

## Research Article

# Involvement of Traditional Birth Attendants and Community Health Workers in Improving Immunization Coverage in Kousseri Health District, Cameroon: a Mixed Methods Study

*Implication des Accoucheuses Traditionnelles et des Agents de Santé Communautaires dans l'Amélioration de la Couverture Vaccinale dans le District Sanitaire de Kousseri, au Cameroun : une Étude Mixte*

Collins Buh Nkum<sup>1</sup>, Ketina Hirma Tchio-Nighie<sup>1,2</sup>, Aicha Mbouandi<sup>1</sup>, Moustapha Moncher Nsangou<sup>3</sup>, Jerome Ateudjieu<sup>1,2,4</sup>

<https://doi.org/10.5281/zenodo.19661032>

### ABSTRACT

**Introduction.** Routine vaccination coverage in Kousseri health district shows persistent disparities, with significant numbers of “zero-dose” children. This study evaluates an integrated intervention involving traditional birth attendants (TBAs) and community health workers (CHWs) to promote routine immunization. **Patients and Methods.** This was a mixed-methods, pre-post evaluation that assessed the effect of involving TBA and CHW in the promotion of routine immunization in eight health areas from July to October 2025 of the Kousseri health district. **Results.** After the intervention, vaccination coverage improved for majority of assessed antigens: Penta 1 (+3.0%), Penta 3 (+1.1%), BCG (+2.3%) and OPV 0 (+0.4%). Regarding zero-dose cases, 176 (97.8%) zero-dose children out of 180 identified were referred for vaccination. The most commonly used awareness-raising methods were home visits (46.5%) and educational talks (33.7%). The qualitative analysis revealed high participant satisfaction (90%) and identified weather related obstacles as flooding as main operational challenges. **Conclusion.** Combined TBA and CHW involvement effectively improves vaccination coverage and reduces zero-dose children in hard-to-reach areas. Success depends on tailored training, structured monitoring, and rigorous referral. Institutionalizing this integrated model is recommended to sustainably strengthen vaccination equity in similar contexts.

### RÉSUMÉ

**Introduction.** La couverture vaccinale systématique dans le district sanitaire de Kousseri présente des disparités persistantes, avec un nombre important d'enfants n'ayant reçu aucune dose. Cette étude évalue une intervention intégrée impliquant des accoucheuses traditionnelles (AT) et des agents de santé communautaires (ASC) visant à promouvoir la vaccination systématique. **Patients et méthodes.** Il s'agissait d'une évaluation pré-post utilisant des méthodes mixtes, qui a évalué l'effet de l'implication des ACC et des ASC dans la promotion de la vaccination systématique dans huit zones sanitaires du district sanitaire de Kousseri, de juillet à octobre 2025. **Résultats.** À l'issue de l'intervention, la couverture vaccinale s'est améliorée pour la majorité des antigènes évalués : Penta 1 (+3,0 %), Penta 3 (+1,1 %), BCG (+2,3 %) et OPV 0 (+0,4 %). Concernant les cas n'ayant reçu aucune dose, 176 (97,8 %) des 180 enfants identifiés comme n'ayant reçu aucune dose ont été orientés vers un centre de vaccination. Les méthodes de sensibilisation les plus couramment utilisées étaient les visites à domicile (46,5 %) et les séances d'information (33,7 %). L'analyse qualitative a révélé un niveau élevé de satisfaction des participants (90 %) et a identifié les obstacles liés aux conditions météorologiques, tels que les inondations, comme les principaux défis opérationnels. **Conclusion.** L'implication combinée des accoucheuses traditionnelles et des agents de santé communautaires améliore efficacement la couverture vaccinale et réduit le nombre d'enfants n'ayant reçu aucune dose dans les zones difficiles d'accès. Le succès dépend d'une formation sur mesure, d'un suivi structuré et d'un système d'orientation rigoureux. Il est recommandé d'institutionnaliser ce modèle intégré afin de renforcer durablement l'équité en matière de vaccination dans des contextes similaires.

