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Perceptions and experiences of a multi-domain preventive health programme: a qualitative study informing future community-based health interventions in singapore

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Abstract

Background Despite global popularity, Community-based Health Intervention (CBHI) programmes have yet to be fully incorporated into Singapore's public healthcare systems, with most initiatives focusing on specific diseases. This qualitative study aimed to evaluate older adults' perceptions of the "Get Well, Live Well" multi-domain preventive health programme, explore the effectiveness of Community Health Workers (CHWs) in promoting health literacy and modifying health behaviours, and examine participants' experiences in the CHW-delivered CBHI programme.

Methods Purposeful sampling was used to recruit study subjects from participants in the "Get Well, Live Well" programme until data saturation was achieved. In-depth, semi-structured, one-to-one telephone interviews were conducted in English or Chinese with participants aged ≥ 40 years. Audio recordings were translated into English as needed and transcribed in full. The collected data were anonymised, and thematic analysis was performed by three trained evaluators using a structured process.

Results The final study sample included 19 subjects (median age of 64 years; 84% women; and 95% Chinese). Three key themes emerged regarding the programme's value, interactions with CHW, also known as Care Connectors, and their facilitation of health services/behaviours. Participants acknowledged that the "Get Well, Live Well" programme provided physical/emotional support, improved health literacy, and enhanced social interaction. The programme's effectiveness may depend on Care Connector's personal qualities, service quality beyond expectation, connection with participants, and their proactive and authoritative roles in facilitating health services/behaviours.

Conclusion The findings suggest that future Community-based Health Interventions could benefit from deploying CHWs with strong people skills to enhance the programme's success.

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Keywords Community-based, Community health workers, Preventive health programme, Public health, Qualitative research

Background

Adopting community-based health interventions (CBHIs) for health promotion and disease prevention has gained much global popularity [1, 2]. This has been fuelled in part by the rise in non-communicable diseases, like cancers, diabetes, cardiovascular as well as chronic respiratory diseases, and ageing populations in both developed and developing countries [1–3]. Projections suggest that by 2050, nearly 22% of the global population will be 60 years and older, up from 12% in 2015. This demographic shift is poised to increase the workload and strain on healthcare systems [3, 4]. Among its various connotations, the term community-based refers to the geographical setting where interventions are implemented for a group of people with diverse characteristics, connected by social ties, sharing common perspectives, and engaging in collaborative activities [5, 6]. The community-based approach to health promotion and disease prevention is particularly advantageous, as it enables access to challenging target groups, including individuals with existing health issues and socially marginalised, such as the elderly [7, 8]. CBHI programmes, which aim to modify factors influencing community health, operate on the premise that human behaviours are shaped by social and environmental interactions [9]. These programmes, typically conducted by paid or volunteer Community Health Workers (CHWs), involve altering the impact of socioeconomic determinants on health, providing information on behavioural and medical health risks, and introducing measures to mitigate these risks at the personal or community levels [1, 2]. They have the potential to empower individuals to make healthier choices, reduce their risk of disease and disability, alleviate social isolation, and enhance the accessibility of healthcare and related services [2, 10, 11]. They have also been shown to reduce preventable utilisation, such as emergency department/urgent care visits and hospitalisation, thereby reducing healthcare costs [12]. However, CBHI programmes encounter many obstacles, including insufficient funding, logistic shortages, inadequate training, supportive supervision, and compensation of CHWs [10]. Moreover, the outcomes and effectiveness of these programmes can vary depending on the specific local context and how the programmes are implemented [11, 12].

Despite the increased attention and recognition, CHW-delivered CBHI programmes have yet to be fully incorporated into the public healthcare systems in Singapore, a developed and rapidly ageing, small country in Southeast Asia [13, 14]. The proportion of residents aged

65 and older has increased from 9.9% in 2010 to 15.2% in 2020 and is projected to reach 25% by 2030 [15]. This demographic shift is driven by low fertility rates, currently at 1.1 children per woman, and a high life expectancy of 83.9 years [16]. The rise in the number of older adults living alone—10.2% in 2020, up from 8.2% in 2010—underscores the challenges posed by shrinking family sizes and increased urbanisation [15]. In response, Singapore has implemented policies focused on community-based healthcare, elder-friendly infrastructure, and lifelong learning to support its ageing population [17]. The Agency for Integrated Care establishment also serves as a centralised platform to coordinate healthcare, social services, and community support for older adults [13]. In 2018, the Ministry of Health reorganised the public healthcare sector into three integrated clusters called Regional Health System to provide a more comprehensive suite of healthcare services, encompassing acute hospital care, primary care, and community care, to ensure the continuity of care for its ageing population [18]. The regional health system design and deployment drew inspiration from healthcare models in other countries, including those from Sweden, Canterbury in New Zealand, and Geisinger in the United States [19]. However, the complex and multidimensional needs of older adults in Singapore underscore the need for a comprehensive approach to their healthcare, which is urgent and of utmost importance.

