Improving immunization equity through a public–private partnership in Cambodia

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Objective To examine the effects on immunization equity of the large-scale contracting of primary health-care services in rural areas of Cambodia.

Methods Data were obtained pre-intervention and post-intervention from a large-scale quasi-experiment in contracting with nongovernmental organizations to provide primary health care in nine rural districts of Cambodia between 1999 and mid-2001. Coverage targets and equity targets for all primary health-care services, including immunization of children, were explicitly included in the contracts awarded in five of nine rural districts which together have a population of over 1.25 million people. The remaining four districts used the traditional government model for providing services and were given identical targets.

Findings After the 2.5 years of the trial, bivariate and multivariate analyses of the results suggested that although there was a substantial increase in the proportion of children who were fully immunized in all districts, children in the poorest 50% of households in the districts served by contractors were more likely to be fully immunized than poor children living in similar circumstances in districts using the government's model, all other things being equal.

Conclusion The contracting approach described in this paper suggests a means of moving towards a more equitable distribution of immunization services in developing countries.

Keywords Immunization programs/organization and administration; Contract services; Public sector; Social justice; Primary health care; Delivery of health care - methods; Nongovernmental organizations; Child; Multivariate analysis; Socioeconomic factors; Developing countries; Cambodia (*source: MeSH, NLM*).

Mots clés Programmes de vaccination/organisation et administration; Service contractuel; Secteur public; Justice sociale; Programme soins courants; Délivrance soins/méthodes; Organisations non gouvernementales; Enfant; Analyse multivariée; Facteurs socio-économiques; Pays en développement; Cambodge (*source: MeSH, INSERM*).

Palabras clave Programas de inmunización/organización y administración; Servicios contratados; Sector público; Justicia social; Atención primaria de salud; Prestación de atención de salud/métodos; Organizaciones no gubernamentales; Niño; Análisis multivariado; Factores socioeconómicos; Países en desarrollo; Camboya (*fuente: DeCS, BIREME*).

الكلمات المفتاحية: إدارة وتنظيم برامج التمنيع؛ خدمات التعاقد؛ القطاع العام؛ الرعاية الصحية الاجتماعية؛ العدالة الاجتماعية؛ الرعاية الصحية الأولية؛ أســــاليب إيتاء الرعاية الصحية؛ المنظمات اللاحكوميـــة؛ الطفل؛ التحليـــل المتعدد المتغيرات؛ العوامل الاقتصادية والاجتماعية؛ البلدان النامية؛ كمبوديا (المصدر: رؤوس الموضوعات الطبية إقليم شرق المتوسط).

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Introduction

Finding ways to improve access to immunization services for the poor is a policy challenge in developing countries (*1–3*), and Cambodia too faces this challenge (*4*). Immunization services tend to favour the wealthier at the expense of the poor, especially the poor living in remote and rural areas. In addition to household wealth, factors such as whether the household lives in an urban or rural area; the mother's level of education, age, and parity; the child's sex; and religion have been found to be related to whether a child is immunized.

In this paper, we examine contracting with nongovernmental organizations (NGOs) to provide primary health-care services and evaluate the effects of these contracts on the immunization status of children from poor households in Cambodia.

In particular, we focus on the relationship between household wealth and fully immunized children (FIC) in areas served by contractors and those served by the traditional government model. We use information from household surveys in 1997 and 2001 in nine large rural districts in Cambodia. In five of these districts NGOs were contracted to provide primary health-care services; the remaining four districts were served by the traditional government model.

The districts, each with populations ranging from 100 000 to nearly 200 000 people, were randomly assigned to NGO contracting or the traditional government model. NGO contracts were awarded through an international competitive bid based on the quality of the technical proposal and price, and they included objectively measurable primary health-care service coverage and equity goals.

