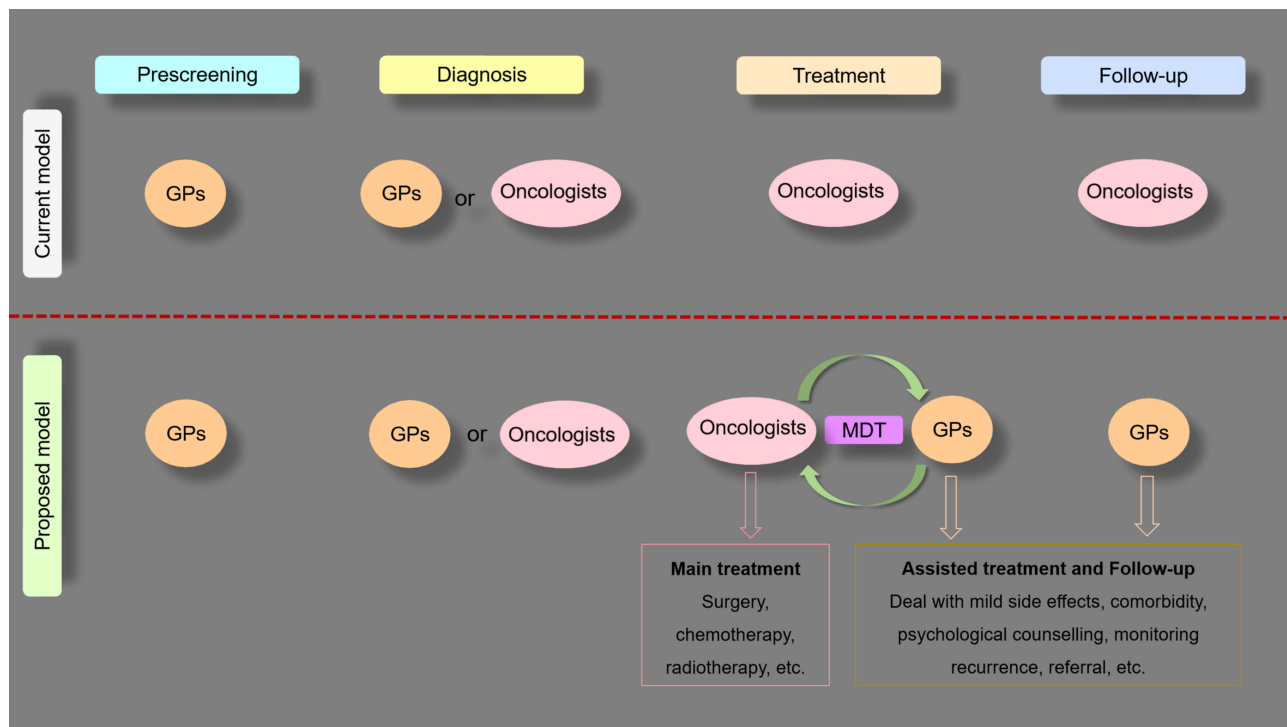


Figure 4 The current model of cancer management in southern China vs the proposal model in our study. Currently, cancer patients in southern China are mainly managed by oncologists. In the future, we expect that GPs could play a more active role in cancer management, such as deal with mild side effects, comorbidity, psychological counselling, monitoring recurrence or referral.

suggested that 71% had visited the GP during cancer therapy, and the most relevant reasons to visit the GP during cancer therapy were to get a blood test (63.3%), comorbidities (42.7%) and complaints and side effects (38.3%). The current inadequate level of chronic disease management for cancer in community hospitals of China might be the main reason. In the present study, patients considered that the ability of GPs in community hospitals was insufficient professional and technical level, hence showed not full trust of them. Furthermore, the facilities of diagnosis and treatment in community hospitals were defective, which was also the patients' concern. The treatment of cancer patients with comorbidities should include many inter-disciplines, such as oncology, nutrition, rehabilitation, psychiatry, etc. These patients often needed multidisciplinary teamwork (MDT) for comprehensive management, which was difficult for GPs in community hospitals currently. A cross-sectional survey study from Changchun in China suggested that residents with chronic disease were more likely to have a usual source of community health service.²⁹ Another study reviewed the factors influencing choice of health system access level in China and suggested that improving drug availability, equipment and perceived quality of primary care services could improve the use of primary care facilities.¹⁸ Therefore, how to improve the cancer management ability of community hospitals was the key point to solving the above problems.

