

BMJ Open Factors influencing the decision to use state-funded healthy lifestyle centres in a low-income setting: a qualitative study from Sri Lanka

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ABSTRACT

Objective Healthy lifestyle centres (HLCs) in Sri Lanka provide screening and lifestyle modification services targeting major non-communicable diseases (NCDs). Even though the service is highly accessible and affordable, HLCs are underused by its target population (adults >35 years). We aimed to explore the factors that influence the decision-making process of utilisation of HLCs in Sri Lanka.

Setting Two districts (Gampaha and Kalutara) from the highest populous province (Western) located adjacent to the capital district of Sri Lanka.

Participants Nine service providers, 37 HLC clients and 52 community participants were selected using judgemental, convenient and purposive sampling methods. Theoretical sampling method was used to decide the sample size for each category.

Method A qualitative study design based on constructivist grounded theory was used. Data collected using in-depth interviews and focus group discussions during January to July 2019 and were analysed using the constant comparison method.

Results The decision-making process of utilisation of HLCs was found to be a chain of outcomes with three main steps, such as: intention, readiness and utilisation. Awareness of HLCs, positive attitudes on health, intrinsic or extrinsic motivators, positive attitudes on NCDs and screening were internal factors with a positive influence on intention. Readiness was positively influenced by positive characteristics of the HLCs. It was negatively influenced by negative attitudes on staff and services of HLCs and negative past experiences related to services in state healthcare institutions and HLCs, service provider-related barriers and employment-related barriers. Family-related factors, social support and norms influenced both intention and readiness, either positively or negatively.

Conclusion The decision-making process of utilisation of HLCs links with factors originating from internal, family, service provider and societal levels. Thus, a multifactorial approach that addresses all these levels is needed to improve the utilisation of HLCs in Sri Lanka.

INTRODUCTION

Globally, non-communicable diseases (NCDs) are the leading cause of death.¹ According to the Global Burden of Diseases (2019), NCDs

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This is the first study that performed an in-depth exploration of the factors of utilisation of healthy lifestyle centres (HLCs) in Sri Lanka using a qualitative study design.
- ⇒ Besides exploring barriers and motivational factors as in previous literature, this study was able to develop a conceptual framework to explain the decision-making process related to utilisation of HLCs based on empirical data.
- ⇒ Interviews with both clients and the target population allowed us to explore credible factors of the utilisation of HLCs.
- ⇒ As only two districts were studied, the findings may not be totally generalisable for all the districts in Sri Lanka.

were responsible for 42 million deaths (71%), and 15 million of these deaths were premature (30–70 years).² Burden is the greatest within low-income and middle-income countries, wherein, 77% of all NCD deaths and 85% of premature deaths occurred.³ In Sri Lanka, NCDs accounted for 50.7% of the deaths in government hospitals in 2019,⁴ and nearly one in five people die prematurely due to NCDs.⁵

In low-income and middle-income countries, there is a lack of satisfactory control of NCD risk factors than in developed countries.⁶ The government of Sri Lanka has identified preventing and controlling NCDs as a priority. The national policy and strategic framework on controlling NCDs highlights the need to implement a cost-effective NCD risk factor screening programme, equally accessible and affordable, according to universal health principles.⁷ Thus, healthy lifestyle centres (HLCs) were first established in 2011 by the Ministry of Health with the objective of ‘reducing the risk of NCDs by detecting risk factors early and improving access to specialised care for those with

NCDs'. These are designed to provide NCD risk factor screening services through primary healthcare (PHC) institutions in Sri Lanka.⁸

Primary medical care units (PMcus) were the major PHC institutions identified as the settings for the HLCs, and it is the lowest level of curative institutions in Sri Lanka that offer only outpatient services. The institutions were expected to conduct HLCs on at least 1 weekday, from 08:00 hours to 12:00 hours, with the participation of individuals above aged 35–65 years who are previously undiagnosed with NCDs.⁸ The Ministry of Health has decided age 35 years as the lowest cut-off for the HLC services because of the aforementioned significant premature NCD morality (The target population was redefined to include adults aged 20–34 years with known NCD risk factors or a positive family history in 2020).⁸ The HLCs encourage the target population to use the HLC services through self-referral following community empowerment and appointments by the public health staff and medical officers (MO) in the curative sector.⁸ The current measures used by the health personnel to invite the target population are displaying banners and posters, referring from outpatient departments and giving related health talks in the health institutions. However, even in the pre-pandemic era (2018 and 2019), the reported utilisation rate of HLCs was only 10.0% and 6.9%, respectively, across the country with substantially low male participation (male to female ratio of 1:2.2 (2018) and 1:2.6 (2019)).^{9 10} The annual utilisation has been reduced further to 3.7% in 2020 and 2.9% in 2021 with the COVID-19 pandemic.¹⁰

In this context, Ministry of Health has identified underutilisation of HLCs as a key challenge in promoting health in Sri Lankans.¹¹ Therefore, strengthening HLCs has been identified as one of the major priority areas in reorganising PHC services in Sri Lanka.^{11 12} At present, there is a dearth of research evidence on reasons that contributes to such underutilisation of HLCs. However, past literature highlighted negative attitudes on screening, low readiness to face outcomes of health checks, lack of motivation, lack of awareness and understanding about services, ineffective invitation methods, low-quality communication skills of the healthcare providers, negative perceptions on primary care, perceived physical barriers (eg, long distance, inadequate transport facilities, high travel cost and loss of wages), psychological barriers and lack of support from the social environment as factors influencing underutilisation of similar screening services in both developed and developing countries.^{13 14} Thus, this study aimed to explore factors for utilisation and non-utilisation of HLCs and thereby describe the decision-making process of utilisation of HLCs, so that the interventions can be designed accordingly.

METHODS

Design

This qualitative study was the first component of a larger community-based study that aimed to design an

intervention to improve HLC utilisation in Sri Lanka. This qualitative component was used to explore factors for utilisation and non-utilisation of HLCs and develop a conceptual framework, based on which, the intervention was designed. As it was essential to collect empirical and credible data that would facilitate an effective community-based intervention, this was conducted using the constructivist grounded theory methodology.¹⁵ An inductive approach was employed to explore the study phenomenon. Similar to any other decision-making process, deciding whether to use or not to use HLC, is based on complex reasoning considering many interacting factors at many different levels. These reasons and their relationships are best presented via a conceptual framework, which is the expected outcome of grounded theory methodology.¹⁶

Study setting

This study was conducted in the Gampaha and Kalutara Districts in the Western Province, adjacent to the capital district of Sri Lanka. These two districts reported a total population of 2 417 027 and 1 284 329, respectively, in 2019. When considering the age distribution, 32.2% (778 378) of the total population in Gampaha and 31.42% (403,509) in Kalutara belonged to the 35–59 years age group, the age range studied in this study. Both districts are a mix of urban, rural and estate sector populations, but the rural sector population is more predominant than the other two sectors as per all the districts in Sri Lanka (Gampaha—84.3% and Kalutara—87.9%).^{17 18} In Gampaha, there are 71 HLCs in total, whereas, in Kalutara, there are 24.¹⁷ When considering the utilisation of HLCs, in Gampaha, 1.35% of the target population was screened in 2021 and the same was 3.3% for Kalutara.¹⁹

Recruitment of participants

The study participants were of three categories, recruited from two settings: HLCs and the communities belonging to the respective HLC draining areas. From HLCs, two categories were engaged; HLC clients and the service providers. Participants recruited from the community aimed to represent the target population of the HLCs. The qualitative sampling methods, namely, judgemental, convenient and purposive sampling were used to sample the service providers, HLC clients and target population of the HLCs, respectively.¹⁶ Theoretical sampling method was used to decide the sample size for each category.

