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Efficiency of Health Centers in Cambodia: Case Study in Takeo Province

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Abstract

Financing and efficiency of primary health care are two major issues for the development and deepening of health universal coverage in a context of strong financial constraint. In Cambodia, the development of demand-side financing schemes - Health Equity Fund and Community-Based Health Insurance – provides an opportunity to enhance the health centers (HCs) activity and thus their performance, which are very low as underlined by the literature. Nevertheless, except our study, the literature on Cambodian HCs focuses on the analysis of their activity and financing without taking into consideration efficiency issues. From a field survey, our study is a contribution to fill this gap by estimating with a data envelopment analysis the technical efficiency of HCs in the rural province of Takeo for 51 HCs observed over the period 2008 to 2010. This study assesses the overall weak efficiency of HCs. Conclusions emphasize the potential role of demand-side financing schemes development and highlight important policy implications for demand and supply sides of health care in Cambodia.

Keywords: Health care; Health center; Health insurance

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Introduction

Financing and efficiency of primary health care (PHC) are two major issues for the development and deepening of health universal coverage. Thereby, Cambodia, which is one of the poorest country of south-east Asia, has undertaken gradual reforms based on the development of several pilot experiments of demand-side financing schemes - Health Equity Fund (HEF) and Community-Based Health Insurance (CBHI) – funded and implemented by local or international NGOs and institutions. HEF and CBHI are designed to alleviate financial barriers facing by the poor to the access to health care, mainly PHC in rural areas. In both schemes, a third-party payer reimburses the providers for services included in a benefit package.

In such a context with a strong financial constraint, efficiency of health centers (HCs) is a major concern. Literature emphasizes that they perform poorly, hindered by numerous failures, particularly the weakness of the demand [1,2]. The development of demand-side financing schemes provides an opportunity to enhance HCs activity and thus their performance. Nevertheless, except our study, the literature on Cambodian HCs focuses on the analysis of their activity and financing without taking into consideration efficiency issues [3].

Our study is a contribution to fill this gap by estimating and analyzing the technical efficiency (TE) of HCs in the rural province of Takeo. Data for the province's 72 HCs were collected during a field survey in February 2011 for the period 2008 to 2010. The data collection was completed by interviews with local partners, officials and health professionals. After cleaning, the dataset covers 51 HCs (i.e. 71% of the HCs of Takeo). The 2008-2010 period corresponds to the three first years of the Cambodian Health Strategic Plan 2008-2015, which encourages the reinforcement of PHC and the development of demand-side financing schemes [4]. According to our data, the coverage of the population by the HEF schemes – supervised by the local NGO Buddhism for Health (BfH) – and by a CBHI scheme called "SKY" – supported by the French NGO "GRET", through a financing from the French Agency for Development (AFD) – expands over the period from 6.6% to 9.5%.

Method

We estimate the TE of HCs, i.e. the capacity of HCs to transform a quantity of inputs into outputs, by using a Data Envelopment Analysis (DEA) [5,6]. DEA makes no a priori assumption regarding the functional form of HCs production function. In output orientation, it identifies as efficient the HCs producing the largest output given a fix amount of inputs. The most efficient

HCs constitute the efficiency frontier. It envelops the others HCs considered as less efficient or - strictly speaking - inefficient. Thus, estimated efficiency is a relative measure with efficiency scores varying from 0 up to 100, from total inefficiency to full efficiency.

Based on our knowledge from the field and discussion with the health authorities, the production function of HCs is output-oriented with variables return to scale. It consists of: i) one output: the quantity of outpatient visits, which is relevant to reflect the overall activity of HCs, ii) three inputs: staff and operation expenditures financed from the government budget on the one hand and from the user fees on the other hand, iii) and a factor, akin to an exogenous input: the size of the population belonging to each HC's catchment area, which represents the potential demand addressed to the HCs and thus can influence the volume of patients they can care. Yearly data are pooled together and a single production function –'inter-temporal frontier' [7] – is estimated over 2008-2010. It assumes that HCs operate with the same technological constraint over the period, a reasonable assumption regarding the local situation.

