TB and Tobacco

Tobacco cessation within TB programmes: A 'real world' solution for countries with dual burden of disease.

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Author: **Shilpi Swami**
(University of York)

Workpackage: WP6
Workpackage Leader: Helen Elsey (University of York)

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Estimating costs of scale-up of behavioural support programme in Bangladesh, Nepal and Pakistan

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Author: Shilpi Swami, University of York

Corresponding address: shilpi.swami@york.ac.uk, shilpiswami2@gmail.com

WP6 Lead: Helen Elsey

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TB & Tobacco

Contents

Summary

One of the objectives of Work Package 6 (WP6) of the TB & Tobacco project is to estimate the costs of scaling up the behavioural support programme in Bangladesh, Nepal and Pakistan. This report deals with the costs analysis of the programme. The approach used is micro-costing, with the number of individual components of resource use multiplied by their respective unit costs (collected by countries in real-time). Then, we used some epidemiological inputs to estimate the national costs of the programme for the potential target population.

The per-patient cost of delivering the behavioural support programme is 0.7, 4.5 and 2.3 USD in Bangladesh, Nepal and Pakistan, respectively. The respective national-level costs of delivery are 171 thousand, 141 thousand and 848 thousand USD. The cost of training a trainer (or NTP supervisor) is 102 USD in Bangladesh, 42 USD in Nepal and 113 USD in Pakistan. The cost of training one DOTS facilitator is 33 USD in Nepal, 35 USD in Bangladesh, and 87 USD in Pakistan.

This work shows that delivering the behavioural support programme to TB patients in health facilities is low-cost. It also shows that scaling up the behavioural support programme is easily affordable if integrated within the countries' systems in the National Tuberculosis Programmes. The data collected during the study will help future studies in estimating costs of similar programmes. This analysis will, overall, help the budget holders to better plan their expenditures for TB control programmes in these countries.

Abbreviations

Abbreviation	Detail
ABC	Activity Based Costing
BDT	Bangladeshi Taka
BS	Behavioural Support
GATS	Global Adult Tobacco Survey
HP	Health Post
MDR	Multi-drug-resistant
NPR	Nepalese Rupee
NTP	National Tuberculosis Programme
PKR	Pakistani Rupee
TB	Tuberculosis
UHC	Urban Health Centre
USD	US dollars
WHO	World Health Organisation
WP	Work Package
XDR	Extensively drug-resistant

1. Introduction

The report presents the cost analysis conducted under Work Package (WP) 6 of the TB & Tobacco Project. WP6 deals with the 'scale up and sustainability' of the behavioural support (BS) programme for tobacco cessation across some TB healthcare facilities in Bangladesh, Nepal and Pakistan.

Scaling-up refers to the process of expansion under real-world circumstances of a healthcare intervention, which has already been shown efficacious on a small scale and under controlled conditions, to a broader population or policy level [1].

The definition of costs is the value of resources used in producing a product or a service. The total cost of intervention includes the costs of all the inputs utilized (for example staff, materials, buildings, etc.) to provide a service or a product. The scale describes the extent to which an activity or intervention is operating. While measuring total costs, there are two main components;- fixed costs and variable costs. Fixed costs remain constant as output changes. Variable costs vary as output changes. In the short-term, the amount of fixed inputs can not be changed, however, in the long-run; the level of all inputs could be changed.

This report presents the estimation of per patient cost of delivering the behavioural support programme. It also predicts the total costs of delivering the programme at the national levels; and the costs of training a trainer and a DOTS facilitator.

This budget impact analysis will provide estimates of the cost per patient, total cost and thus, affordability of the programme. It could be used as a tool to guide the budget holders in planning expenses related to TB cessation programmes in the respective countries.

2. Methods

2.1 Study design

This was an activity-based cost-analysis study. It used real-time cost data collected during the pilot scale-up of the BS programme in the selected health facilities in the countries. The overall idea is to integrate the BS programme within the national tuberculosis programme (NTP) initiatives and hence, this assumption was maintained throughout the analysis.

2.2 Study setting

The study was conducted in the pilot scale-up healthcare facilities in Bangladesh, Nepal and Pakistan. It should be noted that these sites differ from those selected for the TB & Tobacco trial of cytisine. These pilot scale-up sites were selected in conjunction with the NTPs in each country. Table 1 below provides some information on these facilities.

