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## Medical teacher in Tamil Nadu government sector: A role model for youngsters in India

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### Abstract

**Introduction:** Government hospitals in India generally have a negative opinion among public due to lack of sanitation and facilities but in Institute of orthopaedics and traumatology, Coimbatore government medical college hospital headed by Prof. Dr. S. Vetrivel Cherian is having facilities and patient care in par with corporate hospitals. Aim of the article is to teach and inspire young doctors about the methods and innovations adopted by him for the welfare of patients.

**Materials and Methods:** As a retrospective study from 2000–2022, the efforts of Dr. S. Vetrivel Chezian in the public sector and how he expanded the orthopaedic medical services at Coimbatore Medical College are covered in detail.

**Discussion:** He revolutionized trauma care services by leg bone surgery fracture fixation within 6 hours of admission even during covid 19 pandemic. He established modern lightweight artificial limb centre during covid-19 pandemic for the welfare of differently abled people without direct expenditure to the government under AB PMJAY thus making Coimbatore the first district in India with no waiting list for artificial limbs. He improved new born and children care by prevention and surgical correction of foot deformities (Clubfoot) every Thursday even during covid-19 pandemic and established ward for no attender destitute patients for the first time in India. He upgraded department of orthopaedics to Institute of orthopaedics and traumatology and improved patient care by providing various amenities. He also had passion for teaching which enabled him to publish books and encouraging post graduates by giving medals.

**Conclusion:** Various initiatives taken by Prof. Dr. S. Vetrivel Chezian not only improved the patient care but also changed the perception about government hospitals among public and also his actions serve as a role model for young doctors.

**Keywords:** Trauma, prosthesis, patient care, club foot

### Introduction

In the minds of the Indian people, government hospitals are typically portrayed as unsanitary, delayed and negligence in giving treatment, and lacking in facilities. However, that is not the case for the Institute of Orthopaedics and Traumatology at the Government Coimbatore Medical College. It is because of the man who at the Institute revolutionized trauma care services and services for the differently abled. Meet Prof. S. Vetrivel Chezian, the Director of the Institute of Orthopaedics and Traumatology, Government Coimbatore Medical College. His government service is an example for the younger generation of doctors in government service in India. The purpose of this article is to educate aspiring young medical professionals about the successful career path of an orthopaedic surgeon in India's government sector in order to improve quality of treatment and care for the common citizen living below the poverty line.

### Materials and Methods

The activities of Dr. S. Vetrivel Chezian in the government sector and how he developed the health care services in orthopaedics at Coimbatore Medical College are discussed in detail as a retrospective study from 2000–2022. How he upscaled trauma care, established ABPMJAY-TNCMHIS orthopaedic ward and orthopaedic ward for orthopaedic destitute without extra expenditure to the government, genesis of light weight artificial limb production centre without extra expenditure to the government, research activities, publication in various

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indexed journals, and infrastructural improvement on par with corporate hospitals are discussed in order to inspire young doctors in India to work efficiently in government institutions.

### Discussion

Prof Dr. S. Vetrivel Chezian was born on July 31, 1966, in Gurusamipalayam, Tamil Nadu, and was a Tamil-medium student. He did his M.B.B.S. at Stanley Medical College and his Master of Orthopaedics at Madras Medical College.

He started his government service in 1990 at the Primary Health Centre, Vaikuntham. In 2004, he established the first government-run arthroscopy clinic in Tamil Nadu, in Coimbatore. In 2005, he was posted as a Civil Surgeon in Orthopaedics in the District Head Quarters Hospital, Tirupur, and did research on skeletal tuberculosis.

He innovated a new, cost-effective indigenous method of surgical treatment for calcaneum fractures, the first of its kind in the world, for which he was awarded the Dr. Pandey Gold Medal by the Indian Foot and Ankle Society. Appreciating his good work, the Royal College of Physicians and Surgeons of Glasgow conferred the F.R.C.S. in 2013.

Environmental health remains a challenge for developing countries like India. He did a Doctor of Philosophy in environmental health, under environmental sciences and orthopaedic surgery, and was awarded a PhD in 2014.

He published the first case of diaphyseal involvement in multifocal osteomyelitis in the world. He published the first case report in India regarding osteonecrosis of the head of the femur due to human immunodeficiency virus drugs among HIV-infected patients.

In 2017, he was the organizing secretary of the Tamil Nadu State Orthopaedic Conference, and in 2018, he was the organizing co-chairman of the Indian Orthopaedic Conference's scientific committee.

