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The sustainability of two departmental health insurance units in Senegal: A qualitative study

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ABSTRACT

Despite decades of implementation, community-based health insurance (CBHI) in Africa has not effectively achieved Universal Health Coverage (UHC). As a response, from 2014 to 2017, a Belgian-Senegalese project organized an alternative solution: Departmental Health Insurance Units (UDAM). Professionals managed UDAMs at a departmental level, and healthcare providers charged a flat-rate fee. While research on sustainability is scarce in Africa, this study aims to understand the factors that explain why, four years after the end of the project, UDAMs are sustained. This qualitative research used Schell et al. (2013) conceptual framework on factors influencing sustainability. The data came from 13 months of field observations, a documentation review, 120 interviews at the local level and nine at the regional and national level, and a focus group. We carried out a thematic analysis according to the conceptual framework. The results show that central political support has strengthened over time. UDAMs have managed to stabilize their funding through State subsidies and social marketing strategies to improve membership. UDAMs kept their management fees at 13%, below the 25% standard proposed by the West African Economic and Monetary Union. Multiple partnerships have been established at international, national, and local levels. Building on the professionalization of its staff, UDAMs have strengthened their organizational capacity. Internal controls and a complaints system have been organized to improve UDAMs' accountability. Many communication activities were carried out before the end of the project to prepare the exit strategy. With their extensive coverage (penetration rate over 60%), UDAMs impact the health system (between 2014 and 2021, they paid 2.5 million EUR to healthcare providers). Innovations have been implemented, such as organizing a group contribution based on collective work in fields of culture supported by the communities and local stakeholders. As part of its UHC strategy, Senegal decided at the end of 2022 to transition its 676 communal CBHI into 46 departmental units. The sustainability of two UDAMs has demonstrated the relevance of this model. However, sustainability can only be assured if the State prioritizes the health sector and donors place greater emphasis on alignment and sustainability. We need to study how it is organized to scale up nationally.

Introduction

The scientific community must focus more on sustainability issues in health intervention research. When addressing chronic diseases in low- and middle-income countries (LMICs) between 1990 and 2020, only 0.8% of the evaluations of interventions focused on their sustainability (Hategeka et al., 2022). Yet in their famous proposals of implementation science, Proctor and colleagues highlighted sustainability as one of eight

Abbreviations: ANACMU, National Agency for Universal Health Coverage; APM, Mutual promotion agents; CMU, Universal health coverage; CNAM, National Health Insurance Fund; CSU, Universal health coverage'; DECAM, Decentralization of health insurance; Enabel/CTB, Belgian technical cooperation; Lux-Dev, Luxembourg cooperation; MDCEST, Ministry of Community Development, Social and Territorial Equity; OECD, Organization for Economic Cooperation and Development; PFMR, Low- and middle-income countries; TFP, Technical and financial partners; UDAM, Departmental Health Insurance Units; UEMOA, West African Economic and Monetary Union; USAID, United States Agency for International Development; WHO, World Health Organization.

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outcomes to be studied, along with acceptability, adoption, relevance, cost, feasibility, fidelity, and penetration (Proctor et al., 2011). In a recent revision of these proposals, some proposed that sustainability should be understood as a result that must be anticipated from interventions (Damschroder et al., 2022), thus echoing the old work of Pluye et al. (2004). Furthermore, sustainability is one of the six essential criteria for any evaluation of development interventions, according to the Organization for Economic Co-operation and Development (OECD). The OECD defines sustainability as the "*extent to which the net benefits of intervention will continue or are likely to continue*" (OECD/DAC Network on Development Evaluation, 2019), thus agreeing with academic definitions (Pluye et al., 2004; Scheirer, 2005). However, in 2015, out of the 104 measuring instruments available to study the eight implementation outcomes (Proctor et al., 2011), only eight were concerned with sustainability (Lewis et al., 2015). Thus, sustainability remains a relatively underexplored dimension in the evaluations of development projects, particularly in Africa (Braithwaite et al., 2020; Lennox et al., 2020). Indeed, it may be challenging to go against the "cartel of success" (Rajkotia, 2018) in the development world, where there are multiple conflicts of interest and may reduce the willingness to understand whether the effects of an action persist as a result of the departure of the technical and financial partners (TFPs). In most cases, the impact of development projects does not survive their departure (Niang et al., 2022).