Table 1: Information on facilities of scale-up BS

Detail	Bangladesh	Nepal	Pakistan
Name of District(s) where scale-up is planned	Narayanganj District	Kathmandu and Lalitpur Districts	Peshawar, Abbottabad, Mardan and Kohat
Number of facilities in the scale-up district	5 facilities	18 facilities (13 Kathmandu and 5 Lalitpur)	Total 56 facilities • Peshawar= 24 (11 public, 13 private) • Abbottabad = 09 (7 public, 2 Private) • Mardan= 13 (10 public, 3 private) • Kohat= 10 (8 public, 2 private)
Number of facilities by type (e.g. district hospital, PHC etc.)	5 Sub-district hospitals (commonly known as Upazilla Health Complex)	Kathmandu: Urban Health Clinic (UHC): 5 Lalitpur: Urban DOTS Centre: 1 UHC: 6 Health Post (HP): 3 NGO Run TB Clinic: 2 Community hospital: 1	Tertiary care, DHQ & sub district level
Facility's TB patient flow (appx.)	Monthly flow: • Araihazar –31 • Bandar –29 • Narayanganj Sadar – 94 • Rupganj –58 • Sonargaon – 38 Total= 250	Yearly flow: • K.B DOTS Centre- 66 • UHC-17- 33 • Harisiddhi HP - 31 • Sunakothi HP - 16 • Khokana HP - 7 • UHC-12, Hyumat - 15 • UHC-7, Mitrapark - 35 • UHC-4, Dhumbarahi - 29 • UHC-26, Lainchaur - 31 • UHC-32, Koteshwor – 65 • GENETUP - 216 • UHC-15, Swoyambhu - 96 • UHC-10, Baneshwor - 77 • UHC-16, Balaju - 100 • UHC-18, Naradevi - 50 • UHC- 29, Dillibazaar - 55	Yearly flow: • Peshawar= 8403 • Abbottabad = 1810 • Mardan= 3340 • Kohat= 1346 Total=14,899 (Baseline 2017 TB registration)

		• Helping Hands Community Hospital - 168 • Friends of Shanta Bhawan - 99 Total = 1189	
Site setting: rural or urban	All rural	All urban	All rural

2.3 Time horizon

The duration of the pilot scale-up programme was six months. Using estimates from the scale-up, the total costs and per patient costs of delivering the BS programme were calculated. For estimating costs at the country-level, one-time costs for scaling the programme at the national-level were calculated. There was no accounting of discounting and inflation due to the shorter duration of the programme and the analysis.

2.4 Perspective

The analysis was conducted from a budget holder or programme providers' perspective. Thus, costs incurred by patients and family, such as the costs of their travel and productivity losses, were excluded from the analysis. To reflect the real-world scenario that a budget holder would face, research-related costs (e.g. cost of making a training video) did not form part of the analysis. Only the direct and indirect costs that would be incurred in routine practice, assuming that the behavioural support programme will be integrated within the healthcare systems of the countries, were included.

2.5 Methodology

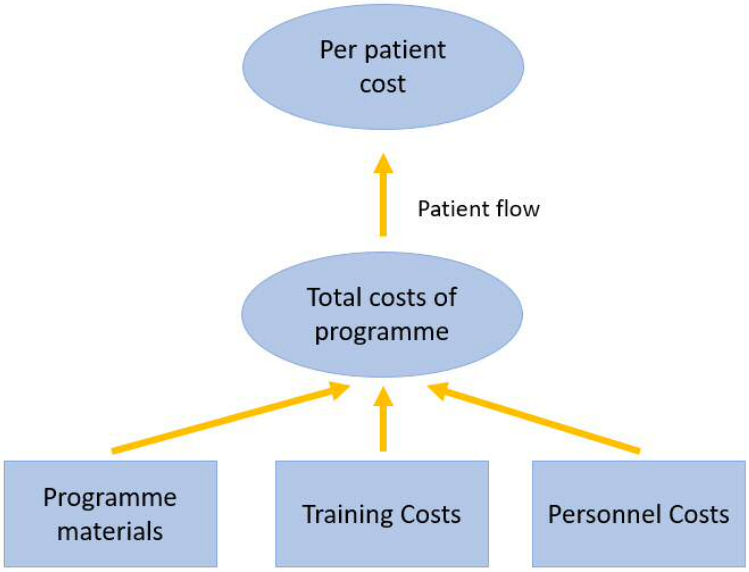
2.5.1 Cost analysis

The analysis of costs was done using a micro-costing, bottom-up approach combining activity-based costing (ABC), and using real-time budget expense data. Micro-costing means that each component of resource-use was estimated and a unit cost was derived for each [2]. The ABC system approach builds an estimate of the total programme cost with the quantities and unit costs of each programme input. This is a useful method in the area of programme expansion [2, 3].

