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Availability of Diabetes Services in Cambodian Primary Care Facilities: An Analysis of Self-Reported Survey with Health Center Staff

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ABSTRACT

Introduction

Cambodia saw an increase in type 2 diabetes prevalence up to 9.6% among the adult population aged 18-69 years in 2016. As a leading risk factor for cardiovascular diseases, type 2 diabetes could lead to serious health complications if proper and adequate care was not available. Lack of access to essential health services and medicines for type 2 diabetes has been proven to hamper improvement in controlling disease outcomes. This study aims to assess the availability of services for type 2 diabetes in the primary care provided by health centers and their characteristics of service inputs.

Methods

This study used an existing dataset obtained from health center staff joining a national training on "Health center preparedness in response to COVID-19 spread in the community" at the National Institute of Public Health from 19 October to 01 December 2020. Data related to the availability of type 2 diabetes services and the associated characteristics of service inputs were extracted for the descriptive analysis.

Results

The dataset collected in 2020 was composed of information from 1,157 (95%) of the total 1,221 health centers in Cambodia. Among the participating health centers (n=1,157), 223 (19%) reported currently providing type 2 diabetes services at their facilities, 261 (23%) currently having anti-diabetic medicines, 740 (64%) currently having supporting infrastructure, 235 (20%) having at least one staff member ever received training about type 2 diabetes, and 320 (28%) having ever provided community education about type 2 diabetes.

Conclusions

This study indicates the limited availability of type 2 diabetes services at public primary care facilities in the Cambodian health system. The findings could be informative for health service planning for type 2 diabetes at the health center level.

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Introduction

Globally, 1 in 10 adults aged 20-79 years were living with type 2 diabetes (T2D) in 2021 [1]. In Cambodia, the prevalence of T2D was 9.6% among the adult population aged 18-69 in 2016 [2]. In 2010, it was only 2.9% among the age group 25-64 [2]. The prevalence of T2D has increased faster in low and middle-income countries (LMICs), where primary health care (PHC) settings are still limited in capacity for screening, diagnosis and care management [3].

As a leading risk factor for cardiovascular diseases [3, 4], which accounted for 24% of Cambodia's total deaths in 2018 [5], T2D could lead to serious complications such as blindness, kidney failure, coronary heart disease, stroke, peripheral vascular diseases, and lower-extremity amputation if proper and adequate care was not available [6].

Cambodia's health care system is pluralistic, consisting of both public and private providers [7]. The public health care system, operated by the Ministry of Health, was established based on a district health system model, following the PHC approach. In the PHC setting, one operational health district includes a number of health centers (HCs) providing primary care to the population in the community and a referral district hospital providing secondary care. As needed, care can be referred to a provincial referral hospital or a national referral hospital that provides tertiary care [8].

By December 2019, the total number of HCs in Cambodia was 1,221 [9]. According to the national clinical guidelines on the Minimum Package of Activities, there is an indication of T2D services at the HC level [10]. HC staff are expected to do screening, provide follow-up care for T2D patients with mild and stable conditions after being diagnosed and prescribed treatment by a doctor at the referral hospital, offer health education and counseling on healthy behaviors, and refer unmanageable T2D patients to the referral hospital [10]. Nevertheless, a national population-based survey in 2016 discovered that more than two-thirds of the population never had their blood glucose tested, and those living with T2D (more than 50%) could not receive treatment [2].

A systematic review found that lack of access to T2D health services as well as anti-diabetic medicines would hamper improvement in T2D outcomes [11]. Therefore, it is essential to know the coverage of health services for T2D available at public primary care facilities in Cambodia. This study aims to assess the availability of T2D services at HCs in Cambodia.

Methods

This study used an existing dataset obtained from HC staff who received national training on "Health center preparedness in response to COVID-19 spread in the community" at the National Institute of Public Health from 19 October to 01 December 2020. All the HCs across the country were grouped into 25 groups and were invited to attend the training group by group, with one representative from each HC.

According to the World Health Organization, service availability refers to "the physical presence of the delivery of services and encompasses health infrastructure, core health personnel and aspects of service utilization" [12]. In this study, the availability of T2D services included five dimensions: (1) reporting providing T2D services, (2) having at least one staff member ever received training about T2D, (3) having anti-diabetic medicines, (4) having ever provided community education on T2D, and (5) having supporting infrastructure for T2D services. The supporting infrastructure consisted of the availability of clean water, electricity, the internet for information transfer, and the patient management registration system (PMRS). These four components need to be available together for an HC to be considered as currently having the supporting infrastructure. Data related to the availability of T2D services were extracted by researchers (VT and SM) for the descriptive analysis using Stata 14.2 [13].

Results

In total, there were 1,157 participating HCs (95%) of the total 1,221 HCs in Cambodia (**Table 1**). Among the 1,157 HCs, only 223 (19%) reported currently providing T2D services at their facilities; 261 (23%) reported currently having anti-diabetic medicines; 740 (64%) reported currently having the supporting infrastructure; 235 (20%) reported having at least one staff member ever received training about T2D; and 320 (28%) reported having ever provided community education about T2D.