Written informed consent was obtained from participants for data collection and audio recording of the interviews.

Patient and public involvement

Clients, public and the healthcare workers were not involved in developing the research question or designing of this study. However, they were engaged in interpretation of study findings by getting back to them with the arrived themes and conclusions.

Table 1 Summary of data collection

Data collection method (As per the sequence of conducting)	No completed	No analysed due to information saturation	Participant category	No of participants
Key informant interviews	9	9	Service providers	9
Focus group discussions	5	5	Female clients	32
In-depth interviews	5	5	Male clients	05
Focus group discussions	6	6	General target population	46
In-depth interviews	11	6	General target population	11
Total	36	31	–	103

Data collection

Data were collected by the principal investigator (PI), who is a PhD candidate in public health. A field assistant took notes which were used to verify subsequent transcribing. All the interviews and focus groups were conducted in Sinhala, the native language of the participants. Data collection was conducted during 11 January 2019 to 20 July 2019.

As presented in [table 1](#), in-depth interviews and focus group discussions were conducted with study participants. Data collection was initiated with the key informant interviews with service providers (n=9). The rationale for starting the data collection with service providers was to obtain initial probes about the issue based on their experience. As this group holds a key responsibility in designing and implementing activities to promote utilisation of HLCs and delivering the service as well as the first contact persons of clients, they have direct perceptions on the issue. The saturation method was followed, and the data collection was continued until the data no longer contributed to new themes.¹⁶ The last five in-depth interviews with the community participants did not add new data, and thus, the final theoretical sample included a total of 31 interviews.

The in-depth interviews and focus groups were conducted using a semistructured interview guide with open-ended questions. The topics covered in each method were listed in [box 1](#).

Data analysis

All interviews and focus groups were transcribed verbatim in the original language to preserve semantics as much as possible and were then translated to English by a professional transcriber. Coding and analysis were done in English. Data were analysed manually. The constant comparative analysis, theoretical sampling, and memoing were conducted with concurrent data generation.²⁰ Memos were used as reflexive notes for researchers to reflect and minimise the effect of preconceived ideas during analysis.²⁰ Data were analysed in the order of data collection.

The PI read through the first 18 transcripts several times for data familiarisation. Initial coding, focus coding and theoretical coding were conducted during the coding process. The peer-review method was adapted for data

verification.²¹ Concepts from the 18 transcripts were then merged. The first 18 transcripts generated 15 concepts, which were consolidated into categories and subcategories. The properties of each category were defined.

During coding and analysis, it was not considered whether the findings were from the majority or minority of the participants as including all new findings was required to explain the reasons for the underutilisation of HLCs in Sri Lanka. After analysing the 31st transcript, theoretical saturation was reached, and no new properties of the core themes were noted from the subsequent five transcripts. Theoretical coding was employed to abstract categories into highly conceptual terms and explore interrelated concepts.

Finally, a conceptual framework was developed to illustrate the decision-making process regarding using HLCs.^{22 23}

Box 1 Topics covered in each data collection instrument

- Key informant interview guide with service providers
 - ⇒ Pattern and trends of using HLCs by its target population.
 - ⇒ Promotion methods of HLC service (method of design, method of implementation, coverage).
 - ⇒ Probable reasons for using and not using HLCs by its target population.
 - FGD with HLC clients and in-depth interviews with male HLC clients
 - ⇒ Sources of information about HLCs*.
 - ⇒ Reasons for accepting screening at an HLC*.
 - FGD with participants recruited from the community
 - ⇒ Prior experiences related to screening for NCD risk factors.
 - ⇒ Reasons for undergoing and not undergoing screening for NCD risk factors.
 - ⇒ Awareness about HLCs.
 - ⇒ Reasons to decline a screening at HLCs, reasons to decline even presence of an awareness on the HLC and gender differences**.
 - In-depth interviews with participants recruited from the community
 - ⇒ Perceived barriers.
 - ⇒ Motivations to uptake a screening.
- *Common for all data collection instruments except for key informant interviews with service providers.
 **Common for both FGDs and in-depth interviews with target population.
 FGD, focus group discussion; HLCs, healthy lifestyle centres; NCD, non-communicable disease.

Feedback sessions for member checking were conducted with 20 participants (15 participants attended 3 group sessions, and 5 attended individual sessions) where the results were presented.²¹

RESULTS

Out of the nine service providers, the majority (n=4) were attached to the PMCU (PHC institutions that only provide OPD care). Others represented the other levels of service provision, namely, the divisional hospital (PHC institutions providing in-patient care, n=2), the base hospital (secondary healthcare institutions, n=1) and the regional director of health services office (the manager at the district level, n=2). Most of the service providers were MOs (n=4) and health education or public health nurses (n=3) who provide HLC services, and the rest were regional level coordinators (MO/NCD) s (n=2).

The sociodemographic characteristics of the other study participants recruited from the clients and the general public are presented in table 2.

The mean age of the participants recruited from the HLCs was 49.5 years (SD=7.64). The majority were females (n=32, 86.5%). Majority had a medical history of NCDs (n=20, 54.1%) and were infrequent attendees of screening (n=17, 45.9%). The mean age of the participants recruited from the community was 46.0 (SD=8.13) years. The majority were females (n=32, 56.1%) and the majority (n=43, 75.4%) had not heard about HLCs. Of the 24.6% (n=14) respondents who were aware of HLCs, only 3 reported utilisation. Most of the participants from the community did not have a medical history of NCDs (n=37, 64.9%) and had never undergone screening (n=28, 49.1%).

The chain of outcomes of the decision-making process on utilisation of HLCs

The study identified the decision-making process on utilisation of HLCs as a chain of outcomes consisting of three main steps, such as: intention, readiness and utilisation. Reasons that influenced the chain of outcomes were described based on two categories: reasons related to underutilisation (figure 1) and reasons related to utilisation (figure 2). Finally, a conceptual framework for the decision-making process was developed by combining both, to demonstrate the combined effect of reasons on the decision-making (figure 3).