All the individual components' costs were added up to find the total costs of the pilot programme during the scale-up duration (6 months).

Figure 1 below summarizes the estimation of costs of scale-up of the behavioural support programme level.

Figure 1: Behavioural support programme costs' components



2.5.2 Data collection

The collection of data on programme's unit costs and resource use was captured via a standardized Excel-based input sheet. The country teams completed this structured data collection input sheet to obtain real-time cost data on personnel costs, cost of training sessions and materials related to the behavioural support programme. Research-related costs (e.g. cost of making a training video) did not form a part of the analysis, as the idea was to capture the costs in a real-world scenario. Also, extra costs only related to the pilot BS (which would not be a part of routine practice) were excluded from the analysis, e.g. cost of supervision or administration of the pilot project. The real-time data for all the countries were broadly collected on the following inputs:

- **Programme materials' costs:** This included costs related to the implementation of the behavioural support programme, such as leaflets, posters, flipbook, desktop guide, health professionals guide and the dissemination of these materials and any related logistics, e.g. display cabinets, etc. The costs of printing the revised tool for recording and reporting of quit status (e.g. revised TB 01 cards) were not included as it was assumed that NTPs would revise the relevant TB forms in future routine print runs and this would not incur any additional costs to NTP.

- **Training costs:** This included the costs related to providing the training at central or district levels. It mainly included the training of trainers and training of DOTS facilitators. In Pakistan, the costs related to the training of doctors were also recorded as their commitment to the TB project was realized to be mandatory for TB integration in the country. The training costs included the per diem training payments, opportunity costs of the time of participants and trainers during the training and travelling to the training venue (assuming this time would have been otherwise been

spent in their respective jobs of treating patients). This opportunity cost of time was derived from the staffs' salary estimates. Where a range is available for a staff's salary, we have calculated and used the average estimate.

- **Personnel costs:** This included the costs related to the staff employed for the implementation of the BS programme. This included the costs related to the DOTS facilitator delivering the BS programme in the facility (as a measure of opportunity costs of his/her time). The behavioural support in the pilot facilities was delivered from 5 to 8 minutes each to all TB patients (irrespective of smoking status), with the longer duration (8 minutes) where the patient identified himself or herself as a smoker. As the data on the number of smokers in these facilities was not available at the time of analysis, we have assumed that all patients were given the longer BS and thus, we have used the liberal estimate of 8 minutes of intervention delivery time per patient.

The costs were reported in the respective countries' currencies-, i.e. Bangladeshi Taka (BDT) for Bangladesh, Nepalese rupee (NPR) for Nepal and Pakistani rupee (PKR) for Pakistan.

The values of the parameters of interest (other than the real-time data) were derived from WHO reports. [5] [6] [7] This included the number of TB patients (all types and ages) notified in each country in a given year-2017.

The sections below provide details on each countries' inputs and costs.

2.4.2.1 Bangladesh

TB patient flow in pilot facilities:

In Bangladesh, for BS intervention, WP6 included all TB patients including children, CAT-2 TB Patients (relapse cases) and new TB cases were included. For each category, both pulmonary and extra-pulmonary cases were included in the total. Multi-drug-resistant (MDR) and extensively drug-resistant (XDR) patients were excluded. The table below lists the number of TB patients estimated in each pilot facility per month.

Table 2: Pilot scale-up facilities and their patient flow in Bangladesh

Facility Name	Facility setting (Rural/ Urban)	Location	TB Patient flow /month
Araihazar	Rural	Naranganj District	31
Bandar			29
Rupganj			58
Narayanganj Sadar			94
Sonargaon			38
Total			**250**

Table 3: Bangladesh- Programme materials costs in pilot BS

Programme material item	Costs (BDT)	Details
Leaflet	10,000	2000 leaflets costing 5 BDT each
Poster	3,900	26 posters costing 150 BDT each
Flipbook	13,200	15 flipbooks costing 880 BDT each
Dissemination of materials	10,000	Courier fee for sending materials to 5 centres
Desk Reminder	300	10 costing 30 BDT each
Total	**37,400**	Total programme materials cost

