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IDHAYAM KAAPOM THITTAM (IKT) – A GOVERNMENT OF TAMILNADU INITIATIVE TO PREVENT DEATH DUE TO CARDIAC ILLNESS - A DESCRIPTIVE STUDY

Pravin Thiagarajan [(1)], Abishek Jeevagan [(1)], Vidhya Viswanathan [(1)], Krishnaraj K [(1)], Selvavinayagam T S [(1)]

(1) Directorate of Public Health & Preventive Medicine

Abstract

INTRODUCTION : Chest pain is a common reason for primary care visits. About 4–7% of chest pain cases are due to acute coronary syndrome (ACS). Timely identification and management of suspected ACS in primary care should include determining the need for referral. Prompt screening, early identification of true cases and prompt management, especially with thrombolytic and aspirins with timely referral in "GOLDEN HOUR", the first 60 min of a heart attack is, of utmost importance. The Tamil Nadu government has initiated a cardiac care program called 'Idhayam Kaapom Thittam' to prevent sudden deaths due to cardiac illness.

OBJECTIVE : To understand the health profile of the beneficiaries under Idhayam Kaapom Thittam and their status of co-morbid conditions based on State data collected from June 2023 to May 2024.

METHODOLOGY : A descriptive study was done based on the secondary data analysis of the beneficiaries of the 'Idhayam Kaapom Thittam' Programme available in the State Data for the period from June 2023 to May 2024 across all districts of Tamil Nadu. Patients showing symptoms of acute coronary syndrome at primary health centres will receive ECG services, Cardiac emergency loading dose of drugs – Aspirin, Clopidogrel, and Atorvastatin, and followed by referrals to secondary or tertiary care facilities for further cardiac evaluation and assessment

RESULTS : Out of a total of 6090 beneficiaries under this scheme who were provided with cardiac emergency loading dose, 953(16%) were subjected for further evaluation and definite cardiac intervention done. Of them, 56% underwent angiography, 39% underwent thrombolysis, 23% had stenting done, 8% of them went for CABG.

CONCLUSION : Given the increase in non-communicable diseases and cardiac-related deaths, this program serves as a model initiative aimed at addressing the mortality and morbidity associated with cardiac illness, as well as improving the quality of life for every individual in Tamil Nadu.

KEYWORDS : Cardiovascular diseases, Sudden Cardiac Illness, Golden Hour

INTRODUCTION

Non-Communicable Diseases (NCDs) contribute to nearly two-thirds of the total burden of diseases in India. Cardiovascular diseases (CVDs) account for nearly half of total NCD deaths and around 28% of all deaths in the country.[1] This epidemiological transition is largely because of the increase in the prevalence of CVDs and CVD risk factors in India1. One in 4 deaths in India are now because of CVDs with ischemic heart disease and stroke responsible for >80% of this burden.[2] These diseases tend to affect patients in the most productive years of their lives and result in catastrophic social and economic consequences. By 2025, India is predicted to have the highest incidence of diabetes & heart diseases in the world & CVD will be the leading cause of death & disability in India.

CVDs and NCDs are at times incorrectly considered urban phenomena. Recent, epidemiological studies have found that the prevalence of risk factors and disease burden of NCDs and CVDs in rural areas is only marginally lower than the urban settings and is increasing at a rapid pace. This situation has evolved alongside a better scientific understanding of the risk factors for NCDs and CVDs, providing opportunities to develop, design, and implement a range of health interventions.

Chest pain is a common reason for consultation in primary care.[1,2] In 4%–7% of patients presenting with chest pain, the pain is caused by acute coronary syndrome (ACS).[1-3] Early identification and treatment of patients with ACS are important to avoid cardiac morbidity and mortality. The assessment and management of patients with suspected ACS in the primary care setting should include determining the urgency of the need for referral. If patients have had any ongoing symptoms within the preceding 24 hours, they should be referred immediately to an emergency department for assessment. An ECG should be performed immediately after assessing the patient with suspected ACS

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Corresponding Author: Pravin Thiagarajan
e-mail : docpravins@gmail.com

for identification of ST-elevation myocardial infarction (STEMI). However, it is to be noted that the 12-lead ECG has limited sensitivity in identifying MI without ST- elevation and >30% of the patients with non-ST-elevation myocardial infarction (NSTEMI) have a normal ECG.[11]

Considering the silent progression of the disease and the requirement of specific expertise for diagnosis and treatment, early diagnosis and treatment facilities are extremely limited at Primary Health Centres (PHCs). Prompt screening, early identification of true cases and prompt management, especially with thrombolytic and aspirins with timely referral in "GOLDEN HOUR", the first 60 min of a heart attack is, of utmost importance.