Experiences from other sectors in developing countries, and from the health sector in developed countries, have led to an increasing interest in using contractors to improve the effectiveness and efficiency of the delivery of primary health-care services in developing countries, and a few studies have examined this question (5–8). This large scale quasi-experiment of using NGOs contractors in Cambodia provides a unique opportunity to examine immunization equity both before and after the delivery of services. Other similar studies have suffered from deficiencies in study design. For example, a contracting experiment in Guatemala did not collect baseline data to enable comparisons to be made between pre-contract and post-contract status (9). Moreover, there is no known systematic study that examines the potential of using contractors to address the problem of the inequitable distribution of health-care services. Here, we focus on FIC equity, defined as the variation of the proportion of FIC across different levels of household wealth in contracted and non-contracted districts. We also assessed equity while controlling for variation related to other household and individual characteristics that have been found in previous studies to be statistically significant factors affecting whether a child is fully immunized, e.g., the mother's level of education, the mother's age, and the child's sex. The question then becomes: once these other factors are controlled for, is the likelihood of a child being fully immunized equally distributed across different levels of wealth in contracted and non-contracted districts? If not, do contracted districts have a more or less equal distribution than non-contracted districts?

Methods

Study design

In the mid-1990s, the Cambodian primary health-care system was not able to deliver an adequate level of services (10). For example, a national demographic and health survey in 1998 found that only 39% of children aged 12–23 months were fully immunized (11). To address this issue, the Ministry of Health developed a coverage plan that used WHO guidelines to define new operational districts and to strengthen and broaden the services provided by the primary health-care system. The plan included new geographical boundaries for the operational districts, the construction or rehabilitation of health centres and district hospitals, and a standard minimum package of activities to be offered by the system, including child immunization.

As part of the implementation plan, the Ministry of Health conducted a large-scale quasi-experiment, using contractors to deliver primary health-care services. To ensure that the test districts were as comparable as possible, districts already receiving additional support from donors or NGOs were excluded from the experiment. The districts were randomly assigned to one of three delivery models:

1) contracting-out, in which the contractors had complete line responsibility for service delivery, including hiring, firing and setting wages; procuring and distributing essential drugs and supplies; and organizing and staffing health facilities;

2) contracting-in, in which the contractors worked within the government's system to strengthen the existing district administrative structure. The contractors could not hire or fire health workers, though they could request their transfer. Drugs and supplies were provided through the normal government channels; or

3) government model, in which the management of services remained with the government, and drugs and supplies were provided through normal government channels.

Detailed, precisely defined, and objectively verifiable health-care service indicators were measured for all districts using data collected from the pre-contract survey and well-defined goals for improvement in service coverage and coverage of the poor were established. For immunization, the target for all districts was to increase the overall proportion of children who are fully immunized to 70%, and the equity goal was to target the children from the poorest 50% of households. The household surveys, conducted by an independent agency, were used to determine whether these contractual obligations had been met. In addition, the contracts specified financial bonuses for achieving coverage higher than the target and equity rates, as well as penalties if these goals were not met. Details of the procedures used for contracting health services, including international bidding, contract award criteria, and targeting mechanism, are well documented (Asian Development Bank, unpublished data, 2002).

Districts were randomly assigned to one of the delivery systems but the contractors were not randomly assigned to the districts. Potential contractors responded to an international competitive bid for each district. NGOs were awarded four-year contracts at a fixed annual price per capita to administer and provide the minimum package of activities based on the quality of the technical proposal and price. All winning bids were international NGOs with previous experience working in Cambodia.

The price differences of the winning contractors led to differences in per capita expenditures for each type of delivery model. The average annual recurrent expenditure per capita during the study period was US$ 3.88 for contracted-out districts, US$ 2.40 for contracted-in districts, and US$ 1.65 for government districts. Although there were differences in expenditure levels across districts, it is not methodologically incorrect to compare the outcomes of the delivery models. Higher overall expenditure levels do not necessarily guarantee higher proportions of FIC or improved immunization equity. Higher levels of resources may enable a district to increase overall immunization coverage and coverage of children living in poor households, but this will happen only if resources are efficiently allocated to favour immunization over the competing needs to achieve performance and equity goals for all other primary health-care services. A low-expenditure district may outperform a higher-expenditure district, contracted or not, and thus increase both the coverage and equity of immunization by allocating its resources to immunization and targeting poor households at the expense of other health-care services and at the expense of households that are better off financially. Similarly, any district may outperform any other district in terms of the proportion of children who are fully immunized but fall short of the equity goal by attaining higher overall coverage at the expense of children from poor households.