Since the beginning of his career, he has had special consideration for the differently abled and has been more inclined to work for their welfare.

### Revolution in trauma care – surgery for leg bone fractures within 6 golden hours of admission even during the covid-19 pandemic

Our country has many road traffic accidents. Most road accidents involve 2-wheelers, which often causes leg bone fractures. Most of these patients come from low-income families and are the sole breadwinners hence the family will suffer physically, mentally, and financially.

Agents would take advantage of this situation by transferring patients from the government hospital to private hospitals, claiming that they would receive faster care. The family of the patient is brainwashed without being informed of the financial repercussions of their decision.

Dr. S. Vetrivel Chezian wished to alter the status quo and came up with the novel idea of providing free surgery for leg bone fractures within six hours ("golden hours") of admission [Figure 1] under the Tamil Nadu Accident and Emergency Care Initiative (TAEI) and the AB-PMJAY in 2017 [1, 2]. To encourage patients to utilize the AB-PMJAY program, a state-of-the-art, air-conditioned orthopaedic postoperative ward is made available. This serves as a model for other medical college hospitals seeking to enhance trauma care.

With this model, hospital stays are shortened, patients are able to return to work sooner, patients getting transferred to private hospitals and family financial loss is prevented, bed occupancy and government expenditures are reduced with early discharge, and money is generated from AB-PMJAY by

doing surgeries, which can be used for infrastructure development.



**Fig 1:** Leg bone fracture fixation within 6 hours of admission and fully equipped emergency OT with C arm.

The first Tamil Nadu medical college hospital to perform 6-hour leg bone fracture surgery is Coimbatore medical college hospital. The COVID-19 pandemic did not stop this 2017 initiative. With improved surgical care even patients' inflow from Dindigal, Tirupur, Erode, Kerala, and Karnataka have increased.

### Establishing modern lightweight artificial limb centre during covid-19 pandemic for the welfare of differently abled people without direct expenditure to the government under ayushman bharat – pradhan mantri jan arogya yojana (AB-PMJAY)

No artificial limb centre has existed at Coimbatore Medical College and Hospital for 50 years. Given their health and finances, amputees had to travel 400 kilometres to Chennai for free prosthetics. The patient would pay lakhs for a private prosthesis. This made them dependent on others for daily tasks. At Coimbatore Medical College Hospital, many patients lose limbs each month due to diabetes and road traffic accidents.



**Fig 2:** Before and after images of establishment of artificial limb centre at CMCH.

To settle this issue locally in Coimbatore and to ensure all our patients get the independence to perform their own functions and duties and return to work, a team headed by Prof. S. Vetrivel Chezian, Director, Institute of Orthopaedics and Traumatology, was formed. Even during the difficult COVID-19 pandemic situation, the team, with their hard work, managed to establish an artificial limb centre at the Coimbatore Medical College and Hospital in a time span of 60 days at a cost of 15 lakh rupees [Figure 2] [3, 4].

The uniqueness of the project is that the entire cost for the infrastructure, equipment, and raw materials was covered by the orthopaedic department's fund generated by treating fractures and other orthopaedic diseases under the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) package.



**Fig 3:** State of art Orthopaedic ward under ABPMJAY for locomotor disabled patients

The establishment of a 10-bed orthopaedic ward [Figure 3] for patients from other districts. Patients are trained by a physiotherapist, an occupational therapist, and a psychiatrist after the prosthesis has been fitted. Patients are only discharged when they are able to perform their activities independently.



**Fig 4:** Below knee light weight prosthesis fitted for amputee.

Patients can now receive prostheses [Figure 4] at the Coimbatore Medical College Hospital, where a new artificial limb centre has recently opened. Additionally, patients from Erode, Nilgiris, Salem, and Tirupur are served by this facility. Since artificial limb fitting is already included in the Ayushman Bharat Pradhan Mandri Jan Arogya Yojana (AB-PMJAY) package in Tamil Nadu, this will be an ongoing process for which AB-PMJAY will cover the recurring costs [Table 1]. This will serve as a model for other medical schools in India to assist those with special needs.

