

Facilitators and Barriers of Managing Patients with Multiple Chronic Conditions in the Community: A Qualitative Study

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Abstract

Background About one-third of all adults worldwide were diagnosed with multiple chronic conditions (MCCs). Literature had found several challenges of providers and patients coping with managing MCCs in the community, urging the need for further study. A qualitative study was thus conducted to examine facilitators and barriers of managing patients with MCCs in the community in Singapore.

Methods This involves 26 semi-structured interviews with 10 physicians, 2 caregivers and 14 patients seeking treatment in the polyclinics that provides subsidised primary care services. Topic guides were developed with reference from literature review, Chronic Care Model (CCM) and Framework for patient-centred access to healthcare.

Results Despite perceived affordable charges and availability of support system, some patients still encountered financial difficulties in managing care. These include inadequacy of the nation-wide medical savings scheme to cover outpatient treatment and medications. Half of the healthcare users did not know where to seek help. While patients could access comprehensive services in polyclinics, those that did not turn up might not receive timely care. Furthermore, patients reported long consultation waiting time. Physicians were able to propose and drive quality improvement projects to improve care quality. However, there were challenges of delivering safe and quality care with limited consultation duration due to the need to manage waiting time, inadequate communication with specialists to coordinate care, and resource constraints in managing complex patients. Although providers could equip patients with self-management and lifestyle related guidelines, patients' actions are influenced by multiple factors including work nature, beliefs and environment.

Conclusions There were barriers on care access, delivery and self-management as reported. It is crucial to adopt whole-of-society approach involving individuals, community, institutions and policymakers to improve and support MCCs management. This study has also highlighted the importance to consider different viewpoints of healthcare providers and users in policy formulation and community care planning.

Introduction

Background

About one-third of all adults worldwide were found to have multiple chronic conditions (MCCs), defined as the presence of more than 1 chronic disease, according to a systematic review in 2011 (1, 2). Various studies across multiple countries such as Canada, United Kingdom (UK), United States (US) and Netherlands had established the correlation of MCCs with lower self-efficacy, reduced quality of life, vulnerability to depression and other psychological issues, as well as disability (3–7). Individuals with MCCs were also found to have required more care attention with higher number of visits to primary and specialist care, had more prescriptions and incurred greater healthcare expenditure when compared to

those with one or no chronic condition (1, 8). In the US, US\$0.71 out of every US\$1 of healthcare expenditure were incurred on management of MCCs in 2010 (9).

Studies conducted in Canada, UK, Sweden and Singapore revealed that patients with chronic conditions or MCC had not been able to receive appropriate care in the community. Challenges were encountered in coordinating care, interacting with providers and acquiring adequate relevant information. Some patients had difficulties in making decision and self-managing due to lack of capacity, being more reliant on caregivers, and other barriers on community, institutional and system levels. Financing had been established as a key area to be addressed to avoid delay in treatment (10–16). Furthermore, a systematic review had identified the lack of understanding on prescribed medication which could lead to medication error (17). Despite the benefits of physical activities (PA), Lee (2013) found that US residents with 3 or more chronic conditions were also unlikely to have met PA requirement as compared to others with lesser conditions (18).

At primary care level, challenges were present due to fragmentation in healthcare system, inadequate guidelines, lack of communications among providers, inability to handle varied and complicated conditions and provide patient-centred care, as well as issues in communicating and making aligned decisions with patients and caregivers, as depicted by studies in US, Switzerland, Scandinavian, Asian and other countries. General Practitioners (GPs) in UK, New Zealand, Ireland and Malaysia had also quoted having inadequate consultation duration to review and discuss conditions to provide quality care (19–22). Nevertheless, Danielle (2016)'s study in the US implied that physicians' satisfaction derived from care coordination and admission prevention could encourage them to manage MCCs (23).

Through a scoping review, Marie-Eve (2018) identified providing patient-centred care, facilitating self-management and training healthcare staff as common forms of interventions to derive positive outcomes of managing patients with MCCs (24). Two other studies in France and Canada illustrated that certain tasks on managing chronic conditions could be transferred to non-physicians within the team, with clearly defined roles (25, 26). Nonetheless, there were still limited effective and evidence-based interventions, prompting the need for more targeted interventions and greater consideration on patient-centredness in care delivery (27–31).

Literature had highlighted health system, financing, care management, care coordination and self-management as areas with gaps. However, there are limited studies that merged the viewpoints of healthcare providers and users to explore the topic of managing patients with MCCs in the community. It would be beneficial to examine these aspects in greater detail, with consideration on the differences in standpoints of both healthcare providers and users.

As such, this study was conducted with the objective of understanding the facilitators and barriers of managing patients with MCCs in the community in Singapore, from healthcare providers and users' perspectives. This study had considered the necessary components for management of MCCs. From the providers' perspectives, the topic of managing patients with MCCs, as well as to meet varied and potentially complex needs of these patients had been explored. This study had also incorporated

individuals' experience on accessing community care and coping with their conditions. The findings which were triangulated could value-add to literature and to be considered in enhancing provision and sustainability of community care.

Case Study Setting

With a rapidly ageing population, Singapore had experienced rising disease prevalence, particularly for hyperlipidaemia, hypertension and diabetes between 2010 and 2017 (32). Older adults aged 60 and above were also found to have been impacted by MCCs with close to 40% of a local study's respondents informed having 3 or more chronic diseases in 2017 as compared to about 20% in 2009 (33).