The test districts are spatially separated within three different provinces, with a total population of over 1.25 million. The nine test districts, made up of two contracted-out districts, three contracted-in districts, and four government model districts, and population sizes are given in Table 1.

Surveys

The pre-contract household survey was carried out in May–June 1997 to establish health-care service statistics to be compared

Table 1. **Population and model of health care delivery in districts taking part in the study of health-care services in Cambodia**

Delivery model and district	Province	2001 Population[a]
Contract-out[b]		
Ang Rokar	Takeo	109 459
Memut	Kampong Cham	109 321
Contract-in		
Cheung Prey	Kampong Cham	167 725
Kirivong	Takeo	197 623
Pearaing	Prey Veng	188 854
Government		
Bati	Takeo	164 006
KamChay Mear	Prey Veng	112 403
Kruoch Chmar	Kampong Cham	102 639
Preah Sdach	Prey Veng	110 013
Total		**1 262 043**

[a] District populations are based on the 1998 census and are estimated for 1999–2001 using a growth rate of 2.49%.
[b] Descriptions of the delivery models are given in the Methods section.

with the evaluation survey conducted in June–August 2001, 2.5 years after the contractors were in place in the first quarter of 1999. A cluster survey method was used for the two household surveys, with the sample sizes calculated to allow each district to be compared to its own performance statistics at the time of the evaluation survey. In each district, 30 villages (clusters) were selected randomly and stratified by health centre catchment area with a probability proportional to population size. The same villages sampled in the pre-contract survey were surveyed again in 2001. The results of the baseline survey were available to contractors and included the villages that were surveyed, but no one knew whether the same villages would be selected for the evaluation survey. Table 2 shows the distribution and demographic characteristics of the children included in the surveys.

The WHO recommendation for a fully immunized child under the Expanded Programme on Immunization was used to determine a dichotomous outcome indicator for each child aged 12–23 months included in the surveys. According to this recommendation a fully immunized child is one who has received anti-tuberculosis vaccine (bacille Calmette–Guérin (BCG)), three doses of diphtheria–pertussis–tetanus vaccine, three doses of oral polio vaccine, and measles vaccine (12). Data on immunization status were collected from vaccination cards; in cases where a vaccination card was not available or a vaccination had not been recorded on the card, the mother's recall of vaccination was accepted. In addition, to confirm vaccination with BCG, the child was examined for a scar. Immunization coverage data using the card plus mother's recall has been found to be high quality (13, 14).

In the absence of data on household income or household expenditures on all goods and services, household ownership of eight assets, which serve as proxies for household wealth, is used as the basis for constructing a wealth index with principal components analysis for the sample as a whole for each of the surveys. Previous studies have shown that such an index is a robust measure of socioeconomic status (15, 16).

Table 2. **Distribution and selected demographic characteristics of children aged 12–23 months included in pre-contract survey (1997) and evaluation (2001) survey in Cambodia**

Variable	Pre-contract survey ($n = 1825$)[a]	Evaluation survey ($n = 1860$)[a]
District		
Contract-out model[b]		
Ang Rokar	11.1	11.1
Memut	10.8	11.1
Contract-in model		
Cheung Prey	10.7	11.1
Kirivong	10.7	11.1
Pearaing	11.5	11.2
Government model		
Bati	11.2	11.2
Kroch Mear	11.3	11.1
Krouch Chmar	11.9	11.0
Preah Sdach	10.8	11.1
Contracted 2001	54.8	55.6
Contracted out	21.9	22.3
Contracted in	32.9	33.3
Government-model districts	45.2	44.4
Mother's level of education		
None	29.0	26.8
1–3 years	25.8	26.5
4–6 years	28.1	29.2
≥ 7 years	17.2	17.5
Mother's age		
< 20	5.2	5.8
20–24	18.4	21.6
25–29	29.8	27.0
30–34	23.8	24.8
35–39	15.9	14.4
≥ 40	9.9	10.6
Child's sex		
Male	49.9	49.8
Female	50.1	50.2

[a] Values are percentages.
[b] Descriptions of the delivery models are given in the Methods section.

