

Review Article

A transforming emergency care in Tamil Nadu: a narrative review of the Innuyir Kappom Thittam - Nammai Kakkum 48 Scheme

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ABSTRACT

In 1956, the WHO Advisory Group defined accidents as unpremeditated events resulting in recognizable damage. Road traffic injuries (RTIs) remain a global public health challenge, with 1.19 million deaths reported in 2021, equating to 15 deaths per 100,000 population. RTIs are now the leading cause of death among individuals aged 5-29 years. In India, estimates of road traffic accidents (RTAs) largely rely on indirect reporting systems such as the National Crime Records Bureau (NCRB) and the Ministry of Road Transport and Highways (MoRTH). According to NCRB 2022, Tamil Nadu recorded 17,884 fatalities, with Chennai reporting the highest number of RTAs among metropolitan cities. Reducing road traffic deaths is critical to achieving Sustainable Development Goal (SDG) 3.6, which aims to halve global traffic deaths and injuries by 2030. Recognizing the burden of RTAs and associated financial strain, the Government of Tamil Nadu launched the “Innuyir Kappom Thittam: Nammai Kakkum - 48” scheme on December 18, 2021. This initiative ensures cashless trauma care during the first 48 hours, golden period covering 81 treatment modalities up to ₹1 lakh per individual under the Chief Minister’s Comprehensive Health Insurance Scheme. Between December 2021 and March 2023, 1,53,091 victims benefited, with ₹135.01 crore spent. By January 2024, 2,09,561 individuals had received treatment. The scheme continues under assurance mode and justified to raise the ceiling to ₹2 lakhs. High utilization and strong public-private collaboration mark IK:NK-48; independent evaluations could establish scalable, equitable trauma care models globally.

Keywords: Accident, Road Traffic Accident, Nammai kakkum 48, Tamil Nadu

INTRODUCTION

Accident is “an unexpected, unplanned occurrence which may involve injury”. A WHO Advisory Group in 1956 defined the accident as an “unpremeditated event resulting in recognizable damage”. Accidents represent a major epidemic of non-communicable disease in the present century. It has its own natural history and follows the same epidemiological pattern as any other disease - that is, the agent, the host and the environment interacting together to produce injury or damage. And the majority of accidents are preventable. Injuries are commonly classified based on intentionality either intentional or unintentional injuries. The leading cause of injury death is road traffic injury comes under unintentional injury.

Accidents are definitely on an increase in India. Rapid increase in vehicular traffic has resulted in an increase in morbidity and mortality due to accidents. Deaths, disabilities and hospitalization due to injuries continue to have an impact of socio-economic loss to individuals, families, society and infrastructure.¹

Globally, there were an estimated 1.19 million road traffic deaths in 2021; this corresponds to a rate of 15 road traffic deaths per 100 000 population. And also, RTIs are now the leading cause of death for children and young adults aged 5 - 29 years. More than half of global RTDs are amongst pedestrians, cyclists and motorcyclists who are still too often neglected in road traffic system design in many countries.² In addition, there are as many

as 20-50 million non-fatal injuries and 10-20 million serious injuries requiring long periods of expensive care, nursing and treatment. From a young age, males are more likely to be involved in road traffic crashes than females. They are almost 3 times as likely to be killed in a car crash as young females.

Traditionally, India depends upon indirect reporting systems to estimate the burden of RTAs and its outcome. Reports published by the National Crime Records Bureau (NCRB) and the Ministry of Road Transport and Highways (MoRTH) are an important source of such information. However, these reports vary considerably from each other and do not give enough evidence to identify risk factors and vulnerable populations.³ India Road Accidents (55,442 cases) accounted for 97.4% of total traffic accidents in 53 mega cities during 2021. Chennai accounted for 9.1% (5,034 cases) of total road accidents reported, followed by Delhi City 8.1% (4,505 cases) and Bengaluru 5.8% (3,213 cases). However, the largest number of fatal road accidents were reported in Delhi City (1,172 deaths) followed by Chennai (998 deaths), accounting for 8.8% and 7.5% of total deaths due to road accidents respectively during 2021.¹

