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PROGRAM FOR EDUCATION IN GLOBAL AND POPULATION HEALTH

National Health and Budget Impact of Implementing the WHO **HEARTS Hypertension Control Program in Bangladesh**

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RESEARCH QUESTIONS

- What are the number of Cardiovascular (CVD) deaths averted and what is the budget impact of the implementation of a nation HEARTS program?
- What is the impact of increased task-sharing or reduced medication prices on the cost of implementing HEARTS in Bangladesh?

BACKGROUND

- About one-fifth of adults in Bangladesh have hypertension.
- Only 13% of Bangladesh adults living with hypertension have their blood pressure controlled (<140/90 mmHg).
- To address the growing burden of hypertension in low- and middle-income countries, the World Health Organization (WHO) recommends implementing the HEARTS technical package.
- HEARTS recommends a practical approach to CVD prevention in primary care settings, including risk factor screening, diagnosis, treatment, and patient counseling.
- Bangladesh's Ministry of Health and Family Welfare and National Heart Foundation implemented HEARTS in four upazilla (sub-district) health complexes in the Sylhet Division starting in 2019.
- To inform Bangladesh's national health care policies, we translated HEARTS effectiveness and costs into projections of national health and budget impact of a nation-wide hypertension control program scale-up.

METHODS

- We used an interactive, web-based mathematical model to project the number of CVD deaths averted based on observed facility-based hypertension control rates.
- We also used local costs to obtain the budget impact estimates of the national HEARTS program implementation.
- In addition, we explored two alternative scenarios: 1) reducing medication costs by 50%, and/or 2) increasing team-based care with larger roles for nurses and community health workers.
- The relative improvement in hypertension control observed in the HEARTS program (from 26% to 46% in the four upazillas over 24 months) was added to the 13% baseline national control rate resulting in a projected improvement to 33% when HEARTS is scaled up nationally.
- Hypertension program costs were quantified with a standard HEARTS costing tool that was deployed in the four upazilla health complexes.
- The costing tool recorded and calculated unit costs for hypertension screening, other cardiovascular disease risk factor assessment, healthcare worker time and compensation, drug prices, and allocation of HEARTS tasks among physician and non-physician health workers (nurses or community health workers).

luman resources	Minutes	Cost (LCU)
Health provider time	521,108	5,834,126
Assess via physical exam and diagr		
Human resources	Minutes	Cost (LCU)
Offer physical exam (HP)	521,108	5,834,126
Administer/analyze diagnostic tests (lab tech)	3,647,757	16,829,874
	Subtotal	22,664,000
Diagnostic tests	Quantity	Cost (LCU)
Complete blood count (panel)	104,222	42,939,307
Blood lipid panel	104,222	85,878,614
Fasting blood glucose (FPG)	104,222	12,881,792
	Subtotal	141 600 712
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Medicines and Technologies	Category	Form
Medicines and Supplies		
Antihypertensive medications		
Amlodipine	Drug	Tab
Losartan	Drug	Tab
Chlorthalidone	Drug	Tab

Figure 1 Screenshots of the HEARTS Costing Tool. These are four different screenshots showing some of the various unit costs that the tool records and calculates. This includes the time devoted for hypertension screening, risk factor assessment, etc., the cost of medications used for treatment protocol, and the salary and effort of the different healthcare workers involved. These calculations were recorded for the current NHF program in the four upazillas in Bangladesh since 2018

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76	35			Target Step 2	Starting	Thiazide	e-like diuretics: Chlorthalidor	e (12.5 mg)	1	365	0.33	
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	Sodium policy impacts:			Step 5	Intensification	ARB: Los	sartan (50 mg)		2	365	0.04	
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saved, total budget impact, and cost-effectiveness for a HEARTS program that would be implemented nationally.

RESULTS SUMMARY

- A 77% relative improvement from baseline 13% to 33% hypertension control nationally would save 9,400 lives by 2030 and 17,600 lives by 2040.
- Extrapolating local program costs to the national level resulted in a budget impact of 649 million US dollars by 2030 and 735 million US dollars by 2040.
- Two of the alternate scenarios were also explored to understand how to reduce the budget impact
- · Reducing medication costs by 50% would lower the budget impact by 39.1% by 2030.
- Increasing team-based care (from 100% physician) care to 50% physician/25% nurse/25% community health worker) would lower the budget impact by 2.2% by 2030.
- Combining these innovations would lower the projected budget impact by 41.3%.

DISCUSSION

- Experience thus far suggests that implementing the current HEARTS model in Bangladesh will improve hypertension control and save 9,400 lives at a national budget impact of over USD 649 million by 2030.
- The cost per averted death is 649 mil/9,400 deaths=\$69,000, which can be translated to about \$3,000 per DALY averted.
- This value exceeds the "very cost-effective" threshold of 1xGDP or \$1,280 but could still be considered cost-effective using the 3xGDP threshold.
- Increased task sharing between doctors, nurses, community health workers, and other healthcare workers as well as lower medication prices have the potential to reduce costs and make reaching hypertension control goals more affordable and sustainable for Bangladesh.
- Improved program quality and efficiencies could increase health impact (more lives saved).
- Lower costs could reduce budget impact and make the program more attractive to government payors.

REFERENCES

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