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Strengthening Equity in Access to Basic Health Care for Indigents via PBF: Selected Key Results in Koulikoro Region, Mali

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Abstract | **Original Research Article**

Introduction: Performance-Based Financing (PBF) can improve access to health care for vulnerable populations, especially those living in insecure areas [8-25]. However, to achieve this goal, careful consideration must be given to the multidimensional challenges faced by these people. Studies highlight the complexity of improving access to health care for the indigent/vulnerable, as they face many barriers [18-24]. These barriers are often interrelated and require a holistic approach to overcome. Despite these challenges, PBF can be effective in reaching vulnerable populations when implemented by incorporating equity measures, empowering health facilities to make autonomous decisions. These different recommendations were taken into account in the PBF model implemented in Mali from 2020 to 2024. The purpose of this study was to assess whether this model improved the performance of the government's medical assistance scheme for indigents. ***Methods***: This was a retrospective quantitative cross-sectional study of data collected from the reports of the social information subsystem from 2017 to 2020, the RBF portal, and the quarterly activity reports of the contracting and verification agency from 2021 to 2023 for all health facilities under PBF contracts in the ten districts of the Koulikoro region. ***Results***: The results of our study show that, with PBF, in addition to the 10 district hospitals that provided facilities for the indigent, 290 CSComs, 112 for-profit private facilities, 343 village maternity hospitals, and 230 community health workers participated in the provision of services to this segment of the population. Thus, the average number of beneficiaries of support in each of the 10 districts increased from 248 people in 2020 to 1367 in 2021, then 3993 in 2022 and 6882 people in 2023. Compared to 2020, the rate of increase in the number of people cared for increased to 482% in 2021, 1600% in 2022 and 2745% in 2023. ***Conclusion***: Integrating equity measures in PBF programs plus autonomy for health facilities in identifying and responding to the specific needs of their local populations, including indigent/vulnerable people, and integrating all types of care providers can help PBF programs complement medical assistance programs. While our results highlight improved healthcare for vulnerable populations, further qualitative analysis is needed to understand the experiences of facility managers, providers, and indigent/vulnerable people. This will help adjust the PBF system and facilitate its adoption by all stakeholders.

Keywords: PBF, Health facilities, Equity, Indigents.

1. INTRODUCTION

The question of equity has always been at the heart of health policies, from Alma-Ata to UHC, social inequalities in health have not fully improved over time. Despite all the claims of social justice, inequalities are widening and the poorest remain largely excluded from health services, especially in the context of austerity and health financing policies [2-8].

Over the past decade, performance-based financing (PBF) has been promoted as an innovative approach to promote universal health coverage (UHC) and equity [4-19]. PBF is a systems approach with a results orientation defined as quantity and quality of outputs and inclusion of the vulnerable.

To improve the supply of care to vulnerable persons, in the PBF model implemented since 2020 in Mali, several tools have been developed and implemented to encourage health facilities to offer more care to this category of users [3]. These tools complement those already developed by the national insurance agency, which the Government has tasked with helping indigents access health care.

Four years after the implementation of this approach, it is pertinent to reflect on the results obtained.

2. BACKGROUND AND RATIONALE

In 2018, Mali adopted a universal health insurance scheme accompanied by a financing strategy that aimed to defragment existing health risk coverage mechanisms to offer the entire Malian population a single health insurance scheme that will cover all social categories through more appropriate mechanisms. This scheme merges and complements the compulsory health insurance scheme (AMO), the medical assistance scheme (RAMED), the mutualist system and private insurance [1]. Its financing strategy planned to reach a level of public financing for the development of universal health coverage by reaching 14% of the national budget by 2023. It should ensure better allocation of resources by establishing a system for allocating financing based on efficiency and equity objectives (i), develop certification and the establishment of appropriate pricing arrangements (ii), systematically consider sector priorities and the national context in resource allocation(iii), develop a strategy with the private sector in the interest of the people [1].

The success of this insurance regime required improving financial governance through the implementation of a strategic financial information management system (i), improved efficiency in grant management (ii), accountability mechanisms and strengthening of the institutional environment for sustainable financing (iii) [2].

To help accelerate the implementation of this major reform, the Accelerating Progress toward Universal Health Coverage (PACSU) project [3], was designed with performance-based financing as its main instrument.

It should be noted that over the past decade, performance-based financing (PBF) has been promoted as an innovative systems approach to promote universal health coverage (UHC) and equity [4-19].