Exploring the socio-cultural context of older adults in Singapore

While these efforts demonstrate Singapore's commitment to supporting the health needs of older adults, the experiences and perceptions of older adults still need to be extensively studied [20]. Understanding the perspectives of older adults is critical to ensuring the relevance and effectiveness of CBHI, as their engagement can be influenced by factors such as their trust in the healthcare system, cultural beliefs, and the perceived relevance to their daily lives [21–24]. The socio-cultural context of older adults in Singapore reflects the tension between traditional collectivist values and rapid modernisation alongside contemporary healthcare strategies. While Singapore has adopted CBHI and Western models like the Regional Health System to address the health needs of its ageing population, the collectivist culture prevalent in Southeast Asia significantly shapes older adults' engagement with these initiatives. Family support and social cohesion often precede individual health management in these societies. Confucian values, particularly filial piety,

remain influential, traditionally placing the responsibility of elder care on the children. However, rapid modernisation—marked by smaller family sizes, urbanisation, and dual-income households—has strained traditional caregiving structures, leaving many older adults reliant on external support systems rather than family-based care. This shift reveals the limits of the current social welfare framework prevalent in Asian countries in addressing elder care needs in modern society [21–28].

CBHI in Singapore tends to focus on a singular domain (e.g. lifestyle behaviours, screening programme, vaccination programme) or specific conditions (e.g. diabetes, hypertension) and does not cut across various domains (e.g. health, social) or address the complex and multidimensional needs of older adults [14, 29–31]. Additionally, Singapore's ethnically diverse population, consisting of predominantly Chinese, Malays, and Indians, adds complexity to how different groups perceive and utilise health services [15, 25]. Locally, there are indications that the uptake of preventive health interventions and services remains suboptimal, particularly among older adults. Concerns have been raised about the integration and accessibility of these services, as older adults may still face challenges in navigating the complex healthcare system [32]. Barriers such as mobility issues, financial constraints, and cultural expectations surrounding self-reliance and family care deter participation, particularly for those living alone or with disabilities [33].

Furthermore, the pervasive medical paternalism, wherein the authority and expectations regarding healthcare delivery reside primarily with medical professionals, may also present barriers to fostering effective patient-provider collaboration, specifically where the provider is a lay CHW [34]. These cultural and systemic challenges, compounded by rapid modernisation and the evolving nature of Confucian values, underscore the need to consider older adults' perspectives to ensure that CBHI programmes remain relevant and accessible to Singapore's diverse population.

Multi-domain Preventive Health Programme-“Get well, Live Well (GWLW)”

The GWLW programme was initiated in 2018 by Ng Teng Fong General Hospital (NTFGH), a member of the National University Health System (one of the 3 Regional Health Systems in Singapore), and supported by the JurongHealth Fund, a registered charity promoting medical and health-related services for the benefit of the community in Singapore (grant number: JHF-14-CC-001). Unlike other disease-specific CBHI programmes, this initiative emphasised general health and overall well-being. It recommended interventions that cut across both the health and social domains. It combined the five major aspects of preventive health: screening, vaccination,

chronic disease management, lifestyle modifications, and social and environmental interventions. The GWLW programme was designed to elevate health literacy, promote holistic and preventive health practices among older adults, and facilitate the integration of care and support schemes within the regional health system. At the core of the GWLW programme were hospital-employed CHWs known as “Care Connectors” (CCs), deviating from the traditional approach of selecting CHWs based on community affiliations [35]. GWLW represents a preventive health pilot initiative by the hospital to test-bed a multi-domain CBHI delivered by non-healthcare professionals.

In 2023, Singapore reorganised its health system to focus on preventive health, supported by an enhanced primary and community care workforce [13, 14]. CHW-delivered CBHI presents an opportunity for Singapore's older adults. CHWs are crucial in understanding older adults' unique needs and preferences and recommending better interventions to suit their cultural contexts [32]. By building trusting relationships with older adults in their local communities, CHWs can assist older individuals overcome barriers to accessing and participating in CBHI [36]. While Singapore's efforts to support healthy ageing through CBHI have made progress, a critical need remains to further explore the perspectives and experiences of the target older adult population.

Research on CBHI in Singapore is still limited, with most studies concentrating on specific diseases in selected target groups and being evaluated either quantitatively or qualitatively [29, 31, 37, 38]. Additionally, the influence of hospital-employed CHWs and CBHI within the healthcare systems has not been widely investigated. While quantitative research uses numerical data and statistics for testing hypotheses, qualitative research focuses on understanding concepts through words and meanings, providing rich and detailed data on human behaviours, attitudes, perceptions, and experiences [39]. Moreover, qualitative research can examine organisational, cultural, societal, organisational and cultural issues [40]. Unlike quantitative variables, qualitative research questions are open-ended, non-directional, and evolving. Research questions are generally flexible and iterative, employing purposeful sampling with sample sizes contingent upon theoretical saturation. Qualitative data collection encompasses a range of methods, including in-depth interviews, focus groups, and/or direct observations. Among these, in-depth one-to-one interviews are more commonly utilised due to their capacity for profound exploration and relationship-building [41].

This qualitative investigation represents one of the initial endeavours in Singapore exploring a CHW-delivered CBHI programme that spans multiple domains, in contrast to those explicitly focused on particular diseases. These CHWs were hired by the hospital, which differs

from the traditional selection from a pool of trusted community members [35]. Moreover, it is particularly significant to examine the patient-provider (lay CHW) relationship due to the prevalence of medical paternalism and expectations of care delivery by medical professionals, alongside a cultural emphasis on family reliance [34, 42]. The main objectives of the study were to:

- 1) Explore participants' views on CHWs and their effectiveness in promoting health literacy and modifying health behaviours and.
- 2) Examine participants' experiences in "Get Well, Live Well", a CHW-delivered multi-domain CBHI programme.