In the area of health finance in Africa, many interventions fail to survive beyond the shutdown of their projects. Notable examples include Community-Based Health Insurance (CBHI) in LMICs (Fadlallah et al., 2018; Ridde et al., 2018), Ghana (Alhassan et al., 2016) or Nigeria (Odeyemi, 2014), as well as performance-based financing initiatives in countries such as Benin and Senegal (Bodson and Zongo, 2021), Burkina Faso (Seppey et al., 2021), Mali (Seppey et al., 2017). These studies in West Africa highlight multiple factors explaining the lack of sustainability consistent with the dimensions of the different analytical frameworks (Pluye et al., 2004; Braithwaite et al., 2020; Lennox et al., 2020). These studies concern implementation modalities, ownership, leadership, origin of projects, stakeholder involvement, or simply maintaining funding. The issue of sustainability takes on added significance in the current context of global health decolonization debates (Büyüm et al., 2020) which involve the role of international aid in budgets and the choice of interventions and their policy instruments. A systematic review confirmed the influence of TFPs in the formulation of health financing policies (Gautier and Ridde, 2017), especially since in some countries, such as Rwanda, almost half of health expenditure is financed externally (WHO African Region, 2021). The World Health Organization (WHO) argues that as international aid increases, LMICs tend to reduce their share of the health sector in their budgets (World Health Organization, 2022).

CBHI in Senegal emerged in the late 1980s and the government set up a support unit in 1996 (Alenda-Demoutiez et al., 2019). By 2003, only 79 CBHI were considered functional (Atim et al., 2005). In the mid-2010s, as elsewhere in LMICs (Chen et al., 2022), insurance coverage was very low in Senegal. In 2012, the state, with the support of the United States Agency for International Development (USAID), formulated a national strategy for universal health coverage (UHC) based mainly on the development of CBHI at the municipal level (Daff et al., 2020). Senegal is following a movement launched in West Africa for several decades whose limits were already known—in particular, its low coverage and lack of professionalization of its staff (Ridde et al., 2018; Ndiaye et al., 2007), confirmed by a recent study in Senegal (Rouyard et al., 2022). Thus, in 2010, an analyst said, '*The future of the* [*CBHI*] *they set up with the help of donors of all kinds is conditioned by the goodwill of their foreign interlocutors*' (Baumann, 2010). In 2021, more than 600 communal CBHI were functional across the country. Volunteers organized these CBHIs and their level of risk is limited at the communal level. However, they struggle to meet the needs of the people because less than 5% of the population are members (Agence Nationale de la Statistique et de la Démographie, ICF, 2020).

At the same time, a Belgian technical cooperation project (Enabel/CTB) proposed another model with an investment of EUR 16 million and EUR 4 million from the Senegalese government. It was launched in 2014 in two departments (Koungheul and Foundiougne) in two different regions (Bossyns et al., 2018). While strengthening the provision of care and organizing subsidized flat-rate fees, the project tested a departmental rather than municipal CBHI model. All communal CBHIs were dissolved, creating a single CBHI for each department. This proposal follows the principles proposed 20 years ago for district CBHI (Criel, 1998). In addition, these CBHI are managed by professionals with a head office, mobilize original membership strategies (group fees, focal points in each village, etc.), and have community governance (general assembly and board of directors). Despite the completion of Enabel's financial and technical support in 2017, these two departmental health insurance units (UDAM) maintained services to their members and increased their level of coverage. While the penetration rate was less than 4% at the start of the project in 2014, it was about 30% in 2017 at the end of the project, and almost 60% in 2020. Thus, at the time of publication, the sustainability of these UDAMs was confirmed. We have identified by a quantitative method the main factors that may explain this exceptional situation (Authors). In addition, another study showed that these UDAMs were resilient to the COVID-19 pandemic. (Authors). This article aims to explore the factors behind this sustainability through qualitative research and extended fieldwork.

Context

Senegal has a pyramid-shaped health system similar to those in French-speaking West Africa. More than 1400 health posts and over 100 district hospitals provide primary healthcare. Public service providers mainly organize the health system. The private sector is limited to the capital, where 52% of private structures are located, and to the urban sector (Diop et al., 2018). As of 2019, only 0.2% of healthcare staff are employed by the private sector (DGPEC, 2019).

Furthermore, 43% of human resources in the care field (medical, nursing, obstetrics, etc.) are in the capital region. The density of this staff could be more evenly distributed across the country, for example seven per 10,000 inhabitants in the Dakar region compared with three in the Louga region (DGPEC, 2019). A New National Plan for Development of Human Resources for Health 2021–2028 was formulated to strengthen staff distribution's quantity, quality, and equity (HRH2030, 2021).

