

## Utilization, perceived access, health system responsiveness for ambulatory care for coronary heart disease (CHD) and risk factors among patients in a semi urban district of Sri Lanka

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### Abstract

#### Background

Coronary heart disease (CHD) is a leading cause of hospital deaths in Sri Lanka. Ambulatory care is a main mode of health service provision. Utilization, access and Health System Responsiveness (HSR) are important to management of CHD.

#### Objectives

Objective was to describe utilization, perceived-access, HSR related to ambulatory services for CHD/risk factors, and correlates among people aged 30-64 in a semi-urban district in Sri Lanka.

#### Methods

A community-based cross-sectional study was conducted among 1192 people aged 30-64 years in Gampaha, recruited by cluster sampling. Data were collected using a pre-tested interviewer-administered questionnaire by trained data collectors. Those with a diagnosis of CHD were administered 'Access to Ambulatory care Questionnaire for CHD' and Health System Responsive Assessment Questionnaire. Data were analyzed using SPSS-21.

#### Results

Out of the 23.7% (N=271) with a previously diagnosed CHD/ hypertension/diabetes/dyslipidaemia, 57.9% (n=157) had sought ambulatory care during past six months. Overall ratings as very good/good utilization; 86.0%, (N=135), perceived-access 82.8% (n=130), HSR 84.1% (n=132). Affordability (p =0.04), satisfaction with general health (p =0.03), seriousness of illness (p =0.04) benefit with treatment (p =0.01) were correlated with utilization. Higher education (p=0.01), poor general health (p=0.03) were correlated with perceived-access. Lower education level (p =0.01), unemployment (p = 0.02), high income (p =0.01), seeking care in private sector (p =0.001) were correlates of HSR.

#### Conclusion

A significant proportion had not sought ambulatory care for CHD/risk factors. Although overall ambulatory care for CHD/risk factors in Gampaha district is satisfactory barriers seem to exist at some levels.

**Key words:** Ischemic heart disease, Non-Communicable Diseases, Outpatient care

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### I. Introduction

Cardiovascular diseases (CVD) are the number one killer disease worldwide. In 2016, 31% global deaths were due to CVD and among them 85% occurred as a result of coronary heart disease (CHD) and stroke(1). CHD is the leading cause of hospital deaths since 1998 in Sri Lanka and has accounted for 13.9% of all deaths in the government hospitals in 2018 (2).

Prevalence of CVD represents only a fraction of the burden of CVD, as the underlying modifiable risk factors of smoking, unhealthy diet, harmful intake of alcohol and physical inactivity often occurs concurrently and adds to the burden and remain hidden. The medical conditions such as hypertension, diabetes mellitus, obesity and abnormal blood lipid levels, are together known as intermediate risk factors. These eight risk factors are collectively responsible of loss of healthy life years due to CVD and 61% of CVD deaths (3,4, 5).

Access to health care comprises availability, accessibility(geographical), affordability, acceptability and accommodation (6). According to the healthcare utilization model proposed by Andy and Anderson (7) perceived access to health is realized as utilization or 'realized access' through 'need factors' which are the immediate determinants of utilization of healthcare. Need factors are twofold; perceived need (perception of own health, experience of symptoms of illness, perception of seriousness of the conditions and perception of the benefits of treatment) and evaluated need (having a diagnosed condition). Poor access and utilization of health care is a major obstacle to management of CVD and the risks (3, 8).

Health system responsiveness (HSR) relates to a system's ability to respond to the legitimate expectations of potential users about non-health enhancing aspects of care; respect for persons and client orientation (3, 9) and is often used for assessing health system performance (10). Responsiveness promotes health care utilization and enhances compliance, reducing inequalities in the healthcare provision, helping all people to attain the best possible level of health (10).

Health care is usually utilized either as in-patient care or outpatient care. Outpatient care which is also known as ambulatory care can be defined as health services provided on an outpatient basis to those who visit a health care facility and depart after treatment on the same day (11).