### Affiliations

1. Department of Health Research, M.A. SANTE (Meilleur Accès aux Soins de Santé), Yaoundé, Cameroon.
2. Department of Public Health, University of Dschang, Dschang, Cameroon.
3. Centre pour le Développement des Bonnes Pratiques en Santé Hôpital Central de Yaoundé, Cameroun.
4. Division of Health Operations Research, Ministry of Public Health, Yaoundé, Cameroon.

### Corresponding Author

Collins Buh Nkum

Email: [nkumcollins05@gmail.com](mailto:nkumcollins05@gmail.com);

Tel: +237 697676191

**Key words :** Vaccination; Traditional birth attendants; Community health workers; Zero doses

**Mots clés:** Vaccination ; Accoucheuses traditionnelles ; Agents de santé communautaires ; Aucune dose

**HIGHLIGHTS FOR READERS IN A HURRY**

**Aim of the study.** Effect of an integrated intervention involving traditional birth attendants (TBAs) and community health workers (CHWs) on routine immunization promotion in the Kousseri health district.

**Key findings.** This mixed-methods pre-post evaluation was conducted in eight health areas from July to October 2025. After the intervention, vaccination coverage improved for the majority of assessed antigens: Penta 1 (+3.0 %), Penta 3 (+1.1 %), BCG (+2.3 %) and OPV 0 (+0.4 %). Regarding zero-dose cases, 176 (97.8 %) zero-dose children out of 180 identified were referred for vaccination. The most commonly used awareness-raising methods were home visits (46.5 %) and educational talks (33.7 %). Qualitative analysis revealed high participant satisfaction (90 %) and identified weather-related obstacles such as flooding as the main operational challenges.

**Implications for practice and policies.** Combined TBA and CHW involvement effectively improves vaccination coverage and reduces zero-dose children in hard-to-reach areas. Success depends on tailored training, structured monitoring, and rigorous referral. Institutionalizing this integrated model is recommended to sustainably strengthen vaccination equity in similar contexts.

**INTRODUCTION**

Routine immunization remains one of the most effective and cost-efficient public health interventions for reducing infant morbidity and mortality (1). Despite significant progress made under the Expanded Programme on Immunization (EPI) globally, many countries, including Cameroon, continue to face persistent challenges in achieving optimal and equitable immunization coverage (2). These challenges are particularly pronounced in hard-to-reach areas characterized by low density of health services, migration, and the presence of socio-cultural barriers (3). In the Far North Region of Cameroon, the Kousseri health district illustrates this problem. Although data from the District health information system (DHIS2) indicate relatively acceptable overall vaccination coverage, significant disparities persist between the different health areas, with pockets of under-vaccination and a considerable number of children referred to as "zero-dose" who have not been vaccinated (unpublished data from the Kousseri health district). These inequalities in access to vaccination services are explained by a combination of factors including geographical remoteness, seasonal constraints (floods), lack of knowledge of the vaccination schedule, and certain community beliefs and resistance (4).

Faced with these challenges, community engagement and the participation of local stakeholders are emerging as promising strategies to strengthen the acceptance of and demand for vaccination services (5,6). Traditional birth attendants (TBAs) and community health workers (CHWs) represent essential links between the formal health system and communities, benefiting from long-established credibility and trust (7,8). Their proximity to

populations, their knowledge of local contexts, and their accessibility make them key actors in promoting vaccination, identifying unvaccinated children, and countering rumors (9).

Several studies have shown the potential of community actors' involvement in improving vaccination coverage. A systematic review by Alban *et al.* (2023) demonstrated the effectiveness of community health workers as vaccinators in certain contexts (10). Similarly, Tchio-Nighie *et al.* (2024) documented the positive impact of traditional birth attendants' involvement in improving access to HIV mother-to-child transmission prevention services in the same region (8). However, few studies have rigorously assessed the combined impact of these two categories of actors on routine immunization in contexts similar to that of the Kousseri district.

This study aimed to improve vaccination coverage in Kousseri by strengthening and involving these actors. This mixed-methods study evaluates the intervention's impact by comparing immunization coverage before and after implementation and assessing changes in TBA and CHW knowledge and practices.