Methods

Study Design and setting

This qualitative study was endorsed by the National Healthcare Group Domain Specific Review Board (reference number: 2021/00431) and reported according to the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines [43].

The qualitative study was conducted as part of a larger pilot programme, the "Get Well, Live Well" Programme. GWLW was implemented in a Western Town in Singapore - Bukit Batok Small Member Constituency, which is estimated to have a population of around 40,427 residents, with 72% Chinese, 16% Malay, 9% Indian, 51% male, 49% female, and 14% ≥ 65 years old, reflective of a mature town in Singapore [15]. The programme team partnered with the town's grassroots organisations and social service agencies to gain insights into the community's health needs and identify health service gaps, including access, affordability, comprehensiveness, continuity, and engagement. Health-promoting outreach activities, including customised healthcare advice, health screenings, vaccinations, public health fairs, and talks, were jointly organised in conjunction with efforts to enhance care coordination between the community and NTFGH.

The CHWs, or CCs, are laypersons who previously worked in administrative roles. They received on-the-job training (a mix of skill and knowledge-based) in preventive health education, care organisation, and processes under a team of medical and allied health professionals, complemented by ongoing field-based mentoring and back-up support. The CCs were trained and assessed to conduct the BioPsychoSocial (BPS) risk screener, a tool used to identify the risks and needs of the residents. The CCs were intentionally embedded in the community to establish relationships with residents, grassroots organisations, and community partners. CCs played integral roles in educating about preventive health, coordinating care, facilitating social prescriptions, and offering

essential social and emotional support. They prioritised building strong relations with participants and understanding their unique circumstances, needs, and preferences. Additionally, CCs provided regular updates on the town's health-related events, volunteering opportunities, financial grants, and community resources available. During follow-up sessions, CCs reminded participants to attend health screenings, vaccinations, and medical reviews and addressed challenges navigating the healthcare system. Using the BPS risk screener, they identified older adults at risk of frailty and collaborated with social workers to link them with appropriate community care services [44, 45]. The GWLW programme was publicised through the local general practitioner's clinic and grassroots and senior activity centres. The CCs were also primarily stationed at the town's senior activity centres, participated in all health promotion events and conducted door-to-door outreach to engage socially isolated residents. The CCs introduced the programme to residents above 40 who resided in Bukit Batok and collected their consent to participate. The CCs followed up with all participants who consented to join the GWLW programme for 12 months. CCs will transition participants to the local senior activity centres or a local social service agency for continual care and follow-up. Each CC cares for 30–60 residents at one time. When the qualitative evaluation was conducted, 101 residents participated in the GWLW programme. Those who participated were predominantly Chinese (86.1% Chinese, 5% Malay, 5.9% Indian), female (78% female, 22% male), and older (82% ≥ 65 years of age). Table 1 illustrates the GWLW recruitment strategies, screening process, roles, and preventive health components.

Sampling and interview framework

The study's inclusion criteria were individuals actively participating in the GWLW programme for 12 months, aged 40 years and older, proficient in conversational English or Chinese, and willing to participate in a telephone interview. Individuals with cognitive impairments and debilitating psychological and/or physical conditions were duly omitted.

Purposeful sampling was used to ensure a diversity of subjects recruited by GWLW from various community sites, including those who regularly participated in health fairs, those who attended the senior activity centres, and those who were predominantly homebound and recruited through door-to-door knocking. Study subjects were recruited from the participants in the GWLW programme until data saturation was reached [46]. An iterative framework comprising two phases was employed for the in-depth semi-structured interviews [47]. In the initial phase, subjects' shared perspectives and experiences of the GWLW programme were gathered, while

Table 1 Get well live well recruitment strategies and screening process, roles, and Preventive Health Components

Roles	Care Connector	Hospital	Community
Recruitment Strategies and Screening Process:			
Recruitment strategies and publicity	-Conducts door-to-door outreach, stations at Senior Activity Centres (SAC), health events, grassroots activities -Introduce the programme to residents and collect consent to participate	-Helps with publicity	-Referral from grassroots, senior activity centres, social service agencies
Needs assessment, screening	-Conducts Biopsychosocial screening, make referrals to Social Workers for high-risk residents	-Social Worker from the hospital conducts a further assessment	-High-risk residents discussed at an interdisciplinary meeting -Support from grassroots, relevant community and social partners in Bukit Batok
Preventive Health Components:			
1. Vaccination	-Recommends age-appropriate screening and vaccination	-Partnered with local General Practitioners (GP) to provide subsidised rates to the kickstart of national subsidy	
-Influenza	-Shares benefits, subsidies available		
-Pneumococcal	-Informed participants on screening events and/or locations that provide screening/ vaccination (try to link residents to local GP providers if service is available)	-Organise community health screening	
2. Screening			
-Chronic Disease Screening			
-Cervical Screening			
-Mammogram			
-Functional Screening			-Available yearly at SAC
-Colorectal screening	-Provides Faecal Immunochemical Test Kit		
3. Lifestyle Modification	-Recommends suitable programmes -Encourage self-monitoring, regular follow-up with the doctor, and compliance with medication	-Programme by Allied Health Professionals (AHP) -Programme by AHP -Health talks by doctors and AHP	-Programmes by Health Promotion Board (HPB)
4. Chronic Disease Management			
5. Social and Environmental	-Encourage volunteering/ connect residents to the local SAC -Assist residents in applying for home improvement programmes to make their homes elder-friendly	-Provides volunteering opportunity	-Provides volunteering opportunities, befriending service
Monthly Health Talks for residents	-Organised interactive monthly health talks on the importance of preventive health at the SAC	-Conduct specific health-related topics by doctors and AHP upon request	-Grassroots and SAC provide location
Schemes/subsidies	Share available subsidies and assist with applications.		
Follow-up	Continue to follow up and nudge residents to take up preventive health recommendations.		