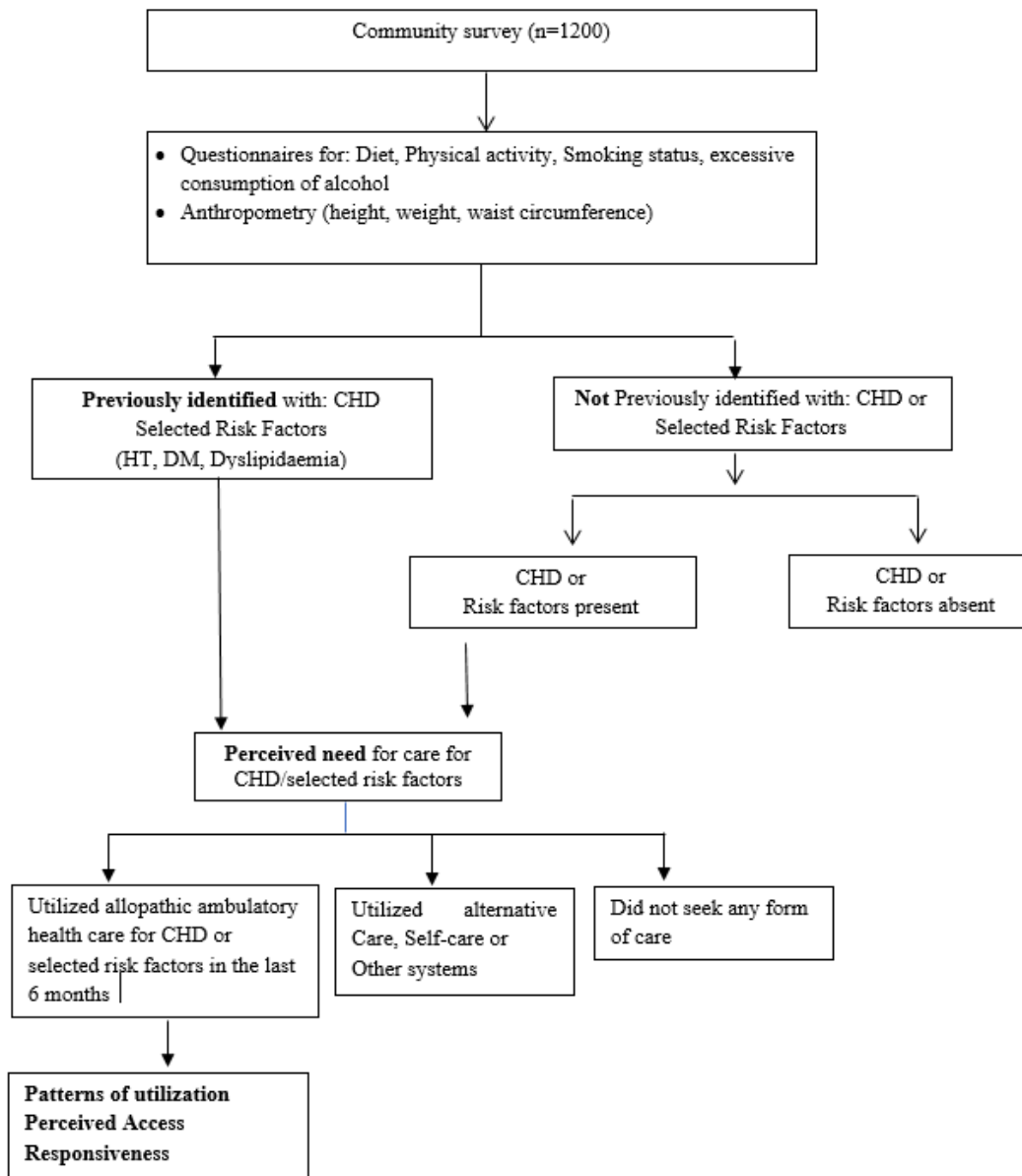
The objective of the study was to describe utilization, perceived access, HSR related to ambulatory health services for CHD and selected risk factors, and their correlates among people aged 30-64 in the district of Gampaha.

## **II. Material and Methods**

A community based cross sectional study was conducted in 2014 among residents, aged 30 to 64 years in District of Gampaha, which is the second most densely populated district and consist of a diverse socio-economic composition. Those who were not residing in the selected area permanently or for less than 6 months, those with severe mental disability and those living in institutions were excluded.

**Sample size.** This study was conducted as part of a larger study to determine prevalence of CHD and risk factors. The sample size was calculated using the formula  $N = Z_{\alpha}^2 \times P(1-P) / d^2$ , where  $Z_{\alpha} = 1.96$  corresponding to a confidence interval of 95% ( $\alpha = 0.05$ ), P or the prevalence of angina pectoris was taken to be 0.03 and the level of precision (d) was taken as 0.015 (12, 13). Since cluster sampling was intended to be used, effects due to cluster sampling were overcome by making a correction for the design effect (14) with multiplying sample size by 2 and a non-response rate of 20% was added since this was a community based study. Therefore, final sample size was calculated as 1192 and a total of 1200 subjects were recruited for the study. Figure 1 outlines data collection procedure of the study. The adequacy of this sample size was also assessed considering the expected prevalence of perceived access and HSR for CHD and the selected risk factors. The fact that CHD, HT, DM or dyslipidaemia co-exist and some of the cases were not diagnosed at the time of the study (12), it was reasonably assumed that 25 % of the total study population would have previously diagnosed disease and of that at least one half (i.e. 12.5% of the total sample) would have sought allopathic care for any of the conditions in the previous six months giving rise to a yield of 150 (1200\*12.5 %) persons. In the absence of local studies, considering 83.4% HSR among family planning users (15) the calculated sample size was 89, and considering an expected prevalence of 50% with good perceived access to ambulatory care for CHD and the selected risk factors, the calculated sample size was 109 at a precision of 5% and a confidence level of 95%. These were well within the expected number of care seekers (150).