Training costs

There were two pieces of training conducted in Bangladesh: Training of trainers and training of DOTS facilitators. For calculating the opportunity cost of time of attending or delivering training and for travelling to the training venue (assuming all travelling), the following monthly salary ranges were supplied by the country team:

- NTP senior staff (Medical officer): 22,000 to 53,060 BDT (Grade G-9)
- NTP supervisor (Program Organizer) : 10,200 to BDT 24,680 BDT (Grade G-14) :
- DOTS facilitator: 12,500 to 30,230 BDT (Grade G-11) and 11000-26,590 (Grade G-13)

For the purpose of analysis, we have calculated and used average salary estimates. So, the average salary for NTP senior staff would be 37,530 BDT, NTP supervisor would be 17,440 BDT and DOTS facilitator would be 20,080 BDT (average of (average of G-11 and G-13)).

The details on training costs are in the table below.

Table 4: Bangladesh- Training costs during pilot BS in scale-up districts

1. Training of trainers: **No. of NTP senior staff (providers of training) =2** **No. of NTP supervisors (receivers of training) = 2**	**Costs (BDT)**
Total per diem of all NTP senior staff	10,000
Total NTP senior staff (average) travel time (opportunity) cost	626
Total NTP senior staff training time (opportunity) cost	2,502
Total per diem of all NTP supervisors (receivers of training)	3,200
Total NTP supervisors travel time (opportunity) cost	291
Total NTP supervisors training time (opportunity) cost	581
Subtotal	**17,200**
2. Training of DOTS facilitators **No. of NTP supervisors (providers of training) = 2** **No. of DOTS facilitators (receivers of training) = 6**	**Costs (BDT)**

Total per diem of all NTP supervisors	3,200
Total NTP supervisor travel time (opportunity) cost	291
Total NTP supervisor training time (opportunity) cost	1,163
Total Per diem of DOTS facilitators	6,000
Total DOTS facilitator travel time (opportunity) cost	1,004
Total DOTS facilitator training time (opportunity) cost	6,024
Subtotal	**17,681**
Overall Total	**34,881**

Personnel costs:

The behavioural support programme was given on average for 5-8 minutes, so we assumed a liberal estimate of 8 minutes for the delivery. We assumed that DOTS facilitators would deliver behavioural support to all estimated patients (250 patients per month) in the pilot scale-up facilities for the duration of 6 months. Thus, using the average estimate of a DOTS facilitator salary of 20,080 BDT per month in Bangladesh (and converting it to per minute salary) and using patient flow rates, the total personnel costs were derived to be 16,733 BDT.

Total TB cases notified

The data for total TB cases notified (2017) data was extracted from WHO Bangladesh's Tuberculosis Profile and was 244,201. [5]

2.4.2.2 Nepal

TB Patient flow in pilot facilities:

In the pilot BS programme in Nepal, WP6 included all new adult (18 years and above) TB patients, including new pulmonary bacteriologically confirmed (PBC), new pulmonary clinically diagnosed (PCD) and extra-pulmonary (EP).. MDR and XDR patients were excluded. The table below lists the yearly TB patient flow in the pilot facilities.

Table 5: Pilot scale-up facilities and their patient flow- Nepal

Facility Name	Facility setting (Rural/ Urban)	Location	TB Patient flow /year
K.B DOTS Centre	Urban	Lalitpur	66
UHC-17	Urban	Lalitpur	33

Harisiddhi HP	Urban	Lalitpur	31
Sunakothi HP	Urban	Lalitpur	16
Khokana HP	Urban	Lalitpur	7
UHC-12, Hyumat	Urban	Kathmandu	15
UHC-7, Mitrapark	Urban	Kathmandu	35
UHC-4, Dhumbarahi	Urban	Kathmandu	29
UHC-26, Lainchaur	Urban	Kathmandu	31
UHC-32, Koteshwor	Urban	Kathmandu	65
GENETUP	Urban	Kathmandu	216
UHC-15, Swoyambhu	Urban	Kathmandu	96
UHC-10, Baneshwor	Urban	Kathmandu	77
UHC-16, Balaju	Urban	Kathmandu	100
UHC-18, Naradevi	Urban	Kathmandu	50
UHC- 29, Dillibazaar	Urban	Kathmandu	55
Helping Hands Community Hospital	Urban	Kathmandu	168
Friends of Shanta Bhawan	Urban	Kathmandu	99
Total: 18 facilities (old and new)	**All Urban**	**Kathmandu and Lalitpur**	**1189**

The total yearly patient flow is 1189 in these facilities. So, the patient flow during 6-months (pilot BS scale-up duration) in Nepal would be 595.