preliminary data analysis was performed to guide subsequent data collection. Additional questions were progressively incorporated into the interview guide during the second phase, building on the insights acquired. This iterative method thoroughly investigated subjects' views and interactions with CCs, exploring their role in promoting health literacy and behaviours within the GWLW programme. Data collection concluded when a convergence of views was observed, where repetitive responses signified data saturation had been achieved, and no new information or themes emerged.

Data collection

All eligible participants, identified by the CCs according to the inclusion criteria, received information about the study, and verbal consent was obtained once by the CCs and again by the interviewers before the one-to-one telephone interviews. Telephone interviews were

conducted due to the prevailing COVID-19 safe distancing restrictions in Singapore at the time of the study. Seven trained and calibrated bilingual interviewers who had no prior relationship with the participants held the interviews between February and May 2020 in English or Chinese. The interviewers participated in role-playing sessions and pilot-tested the interview guide in both languages to ensure clarity when presenting the interview content. The interview guide (Table 2) was initially prepared in English and translated into Chinese to accommodate Mandarin-speaking participants, guaranteeing consistency in eliciting subjects' perceptions and experiences. The translation was performed by an independent bilingual interviewer and subsequently refined through discussions among the study team to reach a consensus. Additionally, study team members familiar with the GWLW programme contributed to the translation process to ensure accuracy. The guide addressed programme

Table 2 Interview guide for collecting participants' perceptions and experiences

Objectives	Questions
Participants' perceptions and experiences	<ul style="list-style-type: none"> · How did you get to know about this programme? · Tell me more about your experiences with the Care Connector (CC). · What information and materials have been shared with you? · What did you like about this programme? What did you dislike about this programme? Why? · Will you recommend this programme to your friends?
Participants' expectations of the programme	<ul style="list-style-type: none"> · Why did you decide to join this programme? · What are your expectations when joining this programme?
Motivations and barriers in attending health interventions	<ul style="list-style-type: none"> · Were you recommended by the CC to participate in any health activities? What are they? · Were you able to complete the health activities recommended by the CC? Why?
Suggestions for improvement	<ul style="list-style-type: none"> · How can we improve this programme for new participants? · Do you have any other comments about this programme?

expectations, experiences with CCs, motivations, barriers to attending health interventions, and suggestions for improvement.

After the interviews, audio recordings and field notes were examined and summarised, and any emotional cues were documented. Where required, clarifications were sought from the subjects on the same day as the interview. The interviews lasted approximately 1 to 1 ½ hours. Transcripts were not returned to participants for comments or corrections. Interview recordings were translated into English by the interviewer as needed and transcribed in full using Microsoft Word (Microsoft Word 2010, Microsoft Corporation, Redmond, WA: USA). The transcripts were provided in Mandarin and their English translation and cross-checked to ensure the accuracy of the data, then anonymised through the application of subject codes and analysed thematically [48].

Data analysis

Three evaluators (JC, SJ, JY) performed thematic analysis to identify, assess, and report patterns within the data. All three researchers were fluent in Mandarin and formally trained in qualitative research methodology. JC (female) is a dietitian with a master's in public health, SJ (male) is an executive with masters in gerontology and JY (female) was pursuing her master's in public health. All three researchers have a research interest in community health. A structured process was employed, encompassing data familiarisation and coding/labelling, generation, review, and definition/naming of the themes, and finally, reporting of insights [48]. Each evaluator reviewed the interview transcripts and field notes multiple times individually, aiming to capture the complete depth and breadth of the information.

The thematic analysis comprised four key steps: (1) familiarisation with the data line by line inductively, (2) identification of codes and themes individually, (3) data coding individually, and (4) consequently, a standardised coding framework was established through consensus.

Table 3 Demographic characteristics of study subjects (n = 19)

Demographic characteristic	n	%
Age group		
55–59	3	16
60–64	7	37
65–69	5	26
70–74	3	16
75–79	1	5
Gender		
Female	16	84
Male	3	16
Race		
Chinese	18	95
Malay	1	5
Recruitment site		
Community site A	7	37
Community site B	8	42
Community site C	4	21

The generated codes were organised into themes and independently categorised by each evaluator [48]. To enhance the analysis, the research team (JC, SJ, JY) regularly discussed the generated themes to achieve a consensus on data interpretation. Emergent themes and categories shaped the narrative of the derived insights, with representative quotes presented for each category. All pertinent data was systematically mapped and reported. The data was organised using Microsoft Excel (Microsoft 365, Microsoft Corporation, Redmond, WA: USA).