Figure 1: Schematic diagram showing data collection procedure



**Sampling technique:**

A probability proportionate to the population size (PPS), cluster sampling method was used to identify the subjects. It was feasible to study 30 subjects in a cluster and the sample of 1200 was obtained as 40 clusters. The primary sampling unit of a cluster was a Grama Niladari Division (GND). The list of GNDs with population size was obtained from the Department of Census and Statistics and GNDs to be included for the study were determined by PPS sampling technique. Participants from a cluster were identified proportionate to the distribution of residents in the district, from the age strata (30-34) (35-39) (40-44) (45-49) (50-54) (55-59) (60-64) years and male to female ratio of one. Pre-testing of the study instrument was carried out among 20 patients with CHD or selected risk factors of CHD, in the MOH area Maharagama.

**Study instruments:** Data were collected using an interviewer administered questionnaire. All study participants were inquired on socio-demographic data and previous diagnosis of CHD or selected risk factors. Those previously identified with CHD or selected risk factors were inquired about perceived need for ambulatory care: perception of own health, experience of symptoms of illness, perception of seriousness of the conditions and perception of the benefits of treatment. ‘Access to Ambulatory care Questionnaire for CHD’ (AAQ-CHD) and Health System Responsive Assessment Questionnaire (HESRAQ- CHD) which were validated and culturally

adapted for ambulatory CHD service provision in Sri Lanka were administered to all people who had sought ambulatory care for either CHD, hypertension, diabetes mellitus or dyslipidaemia within the past 06 months. The AAQ-CHD assessed availability, accessibility, acceptability, accommodation and affordability of services. The HESRAQ – CHD assessed facilities at the clinic, respectfulness while obtaining services, convenience to get services, ability to select a place or doctor or treatment, maintaining privacy and communication with the doctor (15).

### **Data collection and analysis**

Permission for data collection was obtained from the Regional Director of Health Services Gampaha. The data were collected by the Principal Investigator with three trained pre-intern medical officers. All questionnaires were checked for completeness prior to data entry. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS). Univariate analysis was carried out to describe: patterns of utilization of ambulatory care, perceived need, perceived access and HSR related to ambulatory care. Appropriate regression analysis models were used to assess correlates of perceived access, utilization, access and HSR related to CHD and selected risk factors.

### **Ethical considerations**

Ethical clearance for the study was obtained from the Ethical Review Committee of the Faculty of Medicine, University of Colombo. The study was conducted according to ethical principles outlined in the Declaration of Helsinki. Written informed consent was obtained from the respondents assuring the confidentiality of the information they provide.

## **III. Results**

The response rate for the study population was 95.3% (1143). Of them a total of 271 persons had a previous diagnosis with CHD, hypertension, diabetes mellitus or dyslipidaemia. However, only 57.9% (n=157) had sought ambulatory care during the past six months. The remaining 114 (42.1%) reported to either purchase drugs from a pharmacy or on lifestyle modifications or neither. The 157 who sought ambulatory care were requested to identify the disease considered most important if multiple diseases were present and of them; 38.9% (n=61) diabetes mellitus, 35% (n=55) hypertension, 14.6% (n=23) dyslipidaemia and 11.5% (n=18) CHD were perceived as the most important disease.

Those who had sought ambulatory care comprised 65 (41.1%) females and 92 (58.6%) males. Two third of them were between the ages of 50-64 years (n=108, 68.8%). When asked whether they ever sought care following the initial diagnosis of any of the conditions, 22 (78.6%) with CHD, 92.3% (n=108) with hypertension, 96.9% (n=125) with diabetes mellitus and 92.2% (n=107) with dyslipidaemia responded positively.

Ambulatory care was sought mainly from non-specialists (80.3 %) with an almost equal percent visiting private (48.4%) and government sector (51.6%) facilities. Ambulatory care was utilized at least most of the time it was necessary by 86%. Of the 51.6% seeking care in the government sector 33.1% (n=52) had sought care at a secondary care level hospital. . Of those who accessed private sector, 38.2% had gone to private dispensaries or private clinics.