State funding has remained very low for many years, at around 5% of the State budget (Paul et al., 2020). As a result, as of 2021, health expenditure is borne mainly by patients (36%), followed by the State (28%) and donors (25%) (MSAS, 2022). The higher patient percentage is due to user fees in health facilities and the historical challenges of prepayment systems (Foley, 2010). Furthermore, 37% of healthcare spending was on noncommunicable diseases and 21% on infectious diseases (MSAS, 2022). Yet the system remains highly fragmented (Mladovsky, 2020), focused on hospitals and curative care in urban areas and influenced by international aid (Caffin, 2018; Mladovsky et al., 2023).

Senegal was the first African country to ratify the International Labor Organization (ILO) Convention 102 on Social Security in October 1962, but not about health insurance. Since 2017, Senegal has had a national health financing strategy and a National Health Development Programme (2019–2028). In 2013, the country adopted the CBHI at the communal level as a national strategy as part of strategic support provided by USAID and a US private consulting firm (Abt Associates). The National Agency for Universal Health Coverage (ANACMU) was created in 2015 and has a strategic plan (2023–2027). ANACMU is supervised by the Ministry of Community Development, Social Welfare and Solidarity (MDCEST) (Authors).

Methods

This qualitative research (Patton, 2002) was carried out in 2020 and 2021 as part of an embedded research perspective (Ghaffar et al., 2017). Through a scientific approach where research, intervention, and decision-making teams are associated, the objective was to produce helpful knowledge to inform current debates on strategies for UHC in Senegal. The authors of this article are researchers and leaders of UDAM. The study was carried out in the only two departments (Table 1) where UDAMs have been established since 2014 and at regional and national levels.

As a continuation of the conceptual work (Pluye et al., 2004; Scheirer, 2005; Lennox et al., 2020), Schell and his colleagues (Schell et al., 2013) proposed a framework for the sustainability of public health interventions. They suggested nine factors that may influence the ability of a public health intervention to be sustainable (Table 2).

In this research, we focused less on the level of sustainability (Pluye et al., 2004), demonstrated by quantitative indicators (Tables 1 and 4), than on the factors that may have contributed to it. This conceptual framework was adapted to the context and used a priori to design different tools for data collection.

We used four data collection tools. Our knowledge of the two UDAMs since 2015 (Bossyns et al., 2018; Mbow et al., 2020) allowed us to understand the specific context and adapt the methods.

The first tool was the situation observation carried out during 13 months between September 2020 and September 2021 by BK continuously, and VR during several meetings and visits in the UDAM, the capitals of the region and Dakar. We observed workshops on harmonization of flat-rate pricing, invoice validation, visits by the Director General and his management team of the National Agency of the CMU (ANACMU), visits by delegations from four countries (Niger, Mauritania, Chad, and Guinea) and four other regions of Senegal (Matam, Kaolack, Tambacounda, and St-Louis). BK participated in about twenty UDAM activities in villages and headquarters: workshops, exchange visits, control missions, board of directors, home visits, etc. VR participated in an international conference on social protection in May 2022 in Niger (https://conferencepss.enabel.be) where the experience of Senegal and UDAM was discussed with representatives from 10 African countries. All observed situations were noted concerning the dimensions of the conceptual framework.

The second tool was documentation. These observations and this long immersion allowed many documents (mission and project reports, follow-up sheets, etc.) to understand better the UDAM, its history, and its functioning. Administrative and financial reports have been used to produce Table 4 about financial sustainability.

The third tool was the qualitative in-depth interview. It is the primary tool of the study. An interview guide was developed based on the conceptual framework. It was pre-tested and used in 120 interviews at the local level (conducted by BK with sometimes VR) and nine at the regional and national level (performed by VR), thus a total of 129. The qualitative sampling strategy was based on the diversity of sources (UDAM, administrative authorities, TFP, mutualists, private sector, etc.) and their detailed knowledge of the subject being studied (Patton, 2002). Parity was sought where possible (Table 3). At the regional level, we met with regional chief doctors; at the central level, two people from WHO, two from ANACMU, two heads of national associations of CBHI, one leading an extensive private for-profit health insurance, and one from a grassroots donor.

The fourth tool was a discussion group organized by VR with a team of 10 people from the Ministry of Health of Niger, who came on an exchange visit. Their views on the sustainability of UDAMs were instructive as they are health experts, and their external critical eye brought a different vision than those who had long been involved.