We initially examined bivariate changes in the proportion of children who were fully immunized by district, by contracted and non-contracted districts, by household wealth and by characteristics of the mother and child. We then included these factors as categorical (dummy) variables in a probit regression to examine the relative weight of each on the likelihood that a child is fully immunized while holding the other factors constant. In order to more systematically examine the effects of contracting on equity, we also included interaction terms for children living in the poorest one-half of households, being in a contracted district, and time (2001 evaluation survey).

Findings

The bivariate results indicate that there were statistically significant changes in the proportion of children who were fully immunized (the FIC coverage rate), for virtually every variable included in the analysis (Table 3). Overall, the 1997 pre-contract

proportion of children who were fully immunized for the nine test districts was 30.9%, and this increased to 56.7% by the time of the evaluation survey, thus almost doubling in 2.5 years. The FIC coverage rate increased significantly for children from the poorest and richest households between the two surveys, however the inequity of the FIC coverage rate between the poorest and richest households appears to have diminished over time. Pre-contracting, the difference between FIC coverage for children from the poorest and richest households was 9.1 percentage points. This difference decreased to 5.7 at the time of the evaluation survey. In both surveys a higher FIC coverage rate was seen among children whose mothers had higher levels of education; this is consistent with previous surveys. Male children and children with older mothers, up to about 35–39 years old, were also found to have higher FIC coverage rates, but in both surveys the proportion declined as the mother's age increased beyond this level.

The probit results for the pooled data from the pre-contract and evaluation surveys are given in Table 4. Transformed coefficients (dF/dx) show the effect on the probability of a child being fully immunized for a discrete change of each dummy variable (omitted category noted) from 0–1 while holding all else constant. The standard errors of the coefficient estimates are corrected for multiple observations in villages. When other factors are controlled for, a child from the poorest one-half of households overall is are found to have a lower likelihood of being fully immunized, but a child from the poorest one-half of households living in a contracted district is seen to have a higher probability of being fully immunized. With the exceptions of being poor at the time of the evaluation, the mother's age, and the child's sex, all other included factors are found to be statistically significant factors affecting the likelihood that a child is fully immunized.

Discussion

The data from the pre-contract and evaluation surveys in Cambodia provide a unique opportunity to examine the equity effects of contracting with NGOs on a large scale to provide primary health-care services. At the bivariate level, the unadjusted data indicated there were large, statistically significant increases between the pre-contract survey and the evaluation survey in the overall proportion of children who were fully immunized and for virtually every factor examined. When these variables were considered together in a probit regression, the two factors most strongly statistically related to the likelihood of a child being fully immunized are where the child lives and whether the child is from a poor household.

Not surprisingly, the overall proportion of children from the poorest half of households who were fully immunized before the contracting test began was lower than it was 2.5 years later at the time of the evaluation survey, and the bivariate statistics further suggest that contracted districts are responsible for much of this improvement in the equity of FIC coverage. While both the contracted districts and government model districts increased the proportion of children from the poorest half of households who were fully immunized, the contracted districts increased their coverage to 59% by the time of the second survey, whereas the government districts increased coverage of the poorest children to 47.8%. Two districts, one contracted and one government, had already achieved the 70% FIC coverage goal at the time of the evaluation survey. In contrast, the

Table 3. **Unadjusted percentage of fully immunized children included in the pre-contract survey (1997) and evaluation survey (2001) of health-care services in Cambodia, by selected characteristics**