Singapore's healthcare financing system is rooted on the value of personal responsibility, coupled with support system to ensure sustainability and care affordability. Individuals could tap onto financial schemes, namely MediSave, a nation-wide medical savings scheme to pay for healthcare charges, as well MediShield Life, a healthcare insurance plan to fund costly treatments including hospital charges. Singaporeans that require further financial support could utilise MediFund, a government endowment fund after exhausting their financial resources. There are also various other subsidies to support Singaporeans with financial challenges (34, 35).

Nevertheless, with rising healthcare demand in Singapore, it is essential to review and enhance care delivery system continuously to provide quality and affordable care, and ensure further long-term sustainability of the healthcare industry. The Ministry of Health (MOH) had attempted to integrate care by organising healthcare institutions which include restructured hospitals, primary and other community care services into clusters termed as Regional Health Systems, and initiated the shift in care focus "beyond hospital to community" (36, 37). This has called for greater community involvement including primary care providers to address health-related issues such as chronic disease prevention and management in the community.

While Wee (2008) had derived certain level of clinical outcome improvement through "right-siting" of care by referring patients from specialists to primary care physicians (PCP) (38), it is crucial to address system level challenges of working with various stakeholders to integrate care (39) and gaps in the terms of primary care capacity, accessibility and continuity in Singapore (40).

Within Singapore's primary care setting, polyclinics which provide subsidised primary care services and made up 20% of primary healthcare have been managing 45% of the patients with chronic conditions (40). This depicted the imbalance of chronic disease management activities in the community and further raised concern on the capacity, ability and quality of polyclinics in managing patients with chronic diseases. This study was thus conducted with physicians managing patients in polyclinics, caregivers and patients seeking treatment in these facilities to understand their experience in managing MCCs, and explore the facilitators and barriers of community care.

Methods

Sampling, Recruitment & Data Collection

Twenty-six semi-structured interviews were conducted between October 2018 and February 2019 with 10 polyclinic physicians, 2 caregivers and 14 patients that were managing chronic conditions in 6 polyclinics managed by the National University Polyclinics (NUP) (Table 1 & 2).

This study undertook purposive sampling by sending email invite to physicians that have been involved in managing chronic conditions and with minimum qualification of Graduate Diploma in Family Medicine to participate in the interviews. Upon receiving email reply from physicians, the researcher (FKM) proceeded to schedule for the interview sessions.

Purposive sampling also was adopted to recruit patient and caregiver participants. To be eligible for the study, the patients would need to meet the recruitment criteria of aged 40 and above, having 2 or more chronic diseases, visiting the polyclinic for 6 or more months and able to converse in English or Mandarin. In addition, caregivers would have to be involved in patient's care management process and are not domestic helpers. The care managers and advanced practice nurses had identified patients and caregivers that met the criteria, sought verbal consent and passed the lists of potential participants to the researcher (FKM). The researcher contacted the potential participants through phone calls to arrange for interviews. Among the lists passed to researcher, 3 patients were uncontactable and another 3 had refused to participate due to the need to arrange for face-to-face interview session.

The duration of each interview ranged from 30 to 90 minutes, and conducted in either English or Mandarin. Interviews with physicians were conducted in meeting and consultation rooms, while interviews with patients and caregivers were executed in patients' homes, fast food restaurants and cafes. Field notes were documented following the interviews. All interviews were audio-recorded with consent from participants, and fully transcribed. Interviews in Mandarin were translated into English. To ensure confidentiality, the participants' identities had been removed and are being represented by pseudonyms. All participants were only contacted once for the interviews, and no repeat interview was conducted. Recruitment for participants ceased in February 2019, as thematic saturation had been reached, and additional data collection would not derive new code, theme or relevant information for this study.

Table 1: Profiles of participants

Physicians

	Number of physicians (n=10)
Gender	
Female	6 (60%)
Male	4 (40%)
Years of working in the polyclinic	
<1 - 5 years	4 (40%)
6 - 10 years	1 (10%)
>10 years	5 (50%)
Care model involved	
Teamlet <i>(Part of a regular team comprising Family Physicians, Care Manager and Care Coordinator to manage patients with chronic conditions)</i>	3 (30%)
Non-Teamlet model <i>(Manages patients of all profiles, both chronic & acute patients)</i>	5 (50%)
Teamlet & Non-Teamlet model	2 (20%)

Patients

(14 interviews were conducted with patients and 2 interviews were conducted with patients' caregivers)

	Number of patients (n=16)
Gender	
Female	9 (56%)
Male	7 (44%)
Race	
Chinese	15 (94%)
Malay	1 (6%)
Age	
56 - 60 years old	2 (13%)
61 - 65 years old	3 (19%)
66 - 70 years old	8 (50%)
>70 years old	3 (19%)
Education level	
No formal education	1 (6%)
Primary school	5 (31%)
Secondary school	8 (50%)
Polytechnic	2 (13%)
Employment status	

Retired and/or not looking for job	10 (63%)
Working part time	3 (19%)
Employed with full time job	3 (19%)
Living Situation	
Staying alone	2 (13%)
Staying with family member(s)	14 (88%)
Number of chronic conditions	
2	5 (31%)
3	9 (56%)
>3	2 (13%)
Years of managing chronic conditions in the polyclinic	
1/2 - 2 years	4 (25%)
3 - 4 years	2 (13%)
5 or more years	7 (44%)
Unable to recall the exact duration	3 (19%)

Theoretical Framework

The interview topic guides were developed with reference from literature review and two frameworks, the Chronic Care Model (CCM) and Framework for patient-centred access to healthcare. The CCM comprises the necessary components to improve care management at patient, organisation and community levels, and were found to have served as useful guide to enhance care delivery, leading to improved outcomes. CCM includes 6 elements that affect patient care outcome, namely health systems, community, self-management support, delivery system design, decision support and clinical information systems (41). Furthermore, while care access is vital to health system performance, it would be necessary to consider the supply and demand aspects which could be assessed through 5 dimensions, namely approachability, acceptability, availability and accommodation, affordability, appropriateness, and the corresponding dimensions of abilities, namely ability to perceive, ability to seek, ability to reach, ability to pay and ability to engage (42). The authors jointly developed and reviewed the topic guides to ensure relevancy to primary care context.