All interviews were recorded, translated into French when necessary, and fully transcribed. A manual content analysis was carried out according to the dimensions of the conceptual framework (Ritchie and Spenzer, 1994) while being attentive to new and inductive elements. This framework analysis process made it possible to conduct a cross-sectional analysis of the qualitative data according to the framework's dimensions and propose an original inductive dimension. Preliminary results were presented several times with stakeholders in both UDAMs to strengthen the credibility of the interpretations. Regarding collaboration and authorship issues, a reflexivity statement has been added as Supplementary File 1.

Table 1
Characteristics of the two departments and two UDAMs in 2020.

Characteristics	Koungheul	Foundiougne
Type of economy	Agriculture, trade, livestock	Agriculture, fisheries, trade, tourism, livestock farming
Number of villages	425	357
Number of municipalities	9	17
Number of inhabitants	210,124	364,800
Primary health posts contracted	30	52
Number of health centers (hospitals) contracted	1	4
Number of regional hospitals contracted	2	2
Number of employees/ UDAM staff	12	20
Number of UDAM members	14,135	15,800
Number of UDAM beneficiaries	103,252	129,984
Retention rate	43%	78%
Rate of sinistrality	67%	45%

Table 2
Adaptation of the nine factors influencing sustainability.

FACTORS	DEFINITION
Political support	Internal and external policy environment influences funding, initiatives and acceptance of UDAM
Stability of financing	Long-term plans for stable funding
Partnerships	Links between UDAM and the various partners
Organizational capacity	Resources to effectively manage UDAM and its activities
Evaluation	Monitoring and evaluation of data on processes and outcomes associated with UDAM activities
Adaptation	The ability of UDAMs to adapt and improve to ensure their effectiveness
Communication	Strategic dissemination of UDAM results and activities to stakeholders, decision makers and the public
Impact on the health system	The effect of UDAM on the health system in the region concerned
Strategic planning	The process that defines the direction, objectives and strategies of UDAM

Source: Schell et al. (2013).

Table 3
Number of interviews by stakeholder groups at local level (n = 120).

Groups of actors	Koungheul		Foundiougne	
	Men	Women	Men	Women
UDAM staff	8	2	7	2
Members of the Board of Directors	10	1	2	0
Private health workers and pharmacists	7	2	13	2
Mayors, municipal and departmental councilors	6	1	4	3
Health Development Committees	3	0	7	1
Commissions management collective fields	4	2	—	—
Members of UDAM	6	6	5	5
Journalists, associations	4	0	0	2
Technical and financial partners	3	1	1	0
TOTAL	51	15	39	15

Results

We present the empirical results regarding the nine dimensions of sustainability. We also inductively uncovered a tenth dimension: innovations.

Political support

While UDAMs initially lacked strong political support due to differences in approach with the decentralization of health insurance (DECAM), they have become an essential option for UHC in Senegal. They are now part of ANACMU's national strategy. The recent UHC national evaluation highlighted the added value of UDAM in terms of achievements for the health insurance system compared to communal CBHI (CRES, 2021). During a 2022 workshop, the Ministry of Community Development, Social and Territorial Equity (MDCEST) technical services recommended the departmentalization and professionalization of CBHI. The supervision exercised by ANACMU over UDAM confirmed the institutional and political anchor. Indeed, the Agency's senior leadership is linked to the current national political power. Support did not change when, in 2019, ANACMU's stewardship (established in 2015) was transferred from the Ministry of Health and Social Action to MDCEST. Although MDCEST officials and advisers are more inclined to support the option of communal CBHI, they have not sought to dismiss UDAM, despite the advocacy of the traditional CBHI movement.

At the local level, we can see the involvement of local leaders (policies and movements of civil society) and local authorities by subsidizing the contributions of new members, in particular, the indigent, on the part of political figures of national scope but with local roots or some mayors of the municipalities: "*Sometimes we receive politicians who enlist indigents or their activists, it exists, because we received the MRI enrollment (initiative for the re-election of Macky Sall.* [the President of Senegal]*) it was in 2017*" (UDAM Manager, Koungheul). However, mayoral support is limited and seems more important in Foundiougne than in Koungheul. Thus, a 2016 workshop was so the mayors of Foundiougne could convince their colleagues in Koungheul of the importance of this support. But local resources remain limited, and mayors' ownership of the principle of insurance, especially the less educated, poses challenges.

Stability of financing

Despite discontinuing project funding in 2017, the UDAMs have maintained their budget and continued their activities and services to members.