Variable	Pre-contract survey (n = 1825)[a]	Evaluation survey (n = 1860)[a, b]
All	30.9	56.7
Household wealth		
Poorest 50%	26.1	53.9
Richest 50%	35.2	59.6
Poorest 50% and contracted district[c]	25.4	59.0
Poorest 50% and government-model district	28.2	47.8
Contract-out model		
Ang Rokar	27.1	57.2
Memut	23.4	73.6
Contract-in model		
Cheung Prey	26.5	49.8
Kirivong	40.8	61.8
Pearaing	23.4	53.7
Government model		
Bati	64.6	76.6
Kroch Mear	24.3	40.6
Krouch Chmar	31.7	68.8
Preah Sdach	15.5	27.9
Contracted districts	28.2	59.2
Contract-out	25.2	65.4
Contract-in	30.1	55.1
Government districts	34.2	53.6
Mother's level of education		
None	23.7	47.2
1–3 years	30.8	52.5
4–6 years	34.6	60.9
≥ 7 years	37.7	77.1
Mother's age		
< 20	21.0	49.1
20–24	25.9	58.9
25–29	31.1	58.2
30–34	36.5	56.1
35–39	28.9	57.6
≥ 40	30.9	48.0
Child's sex		
Male	32.7	58.2
Female	30.2	55.6

[a] Values are percentages.
[b] The difference in proportions between the two surveys is statistically significant at $P = 0.01$.
[c] Descriptions of the delivery models are given in the Methods section.

national average during this same time period essentially remained unchanged. Increasing returns to the initial large capital investment and labour investment, which greatly improved access to services, may be responsible for much of this large early success. All of the contracted districts, and three of the four government districts, increased FIC coverage above the national average. Overall, regardless of wealth, children in

Table 4. **Probit regression predicting the probability of a child being fully immunized in the pooled pre-contract (1997) and evaluation (2001) surveys of health-care services in Cambodia**

Variable	Transformed coefficients (dF/dx)	Z-value
Household wealth		
Poorest 50% (richest omitted)	-0.0721[a]	-2.84
Poorest 50%, contracted district, evaluation survey[c]	0.0852[b]	2.11
Poorest 50%, evaluation survey	0.0092	0.22
Evaluation survey (2001)	0.2485[a]	10.25
Contract-out model		
Ang Rokar	0.1648[a]	3.98
Memut	0.2847[a]	6.87
Contract-in model		
Cheung Prey	0.1485[a]	3.56
Kirivong	0.2738[a]	6.76
Pearaing	0.1293[a]	3.11
Government model		
Bati	0.4452[a]	12.37
Kroch Mear	0.1081[a]	2.73
Krouch Chmar	0.2788[a]	7.33
Preah Sdach (omitted)	–	–
Mother's level of education		
None (omitted)	–	–
1–3 years	0.0679[a]	2.82
4–6 years	0.1181[a]	4.87
≥ 7 years	0.1853[a]	6.23
Mother's age		
< 20 (omitted)	–	–
20–24	0.0189	0.27
25–29	0.0309	0.44
30–34	0.0563	0.79
35–39	0.0373	0.52
≥ 40	0.0003	0.00
Child's sex		
Male (Female omitted)	0.0322	1.85
No. of observations	3619	
Likelihood ratio[d] χ^2 (df = 26)	578.33	
Probability > χ^2	0.0000	
Pseudo R^2	0.1163	
Log likelihood	-2196.40	
Observed probability	0.4438	
Predicted probability (at x-bar)	0.4370	

[a] Coefficient is statistically significant at $P = 0.01$.
[b] Coefficient is statistically significant at $P = 0.05$.
[c] Descriptions of the delivery models are given in the Methods section.
[d] df = degrees of freedom.

contracted districts appeared to be more likely to be fully immunized than children in the government districts. When grouped together, on average, the contracted districts outperformed the government districts by increasing FIC coverage by 31 percentage points compared with the 19.4 percentage point increase in the government districts.

The most striking results of the probit estimation are found for household wealth, the interaction terms for household wealth, contracted districts, and time, and the district location

variables. The probit result for the independent effect of wealth confirms that a child in the poorest one-half of households has a statistically significant and lower likelihood of being fully immunized when compared with a child from a household in the richest one-half of households, all else being equal. More importantly, the result found for children from the poorest half of households who was living in a contracted district at the time of the evaluation survey, is positive and statistically significant, suggesting that over time contracted districts provided a more equitable FIC coverage distribution than the government districts. The marginal effect on the likelihood of being fully immunized (0.0852) outweighs the marginal effect of simply being from a poor household (-0.0721). The independent effect of being poor at the time of the evaluation survey, however, is found to be a statistically insignificant factor of being fully immunized while controlling for other factors. Taken together, these results again suggest that contracted districts better targeted the poorest half of households than the non-contracted districts did.