Table 6: Nepal's programme materials costs in pilot BS

Programme material item	Costs (NPR)	Details
Leaflet	17,000	1000 leaflets costing 17 NPR each
Poster	15,000	100 posters costing 150 NPR each
Flipbook	115,000	100 flipbooks costing 1150 NPR each
Dissemination of materials	20,000	Vehicle hiring costs for 4 days trip, includes vehicle fuel and driver's costs
Desk Reminder	10,000	500 costing 20 NPR each
Health worker guidelines	8,750	50 costing 175 each
Total	**185,750**	Total programme materials cost

Training costs- Nepal- in pilot BS

Based on the current federal structure and decentralization of NTP's training programme, the training will be conducted at local level, in coordination with NTC. Therefore, the training of trainers for central NTP staff is not required at this moment. There were two levels of training: training of trainers and training of DOTS facilitators at the local level. Table 4 below presents all the training costs.

For calculating opportunity costs of time of attending or delivering training and for travelling to the training venue (assuming all travelling), the following (appx.) monthly salary estimates of the government staff were used:

- NTP senior staff: 43,879 NPR
- NTP supervisor: 35,990 NPR
- DOTS facilitator: 32,095 NPR

Table 7: Training costs in Nepal

1. Training of trainers: **No. of NTP senior staff (providers of training) = 3** **No. of NTP supervisors (receivers of training) = 8**	**Costs (NPR)**
Total per diem of NTP senior staff (who is giving the training)	9,000
Total NTP senior staff travel time cost (opportunity) cost	1,097
Total NTP senior staff training time (opportunity) cost	3,291
Total per diem of NTP supervisors (receivers of training)	5,600
Total NTP supervisors travel time (opportunity) cost	2,399
Total NTP supervisors training time (opportunity) cost	7,198
Training logistics/ refreshment	9,000
Subtotal	**37,585**
2. Training of DOTS facilitators **No. of NTP supervisors (providers of training) = 4** **No. of DOTS facilitators (receivers of training) = 17**	**Costs (NPR)**
Total per diem of NTP supervisors	12,000
Total NTP supervisor travel time (opportunity) cost	1,390
Total NTP supervisor training time (opportunity) cost	4,169
Total per diem of DOTS facilitators	11,900
Total DOTS facilitator travel time (opportunity) cost	4,547

Total DOTS facilitator training time (opportunity) cost	13,640
Training logistics/ refreshment	15,000
Sub-Total	**62,645**
Overall Total	**100,230**

Personnel costs- Nepal:

Like for Bangladesh, the behavioural support programme was given on average for 5-8 minutes, so we assumed a liberal estimate of 8 minutes for the delivery. We assumed that DOTS facilitators would deliver behavioural support to all estimated patients (595 in six months) in the scale-up facilities. Thus, using an estimate of DOTS facilitators' salaries of 32095 NPR per month (and converting it to per minute salary) in Nepal and using patient flow rates, the total personnel costs was derived to be 10,600 NPR.

Total TB cases notified - Nepal:

The data for total TB cases notified (2017) data was extracted from WHO Nepal's Tuberculosis Profile and was 31,764. [6]

2.4.2.3 Pakistan

TB Patient flow in pilot facilities:

In Pakistan, in WP6, the TB patients included were similar to that in Bangladesh, i.e. all TB patients including children, CAT-2 TB Patients (relapse cases) and new TB patients. For each category, both pulmonary and extra-pulmonary cases were included in the total. MDR and XDR patients were excluded. The table below lists the number of new TB patients estimated to flow in a year in the respective districts.

Table 8: Pilot scale-up districts and their patient flow- Pakistan (Source: Baseline 2017 TB registration)

District Name	**Facility setting (Rural/ Urban)**	**TB Patient flow / year**
Peshawar	All rural	8,403
Abbottabad		1,810
Mardan		3,340
Kohat		1,346
Total	**14,899**	

The total yearly patient flow is 14,899 in all the facilities in these districts. So, the patient flow during 6-months pilot scale-up duration) would be 7,450.

In routine practice, all the projects in Pakistan are conducted on a quarterly basis. Hence, cost collection was mostly done on a quarterly basis and was converted to six months-scale up duration (or 2 quarters).