Reasons for underutilisation

Perceived reasons for lack of intention (1A, 1B, 1C)

1A: inadequate community awareness on HLCs

This theme was reported by the service providers and participants recruited from the community. The majority reported limited awareness about HLCs. This theme was commonly the first, and the most expressed reason for not having the intention to use HLCs. Participants did not identify HLC as a centre for NCD risk factor screening or lifestyle modification targeting healthy adults and the novel interventions it provided such as exercise sessions and

Table 2 Sociodemographic characteristics of the study participants recruited from the HLCs and the community

Characteristic	Participants recruited from the HLCs		Participants recruited from the community	
	N=37	%	N=57	%
Age group (years)	Mean age=49.5 (SD=7.64) Median=51.0 (IQR=12.5)		Mean age=46.0 (SD=8.13) Median=45.0 (IQR=12.0)	
35–39	05	13.5	16	28.1
40–44	06	16.2	11	19.3
45–49	07	18.9	16	28.1
50–54	11	29.7	05	8.80
55–59	05	13.5	04	7.00
60–65	03	8.01	05	8.80
Gender				
Female	32	86.5	32	56.1
Male	05	13.5	25	43.9
Marital status				
Married	35	94.6	55	96.5
Single	02	5.41	02	3.51
Employment status				
Government	04	10.8	16	28.1
Private	02	5.40	07	12.3
Self-employed	04	10.8	10	17.5
Labourer	02	5.41	05	8.77
Stay-at-home mother	25	67.6	19	33.3
Education level				
Up to primary	07	18.9	01	1.75
Up to secondary	29	78.4	48	84.2
More than secondary	01	2.70	08	14.0
Medical history of NCD*				
Yes	20	54.1	20	35.1
No	17	45.9	37	64.9
Awareness and utilisation of HLCs				
User	Not Applicable		03	5.26
Heard but non-user			11	19.3
Not heard			43	75.4
Experience in screening for NCD risk factors other than in the HLC†				
Frequent attendee	12	32.4	05	8.77
Infrequent attendee	17	45.9	24	42.1
Never attended	08	21.6	28	49.1

All the general population engaged in the data collection were considered
 *At least one of these medical conditions were present—diabetes, hypercholesterolaemia, hypertension.
 †Frequent attendee—people who underwent screening at least one for above medical conditions almost annually or more often than annually; infrequent attendee—people who underwent infrequent screening and had no plans to go for a future screening.
 HLC, Healthy Lifestyle Centre; IQR, Interquartile Range; NCD, Non-Communicable Diseases ; SD, Standard Deviation.

screening for common cancers. They only saw it as a service that investigates blood glucose and lipids, a PMCU-based service for the low-income and ill (figure 1).

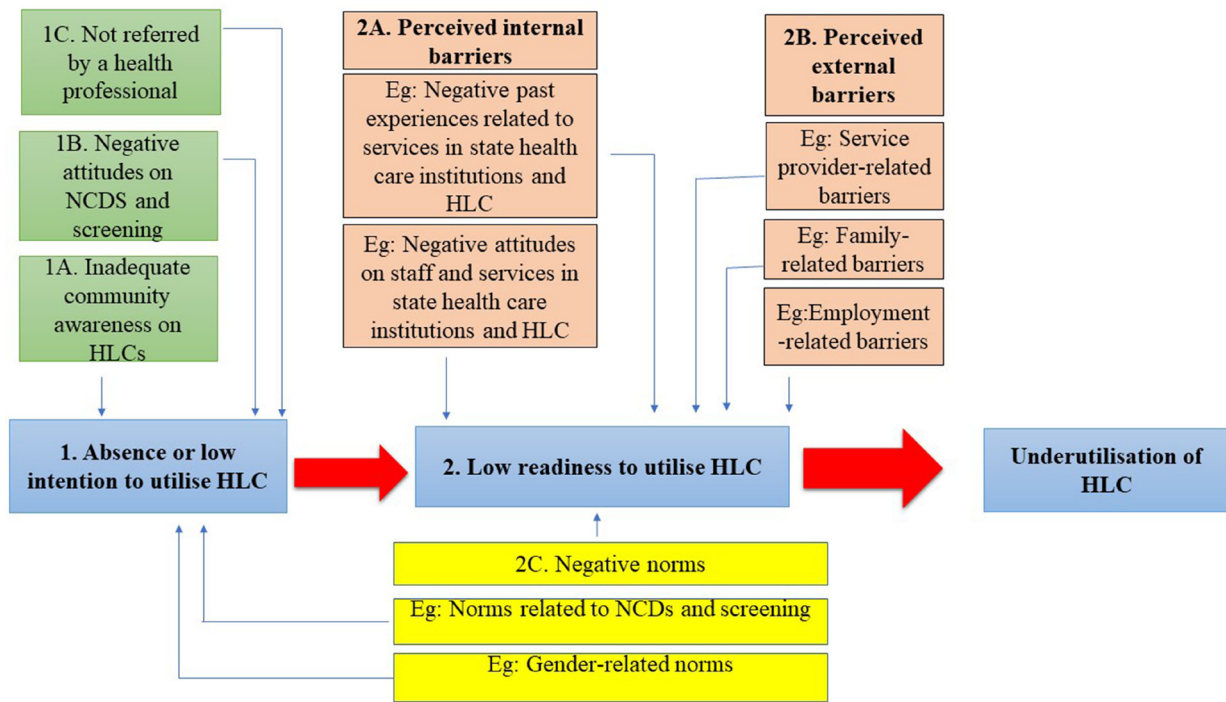


Figure 1 Reasons for underutilisation of HLCs. HLCs, healthy lifestyle centres; NCDs, non-communicable diseases.