Results

The final study sample included 19 subjects with a median age of 64 (range from 57 to 75), among whom 84% were women and 95% were Chinese. Detailed demographic characteristics are provided in Table 3. All participants approached by the interviewers agreed to be involved in the study, yielding a 100% response rate. Of the 19 interviews administered, 84% were conducted

in Chinese, and four follow-up calls were required for clarification.

Three key themes emerged within the collected data: (1) participants’ perceptions and experiences regarding the programme’s value, (2) participants’ perceptions and experiences with the CCs, and (3) CCs’ facilitation of health services/behaviours. The list of themes and categories is presented in Table 4.

Theme 1: participants’ perceptions and experiences regarding the programme’s value

In this theme, ‘perceptions’ encapsulated participants’ thoughts and expectations of the GWLW programme. In contrast, ‘experiences’ involved their impressions and observations within the GWLW programme, including the support received and health literacy gained. This theme developed through three categories: (i) the programme’s physical and emotional support, (ii) improving health literacy, and (iii) enhancing social interaction.

Provision of physical and emotional support

Most participants viewed the GWLW programme positively, appreciating its convenient location in their neighbourhood and efficient service delivery. The comprehensive range of services garnered participants’ recommendations to their peers and served as a communication platform. The latter brought about a sense of relief, contributing to emotional comfort. GWLW programme was perceived as a reliable ‘safety net’ offering participants, especially those living alone, a support system they could count on in times of trouble. Also, the programme provided a communication platform for addressing personal issues. Contrariwise, a few participants held less favourable views, perceiving the GWLW programme as just another government-run service in an already saturated landscape of similar services, leading to confusion. One participant lamented the overlap in the content of the available talks.

“I will tell the older adults, especially those living alone, that we will not panic or be scared if anything happens. There will be people who will help us.” -E3.

“The way [CC] asked questions about me is good. Because if we have small problems, we can talk about them. When she realises a problem, she will help us.” - E8.

“Sometimes they invited us to join some classes, but we have attended so many times, so I did not participate. ...Some of these things don’t need to repeat, I feel.” - L8.

Improvement of health literacy

The participants deemed the provision of easily understandable tips for healthy living, specifically designed for older adults and occasionally presented through entertaining skits, beneficial and appreciated. Notably, some participants acknowledged that the GWLW programme had improved their health literacy, helping them stay safe and healthy in the community through essential vaccinations, healthy eating habits, and fall prevention instructions.

“The [CC] asked if I wanted to be injected and told me information about the flu. She mentioned the things to be aware of in our health to keep ourselves safe.”- E7.

“Because I participated in the class, I know what to eat to stay healthy. ...I wanted to participate in that community fall prevention workshop to learn about safe treatment in the room to prevent falls.” - L5.

Enhancement of social interaction

Some participants highlighted the GWLW programme’s ability to enhance their social interactions. Others expressed a desire to delve deeper into health-related topics and share their acquired knowledge with their peers and family. A few participants even regarded the programme as an opportunity to cultivate new friendships and expand their social circles.

“It’s good that we are going to these workshops. When we come back, we can share with our children. We have the information on how to take care of our

Table 4 Emerging themes and categories

Theme	Category
Theme 1: Participants’ perceptions and experiences regarding the programme’s value	i. Provision of physical and emotional support ii. Improvement of health literacy iii. Enhancement of social interaction
Theme 2: Participants’ perceptions and experiences with Care Connectors	i. Personal qualities of Care Connectors ii. Service quality beyond expectation iii. Care Connector-participant connection
Theme 3: Care ‘Connectors’ facilitation of health services/behaviours	i. Care Connectors’ proactive role in linking participants to health and social services ii. Care Connectors as authoritative figures

body; we can also share with those who didn't go for courses, like neighbours, friends, colleagues." – L5.

Theme 2: participants' perceptions and experiences with Care connectors

In this theme, "perceptions" encompassed participants' views of the CCs, including their attributes and roles. "Experiences" referred to participants' impressions of their interactions with CCs, such as the encounters, services, and assistance received. Participants' perceptions and experiences with CCs were developed through three categories: (i) personal qualities of CCs, (ii) service quality beyond expectation, and (iii) CC-participant connection. Overall, participants' perceptions and experiences with CCs were positive.

Personal qualities of Care connectors

Participants perceived the CCs as amiable, caring, and friendly, experiencing genuine concern for their health and well-being and their families. Even though the CCs kept a professional attitude, the participants felt a sense of warmth in their interactions, often likening it to the bond they shared with a friend or family member.

"I feel she is a good person; she cares about me. She also shows concern about my family, so sometimes we talk about family. ...I treated CC like a friend." – L4.

Service quality beyond expectation

Participants lauded CCs as indispensable resource personnel who exceeded expectations in providing support. Beyond their designated roles, CCs coordinated medical appointments, ensured participants remained well-informed, and sent reminders to improve attendance. This assistance was not limited to programme participants but extended to their peers. CCs were highly regarded for their exceptionally professional service, which included offering clear explanations, knowledgeable advice, and correctly connecting participants to the appropriate resources.

"I looked for [CC] to help [my friend and I] make the appointment. The [CC] is very enthusiastic in helping us." – L8.

"My friend has introduced this [financial aid] scheme, but [she] does not know how to fill in [the application form]. So, I brought [CC] to her house, then [CC] filled in the form for her." – L6.