First, it was necessary to maintain a high level of membership. A study before the withdrawal of the project warned that with "*a penetration rate of 25% of the population, we would be able to ride on our own tracks, and today, I touch wood, we are well above that rate. We don't have a finance problem.*" (Control Committee, UDAM Foundiougne). To reach penetration rates of more than 55% (Koungheul) and 71% (Foundiougne) in 2021, UDAMs have increased social marketing strategies to keep revenues high: reduced rates for memberships of entire groups, schools, or villages (see Innovations). The State subsidizes 100% of the contribution of 40% of members (non-contributory: indigent, disabled). 60% of the members (whose contributions are subsidized at 50%) contribute financially to reducing the risk of dependence on the State. However, these grants are not regularly paid to health mutuals and pose challenges to financial stability. In 2021 in Koungheul, two years of late budget (almost EUR 460,000) prompted healthcare providers to suspend the care of UDAM beneficiaries due to unpaid payments. A meeting between the various stakeholders was organized around the prefect to advocate for the payment of these grants.

Then, in terms of expenditure, the entire payroll has been financed by UDAM since 2017, except for two promotion agents who have been paid by the ANCMU since August 2019, confirming the political support. However, UDAM officials are aware of the importance of rationalizing reimbursement of medical benefits, including medicines that patients must purchase from private pharmacies if the national public supply system fails. But for the moment, it is a controlled situation. However, it is more tense in Koungheul than in Foundiougne. In addition, the management costs of the two UDAMs remained below 15%, reflecting the rigor of accounting (Table 4) since the standard of the West African Economic and Monetary Union (UEMOA) is 25% for so-called social mutuals.

Table 4 shows several key indicators which confirm the financial viability of the two UDAMs in 2022.

Finally, financial transparency and all the accounting and governance control procedures organized by the UDAM influence this determinant of the sustainability of financing stability. The same applies to the continuity of payment of healthcare providers' invoices:

"*I saw that when the project left, what allowed UDAM to continue to exercise is rigor and transparency and above all the fact of paying the posts and the centers despite they owe them money*" (Accounting Manager UDAM Koungheul).

Partnerships

UDAMs have created or strengthened their partnerships for sustainability with three types of actors.

The first actor is the institutional and guarantor of government support through ANACMU. The UDAMs have signed agreements with ANACMU, which ensures their guardianship and supervises their mode of operation. This partnership confirmed the financial support in terms of personnel and contributions because "*it was agreed at the last meeting we had in the framework of the end of the project that the State will continue to support the subsidies in line now with the current policy of grants of mutual contributions on a global basis*" (Responsible, ANACMU). Regular workshops, meetings, and supervision are organized, including with the Agency's regional services. This partnership confirms the institutional anchoring and contributes to the influence of UDAM within the country and in the West African region. The model was promoted by the two UDAM officials and the ANACMU leadership in front of 300 people from a dozen countries at a conference on health and social protection in Africa in May 2022 in Niamey (Niger). Partnership with local and regional authorities is more difficult and disparate due to their lack of health resources and technical skills.

There is also a strong partnership with healthcare providers. UDAMs could only offer tailored services to their members with a quality care offer. Thus, agreements have been signed with all healthcare providers and pharmacies (public and private), including regional hospitals, to ensure insurance portability. This partnership makes it possible to clarify the rights and duties and to ensure compliance with the flat-rate pricing of care, a significant instrument of the attractiveness of UDAMs (Bossyns et al., 2018). "*The partnership we have with them, they benefit from it, and so we benefit from it is a win-win,*" said a Foundiougne district health committee member. This partnership does not always occur perfectly. For example, tensions arise when they are late sending invoices from the service providers to the UDAM or when there are complaints. "*As we say, no one is perfect; there are constraints in our collaboration with UDAM," says* a nurse who complains above all about the deadlines for repayment of invoices. Indeed, the financial challenge and the liquidity tensions are most often highlighted in the difficulties of this partnership. Communication and trust are at the heart of UDAM's strategies to reduce these tensions. "*When money is available, I pay them; I explain to them when there is a problem. But if I'm in a good cash position and you have a problem, come and submit your problem, and I'll do what I can,*" said a Koungheul UDAM manager.

The third partnership involves international aid TFPs and local associations. While the project stopped in 2017, Enabel renewed its support in 2021. It has funded numerous field visits to help swarm the model through exchange visits by officials of the ministries of health of countries such as Mauritania, Niger, Guinea, and others. In 2021, Enabel

Table 4
Key financial sustainability indicator from 2018 to 2022.