In addition, the socio-ecological model (SEM) demonstrated that individuals' health and practices are influenced by the interplay of individual, interpersonal, community, organisational and policy. SEM had been considered in various aspects such as health promotion and disease prevention, and adopted by the Centers for Diseases and Prevention in its initiatives. As various factors are contributing to effective chronic disease management in the community, the authors had also taken SEM into consideration in the process of collecting data and formulating recommendations (43).

Analysis

This study adopted an interpretive approach in analysing physicians, patients and caregivers' responses, considering their experiences. Transcripts were coded using inductive and deductive approaches, and thematic content analysis was conducted with support of Nvivo12 software. Grounded theory techniques such as line by line coding, and identifying emerging and deviant cases had been adopted. Themes and sub-themes were then derived from the analysis (44).

Ethical Approval

Ethical approval was obtained from the National Healthcare Group Domain Specific Review Board (DSRB), reference number 2018/00825.

Prior to starting the interviews, all participants were briefed on the study objectives and details as stated in the information sheet and signed consent forms for participation in the study. All data collected have been stored securely.

Results

Taking reference from the CCM and Framework for patient-centred access to healthcare, and considering the interview findings, patient's journey in managing MCCs generally involves 3 key areas, namely accessing care, receiving appropriate care and self-managing (Figure 1). Firstly, patients would need to access healthcare and other essential services without experiencing financial hardship, and reach the services physically. Secondly, it is crucial for patients to receive appropriate care in the polyclinic. Lastly, patients would have to be able to self-manage with minimal monitoring by healthcare professionals in the community.

The 4 themes, specifically accessing affordable care, ability to reach and utilise services, receiving safe and quality care, and self-managing in the community, and the corresponding 17 sub-themes (as underlined) would be elaborated as follows. Findings through interviews with healthcare providers and users were merged under each theme, with clear distinction on the facilitators and barriers.

Theme 1: Accessing Affordable Care

Facilitators

Affordable charges & presence of "helping hands". Physicians indicated that the most common chronic conditions that are managed in the polyclinics include Diabetes, Hypertension and Hyperlipidaemia. All patients in this study had also reported being diagnosed with at least one of these conditions. A total of 10 patients mentioned managing chronic conditions in the polyclinics due to subsidised and affordable

charges. Other reasons quoted for visiting polyclinics include close proximity to homes and relationship with healthcare providers. Most patients had tapped onto MediSave to pay for the charges (45). Providers shared that patients that require financial and other support could be referred to financial counsellors or Medical Social Workers situated in the polyclinics to facilitate the process of subsidy and other applications.

Barriers

Financial challenges specific to MediSave withdrawal limit, higher non-standard drug charges & support schemes. Several patients reported the inadequacy of the MediSave scheme to cover outpatient visits, particularly with higher charges for certain medications. Physicians shared that although these unsubsidised non-standard medications might be beneficial for patients with chronic diseases, they would not be able to prescribe to patients with financial constraint. For existing patients that had been prescribed non-standard medications but encountered financial challenges subsequently, physicians expressed that they would reduce the dosage or replace non-standard medications with other drugs, with consideration on clinical implication. A patient commented that he would follow his neighbour to purchase medication from neighbouring country if needed to cope with high medication cost.

Although patients could apply for financial assistance through the polyclinics, Dr Candy emphasized that some may not be eligible:

"They (patients) don't fit the criteria to get the subsidy but yet...they really feel that they can't cope (with) the charges, but there's nothing you can do because the criteria have already been set."

Dr Amanda had also questioned on the necessity for all needy patients to be assessed based on eligibility criteria:

"I don't see why people who need walking stick must prove that they need it. Is there a need to prove if they are already 80 years old?... Must we fill up some form for them to qualify for wheelchair?"

Dr Amanda further suggested for flexibility to be exercised on case-by-case basis and added that healthcare providers would rather pay for the patients when needed.

Half of the caregiver and patient participants reported not being aware of where they could seek help from, with a few sharing that they would discuss with their family members. While one of the patients, Mary had applied for Foreign Domestic Worker grant to hire a helper to take care of her elderly mother with chronic conditions, she stressed on the need to reduce processing turnaround time to ensure provision of timely support:

“Shouldn’t take so long (for more than 1 month). By the time you give the grant, my mother might no longer be around...I think the service can be a little faster.”

Theme 2: Ability to Reach and Utilise Services

Facilitators

Perceived accessibility to comprehensive services. Physicians informed that patients could manage MCCs in one polyclinic with access to consultation, diagnostic and pharmacy services. Some patients may need to travel across western polyclinics for allied health services such as Physiotherapy and Podiatry as these are not available in some polyclinics due to space and resource constraints. However, all patients verbalised that they had not encountered any challenges traveling to polyclinics with availability of buses and trains. Physicians explained that patients’ visit frequency depends on their ability to control instead of number of conditions, and could range from 2 to 4 times a year. Patients would schedule for subsequent appointments in the polyclinics and had received SMS reminders sent from polyclinics to attend these appointments.