**Table 1:** Data of prosthesis fitted at CMCH

| Prosthesis               | Beneficiaries | Claim amount (Rs.) | Actual cost (Rs.) | Profit to the government (Rs.) |
|--------------------------|---------------|--------------------|-------------------|--------------------------------|
| Transfemoral prosthesis  | 29            | 14,88,524          | 8,00,400          | 6,88,124                       |
| Transtibial prosthesis   | 62            | 15,06,450          | 6,32,400          | 8,74,050                       |
| Trans humeral prosthesis | 6             | 4,22,400           | 2,47,312          | 1,75,088                       |
| Trans radial prosthesis  | 5             | 2,01,000           | 78,000            | 1,23,000                       |
| Total                    | 102           | 36,18,374          | 17,58,112         | 18,60,262                      |

Until now, private players have reaped the benefits of the government scheme. Now, with this Coimbatore model, these benefits are diverted to government hospitals so that they can be used to improve the infrastructure and facilities in these hospitals.

**Making Coimbatore the first district in India with no waiting list for artificial limbs**

To reach the people, he coordinated with the Coimbatore district differently abled welfare office, and all the individuals on the waiting list were fitted with lightweight artificial limbs under AB-PMJAY, thus making Coimbatore the first district in India without a waiting list for artificial limbs [3, 4]. Over the course of two years, more than 100 differently abled people were fitted with artificial limbs and made independent [Figure 5].



**Fig 5:** Before and after images of patients benefitted from light weight artificial limb prosthesis

Recognizing this exceptional work, the then-Honourable chief minister of Tamil Nadu extended his appreciations on social media.

**Newborn and children-prevention and surgical correction of foot deformities (clubfoot) every thursday even during covid-19 pandemic**

Prof. S. Vetrivel Chezian has been keen on preventing deformities and has been actively involved in clubfoot correction in new-borns and children. He conducts a clubfoot correction clinic every Thursday [Figure 6] and has corrected deformities in more than 500 children since 2011.



**Fig 6:** Club foot clinic on every Thursdays at CMCH.

He ran the clubfoot correction clinic [Figure 7] even during the COVID-19 pandemic, taking all necessary precautions to keep the children safe from infection. Around 61 children with foot deformities have been treated during this difficult time, which is a big relief for the helpless parents during the COVID-19 pandemic.



**Fig 7:** Before and after images of babies benefitted from club foot clinic.

**Establishment of no attender ward for differently abled destitutes first in india under ab-pmjay for better care and surgical treatment**

Today in the modern world, after a fracture, geriatric patients are abandoned by their families. In order to alleviate their sufferings, Prof Dr. S. Vetrivel Chezian came up with the novel idea of having a no-attender ward for destitutes.



**Fig 8:** Exclusive ward for no attender patients with care taker under ABPMJAY.

In 2017, a 20-bed orthopaedic ward was started to treat fractures among them [Figure 8]. This is the first among all the government hospitals in India and is functional through AB-PMJAY.

These patients are provided with quality medical treatment, surgical treatment, and rehabilitation until they are able to do their daily activities independently.

Four caretakers are posted, and their salaries are paid using AB-PMJAY funds. He has so far treated over 500 differently abled destitutes with locomotor disabilities through AB-PMJAY.

**Working for the trauma victims even during COVID-19 pandemic**

Almost all hospitals in Tamil Nadu were converted into COVID hospitals during the COVID-19 pandemic. Due to the fear of COVID, private hospitals closed their doors for regular services. Even in government hospitals, the entire hospital was dedicated to COVID, and all specialty services were nearly halted. The trauma patients had nowhere to go for treatment during this critical situation. The patients and their families were in excruciating pain because they had no idea what to do.

Prof. S. Vetrivel Chezian recognized the plight of the trauma victims and performed emergency and elective orthopaedic surgeries on them. As a result, even during the COVID-19 pandemic, surgical treatment was not denied or delayed, saving many lives and preventing permanent disabilities.

**Contribution during covid-19 pandemic**

He was the vice chairman of the COVID-19 pandemic manpower committee for doctors and was in charge of food for COVID warriors, ensuring that services to COVID victims and warriors were uninterrupted.

He performed emergency and elective surgeries on trauma victims when private hospitals feared treating them and other government hospitals only offered COVID and specialty care. As the first surgeon in India, he designed the Coimbatore Orthopaedic Surgical Fixation Protocol in the COVID-19 pandemic [5].

Even during the COVID-19 pandemic, he conducted regular clubfoot correction clinics to prevent future deformities and disabilities.