....; if you ask 10 people at the OPD (outpatient department) whether they have seen that board (a display board with the details of the HLC), they have not seen it..., people are surprised when we say that other hospitals also have this,.... (KI 4: Medical Officer, HLC located at a PMCU, Interview)

People might go if the hospital has a (Healthy Lifestyle) centre. According to my knowledge, our hospital does not have a centre as such. If the hospital has the centre that you said, it is good (II2, Non-attende, infrequent screening attendee, Interview)

They invite us to come and check sugar and cholesterol if we are of the relevant age when we go to seek medical care for another health issue (Kal5, Non-attende, infrequent screening attendee, FGD)

Two subthemes emerged which can be interpreted as causes for inadequate community awareness.

a: inadequate promotion strategies and low coverage
As promotion strategies are implemented only in two settings: (1) within the institute where the HLC is located (via health talks, information, education and

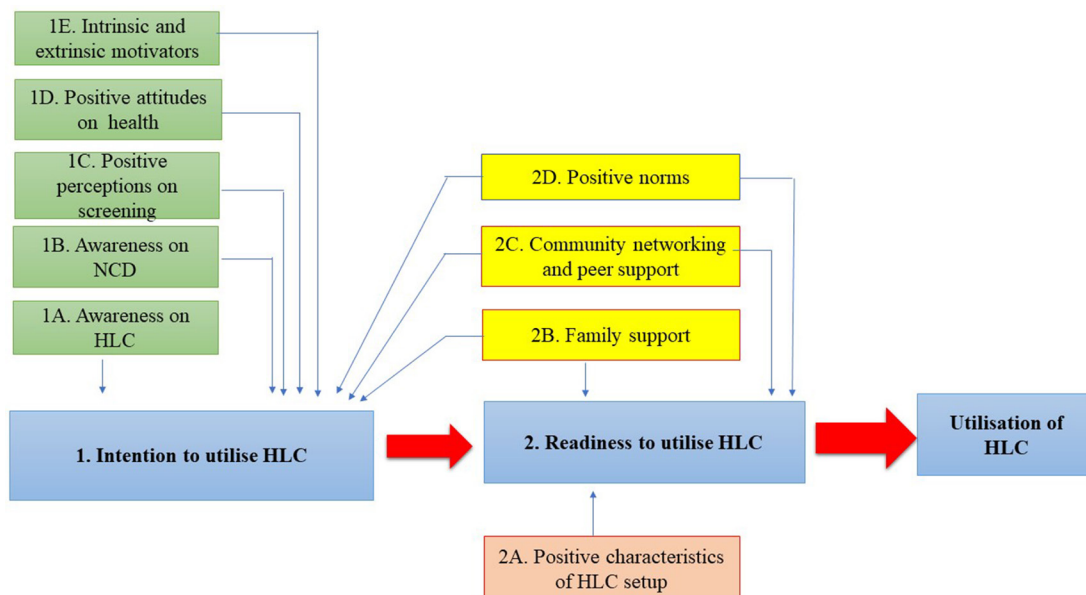


Figure 2 Reasons for utilisation of HLCs. HLCs, healthy lifestyle centres; NCDs, non-communicable diseases.

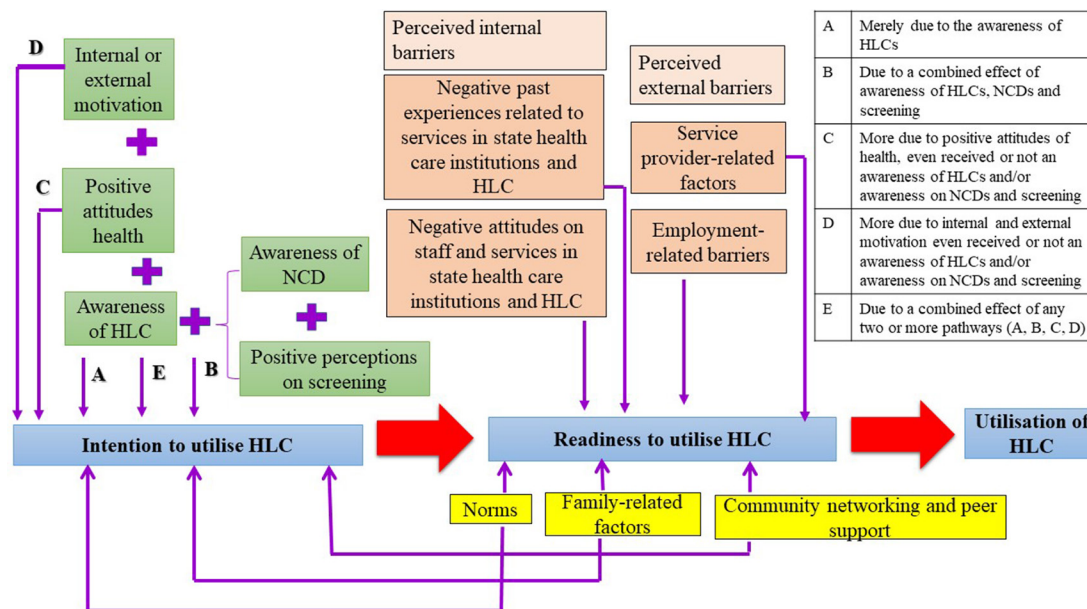


Figure 3 The final combined conceptual framework for target population's decision-making process to use HLCs. HLCs, healthy lifestyle centres; NCDs, non-communicable diseases.

communication materials and referral by MOs) and (2) in the community (only via referral by Public Health Midwife (PHM)) as explained below.

The OPD displays the HLC poster. When people come to the OPD they (OPD staff) mention this place (HLC) if patients tell them that they want to check their cholesterol or that they are overweight. Then at the OPD, we have some leaflets.... Then the doctors at the OPD tell patients who come there that we have it (HLC)..... (KI 5: MO, HLC located at a Divisional Hospital, Interview)

First time I heard this was during my pregnancy, through the midwife, and I saw that notice too in the hospital. I think most of the villagers have not heard about it... Only a person who is going to get treatment from the hospital might know about it [HLC] (III, Non-attendee, Infrequent screening attendee, Interview)

b: no community engagement in promotion

There were no community-based promotion mechanisms, either facilitated or voluntarily developed by the communities. Therefore, inviting a new client to the HLC was not recognised as a community responsibility and solely dependent on their service providers as two of them explained:

Most of the time we take medicine from private GPs. None of our neighbours who visited the hospital shared such news with us. Don't know whether they forgot to tell us about the centre (Kot4, Non-attendee, Infrequent screening attendee, FGD)

...the failure rate is high, if we give it to 20 only 10 comes so then we get discouraged, so it is important to motivate the staff.. (KI 4: Medical Officer, HLC located at a PMCU, Interview)

1B: negative attitudes on NCDs and screening

As reported by the service providers and participants recruited from the community, the majority of target population did not intend to use HLCs because they disliked screening for NCDs. This theme was commonly reported by the respondents as reason for HLC underutilisation compared with other reasons.

Two subthemes emerged as causes for such negative attitudes on NCDs and screening (figure 1).

a: low perceived susceptibility to NCDs

Findings showed that the perception of being healthy due to the absence of symptoms is the most common negative reason that hinders intention. Some assessed susceptibility by the presence or absence of symptoms and didn't identify their true susceptibility in their absence.

I didn't undergo screening. I felt I am fit. So, I did not feel any requirement to undergo screening (III, Non-attendee, Infrequent screening attendee, Interview)

Usually, people will check if they feel uneasy. Otherwise, it does not directly come to their mind (KI 7: Health education nurse, HLC located at a Base Hospital, Interview)

Some participants recruited from the community thought that they would not get NCDs because of their lifestyle:

I usually eat a small quantity. So, I think I won't get any disease. I am also using thebu kola [a herb that is believed to prevent diabetes] (Wat1, Non-attendee, Infrequent attendee, FGD)

b: perceived unimportance of screening

Study participants commonly did not report a felt need for a follow-up screening if they had undergone screening.