Barriers

Impractical for polyclinics to cover all patients. Some participants reported challenges for bedridden patients and wheelchair users to access polyclinic services.

Physicians further cautioned that patients might “fall through the cracks” if they did not schedule any follow-up appointments or defaulted the appointments, e.g. due to work commitment. Dr Peter explained that:

“Most of them will say it’s work...they forget...still have their medications... if they are not here, I can’t help them anyway.”

While polyclinics would follow up with patients enrolled under specific care teams or programmes, physicians generally felt that it would be challenging to reach out to all other patients.

Challenges of elderly navigating the polyclinic system. A few participants highlighted the difficulties encountered by some elderly in their consultation journeys. These include the challenges of them using

self-registration and payment kiosks, communicating with polyclinic staff that do not speak dialects and missing stations. Ang who is an elderly patient mentioned that:

“It is very troublesome now, we (elderly) also don’t know how to read and use the kiosks...If my daughter did not go with me, I also don’t know how to press. Last time when buying medicine, we gave cash, now need to place cash in the machine.”

Long waiting time. Half of the patient and caregiver participants reported on the long consultation waiting time of up to 3 hours despite having scheduled appointments. Several patients thus stressed waiting time as a key area for improvement. Two patients mentioned that demand for polyclinic services had increased with new housing developments and patients that continue to seek treatment at the polyclinics even after relocating to other areas. For instance, a patient shared that he has continued to visit Queenstown Polyclinic located in the West despite shifting to the East, due to preference and familiarity with the polyclinic.

Theme 3: Receiving Safe and Quality Care

Facilitators

Quality assurance and improvement efforts. To be equipped with the skillset to deliver safe and quality care, physicians informed that they are required to attend regular Continuing Medical Education and training sessions conducted either by specialists or physician champions. Furthermore, by tracking common clinical indicators across polyclinics, a physician mentioned that physicians could identify potential gaps and initiate quality improvement (QI) projects. A few physicians also opined that the polyclinics had created a facilitating environment for physicians to propose and drive QI projects.

Collaboration among multidisciplinary team. Close to half of the patients interviewed have been visiting nurses instead of physicians regularly to review their conditions and were generally supportive of this approach. Mary said that:

“Yes, it is a nurse that does explanation instead of the doctor. The nurse was really pretty good...She has more time to explain to us on the details.”

Physicians could also refer patients with multiple medications to clinical pharmacists to assist with medication reconciliation, with a few illustrating that non-doctors have played crucial roles in understanding and addressing the needs of patients, including those that require more assistance in making changes.

Through the interviews, physicians described multiple care delivery models in the polyclinics, of which the teamlet model were most elaborated. Physicians explained there are plans to expand the teamlet model and empanel more patients through this model to address healthcare needs comprehensively. Five physicians interviewed have been involved in this model which consists of a team of 2 doctors, care manager and care coordinator. While doctors review patients' laboratory result and assess conditions, trained nurses who serve as care managers conduct counseling sessions to educate and empower patients to control their conditions. Care coordinators who are lay-persons would assist to keep track of the screening tests that patients are due for, assist in appointment booking and tracking. With fixed care teams managing specific patient groups, physicians elaborated that provider-patient relationship could be well established. In addition, Dr Christine shared that:

“If there’s any difficult patients, we can always discuss within the team about how to manage.”

Barriers

Challenge of physicians adhering to clinical and other guidelines. Although physicians could refer to clinical practice and other guidelines to understand latest care standard and targets, one physician mentioned that it would be tough to refer to guidelines, particularly during consultation sessions. She felt that it would lower patients' confidence when physicians pause and check guidelines during the consultation process. Another physician also raised the need to ensure timely update of guidelines to ensure alignment between national and international guidelines and avoid confusion.

Perceived inadequate consultation duration. Most physicians reported the issue of high patient load as key barrier to provide appropriate level of care to patients. In order to manage patient waiting time which has been tracked as an operational Key Performance Indicator (KPI), physicians mentioned that they could only spend an average of 10 minutes with each patient diagnosed with chronic conditions. Many felt that this would be inadequate, particularly for patients with MCCs and referred from hospitals. To manage patients discharged from hospitals, physicians explained that they would need time to review the discharge summary, and access different IT systems to view clinical notes and list of medications.

Physicians shared that the consultation duration for subsequent patients might be reduced with several issues. These include the presence of patients perceived as “highly demanding” or “overly-empowered” with long list of questions and requests. There were also instances of IT system break-down and slowness, further inducing time pressure and stress among physicians. It was reported that inadequate consultation duration might result in possibility of error occurrence and missing out of crucial areas that may be detrimental to patient care. Dr Amanda verbalised that:

“You cannot rush a chronic patient’s consult. If they just pile patients to the queue...you are bound to make mistakes.”

Lack of care continuity. Some patients are visiting both hospitals and polyclinics concurrently but physicians reported several challenges to provide coordinated care. Firstly, while physicians could view clinical notes of patients visiting or referred from hospitals using the same Electronic Medical Record (EMR) system, they are unable to view detailed notes of other patients. Secondly, it was noticed that most PCPs and specialists mainly communicated through memos passed through patients’ hands. PCPs had highlighted challenges in contacting specialists involved in co-managing patients timely, with less than half mentioning that they could liaise with specialists through emails or phone calls. With these constraints, it could be challenging for polyclinics to coordinate care for patients consuming healthcare services across primary and tertiary care settings, as Dr Jenny recalled that:

“My patient was double-dosing himself with the medication stocked by the specialist but we continue to give because we didn’t know that patient was seeing specialist and medicine was changed.”

