Story of Tribal Speciality Hospital Palakkad

An example of best agricultural and waste management practices

DEPARTMENT OF HEALTH SERVICES KERALA

NATIONAL HEALTH MISSION
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healthy energy initiative

CONTENT

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Background

Palakkad is one of the fourteen districts of Kerala and is the largest district, with a total area of 4,480 km^2 (1,730 sq mi) which is 11.5% of the state's area. Of that 1,36,257ha is forest area, 13,602ha is cultivable area, and 3,037ha is barren land. Palakkad is bordered on the northwest by the Malappuram District, on the southwest by the Thrissur District, on the northeast by Nilgiris District, and on the east by the Coimbatore district of TamilNadu[1]. Its current population is 28,09,934 [Rural – 21,33,124, Urban – 6,76,810] with a population density of 627 Persons per sq Km and a literacy rate of 89.31% [Scheduled Castes – 14.37, Scheduled Tribes – 1.74][2]

The district receives sufficient rainfall and it receives more rain than the extreme southern districts of Kerala. There are many small and medium rivers flowing across the district. Bharathapuzha/Nila River [Tributaries: Kalpathypuzha, Gayathri puzha, Kannadipuzha, Thuthapuzha] and Bhavanipuzha is a tributary of Kaveri River, also flows through the district. There are 9 reservoirs built across these rivers, the largest in volume capacity is the Parambikulam Dam.[3]

Administrative Structure of Palakkad

The city of Palakkad is the district headquarters. At present, the Palakkad district consists of 2 revenue divisions, 6 taluks, and 157 revenue Villages. There are 7 municipalities, 13 block panchayats, 88 village panchayats and 2,689 wards in the district.

Attappadi Block Panchayat

The geographical area commonly referred to as Attappadi is a rural development Block covering three Grama Panchayats –

- Agali
- Pudur
- Sholayur

It is part of Mannarkkad Taluk in the Palakkad district. Agali grama panchayat has 21 wards, of that Kottathara is a ward[4] . Attappadi is an extensive mountain valley with a combination of people from the Scheduled Tribe (ST), general category, and Scheduled Caste (SC). Because of the inward migration of settlers from the mainland of Kerala, the tribal population of Attappadi has decreased from around 90 percent in 1951 to around 40 percent, in 2001.

There are mainly three Communities of tribes living in Attappadi. They are Irulas, Mudugas and Kurumbas. They are the primitive tribes living here. Most of them are engaged in agriculture mainly horse gram, hyacinth bean, and pigeon pea. They are frequently experiencing issues with animal attacks from Elephants and wild boar on their agricultural lands. Some of them are engaged in jobs offered by self-help groups. Currently, there are 192 hamlets in Attappadi.

The respondent to the study is the Medical Superintendent and the infection control nurse of the Government Tribal Speciality Hospital.

Tribal Speciality Hospital

The hospital is located in Kottathara, Attapadi. It was built in the year 1996 under the leadership of Dr.Prabhudas R. who is the former superintendent of the Government Tribal Speciality Hospital. The hospital was developed as a speciality hospital for the tribal population in Attapadi.

The hospital is located on a total of 5 acres of land. Where one and a half acre is used for agricultural purposes, nearly 2 acres has all its building, and the rest of the campus is full of trees. It has a total of eight buildings with 54 beds. The hospital functions 24 hourly and has nearly 375 outpatients per day and 92 inpatients per day.

Since this hospital lies in the center of Attappadi, it is accessible to all people. People who are residing inside the reserve forest are mostly finding it difficult to reach the hospital, but they are the ones who mostly avail the service. The hospital has all the speciality services especially for mothers and children to reduce maternal and newborn mortality. Patients inside the reserve forest are taken in bamboo hammocks and walk for 3-4 hours, to reach vehicles (jeeps) followed by being taken in an ambulance to the hospital. Earlier there were more home deliveries and infant deaths in these areas. But now gestational mothers living in these localities are encouraged to get admitted one month before their delivery date. Thus, there were no home deliveries in this area last year.

This hospital is one of the main hospital campuses in Kerala, which is full of greenery. The hospital has included food and waste management as a key component in its health care system. This case study is primarily focused on agricultural and waste management practices in the hospital.

Agricultural Practices in the Hospital

The hospital sets a great example for other health facilities in the agricultural practices carried out. There is a wide variety of seasonal crops, vegetables, fruits, herbal medicines, etc. The hospital gets crops from the agricultural department. In the one-and-a-half acres of land, there are cultivations of the plantain trees, coconut, jackfruit, mango, tapioca, drumstick, neem trees, Custard apple, Jamun trees, lemon trees, gooseberry trees, pomegranate, badam, passion fruit, long pepper, Alovera, etc. They have a wide range of spinach plants, that includes star gooseberry (mysore cheera), green spinach (pacha cheera), ceylon spinach (sambar cheera), agathi spinach (agasthya cheera), tree spinach (chayamanasa) etc.