Delays in post-crash care of the road trauma victims are caused by several factors, with a major one being the general public's fear of legal consequences such as being blamed for the incident or facing police investigations. Additionally, private hospitals and medical practitioners often refuse admission due to concerns over medico-legal complications, prolonged legal procedures, and reaction of relatives or the public. Financial issues like lack of health insurance and inability to afford treatment further hinder timely care. Hospital-related challenges also contribute, including unnecessary referrals, shortage of beds and ventilators, uncertainty over payment responsibility, and repeated transfers between government facilities, often resulting in denial or delay of treatment.

Burden of road traffic accidents in Tamil Nadu

Tamil Nadu continues to face a significant public health challenge due to the high incidence of Road Traffic Accidents (RTAs), which contribute to considerable morbidity, mortality, and economic burden. As per the NCRB report 2022 (17,884), Tamil Nadu reported more RTA fatalities in 2021 (15,384) than in the previous three years, while Chennai topped (3,653) in RTAs among the metropolitan cities. Realizing the need for RTI surveillance, the Road Accident Data Management System (RADMS) was implemented in a few states in India in 2009, including Tamil Nadu. RADMS pioneered the integration of police, transport, and highways to collect data on RTAs and RTIs. Based on the learnings' from RADMS, the MoRTH launched an "Integrated Road Accident Database" (iRAD), which was developed by IIT-Madras later in 2021. Unlike the RADMS, the iRAD collects transport department key variables, including

insurance validity, fitness certificate (FC) validity, pollution certificate, etc., which RADMS omitted. The iRAD brings the integration of various departments, including the health, unlike RADMS, which was dominated solely by the police department.³

Reducing road traffic deaths is essential to achieving Sustainable Development Goal target 3.6, which aims to halve global road traffic deaths and injuries by 2030.

SCHEME IMPLEMENTATION

Considering the burden of RTAs and the associated out-of-pocket expenditure to the family, the Government of Tamil Nadu launched an innovative "Innuyir Kappom Thittam: Nammai kakkum - 48" (IK:NK-48) scheme by the Hon'ble Chief Minister of Tamil Nadu on 18th December 2021.

The scheme focuses on providing timely, life-saving medical intervention during the first 48 hours following an accident, considered the golden period for trauma care.⁴ Its primary objectives include reducing mortality and morbidity due to RTAs; ensuring immediate access to treatment; minimizing delays and unnecessary inter-facility transfers; reducing financial burden on victims and their families

This review explores the role and impact of the "Innuyir Kappom Thittam: Nammai kakkum - 48" (IK:NK-48) scheme in enhancing emergency medical care, its effectiveness in reducing morbidity and mortality associated with RTAs.

CORE FEATURES OF THE SCHEME

Under this scheme, 81 designated treatment modalities/procedures for damage control measures costing upto Rs. 1.00 lakh per individual will be extended on a cashless basis on assurance mode under Chief Minister's Comprehensive Health Insurance Scheme to all victims. Treatment is provided on a cashless basis through the Chief Minister's Comprehensive Health Insurance Scheme, irrespective of insurance status.

The scheme covers accident victims injured with Tamil Nadu, includes Tamil Nadu, other Indian states, migrant populations and foreigners.

Treatment is available through 609 empanelled hospitals, including 207 government and 402 private hospitals.

Service mapping of Ambulances to the nearest appropriate level I/II/III Trauma Care Center has been done district wise so as to reduce time delays and ensure "right patient is taken to the right hospital within the right time".⁵

Patients are triaged into five levels based on severity, from life-threatening resuscitation cases to non-urgent conditions (Table 2).

Table 1: Nammai Kakkum - 48 operational guidelines.

