

# Costing Study of Training Schools for Allied Health Sciences Professionals under the ETR Unit, Ministry of Health, Sri Lanka

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## Abstract

**Introduction:** Allied health professionals are critical to the delivery of healthcare in Sri Lanka. Despite their growing importance, limited data exist on the cost of training these professionals—information essential for effective workforce and financial planning. Training is primarily conducted through institutions overseen by the Education, Training, and Research (ETR) Unit of the Ministry of Health.

**Objective:** To estimate the average cost incurred by the Ministry of Health to train one allied health sciences professional, using data from selected training schools under the ETR Unit.

**Methods:** A cross-sectional costing study was conducted using a standardized tool developed by the ETR Unit. Retrospective data were collected for the 2024 financial year across ten training programs. The analysis adopted a provider perspective, applying a bottom-up costing approach focused on recurrent expenditures, including personnel salaries, materials, utilities, and student allowances. Data were verified for completeness and accuracy.

**Results:** The highest per-student training cost was for the Prosthetics and Orthotics program (LKR 4.2 million / USD 14,012.86), while the lowest was for the Radiography program (LKR 998,931.43 / USD 3,329.77). Costs dropped significantly when student allowances were excluded. Key cost drivers included training duration and material expenditures.

**Conclusion:** Substantial variation exists in training costs across allied health disciplines. These findings provide evidence for policymakers to optimize resource allocation, enhance cost-efficiency, and support sustainable planning for allied health education in Sri Lanka.

## I. Introduction

Allied health sciences professionals play a critical role in healthcare delivery across various settings in Sri Lanka. Their training is managed through institutions overseen by the Education, Training, and Research (ETR) Unit of the Ministry of Health. Despite the importance of these programs, limited research exists on the financial aspects of allied health training in Sri Lanka. Understanding the cost structure of these training programs is crucial for policymakers and administrators to optimize resource allocation, improve training efficiency, and ensure sustainable workforce development. This study addresses this gap by providing a comprehensive analysis of the costs incurred by the Ministry of Health in training allied health professionals.

## II. New Contribution

This study presents one of the first systematic costing analyses of Allied Health Sciences professional training schools under the Ministry of Health, Sri Lanka. While existing literature focuses largely on medical and nursing education financing, limited evidence is available on the cost structures of allied health training programs in low- and middle-income countries. By employing a standardized, locally developed costing tool, this research offers detailed, institution-level data on recurrent training costs, including salaries, utilities, and student allowances. The findings provide critical benchmarks for financial planning, highlight cost variations across schools, and support evidence-based resource allocation and policy formulation. This contribution fills a significant gap in the health workforce education financing literature and offers a practical approach for future cost-efficiency evaluations in similar settings.

## III. Objective

To estimate the average cost of training one allied health sciences professional within selected training schools managed by the ETR Unit of the Ministry of Health, with a focus on recurrent expenditures such as staff salaries, materials, utilities, and student allowances.

#### IV. Methodology

A cross-sectional costing study was conducted across selected training schools under the Education, Training, and Research (ETR) Unit of the Ministry of Health, Sri Lanka. The study encompassed ten allied health training programs, namely:

1. Dental Technician
2. ECG Technician
3. EEG Technician
4. Ophthalmic Technician
5. Physiotherapy and Occupational Therapy
6. Entomology
7. Radiography
8. Medical Laboratory Technology (MLT)
9. Pharmacy
10. Prosthetics and Orthotics

To collect detailed and consistent data on recurrent training costs, a standardized costing tool was developed in collaboration with the Director of Training, ETR Unit (Figure 1). The principals of each training school were informed about the tool and oriented on how to use it effectively. They were responsible for collecting and submitting the data required.

The tool was designed to capture the following recurrent cost components:

- **Staff costs**
  - Salaries, allowances, and overtime payments for academic and administrative staff involved in the training programs.
- **Consumables and training materials**
  - Expenses for laboratory supplies and educational resources used during the training period.
- **Utilities**
  - Monthly expenditures on electricity, water, telecommunications, and internet services.
- **Student-related expenses**
  - Monthly student allowances and other direct costs borne by the institution.

Additional data recorded included:

- Duration of training (in months)
- Number of students enrolled in each program
- Total recurrent cost for each training program
- Per-student cost, including and excluding student allowances

The data were collected retrospectively for the financial year 2024, ensuring alignment with current fiscal policies. Data validation was performed through checks for completeness and consistency, with any discrepancies clarified through direct communication with the principals of the training schools. The finalized data were reviewed collaboratively with the ETR Unit before analysis.

The costing analysis was performed from the provider perspective (Ministry of Health) using a bottom-up (micro-costing) approach. This approach allowed for precise estimation of costs, itemized by training program and resource category. Costs were calculated to estimate the average per-student cost per full course for each professional category. All costs were recorded in Sri Lankan Rupees (LKR), and for international comparison, values were converted to US Dollars (USD) using the annual exchange rate (1 USD = LKR 300, as of 20/05/2025).