He persuaded the dean to award certificates of appreciation to

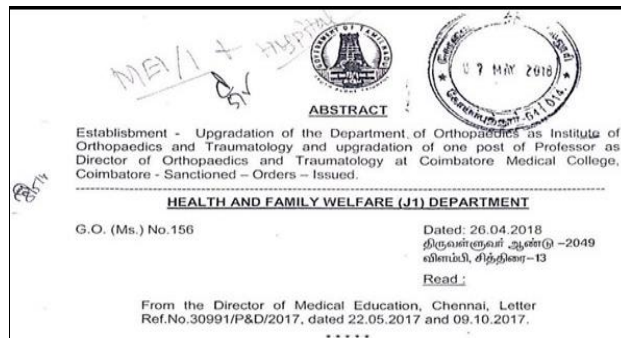
all hospital employees to recognize and encourage them to assist COVID victims.

**Upgrading the department of orthopaedics as institute of orthopaedics and traumatology**

Prof. S. Vetrivel Chezian became Head of Orthopaedics at Coimbatore Medical College Hospital in 2017.

Prof. S. Vetrivel Chezian represented the government to upgrade the Department of Orthopaedics at Coimbatore Medical College Hospital to the Institute of Orthopaedics and Traumatology in April 2017.

The government accepted his proposal and upgraded the Department of Orthopaedics at Coimbatore Medical College Hospital to the "Institute of Orthopaedics and Traumatology," [Figure 9] which will benefit young surgeons and patient care.



**Fig 9:** Government order for upgradation of Department of Orthopaedics to Institute of Orthopaedics and traumatology.

Since then, he has tirelessly worked to improve the institute's facilities to provide patients with corporate hospital-quality care.

**State-of-art post-operative orthopaedic ward for Ab-PMJAY first time in India – Coimbatore a role model**

Prof. S. Vetrivel Chezian was instrumental in setting up a state-of-the-art postoperative orthopaedic ward for AB-PMJAY.



Amenities like 12 new ICU cots, screens in between the cots [Figure 10] to maintain privacy of the patients and help prevent infections, air conditioners, drug trolleys, televisions, and radio facilities for the patients [Figure 11]. This kind of facility is not available in any of the government hospitals in India, and all these facilities have been made available without any expenditure to the government.



**Fig 11:** Television and radio facilities for patients at wards.



**Fig 12:** 24 hours RO water system, Hot water facility and CCTV facilities at wards.



**Fig 13:** Attender cot and attender shelf facilities.

In addition, he worked to provide all the essential facilities for the patients and attendants, including a 24x7 hot water and drinking water facility, 24x7 CCTV surveillance, an attendant shelf, attendant cots, and a digital x-ray documentation room [Figure 12] [Figure 13]. He also increased the bed strength of the institute to 150 beds to avoid patients lying on the floor, which is way above the required strength of 90 beds as per the National Medical Commission.

**Passion for teaching**

Prof. S. Vetrivel Chezian has a special interest in teaching and has been constantly working towards student welfare.

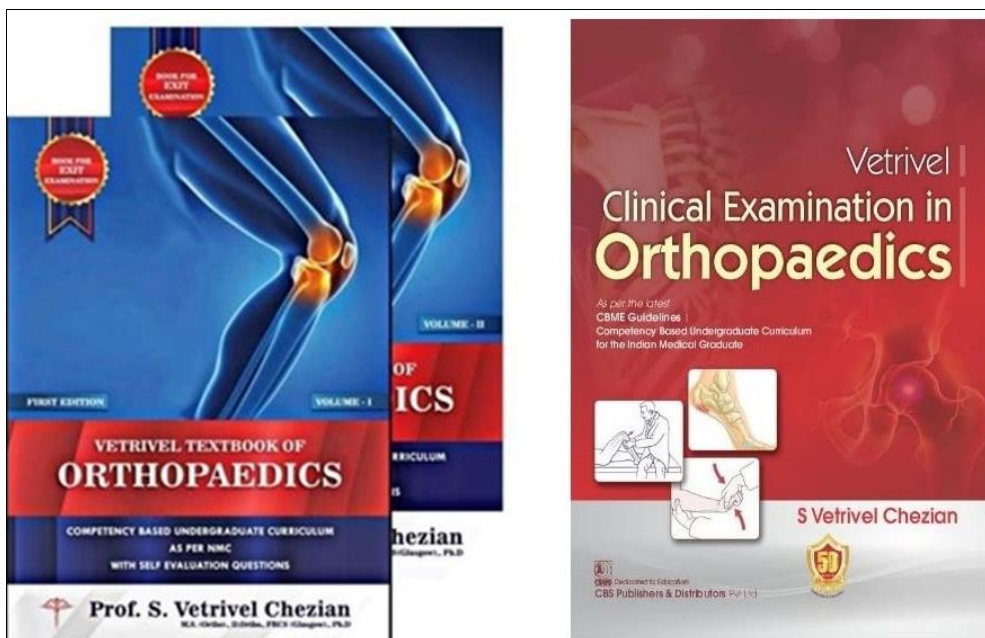
In order to attract the undergraduate students towards orthopaedics, five medals in orthopaedics in the names of orthopaedic legends were created and are being given every year to the final-year MBBS students under his guidance, without any financial implication to the government.