Table 9: Pakistan- Programme materials costs

Programme material item	Costs (PKR)	Details
Leaflet	150,000	3000 costing 50 PKR each
Poster	50,000	100 costing 500 PKR each
Flipbook	50,000	100 costing 500 PKR each
TB Guidelines Manuals (or health worker guide)	3,48,000	1160 (or 20 per centre) costing 300 each
Standee	60,000	60 costing 1000 each
Dissemination of materials	64,000	Vehicle hiring cost for dissemination
Desk reminders	9,600	160 costing 60 each
Total	**731,600**	Total programme materials cost

Training costs-Pakistan:

Apart from the training of trainers and training of DOTS facilitators, there was an element of training of doctors in Pakistan. This is because both doctors and DOTs facilitators are the main implementers of the project activities at TB Care facilities. They would be responsible for recording the history of patients, filling forms, TB cards and registers; and coordinating and reporting to the provincial programme managers. Their commitment to the TB Tobacco project over and above their routine work was realized to be mandatory for TB Tobacco integration in Pakistan. Hence, training of doctors was also conducted in Pakistan, and costed accordingly.

For calculating the opportunity cost of time of attending or delivering training and for travelling to the training venue (assuming all travelling), the following monthly salary estimates were used:

- NTP senior staff: Salary ranges from 100,000 to 180,000 PKR from the doctor working in peripheries (basic health units) to senior staff working in TB Control Program KP. So, we used the higher-end estimate of 180,000 PKR for the calculation, as NTP 'senior' staff were delivering the training of trainers.
- NTP supervisor: 150,000 PKR (average in the salary range above)
- DOTS facilitator: 27,000 PKR
- Doctors: 150,000 PKR

Table 10: Training costs in the pilot BS in Pakistan

1. Training of trainers **No. of NTP senior staff (providers of training) = 2** **No. of NTP supervisors (receivers of training) = 10**	**Costs (PKR)**
Total per diem of all NTP senior staff (who are giving the training)	16,000
Total NTP senior staffs travel time (opportunity) cost	1,500
Total NTP senior staff training time (opportunity) cost	12,000
Total per diem of NTP supervisors (receivers of training)	75,000
Total NTP supervisors travel time (opportunity) cost	6,250
Total NTP supervisor training time (opportunity) cost	50,000
Subtotal	**160,750**
2. Training of DOTS facilitators **No. of NTP supervisors (providers of training) = 10** **No. of DOTS facilitators (receivers of training) = 60**	**Costs (PKR)**
Total per diem of NTP supervisors	75,000
Total NTP supervisor travel time (opportunity) cost	6,250
Total NTP supervisor training time (opportunity) cost	50,000
Total per diem of DOTS facilitators	450,000
Total DOTS facilitator travel time (opportunity) cost	6,750
Total DOTS facilitator training time (opportunity) cost	54,000
Total Training materials (banner, stationery, certificates)	43,600
Refreshment	54,000
Support staff	1,600
Subtotal	**741,200**
3. Training of doctors **No. of NTP supervisors (providers of training) = 10** **No. of DOTS facilitators (receivers of training) = 60**	**Costs (PKR)**
Total per diem of NTP supervisors	75,000
Total NTP supervisor travel cost (opportunity) cost	6,250
Total NTP supervisor training time (opportunity) cost	50,000

Total per diem of Doctors	180,000
Total Doctors travel time cost (opportunity) cost	37,500
Total Doctors training time (opportunity) cost	300,000
Training material (banner, stationery, certificates)	58,000
Refreshment	54,000
Support staff	1,600
Subtotal	762,350
Overall Total	**1,664,300**

Personnel costs:

Like for other countries, the behavioural support programme was given on an average for 5-8 minutes, so we assumed a liberal estimate of 8 minutes for the delivery. We assumed that DOTS facilitators would deliver behavioural support to all estimated patients (7450 in six months) in the scale-up facilities. Thus, using an estimate of DOTS facilitators' salaries of 27,000 PKR per month (and converting it to per minute salary) and using patient flow rates, the total personnel costs were derived to be 37,248 PKR.