Cultivation of spinaches, fruits and vegetables

Spinaches is used mainly for pregnant mothers with Intrauterine growth restriction, Low birth weight and for anaemic and sickle cell patients. The agricultural products are cooked for patients and also sold to patients, staff etc at a low cost. Hospital-based agriculture was also for promoting the rehabilitation of psychiatric patients.

Herbal Garden in the Hospital

Biogas plant in the hospital

The cultivation completely follows organic farming, with cow dung compost etc. The hospital has a cow as livestock. Milk is provided for patients and staff in the hospital. Cow dung is used to produce biogas fuel and it is used in the kitchen for cooking.

Pond with Guppy fish

The source of water in the hospital is the Bhavanipuzha, the river running next to the hospital. Water in the hospital is treated with an RO plant and used for sanitary purposes and the wastewater from the hospital is treated and used for agricultural purposes. The Hospital has an artificial pond with guppy fish to control mosquito breeding.

Hospital Canteen


Staff cook free meals for patients

The hospital authority has employed a woman from the tribal village to take care of the agriculture. Panchayat also extend their support by providing workers from self-help groups. They do landscaping, drainage, weed removal etc. Traditional equipment are used in the farmland. It includes machete (vettukathi), pullrandi, valiya thumba, cheriya thumba, kambipara, chedivetti, mannumanthi, spraying machine etc.

Agriculture has a positive impact on patients coming to the hospital. For tribal patients, the food is provided for free all three times. Eggs and milk are provided for all patients free of cost. For patients with RsBY/BPL/JSSK cards food is free for two times. The hospital has a program called "Vishapurahita Ashupathri"(Hunger free hospital Initiative) where free lunch (mostly Kanji) is provided for bystanders of the patients by the hospital management committee. Because of no out-of-pocket expenditure for patients and bystanders, patients especially the tribal population come to the hospital for treatment. Even patients refuse to go after the treatment is completed.

Food waste is used to produce biogas and agricultural waste is used for composting and used as manure for plants. The financial crisis is the major challenge faced by the facility in continuing the program. Currently, the cost of agriculture is completely taken care of by the Hospital Management committee.

Hospital Waste Management System

The hospital is a "Zero Waste Campus", where they conserve resources by means of responsible production, consumption, reuse and recovery of materials. The hospital has general waste and hazardous waste produced on campus. Hazardous waste includes toxic, flammable, corrosive, infectious, pathological, medical sharps, and even radioactive waste and general waste includes paper, plastics, etc.

Colour-coded bins for waste collection

Waste Management

Collection

Hospital has a colour coding system for the segregation of waste. Yellow, red, blue, and white are the four colours that are followed.

Yellow- Postoperative body parts, placenta, plaster of paris, pathological waste, cotton waste, dressing materials, beddings, body fluid contaminated

paper and cloth, face mask, cap, cytotoxic, expired and discarded medicines, microbiology and biotechnology lab wastes.

Red- syringes without needles, IV sets, catheters, gloves, urine bag, dialysis kit, and IV bottles.

White- Needles, syringes with fixed needles, blades and scalpels (use 1% hypo chloride solution for disinfection glass and metal sharps). Puncture-proof containers are provided to avoid needlestick injuries.

Blue- Glass (Broken glass, Ampules, Labslides), Metals (Nails, implants),

In addition to the above-mentioned colour codes, pink bins are used for collecting paper waste and green bins are used to collect food waste.

Awareness posters are placed on the wall of the hospital

Segregation and Storage

One staff is allotted for collecting waste from all the departments in the hospital. Waste from the wards is segregated at its point source and transported in a closed bin and stored in the storage room. Storage rooms are painted according to the colour coding. Waste generated from patients with hepatitis B surface antigen (HBsAg) and HIV (human immunodeficiency virus) are labelled separately and marked with a permanent marker with details of the date and department.

During the collection, the waste is weighed in the storage room and recorded in a Biomedical Waste Management Register. A ward-based register is maintained in the hospital, which has information on the name of the department, date and weight of the waste. The amount of waste depends on the increase in inpatient admission.

Tentative weights for 3-day waste
Red waste - 25-26 kg
Yellow - 25 -30kg
Glass- 4kg
Sharp - 1.5 to 2 kg


Waste storage room

Disposal

Hazardous waste is collected by the Common Biomedical Waste Treatment and Disposal Facility at Palakkad. A vehicle from the unit comes to the hospital and collects the waste twice a week. The Indian Medical Association – Kerala State Branch has taken up the challenge of disposal of hospital waste by establishing a Common Biomedical Waste Treatment and Disposal Facility at Palakkad in accordance with the provision of the Biomedical Waste (Management and Handling) Rules 1998 and with the approval of Kerala State Pollution Control Board[5]

General waste is collected by the Panchayat (Haritha Karma Sena) once a week. Haritha Karma Sena is a professional team consisting of Green Technicians and Green Supervisors mainly Kudumbashree Women who will be assigned the responsibility of collection, transportation, processing, recycling/disposal and management of waste materials in association with respective LSGs and Suchithwa Mission[6].