**PATIENTS AND METHODS****- Study design**

This was a mixed-methods, pre-post evaluation that assessed the effect of involving TBA and CHW in the promotion of routine immunization. The intervention trained TBAs and CHWs in vaccination, communication, and referral, followed by structured community sensitization. We analyzed DHIS2 data immunization coverage and held a focus group discussion to assess the perception and feedback of involved community actors. Analysis employed descriptive statistics and thematic analysis.

**- Study Site and period**

The study was conducted in the Kousseri health district, located in the Far North region of Cameroon. The intervention was implemented from July 2025 to September 2025 and evaluation took place in November 2025. Eight selected health areas were targeted by the intervention, which include Amchidire, Hilehaoussa, Kalakafra, Madana, Pagui, ParPar, Houlouf and Kodogo.

**- Study Population and Sample**

The study population consisted of three distinct groups. The first group comprised children under five residing in the health areas targeted by the intervention whose vaccination data were assessed. The second group included TBAs and CHWs who benefited from the project intervention. Finally, a subsample of these actors was selected to participate in qualitative interviews aimed at gathering their detailed perceptions of the implementation and effects of the intervention.

Sampling in this study followed a comprehensive approach, based on the complete list of TBAs and CHWs provided by the head of the Kousseri health district. All identified and available actors in the targeted health areas were included in the intervention and evaluation.

**- Intervention**

The implementation comprised three main components. Firstly, TBAs and CHWs received structured training in successive waves, organized at the level of groups of health areas close to each other. The training was conducted on the national immunization schedule, vaccines offered in the Expanded Program of Immunization (EPI), communication and social mobilization techniques, rumor management, and strategies for identifying and referring under-immunized children.

Secondly, the trained TBAs and CHWs conducted community awareness sessions in households and gathering sites. These sessions promoted the importance of complete and timely immunization, clarified the immunization schedule, addressed vaccine safety, and countered misinformation. The strategy included targeted discussions including TBAs, primarily engaged women and young mothers, while CHWs organized group discussion sessions with men to promote marital support for vaccination decisions.

A systematic referral mechanism was established, whereby TBAs and CHWs identified zero-dose and under-vaccinated children and referred them to health facilities.

**- Data Collection:**

Vaccination coverage data on key EPI antigens before and after the intervention for the targeted health areas were extracted from the national health information system (DHIS2). Qualitative data was collected through focused group discussions conducted with a purposive sample of TBAs and CHWs involved in the intervention implementation. A semi-structured interview guide was used to explore their perceptions regarding the relevance, acceptability, and perceived effects of the intervention.

**- Data Analysis**

Vaccination coverage was presented as proportions and graphs by antigen and by health area. The results of the analysis were presented in tables. The recordings of the discussions were fully transcribed before coding. The analysis identified emerging themes related to the perceptions of the actors, the facilitating factors, and the barriers to intervention.

**- Ethical Considerations**

The protocol was approved by the Regional Ethics Committee for Human Health Research of the Far North Region (Ref. 028/CE/25/CRERSH-EN/SG). Informed verbal consent was obtained from all participants. Data confidentiality was ensured through anonymization.

**RESULTS**

**- Sociodemographic characteristics of community health workers and traditional birth attendants**

The sociodemographic profiles of traditional birth attendants (TBAs) and community health workers (CHWs) differed markedly. The majority of CHWs (69.6 %) had completed secondary education, whereas 41.2 % of TBAs had received no formal education. Nearly half of TBAs (47.1 %) had no other employment, compared with 20.3 % of CHWs. Although all TBAs reported prior involvement in vaccination activities, only 73.3 % of

CHWs had such experience. The proportion of workers who had received prior vaccination training was higher among CHWs (68.1 %) than among TBAs (41.2 %) (Table 1).