INDICATEURS	DEFINITION	FOUNDIOUNE					KOUNGHEUL				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
RATE OF SINISTRALITY	Technical costs of services /acquired contributions*100	35%	45%	58%	64%	64%	69%	70%	58%	64%	77%
SERVICE UTILIZATION RATE	Number of cases/beneficiaries up to date of their membership fees	0,79	0,88	0,70	0,66	0,68	0,64	0,82	1,07	0,97	0,89
OPERATING RATE	Total operating expenses /acquired contributions*100	13%	15%	13%	12%	13%	18%	10%	12%	13%	15%
PENETRATION RATE	Total beneficiaries /target population*100	47%	54%	58%	71%	74%	41%	48%	49%	55%	66%
RECOVERY RATE	Amount of contributions received /Amount of contributions issued*100	79,9%	68,1%	68,0%	69,1%	70,1%	73%	81%	71%	72%	79%
UNDUE BENEFIT RATES	Amounts of benefits unduly paid/ total benefits paid*100	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Note: if we consider the children under 5 whom the Koungheul UDAM is insuring as part of a World Bank project (ISMEA until 2025), the penetration rate will be 87% in 2022.

provided each of the UDAMs with a vehicle. Additionally, in 2022, Enabel allocated a grant of EUR 320,000 to Koungheul and EUR 520,000 to Foundiougne enabling them to enroll pregnant or post-partum women in UDAMs. This addition was intended to increase memberships. However, suppose Enabel subsidizes 100% of the contributions of pregnant women (16,000 FCFA). In that case, their enrollment is only possible if four people in the household (4×2500 F) pay their contribution for a collective membership of five people. In addition, Luxembourg cooperation (Lux-Dev), of which a manager is a former from Enabel, is financing a project of EUR 47.000 to support communication, IT and rolling stock, and the opening of offices in an island and landlocked region of the UDAM of Foundiougne where memberships are rare. In Koungheul, the World Bank has started a project where UDAM becomes a grant recipient to pay for free consultations of children under five in health facilities for an amount of EUR 510,000 for five years (2021–2025). Finally, there are smaller collaborations with rural associations (micro-credit), the Pasteur Institute in Foundiougne (to assure populations of its clinical trials), or international NGOs (Save the Children, World Vision, Koungheul) since 2017 to better communicate the insurance product or to affiliate some new members.

Organizational capacity

The project to create UDAMs, based on the professionalization of its staff, has strengthened its organizational capacity to ensure the continuity of its services. This strength is recognized by all stakeholders (UDAM, national or local authorities):

> "If we continue to be sustainable it is thanks to our organizational capacity, that is to say, the fact that we are a professional organization and have a manual of procedures so that everyone knows what they have to do" (Management Assistant, UDAM Koungheul)

UDAMs have most of the characteristics and features of an efficient organization (Shigayeva and Coker, 2015): offices; procedures manuals; codes of conduct; trained, qualified, and motivated staff; IT member management system; accounting system; etc. A person was dismissed because he "*did not comply with the code of conduct*" (Direction, UDAM Foundiougne). The work team is dynamic and efficient even though the increase in memberships causes an apparent work overload. Our field observations showed that staff work late in the evening and often on weekends.

In addition, ANACMU has strengthened the capacities of UDAMs by making two promotion agents (MPAs) available to them. UDAMs have gradually increased their staff capacity to reach populations in remote or isolated locations in their respective regions (e.g. islands) to raise awareness of insurance and to facilitate the collection of contributions.

UDAMs, however, face a historic challenge in medical control. In Koungheul, in the absence of sufficient resources to recruit a medical adviser, they hired nurses to carry out medical checks and validate service providers' invoices on-site for insurance. In Foundiougne, the ANACMU Regional Service Medical Counsellor carried out missions for a few days with the team during invoice validations. Indeed, the role of medical counsel is still rare in Senegal, and the regional services of ANACMU are just beginning to have such resources.

The other organizational challenge concerns the IT system for managing beneficiaries and invoices whose applications were created during the project still needed to be finalized. The Internet connection poses difficulties in these remote areas of the capital. Solutions are being produced for national harmonization using the Universal Health Coverage Integrated Management Information System (SIGICMU) announced at the end of 2019.