Food waste produced in the hospital goes to wastewater produced in the hospital, which gets treated, filtered and used in the vegetable garden. Wastewater that is produced inside the campus is recycled similar to Karnataka liquid waste management model by filtering water with bleaching powder, charcoal, sand etc followed by chlorination and using it for agriculture. Leaves and paper wastes are mixed well with cow dung and are also used for compost for agriculture. For having cow dung, a cow was there as livestock.

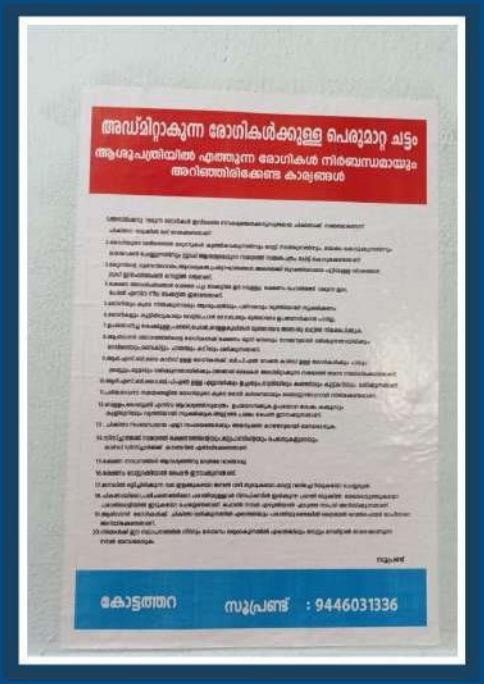
Training

Staff in the hospital undergo training for waste management by the infection control team on a weekly basis. Training sessions are also conducted for newly joined staff. The hospital has continuous monitoring of waste segregation. If there is any misplacement of wast

-e, the infection control team will identify the respective department and training sessions will be given to them to ensure this mistake is not repeated. The hospital also maintains training materials on hand hygiene, which include safety precautions, biomedical waste management, hospital-acquired infections, spillage management, needlestick injury etc.

Awareness sessions are conducted to patients on biomedical waste management at the time of admission. Wall posters are placed throughout the hospital in local languages with pictorial representations of colour-coded bins so that patients do not confuse as to which bin they have to put the waste in. Announcements are made three times a day in English, Malayalam and Tamil on the colour coding of waste disposal.

Awareness posters are placed on the wall of the hospital



Cost

The payments are made to the disposal primarily based on the weight of the waste. It is calculated based on the number of beds, number of days and weight of waste and tax amount.

Disaster situation

During COVID times, there was an increase in waste production. Staff in the hospital wear personal protective equipment such as boots, caps, masks, aprons, gloves, etc. During that time, the hospital maintained a separate COVID ICU, donning and doffing areas, and a separate bathroom for staff to take baths. Separate labelling is given to covid waste.

Awards and Accreditation

The hospital stand first at the national and state levels for quality. It had also bagged several awards such as Kayakalp Award, Award from the pollution control board, National Quality Standard (NQS), International Organization for Standardization (ISO) accreditation, Kerala Accreditation Standards for Hospitals etc.

Kayakalp Award Statue in front of the hospital

Conclusion

The hospital sets an ideal example for other healthcare facilities to be sustainable by having a hospital- based agricultural system. This tribal speciality hospital was able to provide hospital food with quality and high nutritional value, and benefit the communities. They provide a model with less out-of-pocket expenses for patients, promote preventive care and build the health of the community. In a remote tribal area like Attapadi, by this practice, they were successful in bringing indigenous communities to access health care services.

The hospital also sets up a successful, functioning zero-waste model. They reduce the waste produced in the facility and reuse it as much as they can. Recycling waste especially wastewater and using it for agriculture, agricultural waste are composted and food waste is turned into biofuel in this hospital. The hospital also has a rainwater harvesting system with three rainwater harvesting tanks of 5000 L capacity and a solar panel of 53 kV. This successful waste management model reduces climate impact, conserves resources, minimizes pollution and supports the economy by saving the cost of disposal.

It is important for the health system to provide quality healthcare, and improve, maintain, and restore health while minimising the negative impact on the environment. Together having renewable energy, water, sanitation, hygiene, waste management and agricultural practices, this healthcare model contributes to building a climate-resilient healthcare system.

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