Difficulty for polyclinics to manage complex patients. Moreover, physicians reported various challenges to manage certain patient groups, including hospital-referred patients. Frail elderly with MCCs, individuals with poorly controlled conditions, bed-bound patients, and others with rare diseases or complex conditions such as end-stage kidney failure had been flagged. Physicians specifically highlighted the lack of expertise, infrastructure and resources, as well as unavailability of specific medication and services such as occupational therapy for post-stroke patients. For instance, Dr John explained:

“The main challenging part would probably be the medications because we are not trained to give some medications... and the ministry will have to provide us with the resources... to see the patient safely.”

Physicians reported that some patients may choose not to manage their conditions in the hospitals due to certain considerations such as cost concern, challenge of traveling to hospital and disagreement with hospital care plan. Although it may not be optimal for such patients to visit polyclinics, physicians expressed that they would continue to manage them, and discuss cases among multi-disciplinary team or consult specialists when needed. Physicians would also refer patients with deteriorated conditions to the hospitals.

Theme 4: Self-managing in the Community

Facilitators

Patient education and empowerment. Some physicians explained about requesting for information including medical history, family background, daily routines and risk factors from new patients. These

would facilitate them in understanding and addressing patients' potential issues and set targets such as exercise hours to address risk factors. All patients and caregivers also shared that healthcare professionals had provided them with dietary and exercising guidelines and were able to understand the information.

Some patients reported that they were empowered to self-monitor blood pressure and blood sugar level, and capture the readings regularly in a form to be discussed with providers at upcoming consultation sessions. A few patients added that the providers had guided them on symptoms to take note of and were advised to seek early treatment when readings are out of standard range.

Patients with understanding on conditions and making some forms of lifestyle modification. Most healthcare users were able to articulate patients' conditions. When unwell, they stated that they would visit the polyclinics and GPs to seek treatment. To obtain further information on their conditions, majority mentioned that they would either check with healthcare professionals or discuss with their family members. Most patients had also emphasized making some forms of lifestyle changes, mainly through reducing food and sugar intake, and engaging in physical activities. Six patients had reported participating in community programmes such as running, cycling and yoga.

Barriers

Infeasible for polyclinics to track patients' progress closely. Physicians reported that they have been checking laboratory result and clinical indicators to infer whether patients had made any lifestyle changes, and have referred patients to other providers such as nurses and dieticians to reinforce the guidelines when needed. However, Dr Peter explained that with resource limitation, polyclinics have not been able to customise detailed plans for individual patients and monitor the progress closely. He mentioned that:

“There is no service to assess what kind of exercise (patients) are suitable for. Nobody to prescribe the exact exercises they need to do, nobody to monitor their progress.”

Low adoption of technology by patients. Although patients and caregivers could check their screening test results prior to consultation sessions through HealthHub (46), an online application, only one person reported doing so. Key reasons for not using include details only available in English and with small font size, not being able to interpret the results, as well as preference for healthcare providers to explain the results to avoid anxiety.

While polyclinics offer telecare service whereby patients could measure and submit their blood pressure and blood glucose readings online for nurses to monitor and provide necessary advices, participants

reported that this might only benefit patients with IT knowledge and generally of the younger profiles. For instance, Leong opined that:

"I think the government spends a lot of money on technological services. I think that is good. But the problem is, some people (that) know how to use will benefit from it. But those who don't will be at a disadvantage."

Multiple factors influencing patients' self-management and decision to make lifestyle changes. Although patients could be empowered to self-monitor their conditions, a physician expressed that some might not be able to afford devices such as blood pressure monitor and blood glucose monitor, and consumables. Physicians and healthcare users emphasized that patients would also need to be able to interpret the readings and recall the standard guidelines including dietary control. In addition, most patients mentioned that they had ever forgotten to take their medication, and would simply continue with next dose of medication. A few physicians also reported that patients' work nature is a key contributor to them missing medications.

Patients' lifestyle behaviour were reportedly affected by various factors. Firstly, five healthcare users mentioned that patients and family members would source for information online. However, a physician cautioned that the information might be unreliable and she had tried clarifying the details with patients during consultation sessions. Secondly, patients' dietary choices could be dependent on the availability of affordable healthy food options near homes and workplaces, whereas their work nature could impact decision to engage in physical activities. When being asked if he has been engaging in physical activities, Ah Hock, a taxi driver replied that:

"Because we (driver) have to cover our rental and petrol before talking about earning, so sometimes struggle for certain hours... when I come back, tired already."

Thirdly, even though patients could be aware of the benefits of physical activities, they might not be able to exercise due to physical constraint, as depicted by Patrick:

"The only thing that affects me is that my leg hurts...Exercising is good but it may affect my leg. I don't know who to look for? Not sure what's the problem."

Lastly, patients and caregivers' beliefs, e.g. in terms of perceived benefits and adverse outcomes of making lifestyle changes might influence their decision to do so. Linda, a caregiver to 74 years old mother-in-law expressed that:

“She (patient) smokes since young. There’s a saying that, old people if they suddenly stop smoking, they will go faster.”