Patients reporting to the Primary Health Centres (PHCs)/ Health sub-centres (HSCs) with symptoms of acute coronary syndrome will be referred for ECG service and on consultation with the district nodal cardiologist, Emergency cardiac loading dose drugs containing Aspirin 150mg - 2, Clopidogrel 75mg - 4, and Atorvastatin 10mg - 8, a total of 14 tablets will be provided and referred to secondary/ tertiary care facilities for further management. This study aims to provide an overview of "Idhayam Kaapom Thittam" in Tamil Nadu. This study is conducted to understand the health profile of the beneficiaries under Idhayam Kaapom Thittam and their status of co-morbid conditions based on State data collected from June 2023 to May 2024.

The Government of Tamil Nadu has launched the 'Idhayam Kaapom Thittam' program to prevent deaths caused by cardiac illness. The program was launched in Tamil Nadu on June 27, 2023, at the Malumichampatty health sub-centre in the Madukkarai block by the Health and Family Welfare Department, as per the State Assembly announcement No:15 for the year 2023-24. The total project cost is 3.37 crores.

This study aims to provide an overview of the "Idhayam Kaapom Thittam" in Tamil Nadu. This study is conducted to understand the characteristics of the individuals benefitted under Idhayam Kaapom Thittam and their status of co-morbid conditions based on State data collected from June 2023 to May 2024 across Tamil Nadu.

RESULTS

A total of 6090 beneficiaries reported with symptoms of acute cardiac illness and were provided with cardiac loading dose drugs in the Primary Health Centre (PHCs) and Health Subcentres (HSCs). Of the 6090 individuals, 4007 (65.8%) were males and 2771 (45.5%) were between 45 to 60 years of age and 1395 (22.9%) were between 31-45 years of age. The age and gender distribution, comorbidities of the beneficiaries are shown in Table 1. Of the patients with co-morbidities 47.6% of the patients had Hypertension, about 14% had diabetes and 11.6% had both diabetes and hypertension. Regarding personal habits, 18.9% were smokers and 19.7% were alcoholics.

Table 2: Characteristics of beneficiaries of the Idhayam Kappom Thittam, June 2023 to May 2024, Tamil Nadu (N=6090)

Category		Frequency	(%)
Gender	Female	2083	34.0
	Male	4007	66.0
Age Distribution	≤ 30 years	180	3.0
	31 – 45 years	1395	22.9
	45 – 60 years	2771	45.5
	≥61 years	1744	28.6
Comorbidities	No Comorbidities	1637	26.8
	Hypertension	2897	47.6
	Diabetes mellitus	851	14.0
	Both HT & DM	705	11.6
Risk factors	Smokers	1146	18.9
	Alcoholics	1197	19.7

Among all those patients who were given cardiac loading dose and subsequently referred, 98.7% had recovered upon further treatment while 1.3% of patients died. The distribution of individuals received emergency cardiac doses by Health Unit District wise is given in Table 2. Of the total beneficiaries, the highest contribution is from Nagapattinam and lowest from Poonamalle HUD.

Table 2: Health Unit District wise beneficiaries in Idhayam Kappom Thittam, June 2023 to May 2024, Tamil Nadu (N=6090)

Name of the Health Unit District	Frequency (n)	%
Nagapattinam	458	7.5
Chennai	359	5.9
Erode	285	4.7
Viluppuram	287	4.7
Coimbatore	281	4.6
Tiruppur	254	4.2
Cuddalore	211	3.5
Tiruchirappalli	210	3.5
Tirunelveli	212	3.5
Tenkasi	209	3.4
Dharmapuri	199	3.3
Sivaganga	197	3.2
Thoothukudi	169	2.8
Attur	167	2.7
Dindigul	152	2.5
Tiruvallur	154	2.5
The Nilgiris	148	2.4
Kallakurichi	131	2.1
Chengalpet	116	1.9
Kanchipuram	113	1.9
Mayiladuthurai	112	1.8

Perambalur	102	1.7
Kanyakumari	95	1.6
Theni	96	1.6
Salem	90	1.5
Thanjavur	88	1.5
Tiruvarur	94	1.5
Namakkal	85	1.4
Sivakasi	83	1.4
Tiruvannamalai	85	1.4
Vellore	85	1.4
Madurai	72	1.2
Paramakudi	72	1.2
Karur	69	1.1
Kovilpatti	64	1.1
Palani	69	1.1
Pudukkottai	64	1.1
Ramanathapuram	69	1.1
Ranipet	62	1.0
Ariyalur	56	0.9
Krishnagiri	49	0.8
Tirupattur	40	0.7
Virudhunagar	40	0.7
Aranthangi	17	0.3
Cheyyar	15	0.3
Poonamallee	4	0.1

Individuals given with the loading doses were referred to the higher centres for confirmation and further cardiac evaluation and management. Of those referred, 953 (16%) were subjected for further evaluation and definite cardiac intervention done. Of them, 56% underwent angiography, 39% underwent thrombolysis, 23% had stenting done, 8% of them went for CABG.