**Fig 14:** E Library facility for postgraduate students.

In order to update the knowledge in orthopaedics for the postgraduates, four medals in the names of legends for the best thesis paper, the best publication in trauma, the best publication in basic sciences and research, and the best paper published in the Index journal, along with a Rs. 10,000 cash prize with credit points, are created and conducted by him every year among all the medical colleges in Tamil Nadu. In addition, he set up an e-library [Figure 14] for the postgraduates to learn from and update their knowledge regarding the latest publications in orthopaedics.

**Published books to educate students**



**Fig 15:** Orthopaedic textbook and clinical examination book as per latest NMC curriculum

He published "Vetrivel's textbook of orthopaedics," based on the revised basic curriculum of the National Medical Commission, for the benefit of the students. This is the first book in India based on the revised curriculum and he also published "Vetrivel Clinical Examination in Orthopaedics" to

help students learn clinical examination in a more straightforward manner [Figure 15]. He published a book to update the knowledge on biomedical waste management, which is the most neglected part of any healthcare system in the world.

### Academic excellence

Prof. S. Vetrivel Chezian has been actively involved in research activities and has also motivated the postgraduates for the same. He has conducted various research projects and published many papers in various indexed journals.

He invented a new, cost-effective method of treatment for heel bone fractures—the first of its kind in the world [6].

He created the "Vetrivel Trauma Score," a new scoring system for determining the viability of limbs in open fractures that is the only method in the world that is evidence-based [7].

He conducted a study on the genetic pathway of clubfoot and identified gene mutations, which will be used as a tool in genetic engineering to prevent clubfoot in the future [8].

He designed the Coimbatore orthopaedic surgical fixation protocol in the COVID-19 pandemic—the first in India [5].

Earlier, multifocal osteomyelitis was thought to involve the metaphyseal region of the bone. Dr. S. Vetrivel Chezian discovered and published the world's first case of diaphyseal involvement multifocal osteomyelitis [9].

He published the first case report in India regarding osteonecrosis of the head of the femur due to antiretroviral drugs among HIV-infected patients [10].

He published a research paper on the treatment of partial rotator cuff injuries using platelet-rich plasma [11].

He did research on the Bohler's and Gissane angles in the heel bones of the Indian population and published it in an indexed journal, and this has been taken by the European society as the Indian heel angle [12].

Many such research projects have been conducted and published by him in various journals. Owing to his interest and experience in research, the Tamil Nadu Orthopaedic Association (TNOA) has made him the chief editor of their "Journal of Orthopaedics and Joint Surgery" to improve the standard of orthopaedic research in Tamil Nadu.

### Awards

Prof. S. Vetrivel Chezian added many feathers to his cap for his good deeds. Some of his awards worth mentioning are Tamil Nadu Orthopaedic Association awarded the Vyaghreswarudu Gold Medal in 1999, F.R.C.S. Conferred by the Royal College of Physicians and Surgeons of Glasgow (2013), Tamil Nadu Scientist Award in 2016, Gold medal by the Indian Foot and Ankle Society in 2017 for his innovation in the treatment of calcaneal fractures, Best Doctor Award by Rotary Club of Coimbatore in 2017, The IMA Tamil Nadu 2017 Best Doctor Award for Academic Excellence, 2018 Department of Health and Family Welfare Best Doctor Award, Academic Appreciation Award by Tamil Nadu Orthopaedic Association 2017-18, Educational Excellence Award by IMA Coimbatore 2018, Life time Achievement Award (2018) by Rotary Club of Mettupalayam, The Honourable Chief Minister of Tamil Nadu awarded the Best Doctor Award from The Differently Abled Department for 2019 and Tamil Nadu Orthopaedic Association Gold Medal for Best Publication in 2021.

### Conclusion

Over the course of his career, Professor S. Vetrivel Chezian implemented a number of programs and worked to enhance existing services with the goal of improving access to high-quality medical care for individuals with a range of disabilities and poor individuals. This has not only helped improve the public's perception of government hospitals, but it has also served as a model for other government medical colleges in India. His actions serve as motivation for future

medical professionals to improve the quality of care they provide to the general public.

### Conflict of Interest

Not available

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