Serial no.	Guidelines
IKT Categories of patients who will benefit under NK-48	
1	Accident victims brought by good samaritans
2	Accident victims brought by family
3	Accident victims who come by themselves
4	Unknown accident victim brought by police
5	Mass casualty accident victims
IK_NK-48 exclusion criteria	
1	Assault injuries
2	Domestic injuries
3	Fall from height
4	Injuries due to fall of heavy object
5	Train traffic accident injuries
6	Animal bites
7	Self harm
8	Occupational workplace injuries
9	Thermal/chemical/burn injuries
10	Cracker blast injuries
IK_NK-48 will cover the following steps of emergency trauma care	
1.	Prehospital triage & transportation by ambulance along with in-transit car
2.	Resuscitation & stabilization in hospital emergency department
3.	Damage control surgeries
4.	Definitive care & rehabilitation

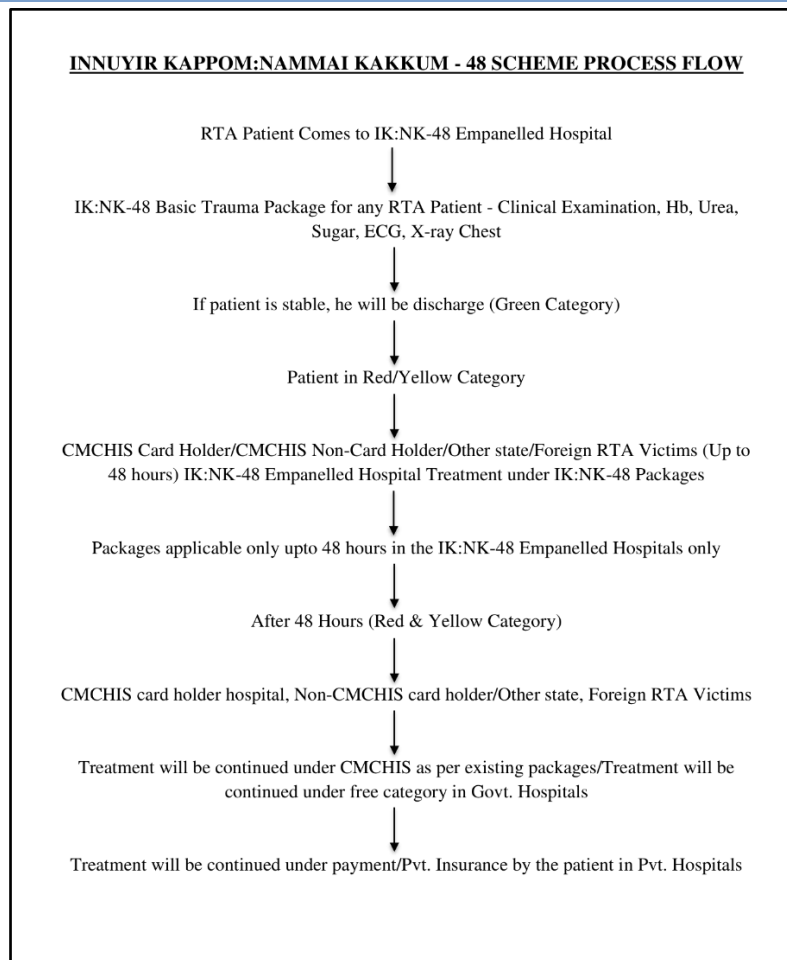
**Figure 1: Innuyir Kappom: Nammai Kakkum 48 scheme process flow.**

Table 2: Levels of triaging at the accident scene for guiding the EMT.

Level	Description of the acuity scale	Equivalent triage category
Level 1 - resuscitation	Patient battling for life in need of resuscitation/Severe hemodynamic compromise/Shock/Traumatic amputation of an extremity	Red
Level 2 - emergent	Seriously injured patient who requires rapid medical intervention/Penetrating head, chest or abdominal injury/Neurovascular compromise of an extremity	Red
Level 3 - urgent	Patient with stable vitals, but the presenting problem suggests further evaluation	Yellow
Level 4 - less urgent	Stable patient with lesser pain scale/Laceration/Puncture requiring sutures/isolated upper extremity injury	Green
Level 5 - non-urgent	Minor contusions, abrasions, lacerations not requiring closure, Non-urgent with minor complaint	Green

Table 3: The cost of care: mapping Tamilnadu road accident recovery.