Seventy six persons (48.4%) were on treatment for more than 3 years, while 30.6% (n=48) and 10.2% (n=16) were on treatment for a duration of '1-3 years' and '6 months to 1 year' respectively at the time of the interview. Among the respondents, 68.8% (n=108,) had sought ambulatory care without any delay once they had decided to seek care. Among the remaining 49 persons (31.2%), the median duration of the time difference between deciding to seek care and actually seeking care was five (5) days (IQR 19 days). However, even among the 31.2% who delayed, for 26.0% the (n=41) the delay was less than one (1) month. The median frequency of visiting the doctor was once in four weeks (minimum 3 weeks to maximum 6 months). Of the respondents, 30% (n=47) had obtained medicine from a pharmacy defaulting their due visit to the doctor at least once during the past six months. Out of the 29 who were ever referred by the primary ambulatory care provider to a specialist during the past six months, 22 (75.9%) persons had complied with the referral.

Among the 271 with a previous diagnosis of CHD or selected risk factors, satisfactory or very satisfactory ratings were by 55% (n=152) for their own health status and 66.1% (n=179) for level of activity to utilize healthcare. Of them, 62.7% (n=170) had experienced symptoms or signs they perceived as due to these condition, 39.5% (n=107) perceived these conditions as either serious or very serious, 58.9% (n=158) thought that these conditions would even be fatal or very much fatal if untreated, 61% (n=166) of the respondents thought that these conditions could cause serious complications, 60.5% (n=164) of the respondents thought these conditions will cause long-term disability. A great majority of 91.5% (n=248) believed that they could benefit from the currently available treatment.

The utilization of ambulatory healthcare was regarded as ‘good’ (86.0%, N=135) or poor’ (14.0%, N=22) based on the respondents rating of attending ambulatory care when it was necessary. Ambulatory care for CHD and selected risk factors was perceived as always available by 36.9% (N=57), always accessible by 30.6% (N=48), always acceptable by 35% (N=55), always accommodative by 13.4 (N=12) and always affordable only by 3.2% (N=5). The question on overall satisfaction with access to ambulatory care for CHD and selected risk factors was rated as either ‘good’ or ‘very good’ by 82.8% (n=130) respondents.

The HSR of ambulatory care for CHD and selected risk factors was rated as ‘very good’ or ‘good’ by the majority: facilities at the clinic (n=124, 79%), respectfulness while obtaining services (n=143, 91%), convenience to get the services (n=117, 75%), ability to select the doctor or place or treatment (n=125, 79.6%), maintaining privacy of medical information (n=134, 84.7%), communication with doctors (n=130, 82.8%). Of the respondents 84.1% (n=132) rated overall health system responsiveness in relation to ambulatory care for CHD and selected risk factors of CHD as very good and good while 15.3% (n=24) rates as average. Table 1 and 2 outline the participant responses on perceived access and HSR to ambulatory care for CHD and selected risk factors respectively.

There was no significance difference in utilization of ambulatory healthcare by age, sex, level of education, employment state, monthly household income, overall perceived access or overall HSR. Satisfaction with affordability of the services (p =0.04), satisfaction with general health (p =0.03), seriousness of the illness (p =0.04) and benefit to self with available treatment (p =0.01) were significantly associated with utilization of ambulatory healthcare for CHD or selected risk factors of CHD.

Having attained a level of education of ordinary level or above (p=0.01) and having a perception of poor general health (p=0.03) were found to be correlates of good perceived access to ambulatory care for CHD or selected risk factors of CHD. On the other hand, an education level of below ordinary level (p =0.01), being unemployed (p = 0.02), having a high income (p =0.01) and seeking care in the private sector (p =0.001) emerged as correlates of good HSR.