**Table 1. Sociodemographic characteristics of community health workers and traditional birth attendants**

Characteristic	CHW (n=69)	TBA (n=17)
<b>Education level</b>		
No education	3 (4.3)	7 (41.2)
Primary	6 (8.7)	6 (35.3)
Secondary	48 (69.6)	3 (17.6)
Higher	12 (17.4)	1 (5.9)
<b>Secondary occupation</b>		
Farmer	23 (33.3)	2 (11.8)
Housewife	8 (11.6)	6 (35.3)
No other job	14 (20.3)	8 (47.1)
Other	24 (34.8)	1 (5.9)
Prior involvement in vaccination	33 (73.3)*	17 (100)
Prior training on vaccination	47 (68.1)	7 (41.2)

**- Vaccination monitoring practices and awareness-raising methods**

Nearly half of community health workers (46.5 %) favored regular home visits to monitor children who had missed vaccine doses, while 25.6 % systematically reported these cases to health centers. Awareness-raising methods were evenly distributed among home visits (34.9 %), community educational talks (33.7 %), and individual discussions at vaccination sites (27.9 %) (Table 2).

**Table 2. Vaccination monitoring practices and awareness-raising methods (N = 86)**

Practices and methods	N	%
<b>Monitoring of children with missed doses</b>		
Regular home visits	40	46.5
Report to the health center	22	25.6
Referral to another community agent	15	17.4
No follow-up	9	10.5
<b>Methods for raising parental awareness</b>		
Home visits	30	34.9
Community educational talks	29	33.7
Individual discussions at vaccination points	24	27.9
Radio/megaphone announcements	7	8.1

**- Impact of the intervention**

Community outreach reached 5,483 people and identified 180 zero-dose children, of whom 176 (97.8 %) were ultimately vaccinated. The intervention resulted in modest but steady improvements in vaccination coverage indicators. Penta 1 coverage increased from 106.8 % to 109.8 % (+3.0 percentage points), while Penta 3 coverage rose from 104.5 % to 105.6 % (+1.1 percentage points) (Table 3).

**- Qualitative evaluation of training and operational challenges**

A focus group discussion (FGD) was conducted with 10 community actors (8 CHWs and 2 TBAs) who actively participated in the intervention. Thematic analysis revealed five major themes.

**Theme 1: Professional legitimacy and community recognition**

Participants reported a heightened sense of usefulness and credibility, which they identified as the primary driver of their sustained motivation.

*"Before, some mothers would hide their children. Now, they come to us to ask for vaccination dates."* — CHW, Pagui

*"I have been a TBA for 15 years, but this is the first time I feel truly part of the health system."* — TBA, Madana

**Theme 2: Training quality but insufficient duration**

Training was deemed relevant and practical, but its short duration limited the mastery of psychosocial and communication skills.

*"Two days is not enough to master communication with a hesitant mother. We needed more role-playing."* — CHW, Hilehaoussa

*"I cannot read. I learn by doing. The practical exercises were too few."* — TBA, Kodogo

**Table 3. Impact on vaccination performance indicators in the Kousseri health district**

Indicator	Pre-intervention (%)	Post-intervention (%)	Variation (percentage points)
<b>Overall vaccination coverage</b>			
Penta 1	106.8	109.8	+3.0
Penta 3	104.5	105.6	+1.1
BCG	104.8	107.1	+2.3
OPV 0	79.7	80.1	+0.4
Rota 1	103.0	106.0	+3.0
Rota 2	101.3	102.1	+0.8
Rota 3	99.1	99.7	+0.6
Pneumo 1	106.9	110.2	+3.3
Pneumo 2	101.1	105.2	+4.1

**Summary of qualitative themes**

Theme	Key finding	Representative quote
Legitimacy	Restored dignity and recognition	<i>"First time I feel part of the system."</i>
Training	Relevant but too short	<i>"Two days is not enough."</i>
Trust	Hesitancy → active demand	<i>"Now they come to us."</i>
Barriers	Floods, network, tools	<i>"Villages become islands."</i>
Sustainability	Formal recognition and minimal support	<i>"Partners, not just volunteers."</i>

**Theme 3: Restoration of community trust and behavior change**

A perceptible shift was observed: from mistrust and resistance to active demand for vaccination services.