Table 1: Distribution of HCs who reported currently providing T2D services by provinces

No.	Capital/Province	Number of participating HCs	HCs reported currently providing T2D services	%
1	Pailin	5	2	40.0
2	Kampong Cham	90	35	38.9
3	Phnom Penh	39	13	33.3
4	Kampong Speu	55	16	29.1
5	Preah Sihanouk	15	4	26.7
6	Kampong Thom	51	13	25.5
7	Kandal	96	24	25.0
8	Preah Vihear	27	6	22.2
9	Kampot	62	13	21.0
10	Battambang	77	16	20.8
11	Takeo	73	15	20.6
12	Kep	5	1	20.0
13	Siem Reap	86	17	19.8
14	Svay Rieng	42	8	19.1
15	Tboung Khmum	68	13	19.1
16	Kratie	30	3	10.0
17	Banteay Meanchey	61	6	9.8
18	Kampong Chhnang	42	4	9.5
19	Steung Treng	12	1	8.3
20	Koh Kong	13	1	7.7
21	Prey Veng	106	8	7.6
22	Pursat	38	2	5.3
23	Ratanakiri	20	1	5.0
24	Oddar Meanchey	34	1	2.9
25	Mondulkiri	10	0	0.0
	Total	**1,157**	**223**	**19.3**

Figure 1 shows the five dimensions of service availability. Only 66 (25%) out of the 261 HCs currently reported having sufficient anti-diabetic medicines. In terms of the supporting infrastructure dimension, among the participating 1,157 HCs, 1,046 (90%) had clean water for use; 1,143 (99%) had electricity; and 1,072 (93%) had internet for information transfer. However, less than three-quarters (73%) had the PMRS (**Figure 2**).

Discussion

From this study, it was clear that the availability of T2D services at public primary care facilities was limited—19%, less than 1 in 5 HCs, reported currently providing the services. Overall, less than 1 in 4 HCs (23%) of the participating HCs reported the availability of anti-diabetic medicines. Among those reporting the availability of the medicines, only 25% reported sufficiency. This indicates that the T2D services stipulated in the national clinical guidelines on the Minimum Package of Activities for HCs [10] were not fully implemented as intended. The follow-up care at the HCs would be difficult, without having sufficient medicines available for refilling the prescription, despite the availability of the supporting infrastructure, such as clean water, electricity, internet for information transfer, and the PMRS.

The communication between the HCs and the community about T2D was also limited, with only 28% of the HCs ever offering community education about T2D. According to the National Standard Operating Procedure for Diabetes and Hypertension Management in Primary Care approved by the Ministry of Health in 2019, HCs are supposed to play an active role in providing continuity and coordination between the community and the healthcare organization of the upper level of care [14]. The limited availability of the T2D services at the primary care facilities, which are closer to the community, would cause overflow of patients seeking care directly at the secondary or tertiary care level, resulting in overwhelming provision of care at the referral hospitals and increase of patients' healthcare costs and time in seeking care. Consequently, private providers would be seen as a better option for the patients.

The limited availability of T2D services at public primary care facilities is not exceptional in Cambodia. In Bangladesh, T2D services at the primary care level were also low, especially in rural public health facilities. Medicines and equipment for diagnostic testing were largely reported as unavailable [15]. Another study in Tanzania found that the availability of T2D services was greater in private healthcare facilities [16].

The T2D condition requires lifelong care and must be managed properly and promptly on a regular basis by patients themselves, care givers, and health care professionals to prevent or delay complications [17]. The complications impose a heavy socio-economic burden on patients themselves, families, and the country as a whole. Direct medical costs (resources used to treat the disease at an advanced stage), indirect costs (productivity lost due to morbidity, disability, and premature mortality), and intangible costs (reduced quality of life of patients) are all large [6].