This was irrespective of the time laps from the previous screening episode.

No, I did not feel like checking, it was around one year ago that they said I have no sugar and I did not even take medicine afterwards..... (Wat5, Non-attende, Infrequent screening attendee, FGD)

They (general population) did not get it done (screening) as they (general population) do not fall sick regularly. If they (general population) haven't even had a symptom so, they did not go for a check-up as they did not feel a need to go for a check-up (KI 2: Medical Officer, HLC located at a Base Hospital, Interview)

1C: not referred by a health professional

Several participants recruited from the community reported a lack of external motivation as the reason for not having the intention to use HLCs. The most common external motivator was an invitation or a referral from a MO (figure 1).

If a doctor prescribes, I will go and do the investigations. Otherwise, I don't think its necessary (II3, Non-attende, Infrequent screening attendee, Interview)

Perceived reasons for lack of readiness (2A, 2B)

2A: Perceived internal barriers

This theme was expressed by only the participants recruited from the community. Perceived internal barriers included negative attitudes on staff and services in state healthcare institutions and HLCs namely perceived lower confidence in staff and services, unreadiness to visit a hospital when not having a disease, perceiving HLCs as a service for poor people and as a place to visit only in desperation. The following is an example that described how participants indicated lower confidence on staff and services related to the availability of diagnostic facilities at HLCs (figure 1).

In these places [HLC], the equipment to check cholesterol is not there. They are just advertised on the board. It is quite expensive noh? Is a cholesterol test similar to a [blood] sugar test? Those equipment probably are not available there (Vey2, Non-attende, Infrequent screening attendee, FGD)

Accessible and free health screening would not persuade some participants to attend the HLC because their readiness had been hindered by remembering negative past experiences encountered at a state health institution. The negative experiences reported were invalid laboratory investigation results, unavailability of equipment, shortage of drugs, long waiting time, lack of empathy of staff, short consultation time, unfairness and injustice and failures in past attempts to change the unhealthy lifestyle. This subtheme was a mostly expressed deterrent to diverting potential clients, as demonstrated below.

One day I went there to check my blood pressure. After I went there, the doctor told me that they do not have the pressure meter (KotM5, Non-attende, Frequent screening attendee, FGD)

..... We have gone (to hospital) early in the morning,, stayed in the queue, we were the first and the second in the line. It is after sending 20 patients of the "staff category" that they took us. After that, they send friends of staff. That is the real situation of the government hospitals. In general, the service is not fair to all (Vey5, Non-attende, Infrequent screening attendee, FGD)

2B: Perceived external barriers

The majority of participants recruited from the community reported barriers related to employment conditions. For example, a daily wager, a government or a private worker had the same obstacle in using HLC because usually the HLC is conducted in the morning hours of a weekday. Thus, irrespective of the type of employment, they were not ready to request leave or to be absent to work to attend HLC sessions. Even though the daily wagers were the ones that would lose their income if they do not go to work, the majority of males in the other two categories also saw it as the key barrier to reducing the readiness to visit HLCs. This was identified as a barrier by the females as well, but not as prominently as the males (figure 1).

I am doing manual labour for my living. It is difficult (to not go to work). So, our practice is to meet the closest doctor (private general practitioner) in the evening (KotM2, Non-attende, Infrequent screening attendee, FGD)

Some woman participants reflected that the unsupportiveness of the family in initiating screening activities could affect a person's readiness to use HLCs. The most common barriers identified were the unavailability of a chaperon and child care support and being busy with household chores as explained in the example below:

These are rural areas. So, you have to accompany your child to school in the morning, then you take the child to other places like tuition classes. After you go to all those and come home, you have to engage in household work. On the other hand, it will take 20 minutes to reach the hospital by bus from the main road. We have to walk to the main road to get the bus. There is nobody to drop us there in the morning. So, most women think it (attending screening) is too much of a burden (Wat6, Non-attende, Infrequent screening attendee, FGD)

The majority of participants reported the following as the barriers related to the service provider (HLCs) which majorly affected the readiness among the potential target group even when there was a firmly established intention: fixed opening and closing times, held in week-day mornings, the need to go early morning to give blood for investigations and the long waiting time. It was also observed that compared with females, males were more unready

to follow the above schedules in HLCs, particularly waiting at queues and enduring lengthy waiting times.

...., *no one has time to waste, now everyone is very busy* (II5, Non-attende, Infrequent screening attendee, Interview)

Participants commonly expressed a general dissatisfaction and mistrust towards the staff and services in the state healthcare sector. The expressed dissatisfaction was commonly related to felt disempowerment, uncaring and discriminating behaviour towards patients and inefficient service delivery structure as one of them explained:

In the Sri Lankan system, they (state health workers) think they have power. You have to call them madam, sir....., the attendants shows his power, [...], The waste of time is also a big issue here. You have to be seated for hours and hours, wasting time. There is no organised method to send off people soon. Also, they do not know how to talk to a person... (III, Non-attende, Infrequent screening attendee, Interview)

Perceived reasons for lack of both the intention and readiness (2C)

Negative norms on NCD risk, stigma of getting diagnosed with an NCD, burden of the need to change the lifestyle once diagnosed with NCDs and stigma related to screening were the reported reasons for the lack of both intention and readiness. This theme was reported by both service providers and participants recruited from the community (figure 1)

Diseases come with age, like after 40 or 50. Not at a younger age. (III, Non-attende, Infrequent screening attendee, Interview)

Generally, people say no to screening saying that it would be another disease if they had found with something after they checked it (KI 3: Public Health Nurse, HLC located at a PMCU, Interview)

The most prominent reason for males was masculinity views. Men believed that they were more agile and active than females, and thus they would not get NCDs. One of the respondents explained:

Males are quite active, so they don't get diseases often (Ka16, Non-attende, Never screening attendee, FGD)

This theme was expressed by the healthcare providers as well. According to their experience, males tend to refuse screening and males think let it be the diseases. They explained this theme as below:

Males are not soft as females. So, they try to show off their strength by not being frightened about diseases (KI 1: Medical Officer (NCD), Regional Director of Health Office, Interview)

Reasons for utilisation

Perceived reasons for generating an intention (1A, 1B, 1C, 1D, 1E)
Majority of the themes were presented by only the participants recruited from the HLC except theme 1E (figure 2).

1A: awareness on HLCs

Getting awareness when they visit the OPDs for other health problems or via PHMs or previous clients supported for generating the intention to use HLCs.