As expected, the overall independent result for children at the time of the evaluation survey is found to be positive and statistically significant, which confirms the bivariate result indicating overall improvement in the likelihood of being fully immunized at this time, all else being equal.

The location results for children living in each of the five contracted districts are found to be positive and statistically significant independent factors of the likelihood of being fully immunized relative to the omitted low-performing government district, when controlling for the other factors included in the estimation. A child living in Memut, for example, was estimated to have a 0.285 higher probability of being fully immunized than one living in Preah Sdach, the omitted government district. On the other hand, the independent effect of residing in any of the three included government districts also was found to be statistically significant and a positive factor of the probability of being fully immunized compared with the omitted government district, and these effects are seen to be large. A child living in Bati, for example, had a 0.445 higher probability of being fully immunized relative to one living in Preah Sdach. While the simple bivariate statistics indicated all districts increased FIC coverage, the multivariate results for the pooled sample, when controlling for other factors, appear to give added relative weight to large increases in FIC coverage (Memut, Krouch Chmar), and for sustained relatively high FIC coverage (Bati, Kirivong).

The independent effects of the location of the household and the wealth of the household on the likelihood of a child being fully immunized are intuitive. Children in households living in districts that had large increases in FIC coverage, and those in districts that started at relatively high levels of FIC coverage and improved these levels, are found to have a higher likelihood of being fully immunized. The independent effect of household wealth on FIC status is similarly intuitive and consistent with the literature. Children from poorer households have a lower likelihood of being fully immunized, all else being equal.

We conclude that the combined effect of location and household wealth was an important factor for whether a child was fully immunized in the Cambodia experiment. Specifically, we found positive and statistically significant increases in the likelihood of children being fully immunized if they lived in a

contracted district and came from the poorest half of households. Contracted districts also are seen to be positively associated with the likelihood of children being fully immunized regardless of household wealth. Although non-contracted government districts also are found to have a positive independent effect on being fully immunized, this positive relationship is compromised in terms of equity by favouring the wealthier half of households at the expense of the poorer.

The results demonstrate that, while controlling for other factors related to the likelihood of a child being fully immunized, living in a contracted area is related to a more equitable distribution of immunization coverage. While these results are descriptive, and not based on a rigorous estimation model of immunization consumption, they do provide estimates of each of the relationships of the included factors, which likely are causal controlled, and have important policy implications. The results are relevant not only because inequity in immunization coverage is widespread in developing countries, but they also suggest a means to move towards a more equitable distribution of immunization services. ■

Résumé

Amélioration de l'équité en matière de vaccination grâce à un partenariat public-privé au Cambodge

Objectif Examiner les effets sur l'équité en matière de vaccination de l'utilisation à grande échelle de services contractuels pour la dispensation des soins de santé primaires dans des régions rurales du Cambodge.

Méthodes Les données ont été obtenues avant et après intervention lors d'une quasi-expérience à grande échelle de passation de contrats avec des organisations non gouvernementales pour assurer les services de soins de santé primaires, menée dans 9 districts ruraux du Cambodge entre 1999 et mi-2001. Les objectifs en matière de couverture et d'équité pour tous les services de soins de santé primaires, y compris la vaccination des enfants, étaient expressément mentionnés dans les contrats conclus dans cinq des neuf districts ruraux retenus, dont la population totale s'élève à plus de 1,25 million d'habitants. Les quatre districts restants utilisaient le modèle gouvernemental traditionnel d'organisation des services, avec les mêmes objectifs.

Résultats Au bout des 2,5 ans de l'essai, les analyses bivariée et multivariée des résultats indiquent que, malgré une augmentation sensible de la proportion d'enfants entièrement vaccinés dans l'ensemble des districts, les enfants des 50 % les plus pauvres des ménages desservis par des prestataires de services avaient une probabilité plus grande d'avoir reçu tous leurs vaccins que les enfants pauvres vivant dans les mêmes conditions dans les districts utilisant le modèle gouvernemental, tous autres facteurs égaux par ailleurs.