<b>Name of the School</b>				
<b>Recurrent Cost</b>	<b>Category</b>	<b>Number</b>	<b>Per Month</b>	<b>Total</b>
Salary with Allowances and Overtime	Principle			0
	Senior Tutor			0
	Tutor 1			0
	Tutor 2			0
	Tutor 3			0
	Tutor 4			0
	Tutor 5			0
	PHMA 1			0
	PHMA 2			0
	DO 1			0
	DO 2			0
	SKS 1			0
	SKS 2			0
				0
	Lecture Fees	Lecture Fees		
				0
Utilities	Electricity			0
	Water			0
	Telephine			0
	Internet			0
	Gas			0
			0	
Stationaries				0
				0
Transport				0
				0
Student Allowances				0
				0
Total Cost				0
Cost without student allowances				0

<b>Training period (Months)</b>	<b>Total Training Cost</b>	<b>Cost without allowances</b>	<b>Number of Students</b>	<b>Per Student Cost</b>	<b>Per student cost without allowances</b>
	0	0	0		

Figure 1: Costing Tool

**V. Results**

The study analyzed ten allied health sciences training programs conducted under the Ministry of Health, Sri Lanka. The training durations ranged from 24 to 36 months. Student enrollment varied across programs, with the highest number observed in the Physiotherapy & Occupational Therapy program (n = 45) and the lowest in the Prosthetics & Orthotics program (n = 7).

The per-student cost, calculated based on total recurrent expenditures including student allowances, exhibited substantial variability across programs. The highest cost per student was recorded in the Prosthetics & Orthotics program at LKR 4,203,858.86 (USD 14,012.86), followed by the Dental Technician program at LKR 3,477,685.37 (USD 11,592.28). In contrast, the Radiography program had the lowest cost at LKR 998,931.43 (USD 3,329.77).

Excluding student allowances led to a marked reduction in per-student costs. For example, the Dental Technician program's cost decreased to LKR 2,644,067.45 (USD 8,813.56), and the Radiography program's cost dropped to LKR 160,971.43 (USD 536.57). These findings highlight the significant share of student allowances in the overall cost structure.

*Table 1: Per-Student Cost of Training by Professional Category*

No	Profession	Training period (Months)	Number of students	Per Student Cost LKR	Per Student Cost USD	Per student cost without allowances LKR	Per student cost without allowances USD
1	Dental technician	24	34	3,477,685.37	11,592.28	2,644,067.45	8,813.56
2	ECG technician	24	40	1,164,691.34	3,882.30	327,091.34	1,090.30
3	EEG technician	24	17	1,171,157.65	3,903.86	347,717.65	1,159.06
4	Ophthalmic technician	24	24	1,084,500.00	3,615.00	278,940.00	929.80
5	Physiotherapy & Occupational Therapy	24	45	1,105,925.03	3,686.42	267,965.03	893.22
6	Entomology	24	29	1,143,447.72	3,811.49	303,447.72	1,011.49
7	Radiography	24	42	998,931.43	3,329.77	160,971.43	536.57
8	MLT (NIHS)	24	35	1,370,495.31	4,568.32	535,343.31	1,784.48
9	Pharmacy (NIHS)	24	41	1,082,884.68	3,609.62	247,732.68	825.78
10	Prosthetics & Orthotics	36	7	4,203,858.86	14,012.86	2,946,918.86	9,823.06

Cost variability was primarily driven by differences in program duration, staffing levels, number of students and the extent of material requirements specific to each discipline. Programs involving specialized equipment and individualized instruction (e.g., Prosthetics & Orthotics) incurred substantially higher costs.

## **VI. Discussion**

This study provides empirical evidence on the recurrent costs associated with training allied health professionals in Sri Lanka. The findings indicate significant variability in per-student costs across training disciplines, largely influenced by program duration, staffing levels, material intensity, and number of students. The highest training costs were observed in the Prosthetics & Orthotics and Dental Technician programs, primarily due to the significant material and consumable requirements intrinsic to these fields. This trend is consistent with global findings, where the use of advanced materials and technology substantially increases training costs in disciplines requiring intensive practical components (*GUIDELINES FOR TRAINING PERSONNEL IN DEVELOPING COUNTRIES FOR PROSTHETICS AND ORTHOTICS SERVICES World Health Organization, 2004*).

The Prosthetics & Orthotics program, with a training duration of 36 months, recorded the highest per-student cost (LKR 4.2 million / USD 14,012.86). This is attributed to the extensive use of high-cost materials such as 3D-printed prosthetic devices and orthotic molds. Globally, the cost of prosthetic components ranges from USD 200 to USD 500 per device, with expenses increasing substantially with the use of advanced technologies such as 3D printing and computer-aided design (ten Kate, Smit and Breedveld, 2017). Similarly, the Dental Technician program incurred a high cost per student (LKR 3.5 million / USD 11,592.28), reflecting the reliance on specialized materials including dental ceramics, precious alloys, and digital imaging systems. Internationally, material-related expenses have been estimated to account for approximately 30–50% of the total cost of dental technology training (Henzi *et al.*, 2006).