Discussion

Key Findings & Recommendations

This study has explored facilitators and barriers in care access, delivery and self-management, taking into account healthcare user and providers’ experiences. In terms of care access, majority of participants shared the provision of affordable care in the polyclinics as key facilitator, but still reported financial-related barriers which could deter patients from receiving timely support in the community. Patients had also reported long waiting time in the polyclinics and some may not turn up to seek treatment regularly. To deliver safe and quality care, institutions had embarked on quality improvement initiatives and formed multi-disciplinary teams with established roles and responsibilities. However, it is still crucial to address challenges related to resource constraint and lack of capability to manage MCCs which could deter providers from providing appropriate level of care to patients. In addition, this study found that providers had attempted to facilitate self-management through empowering patients and increasing their involvement in self-care. Nevertheless, patients had found difficulty in adhering to the guidelines as their practices are generally influenced by multiple factors.

Table 2 summarises the themes and sub-themes derived from this study. It would be essential to consider the facilitators and address key barriers to scale up chronic disease management activities in the community.

Table 2: Themes and sub-themes

Themes	Sub-themes	
	Facilitators	Barriers
Accessing affordable care	<ul style="list-style-type: none"> · Affordable charges & presence of “helping hands” 	<ul style="list-style-type: none"> · Financial challenges specific to MediSave withdrawal limit, higher non-standard drug charges & support schemes
Ability to reach & utilise services	<ul style="list-style-type: none"> · Perceived accessibility to comprehensive services 	<ul style="list-style-type: none"> · Impractical for polyclinics to cover all patients · Challenges of elderly navigating the polyclinic system · Long waiting time
Receiving safe and quality care	<ul style="list-style-type: none"> · Quality assurance and improvement efforts · Collaboration among multidisciplinary team 	<ul style="list-style-type: none"> · Challenge of physicians adhering to clinical and other guidelines · Perceived inadequate consultation duration · Lack of care continuity · Difficulty for polyclinics to manage complex patients
Self-managing in the community	<ul style="list-style-type: none"> · Patient education and empowerment · Patients with understanding on conditions and making some forms of lifestyle modification 	<ul style="list-style-type: none"> · Infeasible for polyclinics to track patients’ progress closely · Low adoption of technology by patients · Multiple factors influencing patients’ self-management and decision to make lifestyle changes

Firstly, a previous study looking at the overall health system found that some patients remain to be unsupported despite the availability of various financing schemes. This had led to late treatment or other financial hardship resulting from seeking treatment (39). Our study further explored the issues of affordability in the outpatient setting and raised questions on the need to revamp the financing framework to meet varied needs of patients, particularly those with MCCs and visits to multiple healthcare providers. Although MOH had set a standard MediSave withdrawal limit of up to \$500 (47), patients with more complex and poorly managed conditions would likely incur higher charges. While there are schemes such as Medication Assistance Fund to support needy patients that require non-standard drugs (48), it may be useful for government to work with agencies and community partners to communicate key schemes and application process to healthcare providers, patients and care givers. Based on this study, about half of the healthcare users were not aware of parties to seek help from.

Secondly, studies had identified the lack of care accessibility, and other access issues such as absence of 24 hours service as a key barrier in primary care (40, 49). Another study established that patients with chronic diseases, especially those with more than one chronic condition had higher likelihood of receiving delayed treatment (50). This study revealed that while patients could travel to polyclinics with availability of public transports, patients with mobility limitations, those that did not schedule for any follow-up appointments, or defaulted appointments may still not be able to receive timely care management. While

it could be challenging for polyclinics to reach out to patients with chronic conditions but did not turn up to seek treatment, it may be useful for polyclinics to extend collaborations with other healthcare and social care providers to follow up with such patients.

Thirdly, this study affirmed the issues of inadequate capacity and consultation time in primary care as mentioned in the literature (19–22, 40). Patients and caregivers had highlighted the need to improve waiting time for consultation. In order to meet this KPI and cater to rising demand, physicians have to control the consultation duration which might inevitably affect patient safety and care quality, especially for patients with MCCs and those referred from hospitals with multiple medications. This emphasized the importance to review and match demand and supply of polyclinic services. A physician opined that it may be beneficial for private primary care to be more involved in managing chronic patients. This may play a part in relieving patient loads for polyclinics to focus on managing patients with higher complexity. To-date, the Singapore government has established Primary Care Networks to provide necessary support to private GPs in managing patients with chronic conditions (51) and introduced the Community Health Assist Scheme which entitles residents from middle and lower income group to subsidised care at GP clinics (52). The government could consider assessing the effectiveness of such initiatives in supporting private GPs to embark on chronic disease management, and determine any additional support needed.

Various studies stressed care coordination as a crucial barrier in chronic disease management impacting the provision of safe and quality care, hence the importance for healthcare providers to communicate (11, 12). This study highlighted the need to establish direct communication platform between specialists and PCPs to clarify doubts when necessary. One of the physicians suggested for specialists to provide contact details to GPs to facilitate communication on referral cases from hospitals to primary care. To minimise the number of referral cases that are too complex to be managed in polyclinics, forums involving specialists and PCPs could be conducted to foster understanding on polyclinic patient profiles, care delivery processes and limitations. Patients and caregivers could also be more involved by informing respective healthcare providers on visits to other providers or new prescriptions.

Several physicians emphasized the lack of expertise, resources and infrastructure to manage complex patients such as frail elderly with MCCs and end stage diseases. While the general direction would be to manage patients safely in the community and lower usage of costly hospital services, it is crucial to consider the types of patients manageable in the polyclinic or community context and adequacy of resources to provide appropriate care. For instance, physicians would need to be trained and given sufficient time to assess the needs of complex patients, and equipped to prescribe certain non-common medications.