Conclusion L'approche décrite dans le présent article indique un moyen de passer à une organisation plus équitable des services de vaccination dans les pays en développement.

Resumen

Mejora de la equidad de inmunización mediante una alianza publicoprivada en Camboya

Objetivo Examinar los efectos en la equidad de inmunización de la contratación en gran escala de servicios de atención primaria en zonas rurales de Camboya.

Métodos Se obtuvieron datos preintervención y postintervención a partir de un estudio cuasiexperimental en gran escala en el que se celebraron contratos con organizaciones no gubernamentales para proporcionar servicios de atención primaria en nueve distritos rurales de Camboya entre 1999 y mediados de 2001. En los contratos concedidos en cinco de nueve distritos rurales, que abarcaban en total una población superior a 1,25 millones de personas, se incluyeron explícitamente metas de cobertura y metas de equidad para todos los servicios de atención primaria, incluida la inmunización infantil. En los otros cuatro distritos se empleó el modelo tradicional de la Administración para dispensar los servicios, pero se establecieron las mismas metas.

Resultados Al cabo de los dos años y medio que duró el ensayo, los análisis bivariante y multifactorial a que se sometieron los datos mostraron que, si bien se había producido un aumento sustancial de la proporción de niños plenamente inmunizados en todos los distritos, los niños del 50% más pobre de los hogares de los distritos atendidos por los contratistas tenían *ceteris paribus* más probabilidades de haber recibido todas las vacunas que los niños pobres que vivían en circunstancias similares en los distritos que aplicaron el modelo de la Administración.

Conclusión La iniciativa de usar contratistas descrita en este artículo sugiere una alternativa para lograr una distribución más equitativa de los servicios de inmunización en los países en desarrollo.

ملخص

آثار الشراكة بين القطاع العام والخاص على التمنيع

تحسين العدالة في التمنيع من خلال الشراكة بين القطاعين العام والخاص في كمبوديا

الهدف: دراســـة آثار التعاقد على تقديم خدمات الرعاية الصحية الأولية على نطاق واسع في المناطق الريفية في كمبوديا، على عدالة التمنيع.

الطريقة: تم الحصول على المعطيات قبل المداخلات وبعدها من تجربة غير كاملة واسـعة النطاق للتعاقد مع المنظمات اللاحكوميــة على تقديم الرعاية الصحية الأوليــة في تسـع مناطق ريفية في كمبوديا في الفترة من ١٩٩٩ إلى منتصف ٢٠٠١. وتم تـضمين الأهداف المتوخاة من التغطية ومن العدالة لكافة خدمات الرعاية الصحية الأولية، بما فيها تمنيع الأطفال، تضميناً صريحاً في العقود التي تم التعاقد على تنفيذها في خمس من بين المناطق الريفية التسـع، والتي يزيد عدد سكانها على ١,٢٥ مليون شخص. أما المناطق الأربعة المتبقية، فاتبعت النموذج الحكومي التقليدي في تقديم الخدمات، مع وضع أهداف مماثلة لغيرها.

الموجودات: بعد مرور عامين ونصف من بدء التجربة، أظهرت التحليـــلات الثنائية والمتعددة المتغيرات للنتائج أنه بالرغم من وجود زيادة جوهرية في النسبة المئوية للأطفال الذين تم تمنيعهم بالكامل في جميع المناطق الصحية، إلا أن فرص الأطفال في الحصول على تمنيع كامل في نصف الأسـر الأشد فقراً في المناطق الصحية التي تولى المتعاقدون فيها تمنيع الأطفال كانت أكبر من فرص الحصول على التمنيــع الكامل لأمثالهم ممن يعيشون في ظروف مماثلة في المناطق الصحية التـي اعتمدت على النموذج الحكومي حتى في حالة تماثل جميـع العوامل الأخرى.

الحصيلة: يشير أسلوب التعاقد الموضح في هذا البحث إلى أساليب للتحول نحو توزيع أكثر عدالة لخدمات التمنيع في البلدان النامية.

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