In Mali, performance-based financing (PBF) operations are based on a fee-for-service model adjusted for quality and equity [3]. Health facilities (HF) receive subsidies based on the number of services provided against a predefined list of services and may receive a quality bonus if the services are in line with norms and standards.

To reduce inequities, an inter- and intra-district equity bonus was introduced. For a district, the interdistrict equity bonus rate is calculated using the following parameters: population density per km² (10 percent of the score), the prevalence of monetary poverty in the locality (30 percent), the distance from the district seat to the regional capital (20 percent), and the security level of the locality (40 percent). The rate of the equity bonus for health facilities in a district varies between + and – 10% around the district's score [3]. This bonus made it possible to substantially increase subsidies for health facilities in remote, poor and highly insecure areas. For example, if a health facility whose overall output (number of reported cases for each indicator multiplied by the agreed unit price) is 1000,000 has an equity bonus of 70 percent, it will receive an additional 700,000. Its overall profit will then be 17000000.

In addition to the inter- and intra-district equity bonus, the PBF program provided other subsidies called quality improvement bonuses to reduce inequity. These bonuses were used to strengthen the technical platform or to staff in medical facilities who expressed need. These two bonuses allow health facilities with structural deficits to have more resources to improve their technical platforms more quickly.

In addition, to encourage health facilities to agree to provide free care to indigent/vulnerable people, personal equity was introduced and consisted in granting a health facility four times more subsidies for the medical care of an indigent/vulnerable person [3]. The identification of indigent and vulnerable persons [1], was left up to the discretion of health care providers, CHWs, community health care workers, and health facility management bodies [2]. Under RAMED, the indigent was identified by the deconcentrated State services responsible for social action and the local authorities. These people were given a national registration number.

Prior to the implementation of this approach, care for indigents was provided under the medical assistance system. The results were very timid. According to regional statistics for Koulikoro, there were an average of 200 patients treated per year per district. As an explanation for this shortcoming, providers cited delays in identifying, registering, and reimbursing the costs associated with caring for indigents. Thus, medical care for indigents under RAMED was confined to district hospitals and a few community health centers located in urban areas. It should be recalled that only the community health centers, and district hospitals had signed a collaboration agreement with ANAM, RAMED's management structure. Private, faith-based health facilities and village maternity clinics were

[1] Under the Program, indigents/vulnerable persons were persons who did not receive care, plus those admitted by right, which included prisoners, wards of the State, internally displaced persons, residents of for-profit associations/orphanages, etc.

[2] In Mali, health facilities known as community health centers are managed by user associations, also known as community health associations. These health facilities enjoy total management autonomy.

excluded from the scheme and offered only limited and non-verifiable aid to the indigent.

In the context of the PBF program, the support provided by health facilities to indigent/vulnerable persons consisted of covering part or all their costs for medical procedures, complementary tests, and medications [3].

In this study, we decided to focus only on aspects related to the provision of care to the indigent and vulnerable, the question of: Has the approach developed led to greater access to health care for this segment since 2020?

3. RESEARCH QUESTION AND OBJECTIVES

Research Question:

Has the PBF approach led to increased access to health care for indigent and vulnerable individuals, compared to RAMED?

Objectives:

- Analyze the evolution of the number of patients cared for as well as the types of care concerned.
- Estimate the evolution of the proportion of users treated as indigent from 2021 to 2023 in district hospitals, community health centers, private health facilities, and village maternity wards in the care offered to indigents.

4. METHODS

Research Design: Retrospective quantitative cross-sectional study.

Data Collection:

Data was collected from the reports of the social information subsystem (SISO from 2017 to 2020), the RBF portal, and the quarterly activity reports of the contracting and verification agency for the following years.

Sampling: All health facilities under PBF contracts in the ten districts of the Koulikoro region.

Data Analysis: Quantitative data were analyzed using Excel.

Study Period: January 2021 to December 2023 (36 months).

Data Collection Area:

The study took place in the Koulikoro region, which is Mali's second administrative region, located in the center of the country. It covers 90,120 km2 and its capital is the city of Koulikoro. The total population was 5,418,305 in 2023, with a density of 60 inhabitants/km2 and an average annual growth rate of 4% between 1998 and 2009. The Koulikoro region is bordered to the north by Mauritania, to the west by the Kayes region, to the south by Guinea and the Sikasso region, and to the east by the Segou region. Together with the regions of Mopti and Ségou, it forms what is commonly referred to as central Mali.