Care connector-participant connection

The CCs' authentic and sincere approach significantly influenced participants' openness in discussing intimate health and family issues. They felt at ease and supported by their caring demeanour. Additionally, the CCs' regular follow-ups with participants demonstrated a sustained level of concern, distinguishing them from the one-off interactions with doctors mentioned by participants.

"I feel very happy that someone cares for our health like someone is concerned. If we go to the hospital, we see the doctor only during that time. After that, they never followed up with us again to find out how we were; the doctor never called us again to find out how we were; the doctor never called again. But [CC] will ask again, 'How is everything?'" – L6.

Theme 3: Care connectors' facilitation of health services/ behaviours

In this theme, the crucial function of CCs in linking health services and promoting health behaviours among participants was highlighted. The categories in this theme were (i) CCs' proactive role in linking participants to health and social services and (ii) CCs acting as authoritative figures.

Proactive role in linking participants to health and social services

Many participants participated in health activities and utilised health services due to the proactive strategy implemented by CCs. This strategy involved conducting home visits to identify health and social needs and connecting individuals with essential interventions such as screenings, vaccinations, and support from medical social workers. The proactive approach also encompassed continuous encouragement and reminders, motivating participants to participate in healthcare activities for improved health and well-being consistently. By facilitating essential health and social services, participants embraced appropriate health interventions. They increased their utilisation of available healthcare resources, some of which they might not have been aware of.

"There were two [CCs] who came to my house. ... [CC] told me to go for stool testing, so I went. [CC] also told me it's better to go for the breast cancer screening and influenza vaccination. I felt that I should go for the screening because I have never done it before." – E2.

"[Before I joined this programme], I didn't know about this vaccination, and nobody said anything."

[After I joined], [CC] told me about it so I said I want to be vaccinated.” – L1.

Care connectors as authoritative figures

The CCs were considered authoritative figures in the programme, primarily due to their association with the hospital. Participants who acknowledged the credibility and expertise of the CCs exhibited greater openness to their recommendations. Receptiveness towards CCs not only stemmed from their professional roles but was also strengthened by CC-participant connections. Nevertheless, there were also participants who still defer to the doctor’s advice, with one participant perceiving doctors’ advice as superior, prompting her to question the necessity of adhering to the recommendations provided by the CCs.

“You all come from the hospital, it’s different. People will believe when you tell them about healthy eating or what benefits us. So, residents will listen to you when you talk. It’s better if they heard from you personally.” – E8.

“CC asked me to go for health screening, why must I listen to her? I would have screened every body part if I wanted to. The doctor’s recommendation is the most important. Doctors know more than us normal people.” – L7.

Discussion

This study evaluated older adults’ perceptions towards the GWLW programme, explored the role of CHWs in promoting health literacy and changing health behaviours, and scrutinised the participants’ experiences in the programme. The findings served to inform the potential utility of lay CHWs in implementing CBHI, particularly within the Asian context where older adults often exhibit a collectivist cultural orientation, in addition to ingrained expectations of paternalistic care provision by medical professionals in Singapore [23]. Situational and demographic characteristics, specifically disease severity, older age, male gender, and lower education levels, have been shown to predict medical paternalism and passive relationships [34]. These dynamics underscore the necessity of understanding the perception and experience of older adults towards a lay CHW-delivered CBHI that may not have been traditionally found within healthcare systems.

Three key themes emerged addressing the programme’s value, interactions with CCs, and their facilitation of health services/behaviours. In their systematic review, Philip et al. asserted that the success of community-based health promotion and disease prevention programmes relies on implementing a package or series of

interventions rather than a singular approach. Interventions should also be multi-level, targeting individuals, groups, and the community [2]. However, integrating diverse strategies requires careful consideration of older adults’ specific contexts and preferences, as their unique circumstances can influence their engagement and receptivity to health interventions. In our findings, participants primarily valued the GWLW programme for providing physical and emotional support, particularly for those living alone, reflecting the growing reliance on external support systems in modernised family structures. This reliance underscores the tension between traditional caregiving roles expected within families and the reality of smaller, modern families that may be unable to provide the same level of support. They saw the programme as a reliable ‘safety net’ and a platform where they could discuss personal matters, reflecting a need for social connectedness beyond just healthcare needs.

Additionally, the positive reception of the GWLW programme as a ‘safety net’ suggests that external CBHI delivered by CHWs can play a vital role in bridging the gap left by the declining capacity for family-based elder care. Participants in the programme go through a BPS screener with validated and adapted questions to suit the local cultural context. This screener served as a structured tool to examine sensitive topics like suicidal thoughts, incontinence, loneliness and culturally relevant topics like their familial and social relationships. The tool also facilitated the CCs to engage in more in-depth discussions about their psychosocial well-being, thus providing an avenue to raise any pertinent needs or concerns. Thus, this highlights the pivotal role of CBHIs in addressing the multifaceted needs of older adults, extending beyond just physical health concerns, as advocated by the biopsychosocial framework [37, 44, 49].

The participants also valued GWLW for improving their health literacy and social interaction. Participants valued accessible, age-appropriate healthcare information, such as guidance on vaccinations, healthy eating, and fall prevention, signifying a shift towards proactive health management and preserving independence. To enhance the effectiveness of health education initiatives, flexible curricula involving entertaining skits are particularly relatable to older adults as they are familiar with Chinese or Malay operas. Highlighting the importance of tailoring health education according to participants’ age, educational level, cognitive capacities, and cultural backgrounds [50].