No. of road accident victims treated			Approved amount in crores		
Government hospitals	Private hospitals	Total	Government hospitals	Private hospitals	Total
1,39,011	14,080	1,53,091	111.63	23.38	135.01

UTILIZATION AND BENEFICIARY REACH OF IK: NK-48 SCHEME (DECEMBER 2021 – MARCH 2023)

Table 3 represents since 18.12.21 upto 31.03.2023, a total of 1,53,091 Road Traffic Accident victims have benefited from this scheme. Since inception till now Rs. 135.01 Crore has been spent for this scheme. Out of these 1,39,011 people have been admitted in Government hospitals for insurance coverage for Rs. 111.63 Crore.⁶

As of January 10, 2024, the "Innuyir Kappom Thittam: Nammai Kakkum 48" scheme had provided treatment to a total of 2,09,561 individuals, reflecting its significant reach and impact. These beneficiaries received care under the assurance mode, with services delivered through both government and private hospitals empanelled under the scheme. Alongside the Chief Minister's Comprehensive Health Insurance Scheme and using the same insurer, the initiative facilitated 71,909 pre-authorization requests amounting to ₹60.37 crore, while the overall expenditure for treatments reached ₹182.55 crore underscoring the scheme's role in offering timely, cashless medical support to accident victims across Tamil Nadu.

ENHANCED BENEFITS AND POLICY EXPANSION

During the Budget Speech for the year 2024-2025, the Hon'ble Minister for Finance and Human Resources Management has made the announcement that "Government is taking earnest efforts to expand the pioneering "Innuyir Kappom Thittam: Nammai Kakkum - 48", which has saved invaluable human lives and has benefitted more than 2 lakh people so far. Considering the costs of treatment, the maximum threshold for availing free of cost treatment during the first 48 hours post-

accident will be raised from one lakh rupees to two lakh rupees".

The NK-48 scheme is continue under assurance mode for the upcoming policy year and justified to increase the ceiling limit for cashless treatment for the first 48 hours from Rs. 1.00 Lakh to 2.00 Lakhs under Innuyir Kappom Thittam - Nammai Kakkum 48 scheme. The existing packages are modified and revised also Nammai Kakkum-48 scheme guidelines are revised and implemented.⁷

PUBLIC HEALTH SIGNIFICANCE AND FUTURE DIRECTIONS

The IK:NK-48 scheme represents an important public health intervention addressing key barriers to trauma care. By ensuring cashless treatment during the first 48 hours, the scheme reduces financial and institutional delays that can worsen outcomes.

Early data suggest strong utilization and effective public-private collaboration. However, current evidence is primarily administrative. Independent evaluations are needed to assess the reduction in mortality rates, the impact on disability and functional outcomes, the cost-effectiveness and the equity in access across populations

Strengthening quality assurance, monitoring systems, and integration with rehabilitation services will be essential for sustained impact.

CONCLUSION

The Innuyir Kappom Thittam: Nammai Kakkum - 48 (IK:NK-48) scheme represents a significant advancement in trauma care delivery in Tamil Nadu. By ensuring

cashless, timely treatment during the critical first 48 hours after accidents, the scheme goes directly to overcome the delays and unaffordability, the tragic barriers that usually decide the survival and outcome of recovery in road traffic injury. Early implementation data demonstrate high utilization and effective public-private collaboration. Notably, independent assessments are needed to measure its actual impact on health outcomes. If further strengthened on these dimensions, IK:NK-48 could not only revolutionize emergency care delivery in Tamil Nadu but also act as a pathfinder for other Indian states and low- & middle-income countries intending to build scalable, equitable, and outcome focused trauma care systems.

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