We (She and her friend) got to know about it (HLC) after we came here (PMCU). Misi (Attendant) explained about the services in HLC and we thought to visit HLC (FCG4, HLC attendee, Frequent screening attendee, FGD)

1B: awareness on NCD

The majority of clients had a higher awareness of risk factors for NCDs and the need to detect them early. They also expressed awareness of the ability to positively manage and control NCDs once detected.

We found that an intention to screen for undetected diseases is generated by combining both awareness on NCDs and HLCs. As one of the participants explained below, this awareness led them to use HLCs and thereby achieve a higher quality of life.

I do not know whether I have any diseases. We are obese and we do not engage in any exercise. We struggle to make a living. We also travel in the motor bicycle, and not even by bus like in those days, walking is less....so I thought of visiting a HLC to check my health situation (MC1, HLC attendee, Frequent screening attendee, Interview)

1C: positive perceptions on screening

The majority of the participants believed that they can prevent NCDs through screening. High acceptance for screening seemed to be driven by their high awareness of NCDs (1B) as reported below.

Before we fall sick, if we get to know that we are going to get it, then we can control it through our diets or from medicine (FCG3, HLC attendee, Frequent screening attendee, FGD)

1D: positive attitudes on health

Most of the participants believed that there is a probability that they may have undetected diseases and demonstrated positive attitudes towards being healthy:

It is good to stay fit by controlling our diet, and we try to maintain our lifestyle that way. We do not know what hidden disease we may have (FCG3, HLC attendee, Frequent screening attendee FGD)

1E: availability of intrinsic or extrinsic motivators

Commonly reported intrinsic motivations included the appearance of severe symptoms, the need to reduce body weight and having long-term life goals, especially related to family and children, as the following client reported:

Our children are small. We should not die prematurely—otherwise our children will suffer (FCP 4, HLC attendee, Infrequent screening attendee, FGD)

Participants were extrinsically motivated for screening when they were referred by a health professional or recommended by a client.

If a doctor prescribes, I will tend to check for these. Otherwise, I don't think its necessary (II 3, Non-attendee, Infrequent screening attendee, Interview)

Participants were also motivated by the availability of cancer screening and exercise programmes as illustrated in the following quotes.

I was keen to know whether there is cancer in my body. Other tests we can even do outside (II8, HLC attendee, Infrequent screening attendee Interview)

Most of the clients visited here (HLC) because of our exercise sessions (KI 3: Public Health Nurse, HLC located at a PMCU, Interview)

Perceived reasons for generating the readiness to use the HLC (2A) 2A: positive characteristics of the HLCs

The most prominent positive characteristic that influenced readiness was HLC services being free of charge and presented only to the participants recruited from the HLC (figure 2)

Yes, because it is done for free and also if you have an illness, you can identify it..... (II 9, HLC attendee, Infrequent screening attendee, Interview)

Perceived reasons for generating both the intention and readiness (2B, 2C, 2D) 2B: family support

All the male clients reported that encouragement and support from their family was the main factor that facilitated their intention and readiness. One of the male clients explained (figure 2):

My wife told me several times that I am now 40 plus and it is better to undergo a test... Otherwise, it will never have occurred to me (MC2, HLC attendee, Infrequent screening attendee, Interview)

Service providers also viewed that clients were usually motivated and accompanied by their family members.

One of my client's daughters is always telling her to reduce her weight. That daughter is even accompanied her mother to the HLC and thus she is a regular client of our HLC for years now (KI 3: Public Health Nurse, HLC located at a PMCU, Interview)

2C: community networking and peer support

Some had used HLCs because of community networking and this theme was reported only by the participants recruited from the HLC. They highlighted the importance

of promoting via the formal community networking structures as reported below (figure 2).

We know because we are going for every samithi (local clubs, community organisations) in the village (Kal2, HLC attendee, Infrequent screening attendee, FGD)

Peer support was likely to improve the awareness of NCDs, screening and HLCs. Peer promotions, encouragement and collaborative planning were the most common peer support attributes among clients who participated in the study as exemplified below.

One of my friends had been told about the centre by someone she knows. Earlier, that lady thought that she had no illness. However, when she came here and checked, she had been identified as having pressure. She told my friend if she stayed home, she may have not identified it. So, she encouraged my friend, and my friend encouraged me. So, both of us came (FCK3, HLC attendee, Infrequent screening attendee, FGD)

2D: positive norms

There was a positive influence on initiating screening for people above 40 years because of the social norms that 'anyone will get NCDs after 40 years' and 'NCDs will come with age' as reported (figure 2).

"So, for me, now I am thirty-nine years old (laughs). So, this is the time when illnesses start to come, so I decided to get everything checked" (FCK3, HLC attendee, Infrequent screening attendee FGD)

There was a tremendously positive influence from the gender norm 'women should look after their health as she needs to manage the household and care for the children' as reported by some women and by service providers.

As mothers, we should look after ourselves first, because we have huge responsibilities towards our children (FCK6, HLC attendee, Infrequent screening attendee FGD)

Mother has more work than father in the family. So, if she gets a disease, it is a problem. That is why they tend more in screening (KI 3: Public Health Nurse, HLC located at a PMCU, Interview)

The final combined conceptual framework for target population's decision-making process to use HLCs

A conceptual framework was developed by combining reasons for underutilisation and utilisation of HLCs to describe how the target population decided to use or not to use screening at HLCs (figure 3). This decision-making process was demonstrated as a chain of outcomes with three main steps, such as: intention, readiness and utilisation as explained earlier.

Participants demonstrated five common pathways in generating intention to use HLCs. The most overt pathway was to develop the intention because of the awareness of HLCs (Pathway A). The second pathway was developing



the intention because of a combined effect of the awareness of HLCs, NCDs and screening (pathway B). The third pathway is majorly driven by developing the intention due to positive attitudes towards health (pathway C). In the fourth pathway participants mainly developed the intention due to internal and external motivation (pathway D). The last pathway was a combination of any two or more pathways (pathway E).

However, the target population should develop readiness after developing an intention to use HLCs. We found that only the reason 'positive characteristics of the HLCs' has a positive influence on the readiness while there are negative influence from the perceived internal and external barriers such as 'negative attitudes on staff and services in state healthcare institutions and HLCs', 'negative past experiences related to services in state healthcare institutions and HLCs', 'employment-related barriers' and 'service provider (HLC)-related barriers'.

The findings of the study indicated that some reasons can influence both intention and readiness to use the HLC. There was a positive influence from the reasons 'supportive family', 'high social support' and 'positive norms' and a negative influence from their reversal.

DISCUSSION

This qualitative study explored the decision-making process of utilisation of HLCs and found that it occurred as a chain of outcomes consisting of three main steps, such as: intention, readiness and utilisation. Participants reported awareness of HLCs, positive attitudes on health, intrinsic or extrinsic motivators, positive attitudes on NCDs and screening as the major perceived reasons that influence intention. Readiness to use HLCs can be positively influenced by positive characteristics of the HLCs. It can also be negatively influenced by perceived internal and external barriers. Family-related factors, social support and norms can influence both intention and readiness to use the HLCs either positively or negatively. Our findings underscore that multiple reasons derived from internal, family, community and service provider levels influence the utilisation of the HLCs and a comprehensive approach is needed to address them to improve utilisation.