The opportunity to form new friendships or expand social circles highlights how CBHI can mitigate loneliness. Thus, it addresses a broader socio-cultural theme of ageing, wherein older adults may experience diminished social networks due to retirement, mobility issues, or the death of friends and family [51, 52]. Moreover,

the participants' eagerness to share the knowledge gained from the programme with others, such as their children or peers, showcases a cultural transmission of health knowledge across generations. It reflects a collective responsibility often observed in more community-focused or collectivist cultures, where individuals feel compelled to educate and support their social groups [23]. Nevertheless, the few negative views of the programme, where participants felt overwhelmed by overlapping services, shed light on the complexities of navigating and the duplication of government or institutional programmes. Thus, concerted efforts should be made to consolidate and streamline interventions, reducing duplication and optimising participants' overall experience.

While CHWs are traditionally chosen from a pool of trusted community members, the CCs were employed by the hospital and recruited from outside the community [25, 35]. This factor did not influence the participants' impressions of the CCs. In a cultural context where medical paternalism is prevalent, a CC's affiliation with a hospital increases the CC's credibility and expertise, allowing them to be viewed as an authoritative figure. Such perception is further strengthened as CCs are seen as a team with the medical team during health activities. The CCs are also trained and supported by a team of medical and allied health professionals, which is a valuable support for laypeople without medical training.

CCs are viewed not just as authoritative figures but as friends or family-like figures, underscoring the cultural significance of interpersonal relationships in caregiving. This blurring of professional and personal lines may resonate strongly in societies where caregiving is culturally perceived as a profoundly relational practice. Participants' positive interactions with CCs highlight the cultural importance of trust, empathy, and relationship-building in health and social care settings. The relationship-centred care (RCC) approach underscored healthcare's collaborative and interpersonal aspects, conceding that effective, empathetic relationships significantly contribute to positive health outcomes and patient experiences [11, 53]. RCC is based on four main principles: (1) recognising the personhood of participants, (2) acknowledging the importance of emotions in relationships, (3) understanding the reciprocal influence of healthcare relationships, and (4) affirming the moral value of establishing and maintaining genuine healthcare connections [36, 53]. The personal attributes of the CCs, exceptional support provided, and relationships formed played essential roles in shaping participants' perceptions and experiences. When hiring CHWs or CCs, they must embody various positive qualities. These include showing professionalism, compassion, patience, resourcefulness, flexibility, extroversion, social responsibility, and

conscientiousness, among other desirable traits [35, 54]. These qualities are also similar to factors valued by participants in CHW-delivered programmes and have been linked to the community's willingness to accept the duties of CHWs [36, 54].

Participants also expressed support for the contribution of CCs in facilitating health services/behaviours. This endorsement ensued from the initiatives of CCs in connecting participants with health and social services, as well as their role as authoritative figures. Elderly individuals in Singapore often face barriers to healthcare, including concerns about burdening others, financial constraints, transportation issues, and a lack of knowledge about available resources [37, 55]. The CCs took proactive steps to identify, address, and alleviate many of these challenges with the assistance of social workers. The CCs in the GWLW programme went beyond their job scopes, even assisting participants and their peers in securing and reminding them of medical appointments. The deep appreciation of CCs meeting their practical needs reflects a broader socio-cultural issue where healthcare systems can be complex and intimidating, especially for older adults who may not be familiar with bureaucratic processes. This personalised assistance becomes culturally significant as it bridges the gap between older adults and formal healthcare systems, ensuring equitable access to services. Though most participants viewed the CCs as authoritative figures from the hospital and trusted their advice and recommendations, one raised concern about the depth of their knowledge as laypersons. Thus, a possible challenge for CHW-delivered CBHIs is if they lack support from medical and allied health professionals [38, 56].

Collectively, the findings of this study suggest that CBHI could benefit from incorporating lay CHWs and implementing multi-level interventions along with health education featuring diverse curricula. CHWs' attributes, including people skills, commitment to delivering exceptional service quality, strong connections with the participants, and their facilitation of health services/behaviours, are critical factors to the programme's success. This observation aligns with existing research [36, 54, 56]. The findings also revealed the local older adults' desire for a support system that extends beyond the traditional family structure, reflecting the changing dynamics and interdependent needs of Asian older adults with the larger community. Thus, a well-designed CBHI that leverages the support of CHWs could bridge this gap to meet the evolving healthcare needs and changing family dynamics in Asian populations [26, 27, 57]. The findings highlight the potential value of incorporating a culturally appropriate and locally validated screening tool grounded in a biopsychosocial framework. Such a tool could enable CHWs to facilitate meaningful discussions that enhance

their understanding of the older adults' comprehensive healthcare needs. A systematic review examining the challenges CHWs face in South Asia also emphasises the critical role of culturally tailored program planning in enhancing the effectiveness of CHW initiatives. The deep-rooted values and belief systems in South Asian communities often pose significant obstacles to the successful implementation of CHW programs [58]. Furthermore, to ensure credibility and sustainability, lay CHWs will benefit from formal affiliation with a healthcare provider and the supervision of a team of medical and allied health professionals. Finally, the insights gained from this research can inform the development of future CBHIs targeting the ageing population in Singapore and potentially other Asian contexts.