Evaluation

UDAMs have an arsenal of internal procedures, often manual, to track their activities (e.g. bill control, member tracking, and care use) and to conduct regular assessments of their ability to provide services to their members. These assessments or the discovery of possible abuse or fraud (patients and providers) are quickly discussed with the people concerned. This response proved essential at the end of Enabel's project because the maximization of profit sometimes guides the behaviors of the actors during the presence of development projects:

> *"The simple birth is at 7500 F CFA; the complicated delivery is 25,000 CFA F of the time of the project since it is a project that pays. People tended to systematize complicated births because there was the project, but when we came all that, we put it back on the table. They were told you can't have so much complicated childbirth; there's something in there. You must know that the project is no longer there and that it is the demand that must bear. But, what we must bear, too, must be sustainable."* (Directorate, UDAM Koungheul)

One UDAM agent recalled using another person's card to verify complaints of the lack of control of insurance cards at the reception of a hospital. Thus, through his test, he confirmed that the procedure for verifying the identity of the beneficiaries was not being followed. A meeting with the district team made it possible to quickly '*correct this negligence*'. The responsiveness and dialog between UDAM teams and healthcare providers' managers are central. They are often effective in repairing the errors detected by these evaluations. In addition, the control of invoices is at the heart of UDAM's business to ensure their viability. This is an ongoing challenge, and the staff of the UDAM attaches considerable time and importance to it. The departure of project support increased the control of invoices as their survival was at stake. These regular assessments are also a way *to "deter people from knowing*

that people are following" (Direction, UDAM Koungheul).

Enabel allocated a substantial budget for documenting the project's experience. From 2015 to 2017, dozens of people involved in the project and multiple meetings made it possible to evaluate the functioning of UDAMs and to produce lessons learned. This resulted in a collective book (Bossyns et al., 2018), policy notes, and a National Forum with 300 people for four days in 2017. This collaboration with a team of researchers resulted in embedded research (Ghaffar et al., 2017) started in 2021. It made it possible to produce scientific knowledge, of which this article is a product, on several subjects requested by the UDAMs: resilience, perception of the quality-of-care providers and insurance services, the spatial distribution of memberships, etc.

Adaptation

UDAMs have demonstrated multiple adaptive and agility capabilities to maintain and strengthen their activities since Enabel's support ended. In the face of regular delays in the payment of state subsidies, UDAMs have learned to prepare their cash flow and management arrangements. They also relied on "*the diversification of funding to adapt to this situation*", which tells a UDAM official to reduce their dependence on the State, unlike communal CBHI, whose small number of members does not allow them to cope. In addition, the COVID-19 pandemic and the travel restrictions imposed by the state have been an opportunity to adapt contribution payment systems using digital applications. The phone and WhatsApp were used to send a copy of the membership card and medical reference bulletins to avoid traveling to UDAM headquarters to obtain these documents. We noted above the adaptability of UDAMs by using nurses (qualified as counseling practitioners) for medical supervision without a physician whose mandate is usually the case. This adaption does not solve all the problems because doctors will not hesitate to disqualify the nurse from these controls, but it is a first step in ensuring a more regular control process.

Communication

Before the start of the project, multiple communications efforts were made. The urgency was to explain to healthcare providers that the beginning of the project remained the same way UDAMs operate in their partnership and that they would continue their roles. It was also necessary to show pedagogy towards the population to explain that at the end of the project, the subsidy of the pricing of acts would only be valid for the members of the UDAM. It was also necessary to reassure the members that the departure of the project did not call into question the continuation of their rights. Numerous interventions (UDAM officials and health services) in local radios and other assemblies made it possible to discuss with populations, explain and answer multiple questions. UDAM also helped health workers better explain changes to people and patients:

> "*It was a few synthetic elements that we had and had programmed the radio shows where we went together with the doctors; we made radio shows to explain to the populations that they have nothing to fear that the project is gone, but in fact, everyone who is shared is as if the project is still there will be no change*" (Technical Personnel UDAM Koungheul)

These communication activities were more comprehensive than the end of the project because they were almost permanent to raise awareness of the interest in being a member of UDAM. Thus, community organizations and village godmothers (*BàjenuGox)* are often solicited for these activities. In Koungheul, the focal points of the different villages are also responsible for raising awareness of all social occasions: weddings, baptisms, and religious ceremonies. They are not specific to the promotion of UDAM. During vaccinations, home visits, or preparing for deliveries, they take advantage of them to evoke insurance:

> "*Even I am talking about it because I am president of the women's group, but usually when I do meetings, I tell them about the interest of UDAM. Those who have not yet joined must do so for them and their children, help another even outside your family*" (President Soum Grouping, Foundiougne)

UDAM perceives the use of community actors as a horizontal outreach approach at the local level but also complementary to more vertical and institutional efforts. The UDAMs have signed an agreement with a telephone operator so that all their local focal points can constantly contact antenna presidents on the same network (float) to facilitate sharing and reduce costs.