Multiple studies had specifically outlined issues encountered by older adults in seeking care treatment (10–15, 17, 18), and lower technology adoption rate among older adults (53, 54). This study had also found low adoption of technology among healthcare users interviewed, with participants reporting challenges of elderly in using technology to navigate the polyclinic systems and self-manage. Although healthcare institutions are increasingly tapping onto technology in care delivery and monitoring

processes, it may still be essential to continue having “human intervention” in managing and meeting the needs of elderly patients. Polyclinic and other providers could also possibly reach out to caregivers who are more IT savvy to support patients in tracking their online health record and interpreting the results.

In addition, patients in the community generally spend most of their time self-monitoring and making lifestyle choices. As such, patients should be equipped with the right skillset for self-care. Various studies identified the need to facilitate self-management and provide adequate support, for example through community programmes (55–62). Even though healthcare providers might have provided self-management guidelines to polyclinic patients, our study found that patients’ practices were also affected by their daily activities involving work and the community, as well as their beliefs and physical condition. It is thus suggested for government institutions to step up effort of involving communities and workplaces to co-create healthy living environment, which includes making more healthier food options available (63, 64). Community providers and peers may also potentially be involved in influencing choices of patients participating in community programmes and assisting them in monitoring conditions. Moreover, the government could engage employers to provide adequate support to employees with chronic conditions.

On the contrary, our study revealed a potential scenario whereby patients could be very involved in their care, take effort to source for additional information and discuss this with the providers. While it would be beneficial for patients to be more involved in the discussions, consultation session might also be lengthened. This raises the need for government and polyclinics to continue reviewing patient load and appointment time slots allocated to each patient. Healthcare providers should also attempt to direct patients and caregivers to credible online resource to ensure accurate understanding of conditions.

Through this study, the elements of CCM and Framework for patient-centred access to healthcare were found to have covered patients’ touchpoints in accessing and receiving care, and self-managing comprehensively. In coherence with these models, our findings also demonstrated the need to involve multiple stakeholders to extend effort in addressing gaps and scale up positive aspects of respective components such as health systems, delivery system, self-management, community support and care access. Specifically, it would involve a whole-of-society approach in accordance to socio-ecological model to look into several areas as shown in Figure 2.

Strengths and Limitations

To-date, there is no other qualitative study in Singapore that explore the topic of managing polyclinic patients with MCCs in the community. This study had interviewed both care providers and consumers with different perspectives to understand barriers and facilitators of managing MCCs. The interview topic guides were developed with reference from established model and framework, namely CCM and

Framework for patient-centred access to healthcare. This has ensured that questions pertaining to care access, delivery and self-management could be addressed extensively. Some participants had also shared about their experience beyond the interview questions. Furthermore, this study had captured the viewpoints of both genders, elderly and those from lower socioeconomic status. Half of the physicians interviewed had also worked in the polyclinics for 10 or more years.

Although there are also patients managing chronic diseases with private GPs' support, this study was only conducted in the polyclinic context. In addition, while there are other providers such as nurses and dieticians involving in managing chronic diseases, this study had only interviewed physicians. Limitations might also exist due to biases. Firstly, selection bias could be resulted as patient and caregiver participants were mainly identified and referred by care managers and advanced practice nurses. Secondly, social desirability bias might be present with most healthcare users mentioning that they had made some forms of lifestyle changes following detection of diseases and would like to be more involved in managing their healthcare needs when these topics were explored. The study could not recruit more working adults below 55 years old, as well as patients from other ethnic groups with only one Malay patient being interviewed. While we were not able to interview more of such patients, physicians had shared their encounters generally.

With consideration on the limitations, this study could be scaled up to incorporate the viewpoints of other stakeholders including nurses and other providers in the polyclinics, private GPs and their patients, and policy makers. It might also be beneficial to conduct a qualitative study with working adults with specific occupations such as office workers and drivers to understand challenges that they might encounter in managing MCCs due to work nature. A new study may also be initiated to explore the aspects of providing safe and quality care in the community, for instance to consider patient groups that could or could not benefit from community care and sizing the right amount of resources for chronic disease management.

Conclusion

It is crucial to look into sustainable approaches for care delivery to manage rising healthcare demand. This includes strengthening collaboration among stakeholders to reduce care fragmentation and shifting care focus beyond hospital to the community. This paper emphasized the importance to improve care access and yet the challenge to balance this with provision of safe and quality care due to limited capacity in polyclinics. Interventions involving a whole-of-society approach that look beyond collaboration with healthcare-related stakeholders are also essential to support self-management. Furthermore, this study had incorporated healthcare users and providers' views on facilitators and barriers in managing MCCs in the community, and stressed the need to consider varying standpoints of various stakeholders and potential implications so as to further contribute to policy formulation and community care planning.

Declarations

Availability of Data and Materials

The datasets generated and/or analysed during the current study are not publicly available due to consideration on data sensitivity. We have also not obtained written consent from study participants and ethical review board to share the datasets. As such, we are responsible to ensure confidentiality of the collected data and unable to disclose any additional data.

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Contributions

FKM: Study conceptualisation and design, data collection, data analysis, manuscript drafting and revision. MS: Study design, manuscript revision. HLQ: Study conceptualisation and design, manuscript revision.

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Ethics Declaration

Ethics approval and consent to participate

Ethical approval for this study was obtained from the National Healthcare Group Domain Specific Review Board (DSRB). All participants were presented the participant information sheet and signed the consent form to participate in this study.

Competing Interests

The authors declared that there is no competing interest.