*"Some men refused to let us speak with their wives. After our special sessions for husbands, several now accompany their children to the health center themselves."* — CHW, ParPar

*"Women believe us because we live in the same village, we speak the same language."* — TBA, Kala Kafra

**Theme 4: Persistent operational challenges**

Three major obstacles were consistently reported:

- **Seasonal floods:** *"During the rains, some villages become islands. We need boots or adapted planning."* — CHW, Kodogo
- **Poor network coverage:** *"To reach the supervisor, I must walk 30 minutes. In an emergency, I am alone."* — CHW, Amchidire
- **Lack of adapted tools:** *"A simple picture booklet would help us explain vaccination to illiterate grandmothers."* — TBA, Madana

**Theme 5: Aspirations for sustainability and formal recognition**

Actors strongly expressed a desire to continue their engagement, but under clear conditions.

*"We are not asking for a salary. But a badge, an official district ID card, a seat at health committee meetings – these small signs mean a great deal."* — CHW, Pagui

*"If supervision stops, we will feel abandoned. Regular visits keep us motivated and show the community we are not alone."* — CHW, Hilehaoussa

**DISCUSSION**

This study assessed the impact of an intervention simultaneously involving traditional birth attendants and community health workers on improving routine immunization coverage in Cameroon. Our results demonstrate not only the effectiveness of this integrated participatory approach on several key immunization performance indicators, but also reveal the mechanisms underlying its success and the significant challenges to its sustainability (11). This approach has made it possible to create an ecosystem conducive for vaccination by capitalizing on pre-existing relationships of trust between these community actors and the populations. The involvement of community actors in health promotion have been proven efficient in public health interventions like the improvement of access to PMTCT or vaccination in nomad population(12–14). This approach is based on the close proximity of community actors to the target populations, which already establishes a climate of trust and ownership. In the present project, we have leveraged

this approach by involving TBA and CHWs in community-based vaccination promotion among households and parents of children under five. The magnitude of the improvements observed in vaccination coverage, though moderate in absolute terms, is of significant importance in the Kousseri district. The increase by 3.1% for Penta 1 and 1.1% for Penta 3 fall within the range of effects reported in the international literature(15), but the distinctive feature of our intervention lies in its synergistic model, creating a continuum of care from the prenatal to the postnatal period(16). This temporal integration of interventions largely explains the results obtained, particularly in reaching the most marginalized populations, as proven by a rate of zero dose children at 97.8%, which exceeds the usual performance reported in sub-Saharan Africa (17). The crucial issue of sustainability, identified as a major challenge, warrants in-depth systemic analysis(18). In addition to the complementary financial incentive approach (19), our results suggest that social recognition and a sense of purpose are powerful driving forces of community stakeholder engagement, as proven by the high level of satisfaction expressed during focus group discussions, opening up innovative perspectives for motivational models (20). In addition to the present project implementation in the health district, other health projects were simultaneously implemented that could have produced a synergic or enhanced effect. This co-existence raises fundamental questions about optimizing coordination and the systemic integration of community interventions (21). Several methodological limitations must be considered when interpreting our results. The evaluation period was relatively short and a control group absent, which limited the analysis of long-term effects and the strict causal attribution of the observed improvements (22). The measurement of vaccination coverage based on the DHIS2 system may be affected by reporting bias, although this system is widely used in the country. These constraints open up essential avenues for future research, particularly regarding the economic evaluation of the intervention and the analysis of its differential effects on health equity(23). A 12-month follow-up study would allow for a better understanding of the sustainability of the observed effects.

## CONCLUSION

Our study provides evidence supporting the institutionalization of this integrated approach within the national immunization strategy. The success of this model relies on the optimal combination of several critical elements: appropriate training, regular supervision, systemic integration, and formal recognition of the role of community actors (24). The complementary collaboration between traditional birth attendants, intervening during the perinatal period, and community health workers, providing postnatal care, is the major strength of this approach. These results suggest a change in public health policies, aimed at transforming community actors from mere intermediaries into true partners in the health system (25).