5. RESULTS

The results presented here are those obtained under RAMED from 2017 to 2020 and PBF from the fourth quarter of 2020 to 2023. For the PBF program, only verified and validated data were considered. Note that non-validated data are those that did not meet validation criteria but resulted in expenditures for health facilities. In addition, the PBF program did not provide subsidies for prenatal visits for indigents. For this indicator, data reported come from the Social Information Subsystem (SISO). The calculated rate of progress compares the results achieved each year with those achieved in the year 2020.

5.1 Number of Health Facilities Involved in the Study:

Tab. 1

Types of providers	**Types of Contracts**		
	Main Contract	**Contracted**	**Total**
District hospitals	10	0	**10**
CSCOM *	190	0	**190**
Private health facilities	28	84	**112**
Village maternity clinics	19	324	**343**
Community Health Workers	0	230	**230**
Total	**247**	**638**	**885**

*Centres de sante communautaires/ Community Healthcare centers (CHC)

The study included data from 885 health facilities, including 10 district hospitals, 290 CSComs, 112 for-profit private facilities, 343 village maternity clinics, and 230 community health workers.

[3] Contrary to the provisions of RAMED, which provides for completely free care, under the PBF program, support can take the form of partial or total coverage of the costs of medical procedures, complementary tests, and medications. It should be noted that in RAMED, only generic drugs are taken into account at the level of basic health facilities.

5.2 Evolution of the Number of Patients Treated and the Types of Care Concerned

Tab. 2

N	Indicators	Aspects assessed	2017	2018	2019	2020	2021	2022	2023
1	Curative consultations	Number	3570	3030	2395	2168	10121	27001	41793
2	Management of severe malaria among children under 5 years of age	Number	-	-	28	64	1911	5955	11036
3	Cases of major surgery other than caesarean section	Number	86	54	42	32	135	556	575
4	Cases of eutocical births	Number	118	13	15	19	629	2106	4468
5	Cases of obstructed delivery	Number	0	0	0	26	269	725	1,822
6	Cases of antenatal care visits**	Number	13	47	37	42	18	22	26
7	Cases of free hospitalization/observation days	Number	0	0	0	101	1687	7386	15223
8	Cases of minor surgery	Number	-	-	-	24	806	3835	8278
9	Caesarean section cases	Number	0	0	0	0	31	94	262
10	Blood transfusion cases	Number	0	0	0	0	33	377	410
	Total	**Number**	**3787**	**3144**	**2489**	**2450**	**15353**	**47310**	**82045**
		Rate of progress	ND	-17	-21	-2	527	1831	3249

NB: **: the data source for this indicator is SISO, this indicator was not included in the PBF

Since 2020 and the launch of the PBF program, we have observed a stabilization of the decrease in the number of patients treated by RAMED, followed by a steady increase from 2021 onwards. The results of the PBF did not result in any additional expenditure for RAMED. In order to avoid double use, only indigents not registered with RAMED were included in the PBF program. However, because most of the CSCOMs have abandoned RAMED because of unpaid bills, PBF has expanded coverage to cover all indigents, whether registered or not, to ensure equity.

5.3 Estimation of the Rate of Increase in the Number of Patients Treated in District Hospitals, Community Health Centers, Private Health Facilities, and Village Maternity Wards in the Care Offered to the Indigent.

5.3.1 Overall Situation

Tab. 3

N	Indicators	Aspects assessed	2020	2021	2022	2023
1	Curative consultations	No. of cases reported	277191	798606	967088	911437
		% destitute	1	1	3	4
2	Cases of severe malaria among children under 5 years of age cared for	No. of cases reported	20900	60190	106318	105118
		% destitute	0	3	5	10
3	Number of days of hospitalization/observation	No. of cases reported	21563	66853	112640	83626
		% destitute	1	2	5	12
4	Minor surgery cases	No. of cases reported	3727	29346	42907	58248
		% destitute	1	3	8	12
5	Cases of eutocic deliveries	No. of cases reported	18961	63863	74746	81509
		% destitute	1	1	3	5
6	Cases of dystocic vacuum-induced deliveries	No. of cases reported	365	1925	3800	6116
		% destitute	7	12	16	23
7	Caesarean section cases	No. of cases reported	863	3500	3978	4009
		% destitute	0	1	2	6
8	Cases of major surgeries other than caesarean sections	No. of cases reported	392	4545	6229	3644
		% destitute	0	3	8	14
9	Blood transfusion cases	No. of cases reported	2467	7524	8409	6005
		% destitute	0	0	4	6

The analysis of this table reveals that the proportion of users of supported services has increased steadily over the years. This trend is probably due to better mastery of tools, more rigorous criteria for validating indicators, increased confidence of health establishments in the subsidy payment system, and better knowledge of the health care system by the population.