In contrast, training programs such as Radiography and Pharmacy demonstrated relatively lower per-student costs. This can be explained by standardized training models, larger student intakes, and reduced dependency on high-value consumables. For instance, the Radiography program, with a per-student cost of LKR 998,931 (USD 3,329.77), benefits from shared use of imaging equipment and economies of scale arising from higher enrollment.

## **VII. Material Costs as a Primary Cost Driver**

Material expenses emerged as the primary contributor to the higher costs observed in certain programs. In the Prosthetics & Orthotics program, training involves hands-on fabrication using custom devices and new materials, significantly increasing recurrent costs. Notably, when student allowances and material-related expenditures were excluded, the cost reduced by over 30% (LKR 2.9 million / USD 9,823.06), underscoring the magnitude of material-related expenses. Similarly, the high cost of dental materials, including simulation models and lab-based components, explains the elevated cost in Dental Technology training ('Oral health WHO 2005').

## **VIII. Regional and Global Comparisons**

### **South Asian Context**

Compared to neighboring countries, Sri Lanka's allied health training programs appear to have higher per-student costs. In Bangladesh and Nepal, training institutions commonly rely on low-cost, non-customized materials and basic training infrastructure (*Transforming and scaling up health professionals' education and training, 2017*). The higher costs in Sri Lanka may reflect a deliberate investment in modernizing training infrastructure and integrating advanced technologies, particularly in laboratory-intensive disciplines.

### **Global Context**

International studies support the trend of high material-related training costs in allied health education. A costing study from the United Kingdom reported that Diagnostic and Therapeutic Radiography programs incurred per-student costs ranging from GBP 11,300 to GBP 11,341, primarily due to the use of specialized imaging equipment and consumables ('NMAH\_Costing\_study', 2017). While Sri Lanka's Radiography training costs are comparatively lower, they remain significant when contextualized within national budgetary constraints.

Globally, economic evaluations of Prosthetics & Orthotics programs highlight a "value versus cost" paradox—where the use of advanced materials and technologies improves patient outcomes but significantly escalates both training and service delivery costs (*GUIDELINES FOR TRAINING PERSONNEL IN DEVELOPING COUNTRIES FOR PROSTHETICS AND ORTHOTICS SERVICES World Health Organization, 2004*). This aligns with findings from this study, reinforcing the need for careful financial planning and strategic resource allocation in allied health education.

## **IX. Conclusion**

This study offers valuable evidence on the recurrent costs associated with training allied health sciences professionals in Sri Lanka. The analysis revealed marked variability in per-student costs across disciplines, driven primarily by training duration, material requirements, and student allowances. The highest

costs were observed in programs such as Prosthetics & Orthotics and Dental Technology, reflecting their reliance on specialized materials and intensive practical components. Conversely, lower costs were associated with programs like Radiography and Pharmacy, which benefited from standardized training models and larger student cohorts.

These findings underscore the need for systematic cost analysis to inform policy decisions related to budget allocation, program design, and training efficiency. Identifying the main cost drivers enables the Ministry of Health to optimize resource use and enhance the financial sustainability of allied health education. The results also provide a foundation for future economic evaluations and can support strategic planning efforts aimed at strengthening the allied health workforce in Sri Lanka.

### **Limitations and Methodological Considerations**

This study has several limitations that should be considered when interpreting the findings:

#### **1. Scope of Costing**

- The analysis focused solely on recurrent costs from the provider perspective. Capital investments such as infrastructure development, equipment purchases, and opportunity costs were not included, which may result in an underestimation of the total training cost.

#### **2. Retrospective Data Collection**

- Cost data were collected retrospectively for the 2024 financial year. Despite validation efforts and direct communication with training school staff, there remains a possibility of recall bias or incomplete reporting.

#### **3. Generalizability**

- The study was limited to selected training programs under the ETR Unit of the Ministry of Health. As such, the findings may not be generalizable to all allied health training institutions in Sri Lanka or those managed by other administrative bodies.

## **X. Methodological Strengths and Recommendations**

Despite these limitations, the study employed a standardized and validated costing tool tailored for allied health training institutions, ensuring consistency in data collection across multiple programs. The use of a bottom-up costing approach enhanced the accuracy of cost estimation by capturing detailed input-level expenditures.

To build on these findings, future research should incorporate prospective data collection to reduce potential bias, include capital and opportunity costs for a more comprehensive analysis, and expand the scope to include a wider range of institutions and training models. Such enhancements would strengthen the evidence base for policymaking and support the development of cost-effective and sustainable education strategies for allied health sciences professionals.

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