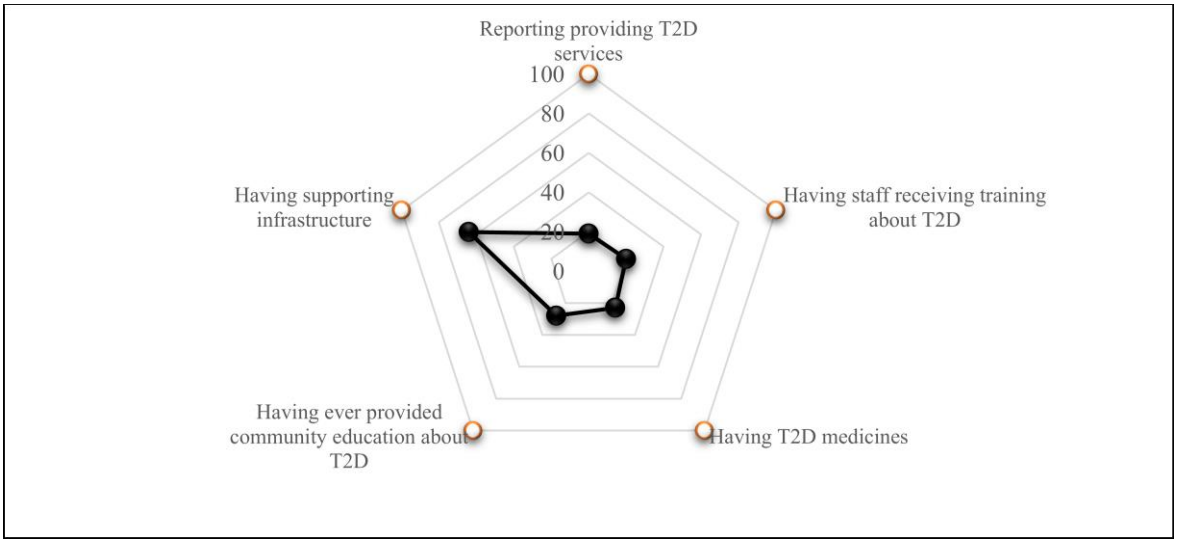

Figure 1: Availability of the five dimensions of T2D services (n = 1,157 HCs)

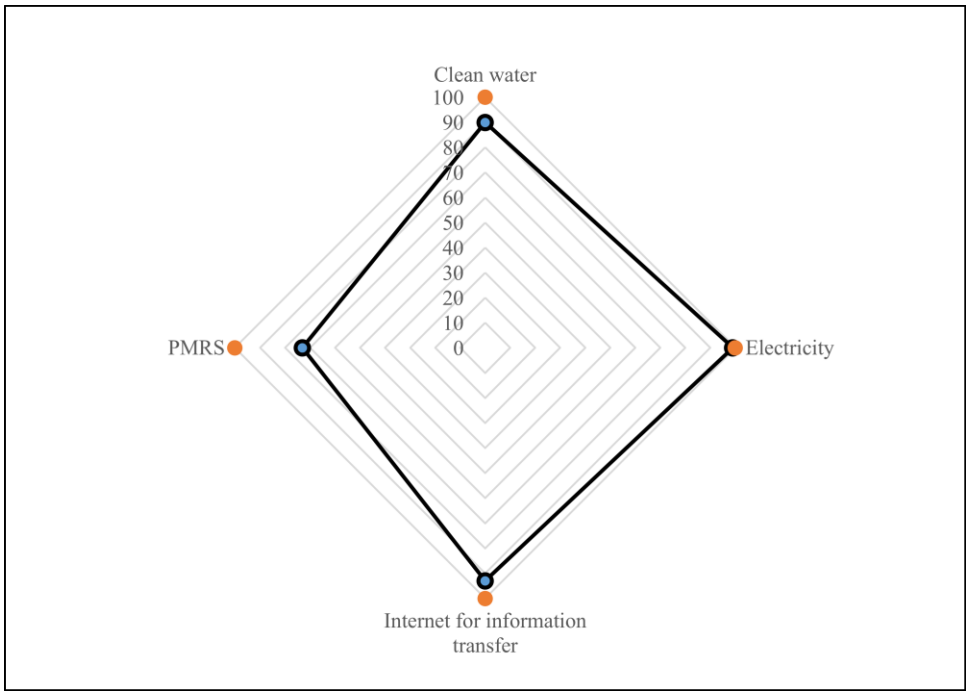

Figure 2: Availability of the supporting infrastructure components (n = 1,157 HCs)

This study, despite having a large sample size (95% of the total HCs in the country), was based on self-report. The timeframe of the availability of each dimension was not totally clear. Although the data were collected in 2020, dimensions on staff training and community education did not clearly indicate when the training was provided and whether the staff ever receiving the training still worked for the respective HCs. This also applied to the community education dimension. There was no indication of when and how many times the education was given to the community. Regarding the dimensions on the reporting providing T2D services, anti-diabetic medicines and supporting infrastructure, the timeframe indicated in the questionnaire was being 'current'. The findings were more descriptive but could be informative for health service planning for T2D at the public primary care facilities.

Conclusions

This study indicated the limited availability of T2D services in the public primary care of the Cambodian health system. The service coverage in the country was low, less than 1 in 5 HCs. The findings provide a situational and descriptive snapshot of T2D services at the public primary care facilities, which would be a useful baseline for health policy makers or other relevant stakeholders to plan or strengthen the services. More than half of the total HCs already had the supporting infrastructure. To strengthen the service availability at the HCs, more effort should be targeted on training the core staff about T2D, improving communication between the HCs and communities about T2D, and ensuring adequacy of the anti-diabetic medicines at the facilities. For a more comprehensive service availability and readiness assessment, an implementation study with field visits and interviews with relevant health care providers should be conducted.

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Authorship

All authors took part in conceptualizing the study design. VT and SM extracted the data, performed the analysis, and prepared the first draft. PI, CC, PH, and SL provided feedback on the drafts. All authors read and approved the final manuscript.

Ethical Approval

The dataset was granted by the National Institute of Public Health to be used as part of knowledge sharing purpose. Therefore, formal ethical approval was not deemed to be required.

Declaration of Conflicts of Interest

The authors declare that there are no conflicts of interest.

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