## Study Limit

The absence of a control group does not allow the observed improvements to be attributed with certainty to the intervention itself, as other contextual factors (national vaccination campaigns, seasonal variations, actions by other partners) may have contributed to the changes.

## Author's contributions

All authors read and approved the final manuscript.

## Acknowledgements

We sincerely thank all the patients and hospitals who made this study possible.

## Declaration of Conflict of Interest

The authors declare that they have no conflicts of interest in relation to this study.

## Funding

No funding was received for this study.

## Ethics

All participants provided written informed consent. The research was conducted in accordance with current regulations concerning the ethical principles of the Declaration of Helsinki.

## Human and animal rights

The authors declare that the work described did not involve any experimentation on humans or animals.

## Informed consent and patient information

The authors declare that this report does not contain any personal information that could identify the patients.

## REFERENCES

1. Immunization coverage [Internet]. [cité 25 nov 2025]. Disponible sur: <https://www.who.int/news-room/fact-sheets/detail/immunization-coverage>
2. outcomes--gavi-vaccine-investment-strategy.pdf [Internet]. [cité 25 nov 2025]. Disponible sur: [https://cdn.who.int/media/docs/default-source/immunization/pdvac/pdvac-2024/day-1/outcomes--gavi-vaccine-investment-strategy.pdf?sfvrsn=5a41cf31\\_1](https://cdn.who.int/media/docs/default-source/immunization/pdvac/pdvac-2024/day-1/outcomes--gavi-vaccine-investment-strategy.pdf?sfvrsn=5a41cf31_1)
3. Enquête Démographique de Santé -V\_ 2018\_0.pdf [Internet]. [cité 26 janv 2023]. Disponible sur: [https://www.minsante.cm/site/sites/default/files/Enqu%C3%AAt%C3%A9mographique%20de%20Sant%C3%A9%20-V\\_%202018\\_0.pdf](https://www.minsante.cm/site/sites/default/files/Enqu%C3%AAt%C3%A9mographique%20de%20Sant%C3%A9%20-V_%202018_0.pdf)
4. Jalloh MF, Senghe P, Ibrahim N, Kulkarni S, Sesay T, Eboh V, et al. Association of community engagement with vaccination confidence and uptake: A cross-sectional survey in Sierra Leone, 2019. *J Glob Health*. 2022;12:04006.
5. Ingle EA, Shrestha P, Seth A, Lalika MS, Azie JI, Patel RC. Interventions to Vaccinate Zero-Dose Children: A Narrative Review and Synthesis. *Viruses*. 14 oct 2023;15(10):2092.
6. Alban R, Gibson E, Payne J, Chihana T. Leveraging community health workers as vaccinators: a case study exploring the role of Malawi's Health Surveillance Assistants in delivering routine immunization services. *Hum Resour Health*. 31 mai 2023;21(1):42.
7. Community Health Workers Capacitated on Vaccination in Practice and ZDC Tracking Log – CBC Health Services [Internet]. [cité 25 nov 2025]. Disponible sur: <https://cbchealthservices.org/community-health-workers-capacitated-on-vaccination-in-practice-and-zdc-tracking-log/>