Results

Our findings show four major results. First, the technical efficiency of HCs is low and quite stable over the period: HCs could in average increase the volume of outpatient visits by almost 48% with the same level of inputs. More than 50% of the HCs can produce at least twice the output they did, with the same level of inputs. Second, the TE of HCs declines significantly with the increase of their size (Table 1). Third, very large heterogeneities between HCs and across the five health districts are confirmed by our study (Table 1). The HCs of Ang Roka are on average the most efficient (79%) while those of Dounkeo, Kirivong and Prey Kabass have a low TE (between 45% and 56%), and those of Bati can be considered as very inefficient (17%). Interestingly, the efficiency frontier consists mainly of HCs from Kirivong. This result shows that some HCs in Kirivong district perform well, but that a large share of HCs with low level of TE pulls downward the district's average performance. In contrast in Ang Roka, only two HCs are on the efficiency frontier. On the whole sample, TE of HCs is more homogeneous in Ang Roka and Bati – the best and the lowest performers – than what we observed in districts with intermediate level of TE **(Table 1)**. Fourth, TE of HCs is significantly different according to the scheme implemented, either HEF or CBHI (Table 1). HEF and CBHI covers gradually and in a not uniform pattern the catchment areas of the HCs over the province: i) For HEF: Kirivong and Ang Roka where covered from 2008 and only 3 HCs were covered in Bati from 2010 ii) For CBHI: Ang Roka, Kirivong and Dounkeo were covered from 2008, while Bati and Prey Kabass were covered from 2010. The HCs with no scheme covering their catchment area register in average a lower TE than those where the HEF and/or the CBHI schemes are implemented. The highest average level of TE occurred for HCs where both schemes are available. When there is only one scheme, the TE is higher when there is an HEF rather than a CBHI scheme. This result can be partly explained by the coverage rate of the population which is higher for HEF (14%) than for CBHI (3%) although our analysis does not allow us to infer a causal relationship between HEF and CBHI schemes and the TE of HCs **(Table 1)**.

Discussion

Improvements of activity and financing of HCs occurred in Cambodia over the period 2008-2010 [8,9]. This study focused on Takeo province shows that those overall progresses do not mean global upgrading in efficiency of HCs. Therefore it calls for urgent interventions at HC level to improve their efficiency and thus to reduce what appears as a misused of scarce resources. HCs perform poorly to deliver primary health care, even if the activity increases by 29% over the period in our sample, questioning the adequate size of their inputs as regard to the demand they face. There are important potential improvements, particularly alongside the development of HEF and CBHI schemes. During the period, the schemes have been gradually implemented over the province, but the coverage of the population remains low. They can play a role both: i) on the demand side, by providing households with incentives increasing the activity of HCs, ii) on the supply side, by encouraging he providers, with contracting arrangements, to be more efficient. In addition, we found huge differences in efficiency among HCs and across districts. Ang Roka and Kirivong have the reputation to perform better than other districts within the province. However, our study challenges this assessment and shows that in Kirivong only few HCs are efficient. Ang Roka and Kirivong benefit from technical support from international agencies, which can explain their higher level of efficiency. The benefits of this technical support, pushing up the improvement of the managerial capabilities, were clearly observable during our field mission. Lastly, other barriers than households financial access impeded the activity of HCs, such as the quality of the medical services delivered and the motivation of staff. Therefore in addition to demand side approaches, supply-side interventions seem to be necessary to reinforce the efficiency of primary level of healthcare delivery in Takeo province.

Although our results are not generalizable country wide and if the availability of the data have limited the analysis that we have been able to carry out with the DEA model, the analytical framework used highlights challenging evidences concerning the efficiency of HCs and raises important policy implications for demand and supply sides of health care in Cambodia.

Table 1 Summary of the technical efficiency scores.

	2008-2010
All HCs	52,28 (28,66)
Inefficient HCs (TE<100)	47,24 (23,98)
Small HCs (<5 medical staffs)	93,87 (16,21)
Medium HCs (5-7 medical staffs)	53,89 (28,20)
Large HCs (>7 medical staffs)	39,07 (19,54)
Ang Roka	79,61 (15,86)
Bati	17,31 (10,16)
Dounkeo	49,22 (24,94)
Kirivong	56,44 (25,73)
Prey Kabass	45,03 (29,19)
None scheme	39,55 (29,77)
HEF	60,19 (28,59)
CBHI	44,03 (25,89)
HEF and CBHI	64,99 (25,29)

Note: mean (standard deviations).

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Ethical approval not required. The study does not stand on individual information requiring an ethical approval. None declared conflict of interest.

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