GPs played a very important role in the whole process of diagnosis and treatment of cancer, including cancer screening, diagnosis, evaluation and dealing with treatment side effects, follow-up and monitoring of cancer survivors.³⁰ Participants of GPs could reduce the workload of specialized physicians in tertiary hospitals and relieve overcrowding in tertiary hospitals, which was benefit for reducing delay in registration and remission of time-consuming. However, because the treatment details about cancer patients in tertiary hospitals often could not be well conveyed to community hospitals,³¹ there was an information disconnect between tertiary hospitals and community hospitals, which was not conducive to the effective and accurate management of cancer patients by GPs. Some scholars have shown that the multidisciplinary teamwork (MDT) management mode of cancer patients with a primary care representative could fill the gap between superior hospitals and the community and strengthen the connection between them, so as to improve the management of cancer in community hospitals.³² Another study recommended the application of multidisciplinary care mode combined specialists with general practitioners in the management of breast cancer. In the present study, part of patients also proposed the comprehensive management mode of

linkage between community hospitals and general hospitals, which may be a preferred chronic disease management mode adapted to the current national conditions of China at this stage. GPs should fully consider the patient's needs and make an effort to explore the feasibility and effectiveness of the MDT management mode integrating tertiary hospitals and communities with the participation of GPs in the future study, in order to improve their survival prognosis and quality of life. Figure 4 shows the above MDT management mode, with a higher expectation on GPs to play a more active role in cancer management, such as dealing with mild side effects, comorbidity, psychological counselling, monitoring recurrence, and referral.

In the present study, patients raised the current problems during the tertiary hospitals' visits, such as difficult to register, time-consuming, repeated examinations, wasting medical resources, and polypharmacy. China has a population of 1.4 billion, so medical resources are very scarce. Due to the relatively slow and backward development of community hospitals in China, there is a significant gap in their service capabilities compared to developed countries. In China, patients can go to a tertiary hospital of their choice, without the need to be referred by community GPs. These results in overcrowding in higher tier hospitals. Due to the large number of patients visiting tertiary hospitals and shortage of physicians, it is difficult for patients to register, and the waiting time for consultation and examination queues are too long.¹⁸ In fact, these were common problems in the management of other chronic diseases,³³ but these issues might be more prominent in cancer management, due to the specificity of tumor treatment. At the present stage, China has formulated a hierarchical diagnosis and treatment mode of chronic diseases with

First diagnosis at the grass-roots level, Both-way referral, Separate treatment for urgent and slow diseases, and Connection of higher and lower-level hospitals³⁴,

which was also proposed to solve the above problems. GPs need to play a role in connecting the preceding and the following, opening up the communication barrier between higher- and lower-level hospitals, so as to give better patient-centered and individualized diagnosis and follow-up programs.

Conclusion

Cancer patients preferred choosing oncologists in tertiary hospitals than GPs in community hospitals for follow-up of cancer currently, even if they were facing many difficulties during visits in tertiary hospitals. Our survey indicated that there is a lack of drugs and equipment in community hospitals, which could be the reason why some patients did not fully trust GPs in the community hospitals. These will be the aspects that need improvement in the future. Our study suggested that we need a new management model of cancer care, to meet the medical demands of a large number of cancer patients in China. Improving drug availability, equipment and quality of cancer care services can help increase cancer patients' recognition of community hospitals. In many instances, GPs could be the bridge between community hospitals and tertiary hospitals. Multidisciplinary management integrating tertiary hospitals and communities with the participation of GPs was a worth exploring mode for cancer care.

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Disclosure

The authors report no conflicts of interest in this work.

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