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Figures

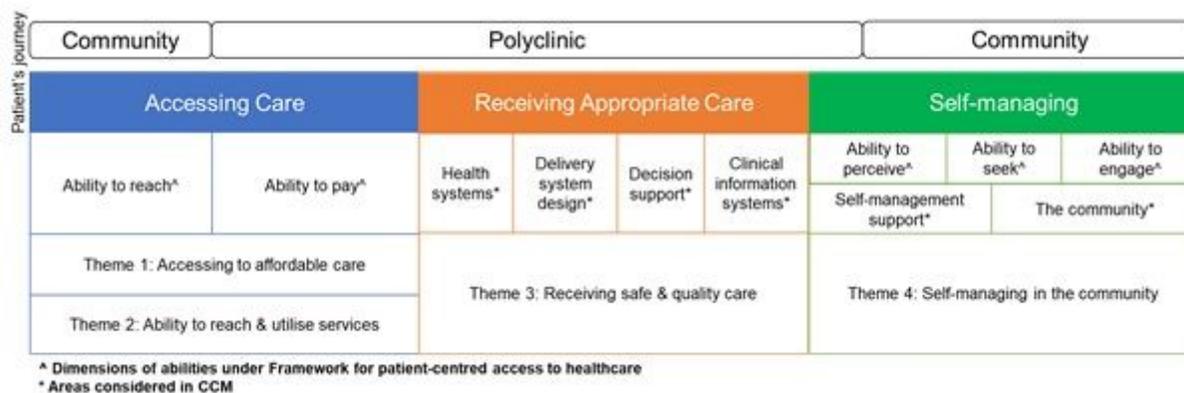


Figure 1

Journey of patients with MCCs & derived themes

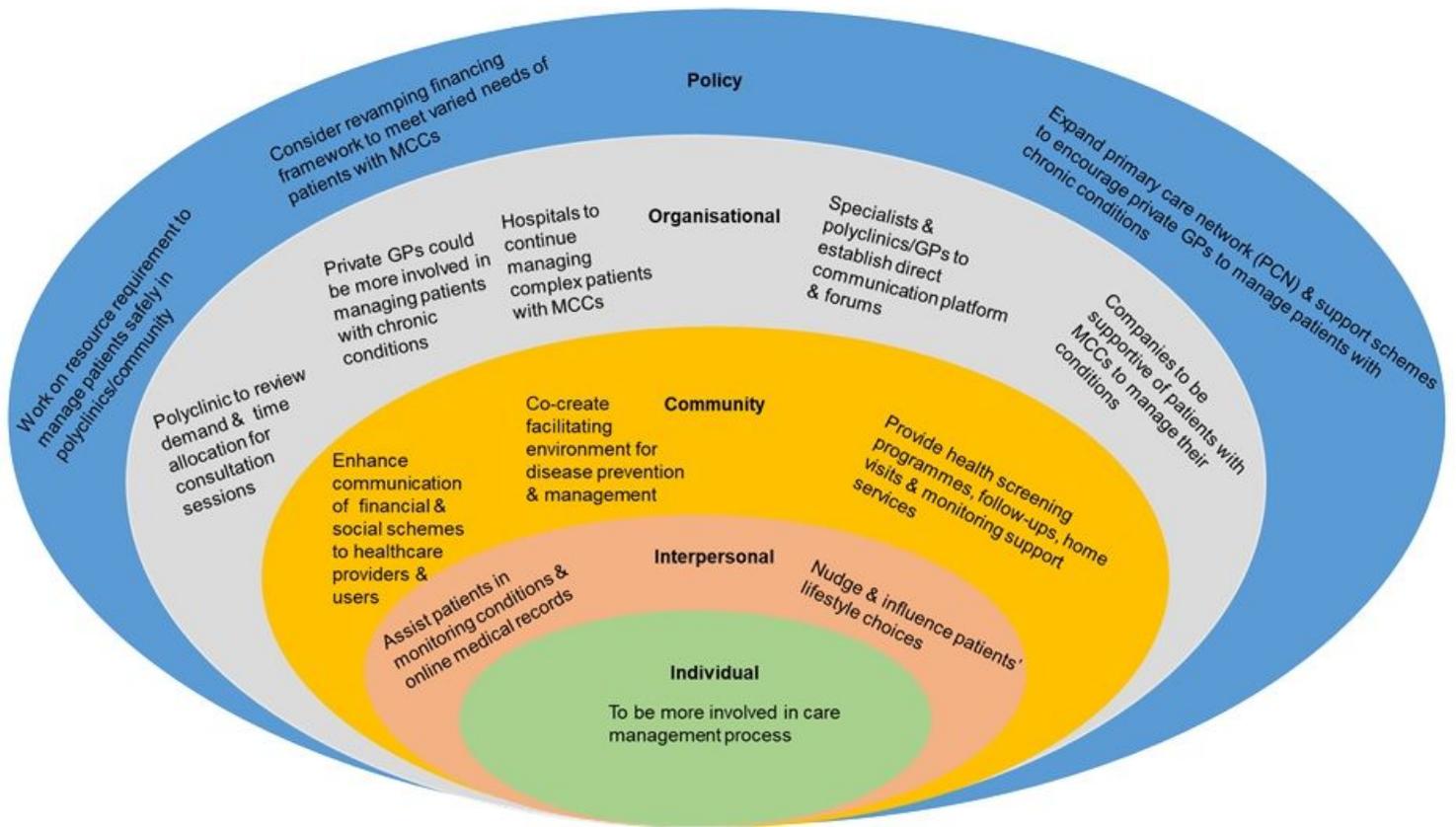


Figure 2

Socio-ecological model depicting whole-of-society approach to manage MCCs