**Table 1: Perceived access to ambulatory care in respect to ambulatory care among those diagnosed with CHD or selected risk factors of CHD(N=157)**

Domain	Always	Most of the time	Some times	Occasionally	Never	Total
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Availability	57(36.3)	83(52.9)	14(8.9)	3(1.9)	0(0.0)	157(100.0)
Accessibility	48(30.6)	44(28.0)	31(19.7)	25(15.9)	9(5.7)	157(100.0)
Acceptability	55(35.0)	76(48.4)	21(13.4)	5(3.2)	0(0.0)	157(100.0)
Accommodation	21(13.4)	69(43.9)	66(42.0)	1(0.6)	0(0.0)	157(100.0)
Affordability	5(3.2)	21(13.4)	39(24.8)	41(26.1)	51(24.8)	157(100.0)

**Table 2: Health system responsiveness in respect to ambulatory care among those diagnosed with CHD or selected risk factors of CHD (N=157)**

Item	Very Good	Good	Average	Poor	Very Poor	Total N (%)
	N (%)	N (%)	N (%)	N (%)	N (%)	
Facilities at the clinic	41(26.1)	83 (52.9)	32 (20.4)	1(0.6)	0(0.0)	157(100.0)
Respectfulness	46(29.3)	97(61.8)	14(8.9)	0(0.0)	0(0.0)	157(100.0)
Ability to select place/ doctor/ treatment	40(25.5)	85(54.1)	24(15.3)	7(4.5)	1(0.6)	157(100.0)
Maintaining privacy	41(26.1)	92(58.6)	24(15.3)	0(0.0)	0(0.0)	157(100.0)
Communication	38(24.2)	92(58.6)	19(12.1)	8(5.1)	0(0.0)	157(100.0)
Convenience to get services	23(14.6)	94(59.9)	35(22.3)	5(3.2)	0(0.0)	157(100.0)

#### IV. Discussion

Given the fact that CHD and the risk factors are all relatively serious conditions needing long term care, it was interesting to find that 40% of the diagnosed persons had not sought care during the past six months. This could either be due to some barriers for utilization or a low perceived need to seek care among this group. The high percentage seeking care from non-specialists and nearly 50% seeking care at secondary or higher level

of care indicates that a sizable proportion who are seeking care from non-specialists are doing so at higher level of health care facilities.

The findings of a previous study also confirm the fact that nearly one half of Sri Lankan patients seek care in the private sector (16). One third of those who are defaulting seeking care, obtain the regular prescription drugs from pharmacies, highlight barriers to seeking care despite the need to seek care. The median frequency of once in four weeks visiting the doctor confirms the common practice of reviewing patients with chronic disease once a month by most doctors and institutions at all levels of care.

In the present study, the great majority were satisfied with 'availability' and 'acceptability', of ambulatory care. Penchanskey and Thomas (1981) had observed similar findings. The domain 'accessibility' of services however, got relatively low satisfactory ratings (6). The greatest dissatisfaction was with high waiting time to obtain medicines. While these ratings are considerably low compared to the ratings in the study by Penchanskey and Thomas, it is also interesting given the high coverage of healthcare facilities in the country (6, 17). The ratings for 'accommodation' and 'affordability' got moderate ratings. Since healthcare service are free of charge at the point of delivery in Sri Lanka, this finding may be unexpected. However it may be explained by the fact, that about 50% seek ambulatory care in the private sector and hence find the cost unaffordable.

Respectfulness while obtaining services was rated very high by the respondents and similar results had been observed during the World Health Survey (WHS) (18). In the study by Perera (2011) the healthcare staff tended to treat patients with respect in the local context (15). Maintaining the privacy of the medical information was also rated high and the findings were the same in the study by Perera (2011), on family planning services (15). However, the WHS assessed the responsiveness in terms of all out-patient services and reported lower ratings. CHD service are sought repeatedly and creates a long term relationship between the patients and the healthcare providers and could have led to high ratings of patient opinions on privacy in the present study.

Communication was rated as 'very good' or 'good' by a high number of the respondents. Comparatively the findings if the family planning services study (15) revealed lower ratings and the findings of the WHS was also lower than the present study (18). There appears to be more dialogue between the patients with CHD and the healthcare providers, which is very important as much health education needs to be provided in relation to CHD and risk factors.

Ability to select a place or doctor or treatment was rated high by the participants. This shows that patients have more freedom to select CHD services in Sri Lanka. At the same time treatment is also more diverse in relation to CHD services rather than other services. However the WHS assessed, autonomy and choice of a provider and received lower ratings. This difference could be due to the fact that WHS was a general outpatient assessment and the present study assessed a more long term and focused healthcare providing setup (18).

Although socio-economic factors such as having attained a higher level of education were found to be correlates of good perceived access surprisingly economic status was not. Availability of free health services in Sri Lanka could be a reason for economic factors not predicting access to healthcare. On the other hand lower education level, unemployment, having a higher income and seeking care in the private sector emerged as correlates of HSR.

People with lower level of education having low levels of expectations from the healthcare system (6) may explain why lower level of education and being unemployed predicts high HSR, which in fact are the non-medical expectations of the client. People with higher level of income may be able to seek care from a provider of their choice who meet their expectations and therefore perceive the health system responding to their expectations.

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