Strengths and limitations

This research is among the first in Singapore to qualitatively assess a multi-domain preventive programme delivered by CHWs. Targeted sampling and semi-structured interviews in both English and Chinese were utilised to gather rich and detailed data from participants. The interview, translation, and transcription procedures followed conventional methods [8, 37, 38], but manual thematic analysis was chosen over automatic techniques as it allowed for a deeper understanding of the data and did not require specialised software. Despite the efficiency and scalability of thematic analysis software, concerns persist regarding the complexity and transparency of algorithms, inherent biases, replicability of results, and overall validity [59, 60].

The engagement of three trained evaluators for thematic analysis ensured a rigorous and methodical interpretation of the collected data, enabling a nuanced understanding of the value of the GWLW programme. Insights into the roles of CHWs, the qualities that contribute to their success, and their impact on health behaviours were also obtained. The findings carry practical implications for the design and implementation of future as well as ongoing CBHI, including the national "Healthier SG" initiative, which emphasises preventive health and empowers citizens to manage their health, prevent chronic diseases, and adopt healthier lifestyles; additionally, there is a shift to include training layperson to relieve the healthcare workers [61]. To further strengthen Singapore's Regional Health System, CHWs can be incorporated as healthcare team members to empower and encourage residents to adopt health behaviours by training CHWs to perform essential health and community coordination roles. The support provided by CHWs could expand the capacity of clinicians to focus on acute care. In the long run, such an integrated approach involving the health system and the community could

improve health outcomes and reduce healthcare spending for the ageing population.

Despite its strength, the study had several limitations. Firstly, the majority of the interview subjects were Chinese women. Although this composition reflects the majority participant demographics of the GWLW programme (86.1% Chinese, 78% female in GWLW; 95% Chinese, 84% female in this qualitative study), the racial and gender imbalance may introduce potential biases in understanding the experiences and perceptions of community programmes among other races and in men. Given that Chinese females tend to be more participative in community programmes in Singapore [62], there may be an underrepresentation of views from the less engaged subgroup in this study, limiting the generalizability of the findings. Secondly, the programme was conducted in only one town, and although the sample size was sufficient to achieve data saturation, it was relatively small. This could potentially limit the generalizability of the results. Finally, the study depended on self-reported data, which may be susceptible to biases, including recall and social desirability partialities [63]. This could potentially limit the generalizability of the findings.

Future research could employ a stratified sampling approach to include younger participants, more men, and Malay and Indian subjects to better depict the diversity of adults in Singapore. Third, the interviews were conducted via telephone in either English or Chinese, excluding non-verbal cues and participants who do not speak English or Chinese. Thus, prospective studies can consider face-to-face interviews in additional languages, such as Malay and Tamil, where feasible. Subsequent research should explore the perspectives of CCs and other stakeholders and objectively assess the outcomes of the GWLW programme through quantitative data analysis, including an evaluation of its cost-effectiveness.

Conclusions

The findings underscore the potential utility of CHWs in implementing CBHI, particularly within the Asian context where older adults often exhibit a collectivist cultural orientation emphasising family and social cohesion, in addition to a traditionally paternalistic healthcare system and expectations of care provision by medical professionals in Singapore. Participants acknowledged that the programme provided physical/emotional support, improved health literacy, and enhanced social interaction. The programme's effectiveness was found to be potentially dependent on the personal attributes of CHWs, their commitment to exceptional support, and the establishment of strong connections with participants, coupled with their facilitation of health services and behaviours. The findings indicate that future and ongoing CBHI could benefit from deploying CHWs with strong interpersonal

skills and the potential value of integrating a culturally appropriate and locally validated screening tool to understand older adults' values, beliefs and needs beyond healthcare needs. This would not only extend the reach of the programmes but also enhance their success. The results also emphasised the importance of the human element and RCC in CBHIs.

Abbreviations

CBHI	Community-based Health Interventions
CC	Care Connectors
CHW	Community Health Workers
NTFGH	Ng Teng Fong General Hospital
RCC	Relationship-Centered Care

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12889-024-20409-9>.

Supplementary Material 1

Acknowledgements

The authors would like to thank Mr. Poh Sijie for his assistance with the data analysis and the initial draft and all participants who contributed to the study.

Author contributions

JHSC: Conceptualization, methodology, investigation, data curation, formal analysis, project administration, and writing - original draft. JYC: Data curation, formal analysis, visualization, validation, and writing - original draft; PP and ZZSG: review & editing; EXXT: review; TGC and HHL: Conceptualization, investigation, resources, supervision, funding acquisition; AUY: Data curation, visualization, validation, resources, and writing - original draft. All authors have read and agreed to the published version of the manuscript.

Funding

This research was supported by the JurongHealth Fund grant number JHF-14-CC-001. The funding body had no role in the design of the study, in the collection, analysis, and interpretation of data, or in the writing of the manuscript.

Data availability

The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

Ethical approval for the study was obtained from the Institutional Review Board of the National Healthcare Group Domain Specific Review Board (DSRB) (DSRB reference number 2021/00431, 27 July 2021). Signed informed consent was waived by the National Healthcare Group Domain Specific Review Board due to the nature of the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Received: 7 January 2024 / Accepted: 15 October 2024

Published online: 24 October 2024

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