Total TB cases notified

The data for total TB cases notified (2017) data was extracted from WHO Pakistan's Tuberculosis Profile and was 368,897. [7]

3. Results

3.1 Bangladesh

The per- TB patient cost of providing the behavioural support in the facilities was as low as 59 BDT or 0.7 US dollars (USD), using the exchange rate of 1 USD=84.4 BDT. The provision of the BS programme at national level to all TB patients (assuming the same number of notified TB cases as in 2017) would cost around 171 thousand USD. The cost of training a trainer was 102 USD and training a DOTS facilitator was 35 USD.

Table 11 Bangladesh's results

Result	Value (BDT)	Value (USD)
Cost of intervention delivery per patient	59	0.7
National level cost for delivery to all notified TB patients	14,491,566	171,498
Cost of training a trainer (or an NTP supervisor)	8,600	102
Cost of training a DOTS facilitator	2,947	35

3.2 Nepal

The per- TB patient costs of delivering the behavioural support in the facilities was 112 NPR or 4.5 USD, using the exchange rate of 1 USD= 112.1 NPR. The provision of the BS programme at the national level to all TB patients would cost around 141 thousand USD (assuming the same number of notified TB cases as in 2017). The cost of training a trainer was 42 USD and training a DOTS facilitator was 33 USD.

Table 12 Nepal's results

Result	Value (NPR)	Value (USD)
Cost of intervention delivery per patient	112	4.5
National level cost for delivery to all notified TB patients	15,846,238	141,409
Cost of training a trainer (or an NTP supervisor)	4,698	42
Cost of training a DOTS facilitator	3,685	33

3.3 Pakistan

The per- TB patient costs of delivering the behavioural support to patients in the facilities was 327 PKR or around 2.3 USD, using the exchange rate of 1 USD= 142 PKR. The provision of the BS programme at the national level to all TB patients would cost around 848 thousand USD (assuming the same number of notified TB cases as in 2017). The cost of training a trainer was 113 USD, training a DOTS facilitator was 87 USD and training a doctor was 89 USD in the training programmes.

Table 13 Pakistan's results

Result	Value (PKR)	Value (USD)
Cost of intervention delivery per patient	327	2.3
National level cost for delivery to all notified TB patients	120,488,733	848,512
Cost of training a trainer (or a NTP supervisor)	16,075	113
Cost of training a DOTS facilitator	12,353	87
Cost of training a doctor	12,706	89

4. Discussion

The behavioural support programme is a low-cost intervention; with per-patient cost of delivery as low as 0.7 USD in Bangladesh, 2.3 USD in Pakistan and 4.5 USD in Nepal. The national level costs are 171 thousand USD in Bangladesh, 848 thousand USD in Pakistan and 141 thousand USD in Nepal. These total costs of the programme are very well below the national TB budget of these countries. For instance, the national TB budget (2018) for Pakistan was 118 million US dollars from different domestic and international funding sources [7]. For Bangladesh and Nepal, it was 66 million and 18 million US dollars, respectively [5] [6]. Therefore, the BS programme is easily affordable at these rates.

The study has several strengths. The study provides useful estimates for the costs of the scaling up the behavioural support programme at TB facilities. These estimates were calculated at both the patient level and national level. Also, estimates of costs of training a trainer and training a DOTS facilitator were also presented. There is a lot of useful unit cost and resource-use data collected during the study, which could also help inform the analysis of the costs of other related programmes in the future. The analysis is performed using MS-Excel and is easily reproducible. It is highly adaptable to the needs of changing inputs in the future and even could be adapted for other countries.

These results (cost/patient) will be same for all type of TB patients, even though the pilot of BS had included or excluded certain types of TB patient population. This is because the components of costs of BS programme for all types of TB patients will remain the same (material cost, training cost and cost of delivery of intervention).

There are some approximations used in the analysis based on data availability. However, these assumptions reflect the real-world scenario of these countries as had been crosschecked with the research staff working in these countries. In the study, we have assumed full uptake and coverage rates. Once the intervention is rolled out on the national scale, there may be a possibility that coverage rates and uptake rates are less than full. In that case, the national cost of scaling up the intervention will be even lower as being delivered to a lesser number of TB patients.

Overall, this costs analysis will help the policymakers in these countries to plan their budgets accordingly. This also shows that the potentially beneficial behavioural support programme is a low cost (per TB patient) programme, if integrated within the system.

5. Conclusion

The analysis produces estimates of cost per patient for the delivery of BS and total costs of scaling up the programme in Nepal, Pakistan and Bangladesh (if integrated within the healthcare systems). It shows that the behavioural support programme is affordable and will help budget holders in planning future expenses on healthcare for TB patients.

6. References

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