While the government implements a highly affordable and accessible NCD risk factor screening for adults in Sri Lanka via HLCs, the majority of the participants belonging to the target population were not aware about HLCs. In our study, inadequate promotion and low coverage of existing promotional strategies were emphasised as major deterrents to awareness on HLCs, and the previous studies concluded the same.^{24 25} Lack of promotion mechanisms within the community had diminished the sense of community responsibility in recognising and referring individuals to screening services as highlighted by previous studies.²⁶ Hence, participants identified lack of awareness of HLCs as the main perceived reason for low intention to use HLCs. Therefore, our findings

highlight the need for more attempts in designing a range of promotion strategies, involving various community stakeholders in addition to the health sector.

The perception of being 'healthy' and perceived 'unimportance of screening' were the two prominent factors for low intention to use HLCs among the participants who were aware of HLCs. These factors were identified in majority of the global studies as factors that hinder the demand for the available screening services.^{27 28} Therefore, our study implied a clear need for tailoring the promotional messages to improve perceived susceptibility to NCDs and the importance of screening among the public via different communication strategies.²⁷ For example, the communities can be empowered to assess their CVD risk according to their anthropometric measurements and lifestyle habits.

Global studies have indicated the role of negative attitudes and negative past experiences of PHC services, employment-related barriers and service provider-related barriers in reducing the readiness among the potential target group even when there was a firmly established intention to use state screening services.^{28 29} These findings are consistent with the findings of our study and it has resulted in underusing HLCs compared with the private sector. Thus, our findings highlight the need for reorganising HLCs to cater to the issues of the target population related to the quality of services, particularly to serve the most impoverished fragment of the population.³⁰ These amendments are noteworthy as bypassing the PHC services causes an increment in catastrophic health expenditure and poses a challenge to the prevention of NCDs.³¹

In our study, intention and readiness to use HLCs by males were negatively influenced by masculinity-related perceptions as reported in the global literature.³² Males' unpreparedness to use screening and lifestyle modification services compared with females, is a well-established risk factor for increased NCD risk, leading to increased premature mortality and reduced life expectancy.³³ Thus, males in Sri Lanka may benefit from promotion strategies that address gender-related myths and negative norms that reduce their readiness to undergo screening.

Previous study participants in global literature had used screening due to family support,³⁴ social networks³⁵ and peer support³² which were in line with our study. Our findings indicated that Sri Lankan men's intention and readiness to utilise HLCs was also linked with family support, particularly from the spouse in terms of encouragement, follow-up and accompaniment.^{34 36} We also found that the majority of the female clients opted to use HLCs because of the peer support and community networking that promote screening. According to Ottawa Charter for Health Promotion, there is an inextricable link between people and their social environment.³⁷ Thus, these findings make important implications about how unsupportive families and communities influence low HLC utilisation. Our findings suggest that community-based strategies that uplift promotions via existing community-based

organisations, community networking of the existing client base and family members can be used to improve intention and readiness of the target population to use HLCs. The national coordinating and guiding bodies could implement larger-scale strategies and interventions such as social marketing and community mobilisation campaigns to achieve the same.²⁹ Further, appointing a specific facilitator to the ground level specifically qualified in addressing community determinants of underutilisation of HLCs will be a long-term investment in this regard.³⁰

While the other studies have focused on exploring motives and inhibitors of screening utilisation or non-utilisation, we developed a conceptual framework to explain the decision-making process for using the HLCs incorporating factors that affect both utilisation and non-utilisation. For example, the factors such as negative attitudes towards staff and services of HLCs,³¹ lack of community networking and peer support,^{33 36} gender-related negative norms³⁵ and service provider-related issues¹³ were identified as inhibitors of screening utilisation by the previous literature. However, we found that the influence of these inhibitors can exist even in the presence of a solid intention to use HLCs. Thus, the ultimate decision for HLC utilisation is a net result of interaction between these inhibitors and primary intention. Therefore, the effectiveness of a community screening programme may reduce if a holistic approach is not used to address the perceived reasons influencing the chain of outcomes.

Limitations of the study

A limitation was not including individuals belonging to ethnic groups other than Sinhala, the main ethnic group in Sri Lanka. This limitation was due to the PI's language barrier and unavailability of a qualified Tamil-speaking interviewer during the data collection to conduct interviews in Tamil medium. Further, as only two districts were studied, the findings may not be transferable to other districts in Sri Lanka.

CONCLUSIONS AND RECOMMENDATIONS

In a country with limited resources, underutilisation of HLCs is not only a burden to the free healthcare service system, but also will lead to an increased disease burden of NCDs. Despite HLCs being launched to fulfil a current public health requirement in Sri Lanka, our study identifies several unmet clients' needs and social aspirations that prevents them from being used. Underutilisation is mainly because of the lack of intention, driven by lack of intention for screening. When intention is present, the readiness to use HLCs is affected by a range of factors that operate at internal, family, community and service provider levels. Thus, the limitations identified in this research can be overcome via a community-based intervention that address the factors hindering the intention and readiness to use HLCs and improve their utilisation.

This intervention should be based on a holistic approach with integrated actions at the aforementioned levels. The conceptual framework developed by this study can be used in designing interventions in similar settings after adapting for contextual changes. This study was followed by a quantitative study that established associated factors with utilisation and underutilisation and an interventional study that addressed those factors to improve utilisation. Based on this study, it is recommended to include participatory methods for monitoring and evaluation methods of the HLC service, allowing clients and potential clients to contribute to improve the utilisation.

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REFERENCES

- 1 World Health Organization. Noncommunicable diseases fact sheet. 2022. Available: <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases> [Accessed 8 Aug 2022].
- 2 Institute for Health Metrics and Evaluation. GBD 2019 cause and risk summary. 2022. Available: https://www.healthdata.org/results/gbd_summaries/2019?page=6
- 3 World Health Organization. World health Statistics. 2021. Available: <https://www.who.int/data/gho/publications/world-health-statistics> [Accessed 18 Aug 2022].