Between 2021 and 2022, the number of patients treated almost doubled due to a change introduced. In

fact, even though health establishments received four times as many subsidies for the care of indigents, the costs of drugs and additional tests were considered an obstacle. The health authorities in the Koulikoro region therefore decided to allocate 50% of the equity bonuses to cover these costs. This allowed providers to have funds to help the indigent and vulnerable without risking the decapitalization of their pharmacies and laboratories.

In addition, the start-up of coverage of indigent and vulnerable people at the level of the CHC, private health establishments, village maternity clinics, and sites for community health workers (CHWs), as well as the strengthening of the referral system for patients to district hospitals, has enabled the latter to provide more assistance to patients requiring blood transfusions. Surgical care and assistance with obstructed deliveries (cupping or caesarean section).

These findings are further illustrated in the graphs below.

5.3.2 Situation by Type of Health Facility

In the Malian program, care for vulnerable persons included 7 indicators at the Complementary package of activities PCA level and 6 at the Minimum package of activities MPA level. The standards allowed subsidies as long as vulnerable beneficiaries did not exceed 25 percent of users.

The results were as follows:

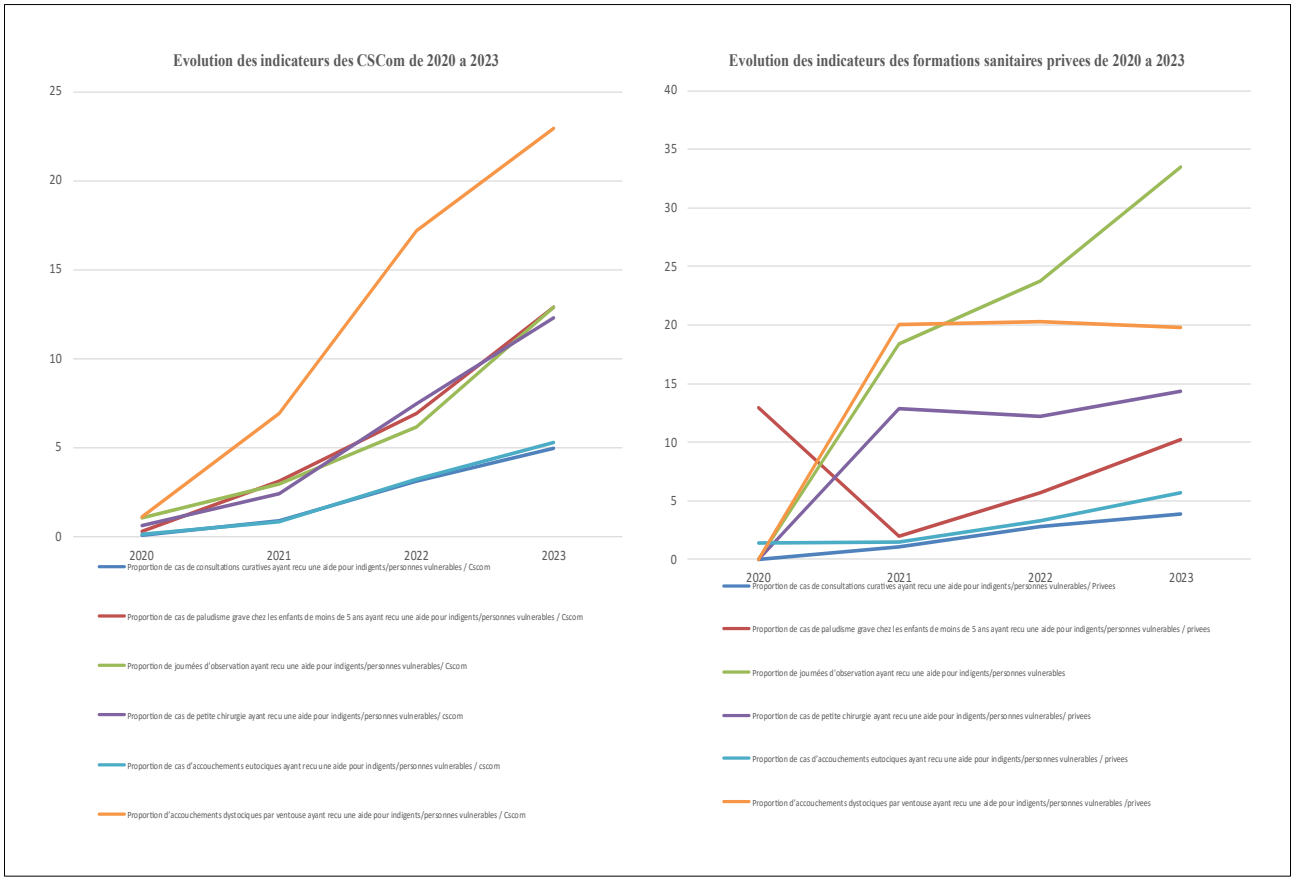

Figure 1: Evolution of the indicators of private health facilities and CSCOMs from 2020 to 2023

An unexpected outcome of the program was greater involvement of for-profit private health facilities in the care of indigents.

As in private for-profit health facilities, the proportion of users receiving assistance in CHC increased steadily from 2020 to 2023, with a peak in 2023, especially for obstructed childbirth.

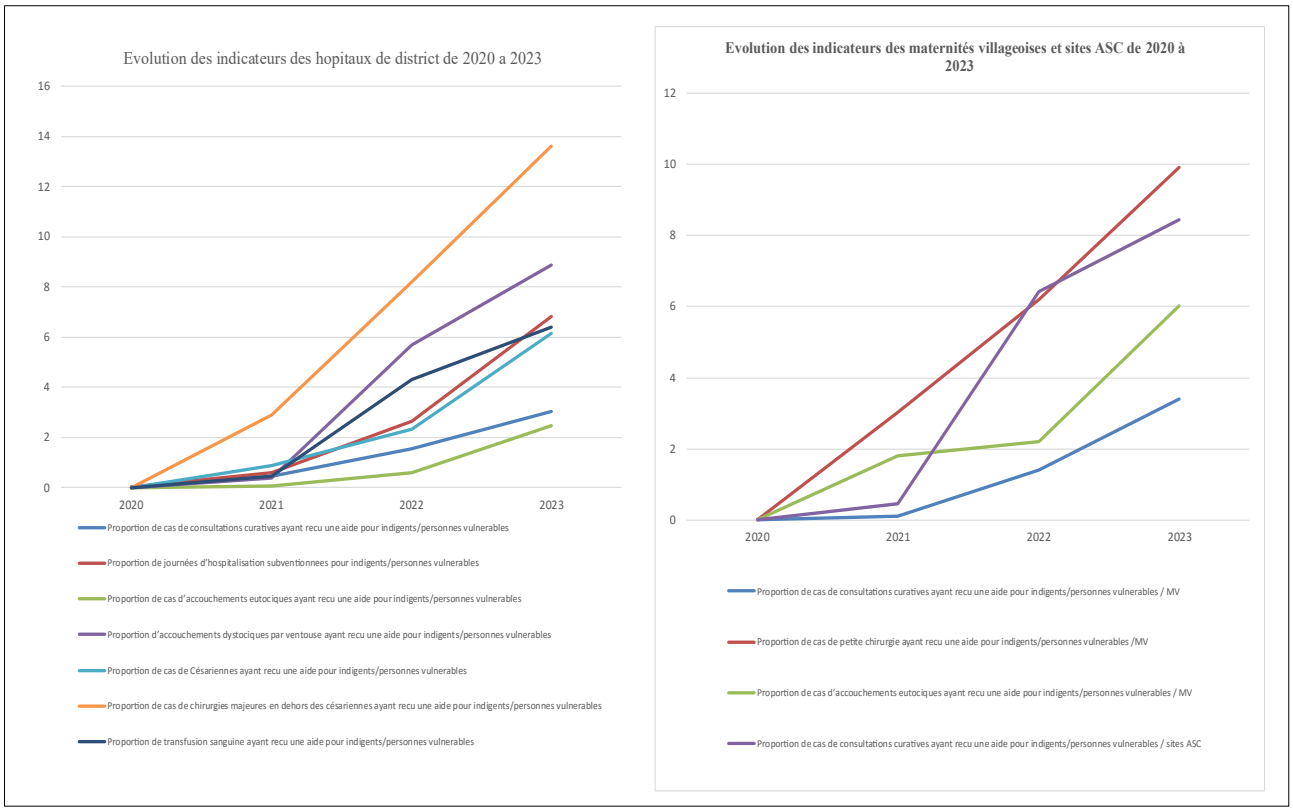

Figure 2: Evolution of district hospitals and village maternity hospital indicators from 2020 to 2023

As in other health facilities, the increase in the proportion of users who have received assistance is also remarkable in village maternity wards and CHW sites, the actual first-contact health structures.