There is no significant association between the age, or gender of the patient and the outcome of the study population who were given cardiac loading doses at healthcare facilities (p value>0.05).

DISCUSSION

Early detection of acute cardiac illness and timely intervention among individuals presenting with chest pain and other symptoms of acute coronary syndrome especially among middle-aged adults will be considered as a significant achievement under this program. Rienna G. Russo et al. observed the mortality benefits from early aspirin use based on the relative reduction in mortality after 28 days of AMI from the International Study of Infarct Survival-2 trial.

The use of aspirin within 4 hours of symptom onset led to a 25% reduction in 28-day cardiovascular mortality and starting aspirin between 4 to 24 hours of symptom onset led to a 21% reduction in 28-day cardiovascular mortality compared with no use.[4] The early oral aspirin administration, including self-administration, appears to have a raised short- and long-term survival ratio as compared to the late administration of aspirin in subjects with non-traumatic chest pain typical of an acute MI.[5] The 2021 ACC/AHA/Society for Cardiovascular Angiography and Interventions guidelines for coronary artery revascularization recommended aspirin loading in patients before PCI, which is a COR I and LOE B-R based mainly on trials conducted in the 1980s and found a significant reduction in angiographic thrombus formation complicating the procedure aspirin use compared to no aspirin

Similarly, the use of clopidogrel benefitted many patients, including those who were undergoing revascularization procedures and those who were not. It was also observed that those at low, medium, and high risk of cardiovascular events and those who received several proven therapies such as aspirin, lipid-lowering drugs, angiotensin-converting–enzyme inhibitors, and beta-blockers benefitted.

It was concluded that clopidogrel was useful as early as the first 24 hours after randomization in the study indicating that the oral loading dose was rapidly effective and significantly reduced the risk of the composite outcome of death from cardiovascular causes, nonfatal myocardial infarction, or stroke, as well as a range of related ischemic events.[6-9]

In a study by Gregory G. Schwartz et. al, it was concluded that the early initiation of treatment with atorvastatin 80 mg/d within 24 to 96 hours after an Acute Coronary Syndrome had a 2.6% absolute reduction and a 16% relative reduction in the primary combined end point of death, nonfatal acute MI, cardiac arrest with resuscitation, or worsening symptomatic myocardial ischemia.[10] Though we have references of studies endorsing on individual drug usage, no studies were found on using the combination of Aspirin, Clopidogrel and Atorvastatin in community level and primary care level settings.

This is an attempt to describe the Idhayam Kappom Thittam program in Tamil Nadu in its initial phase of implementation to understand the feasibility and its usefulness in detecting cardiac illness for early intervention and thus improving the mortality and morbidity status due to heart attack.

Around one-fifth of those given with the emergency cardiac loading dose had a cardiovascular intervention and this explains the importance of providing the emergency cardiac loading dose during the Golden hour – first 60 mins of heart attack, at the first health contact itself in determining the outcome.

Also, it is to be noted that providing loading dose drugs to non-cardiac illnesses might have complications like

gastrointestinal bleeding, especially in older persons[12], and thus the regular orientation of the medical professionals on identifying ACS and the chain of referral especially expert opinion from district nodal cardiologists as per the program guidelines is to be ensured.

The total number of tablets can be brought down from 14 numbers to 7 numbers, if the tablet Atorvastatin can be supplied as 80mg tablets than 10mg tablets.

"Idhayam Kaapom Thittam" by the Tamil Nadu government is one of the pioneer programmes of the state. With the rise in non-communicable diseases and increasing cardiac deaths, this programme is another prototype programme for the entire nation which can be implemented by other states owing to the impact it can create on mortality, morbidity, and quality of life of every common man in Tamil Nadu.

The follow-up information on diagnosis and treatment of few patients are yet to be updated and hence those individuals were not included in the analysis. Further analysis to understand the implications of comorbidities like hypertension, diabetes and other factors are essential and can be taken up.

A mixed method study can also be done gathering more information on the symptoms experienced by the beneficiaries, time duration taken to reach the referred centres and initiation of treatment, to estimate the confidence level of the community level field workers in delivering the cardiac emergency loading doses and studies to estimate its cost effectiveness in reducing cardiac morbidity and mortality.

CONCLUSION

This study tries to give an idea of the high-risk category patients with chest pain who approach health centres for cardiac loading doses. Males between 45 and 60 years of age with hypertension are at the highest risk of having chest pain. Also, this study shows the importance of providing a cardiac loading dose at the first health contact itself in determining the outcome.

"Idhayam Kaapom Thittam" by the Tamil Nadu government is one of the pioneer programmes of the state and it goes a long way in showing the well-developed healthcare service delivery system and its effective functioning. With the rise in non-communicable diseases and increasing cardiac deaths, this programme is another prototype programme for the entire nation which will be implemented by other states sooner or later owing to the impact it can create on mortality, morbidity, and quality of life of every common man in Tamil Nadu.

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