- 4 Ministry of Health Sri Lanka. Annual health bulletin. 2019. Available: http://www.health.gov.lk/moh_final/english/others.php?pid=110 [Accessed 12 Sep 2022].
- 5 World Health Organization. Making a difference WHO SRI LANKA ANNUAL REPORT. 2017. Available: <http://www.searo.who.int/srilanka/9789290226338-eng.pdf> [Accessed 2 Sep 2022].
- 6 Malekzadeh A, Michels K, Wolfman C, *et al.* Strengthening research capacity in Lmics to address the global NCD burden. *Glob Health Action* 2020;13:1846904.
- 7 Ministry of Health Sri Lanka. The national policy and strategic framework for prevention and control of chronic non-Communicable diseases. 2010. Available: http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/publishpolicy/13_NCD.pdf [Accessed 19 Sep 2022].
- 8 Ministry of Health Sri Lanka. Revised guidelines for screening for non-Communicable diseases at the healthy Lifestyle centres in Healthcare Institutions. 2020. Available: [https://www.ncd.health.gov.lk/images/pdf/circulars/new/Guideline%20for%20HLC%202019%20\(i\).pdf](https://www.ncd.health.gov.lk/images/pdf/circulars/new/Guideline%20for%20HLC%202019%20(i).pdf) [Accessed 9 Sep 2022].
- 9 Ministry of Health Sri Lanka. Annual health bulletin. 2018. Available: http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/AHB/2020/AHB_2018.pdf [Accessed 9 Aug 2022].
- 10 Directorate of Noncommunicable Diseases. Annual report. 2021. Available: https://ncd.health.gov.lk/images/Annual_Report_2021-Part_1.pdf [Accessed 30 Aug 2022].
- 11 Ministry of Health Sri Lanka. Reorganising primary health care in Sri Lanka, preserving our progress, preparing for our future. 2018. Available: http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2018/ReorgPrimaryHealthCare.pdf [Accessed 3 Sep 2022].
- 12 World Health Organisation. Strengthening health systems response to address Noncommunicable diseases in the South-East Asia region. 2016. Available: http://origin.searo.who.int/entity/noncommunicable_diseases/documents/sea-ncd-95/en/ [Accessed 13 Sep 2022].
- 13 De Waard A-KM, Wändell PE, Holzmann MJ, *et al.* Barriers and Facilitators to participation in a health check for Cardiometabolic diseases in primary care: A systematic review. *Eur J Prev Cardiol* 2018;25:1326–40.
- 14 Pati MK, Swaroop N, Kar A, *et al.* A narrative review of gaps in the provision of integrated care for Noncommunicable diseases in India. *Public Health Rev* 2020;41:8.
- 15 Noble H, Mitchell G. What is grounded theory? *Evid Based Nurs* 2016;19:34–5.
- 16 Chun Tie Y, Birks M, Francis K. Grounded theory research: A design framework for novice researchers. *Sage Open Med* 2019;7:2050312118822927.
- 17 District Secretariat Office Gampaha District Sri Lanka. Statistical hand book Gampaha district. 2019. Available: <http://repo.statistics.gov.lk/handle/1/1545> [Accessed 23 Sep 2022].
- 18 District Secretariat Office Kalutara District Sri Lanka. Statistical hand book Kalutara. 2019. Available: <http://repo.statistics.gov.lk/handle/1/1548> [Accessed 23 Sep 2022].
- 19 Provincial Director of Health Services Office Western Province Sri Lanka. Population data. 2020. Available: http://healthdept.wp.gov.lk/web/?page_id=707 [Accessed 23 Sep 2022].
- 20 Sbaraini A, Carter SM, Evans RW, *et al.* How to do a grounded theory study: A worked example of a study of dental practices. *BMC Med Res Methodol* 2011;11:128.
- 21 Korstjens I, Moser A. Series: practical guidance to qualitative research. part 4: trustworthiness and publishing. *Eur J Gen Pract* 2018;24:120–4.
- 22 Fishbein M. A reasoned action approach to health promotion. *Med Decis Making* 2008;28:834–44.
- 23 Head KJ, Noar SM. Facilitating progress in health behaviour theory development and modification: the reasoned action approach as a case study. *Health Psychology Review* 2014;8:34–52.
- 24 Jenkinson CE, Asprey A, Clark CE, *et al.* Patients' willingness to attend the NHS cardiovascular health checks in primary care: A qualitative interview study. *BMC Fam Pract* 2015;16:33.
- 25 Robson J, Dostal I, Sheikh A, *et al.* The NHS health check in England: an evaluation of the first 4 years. *BMJ Open* 2016;6:e008840.
- 26 Harkins C, Shaw R, Gillies M, *et al.* Overcoming barriers to engaging socio-economically disadvantaged populations in CHD primary prevention: A qualitative study. *BMC Public Health* 2010;10:391.
- 27 Burgess C, Wright AJ, Forster AS, *et al.* Influences on individuals' decisions to take up the offer of a health check: A qualitative study. *Health Expect* 2015;18:2437–48.
- 28 Harte E, Maclure C, Martin A, *et al.* Reasons why people do not attend NHS health checks. *Br J Gen Pract* 2018;28:35.
- 29 Cheong AT, Khoo EM, Tong SF, *et al.* To check or not to check? A qualitative study on how the public decides on health checks for cardiovascular disease prevention. *PLoS One* 2016;11:e0162152.
- 30 Mallawaarachchi DSV, Wickremasinghe SC, Somatunga LC, *et al.* Healthy Lifestyle centres: a service for screening Noncommunicable diseases through primary health-care institutions in Sri Lanka. *WHO South East Asia J Public Health* 2016;5:89–95.
- 31 Basu S, Andrews J, Kishore S, *et al.* Comparative performance of private and public Healthcare systems in Low- and middle-income countries: A systematic review. *PLoS Med* 2012;9:e1001244.
- 32 Hoebel J, Starker A, Jordan S, *et al.* Determinants of health check attendance in adults: findings from the cross-sectional German health update (GEDA) study. *BMC Public Health* 2014;14:913.
- 33 World health Organisation [World Health Statistics 2019]. <https://repositorio.ufsc.br/bitstream/handle/123456789/186602/PPAU0156-D.pdf?sequence=-1&isAllowed=y%0Ahttp://journal.stainkudus.ac.id/index.php/equilibrium/article/view/1268/1127%0Ahttp://www.scielo.br/pdf/rae/v45n1/v45n1a08%0Ahttp://dx.doi.org/10.1016/j.10.1016/j>
- 34 Lee MJ, Sobralske MC, Fackenthal C. Potential Motivators and barriers for encouraging health screening for cardiovascular disease among Latino men in rural communities in the Northwestern United States. *J Immigrant Minority Health* 2016;18:411–9.
- 35 Petrova D, Garcia-Retamero R, Catena A. Lonely hearts don't get checked: on the role of social support in screening for cardiovascular risk. *Preventive Medicine* 2015;81:202–8.
- 36 Teo CH, Ng CJ, Booth A, *et al.* Barriers and Facilitators to health screening in men: A systematic review. *Soc Sci Med* 2016;165:168–76.
- 37 Fry D, Zask A. Applying the Ottawa charter to inform health promotion programme design. *Health Promot Int* 2017;32:901–12.