6. DISCUSSIONS

Many authors argue that performance-based financing does not lead to universal health coverage or equity. However, many acknowledge that PBF programs have introduced strategic purchasing approaches, including tools for contracting and paying providers based on results, which were used for the first time in some countries. To respond to the recommendations of various studies, the PBF model implemented in Mali incorporates several tools aimed at strengthening equity between health facilities and social justice in favor of the most vulnerable.

Due to limited resources available for this research, we were unable to complement our quantitative study with in-depth qualitative analysis. Such a qualitative analysis, based on key informant interviews and focus group discussions using a grounded theory-based approach, would have led to a better understanding of social processes and their experiences with the identification and care of the indigent and vulnerable, as done by Turcotte-Tremblay AM *et al*., (2018). In addition, for our quantitative study, an experimental design (cluster randomized trial) nested within a quasi-experimental design (pre- and post-test with independent controls) would have been more appropriate to assess statistical inferences. Nevertheless, our study has identified some interesting findings.

In particular, the introduction of PBF as well as equity instruments such as the personal bonus and the inter- and intra-district equity bonus have led to better care for indigent and vulnerable persons compared to the pre-existing medical assistance system. Private health facilities, which account for 42 percent of Mali's health structures (Herams, October 2024), community health centers, and their satellites (village maternity wards, CHW sites) rarely applied RAMED. Turcotte-Tremblay AM *et al*., (2018) found that health care providers viewed free drug distribution as causing financial hardship and shortages, particularly due to low purchase prices and long payment delays. These factors have led health workers to limit free services to indigents, leading to conflicts between indigents and providers. Finally, some indigents have benefited from uneven and uncertain coverage.

With the implementation of the program and its equity tools, the number of services delivered per district increased from 296 to 1,535, then to 4,731 and finally to 8,205 persons treated per health district. All types of health facilities (public, community, private) participated in this service, thus bringing care closer to this category of users. Priedemam SC *et al*., (2013) found that the assurance of care is a positive predictor of service utilization. Their research suggests that a PBF program that promotes certain services, such as institutional deliveries, can improve overall service utilization.

However, they also found that a PBF program without equity objectives does little to reduce disparities. According to Laurence Lannes *et al*., (2015), PBF implementation improved access to health services for the better-off but was less effective in reaching the poorest.

In addition to the traditional equity tools incorporated into the Malian PBF model, several other factors contributed to the achievement of the results obtained. In particular, the involvement of private health facilities, village maternity wards, and CHW sites in the care of indigents, with the establishment of appropriate support documents tracking all useful information, including the level of financial contribution from the health center. In addition, part of the equity bonus for health facilities was used to cover the cost of drugs and additional tests for the indigent patients in care. Finally, health facilities were given autonomy in identifying indigent/vulnerable people. The study found that the standard of 25 percent of beneficiaries identified as indigent/vulnerable did not exceed the standard. The highest proportions were noted for obstructed deliveries, non-caesarian surgeries, minor surgeries, observation/hospitalization days, and severe malaria in children under 5 years of age, at 23%, 14%, 12% and 10%, respectively. Flink IJ *et al*., (2016) found that targeting the poorest in PBF programs can reduce inequities in access to care, if design and implementation issues leading to insufficient coverage are addressed. It is essential to pay attention to the persistent barriers to the use of health care (transport, negative community reactions towards the indigence). Lohmann J *et al*., (2022) showed that various contextual, design, and implementation issues prevented the causal mechanism from unfolding as intended, including with respect to the identification and exemption of the very poor and supply-side financial considerations.

Overall, our results highlight the challenge of improving access to care for the poorest, given the complex nature of the barriers they face. However, by incorporating equity measures and granting autonomy to health facilities, results can be improved.

7. IN CONCLUSION

Performance-based financing (PBF), when implemented with equity measures and increased autonomy for health facilities, can improve access to care for the indigent and vulnerable. By using clear indicators and defining a mechanism to cover medical costs, PBF can complement existing medical assistance schemes and advance towards universal health coverage. A qualitative analysis of the experiences of managers, providers and beneficiaries will help to adjust the scheme and facilitate broader adoption.

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