8. Tchio-Nighie KH, Njimbina Chebe A, Murhabazi Bashombwa A, Ngu Nembo P, Ateudjieu J. Improving Access to PMTCT Through the Involvement of Traditional Birth Attendants in Program Activities in the Far North Region of Cameroon: A Retrospective Cohort Study. *HIVAIDS Auckl NZ*. 5 nov 2024;16:423-31.
9. Bodwell G. Rebuilding Trust in Vaccination through Community Health Workers in Cameroon [Internet]. Sabin Vaccine Institute. 2023 [cité 25 nov 2025]. Disponible sur: <https://www.sabin.org/resources/rebuilding-trust-in-vaccination-through-community-health-workers-in-cameroon/>
10. Marefiaw TA, Yenesew MA, Mihirete KM. Age-appropriate vaccination coverage and its associated factors for pentavalent 1-3 and measles vaccine doses, in northeast Ethiopia: A community-based cross-sectional study. *PLOS ONE*. 16 août 2019;14(8):e0218470.
11. Community health worker programmes in the WHO African region Policy brief | WHO | Regional Office for Africa [Internet]. 2025 [cité 25 nov 2025]. Disponible sur: <https://www.afro.who.int/publications/community-health-worker-programmes-who-african-region-policy-brief>
12. Ateudjieu J, Tchio-Nighie KH, Goura AP, Ndinakie MY, Dieffi Tchifou M, Amada L, et al. Tracking Demographic Movements and Immunization Status to Improve Children's Access to Immunization: Field-Based Randomized Controlled Trial. *JMIR Public Health Surveill*. 1 mars 2022;8(3):e32213.
13. Nsongola RDM, Ndziessi G, Niama AC, Ngatse JA, Massala J, Matangelo GE, et al. Evidence on the Impact of Community Health Workers on Health Indicators in Congo: A Quasi-Experimental Temporal Study. *Open J Epidemiol*. 26 août 2025;15(3):712-26.
14. Reyat HP, Perera MN, Guruge GND. Effectiveness of a community-based participatory health promotion intervention to address knowledge, attitudes and practices related to intimate partner violence: a quasi-experimental study. *BMC Public Health*. 27 mai 2024;24(1):1417.
15. Bosch-Capblanch X, Liaqat S, Garner P. Managerial supervision to improve primary health care in low- and middle-income countries. *Cochrane Database Syst Rev*. 7 sept 2011;2011(9):CD006413.
16. Haddad S, Bicaba A, Feletto M, Taminy E, Kabore M, Ouédraogo B, et al. System-level determinants of immunization coverage disparities among health districts in Burkina Faso: a multiple case study. *BMC Int Health Hum Rights*. 14 oct 2009;9(1):S15.
17. Zero-dose children and missed communities [Internet]. 2025 [cité 25 nov 2025]. Disponible sur: <https://www.gavi.org/our-alliance/strategy/phase-5-2021-2025/equity-goal/zero-dose-children-missed-communities>
18. Perry HB, Zulliger R, Rogers MM. Community Health Workers in Low-, Middle-, and High-Income Countries: An Overview of Their History, Recent Evolution, and Current Effectiveness. *Annu Rev Public Health*. 18 mars 2014;35(Volume 35, 2014):399-421.
19. Gopalan SS, Mutasa R, Friedman J, Das A. Health sector demand-side financial incentives in low- and middle-income countries: a systematic review on demand- and supply-side effects. *Soc Sci Med* 1982. janv 2014;100:72-83.
20. Singh KD, Alagarajan M, Ladusingh L. What Explains Child Malnutrition of Indigenous People of Northeast India? *PLOS ONE*. 29 juin 2015;10(6):e0130567.
21. A77/32 - Mises à jour et rapports futurs : renforcement des services de santé intégrés centrés sur la personne [Internet]. [cité 25 nov 2025]. Disponible sur: [https://apps.who.int/gb/ebwha/pdf\\_files/WHA77/A77\\_32-fr.pdf](https://apps.who.int/gb/ebwha/pdf_files/WHA77/A77_32-fr.pdf)
22. Habicht JP, Victora CG, Vaughan JP. Evaluation designs for adequacy, plausibility and probability of public health programme performance and impact. *Int J Epidemiol*. févr 1999;28(1):10-8.
23. Sweeney S, Vassall A, Foster N, Simms V, Ilboudo P, Kimaro G, et al. Methodological Issues to Consider When Collecting Data to Estimate Poverty Impact in Economic Evaluations in Low-income and Middle-income Countries. *Health Econ*. févr 2016;25 Suppl 1(Suppl Suppl 1):42-52.
24. Lewin S, Munabi-Babigumira S, Glenton C, Daniels K, Bosch-Capblanch X, van Wyk BE, et al. Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases. *Cochrane Database Syst Rev*. 17 mars 2010;2010(3):CD004015.
25. Schneider H, Lehmann U. From Community Health Workers to Community Health Systems: Time to Widen the Horizon? *Health Syst Reform*. 2 avr 2016;2(2):112-8.