Finally, the branches of the UDAM (whose members are from the communities) at the local and regional authorities' level have played an undeniable role in the communication from the project's launch in 2014 until now. These people often organized home visits, talks, community radio broadcasts, meetings in schools and weekly markets. Their thorough knowledge of local contexts allowed them to identify 'champions' on which to rely to promote UDAM and the provision of care. They informed communities of changes in the supply of UDAMs (new care) or those of hospitals when new specialist doctors are assigned to the region. These community relays also called the members of their villages on the phone to remind them to renew their annual membership when necessary. In addition, UDAM technical staff made telephone calls to relaunch members who needed to renew their membership fees.

Impact on the health system

UDAMs have an essential influence because, between 2014 and 2021, they paid 1.5 million EUR to Foundiougne's healthcare providers and 1 million EUR to Koungheul. They can "*pre-position a sum of money that the structure will use if necessary, which is a big advantage*" (local Antenna, UDAM Foundiougne). In the five hospitals contracted by the two UDAMs, their revenues from their members account for about 60% of their total revenue. This financial weight can allow UDAMs to have a counterweight of discussions and negotiations with healthcare providers in favor of their members, including the quality of care.

Beyond the financial impact on the health system, the effects are also tangible for members and their families. The testimonies are numerous and varied to show the real benefits of their use of care and financial protections beyond the number of memberships and loyalty. Whether they are health professionals or members, people specified that UDAM memberships make it possible to visit health facilities earlier and spend less money:

> "*One day, I was out, and I was called for my wife, who was very sick, but I paid much money because she had not yet joined. Today I brought my child and wife; they paid only 500 francs. When I showed them their cards, they paid only 500 francs, and I bought only prescriptions from the pharmacy. Thanks to this, we were able to save money; otherwise, we would pay a lot more in any case it suits us.*" (Beneficiary UDAM, Foundiougne)

Implementing the pricing fork at the heart of UDAMs, has favored the attractiveness of the health insurance offer and the ability to anticipate and transparent costs for members. The portability of insurance within the department and the regional hospital for certain services also contributes to the impact. Despite these positive impacts, several people face several challenges in establishing the amount of the lump sum for the permanence of effects, taking better account of the public (children, the elderly), pathologies (chronic diseases), stock shortages of medicines, the increase in their costs, etc.:

> "*I can give you as many examples when we were doing the study on flat-rate pricing, the capsule amoxicillin at that time cost 26,000 F CFA (EUR 40), and today to have an amoxicillin capsule, it takes 32,000, so you see the difference when we did this also the gloves you see, cost 2500 F, today*

these gloves cost 7500 and a few, so double or triple" (Nurse, Koungheul).

Strategic planning

Our research has yet to be able to find specific strategic planning documents. However, through our exchanges with stakeholders, we have understood that multiple activities have been organized, sometimes spontaneously or reactively, by UDAMs and their partners to ensure sustainability conditions. Above, we uncovered some strategic activities planned by the UDAMs and their partners to prepare for the end of their support: actuarial studies to identify the number of members guaranteeing financial viability, broad communications with national, local and population authorities, training of UDAM agents, consultation with guardianship, research of partners, etc. They organized, for example, numerous meetings with ANACMU and the central officials of the Ministry of Health to discuss the issues surrounding the maintenance of flat-rate pricing (which is only applied to Foundiougne and Koungheul) and the challenges of financing subsidies for state contributions.

Innovations

It is important to us to highlight innovations as they demonstrate the leadership of UDAM in finding new ways to ensure their sustainability. Therefore, this additional category, which differs from those proposed by Schell et al. (2013), concerns an innovative and endogenous experiment attempted by the two UDAMs: a group contribution based on collective work. In two rural villages of Koungheul, a collective field of culture started in 2007 and is still being implemented. This initiative has continued to strengthen UDAM membership. The concept involves making a field of culture (mil, peanuts) available to the villagers, often facilitated by a notable or chief of the village. Then, all villagers participate in cultivating the field, and the profits are used to subsidize, wholly or partially, the contributions to UDAM for all the village inhabitants. Due to the initiative's success, UDAM extended it to other villages or other economic activities, such as collective fishing, which is more common in Foundiougne. In 2021, 150 villages were supported for collective fields with inputs financed by the Koungheul UDAM (403 bags of fertilizer for 7470 EUR) and municipalities (20 tonnes of peanuts for 8200 EUR) in the first year of implementation. This demonstrates the innovation and the commitment of local managers to the relevance of insurance. These villages will constitute their seeds and inputs to perpetuate these collective fields for the following years. Management committees have been set up in each village to monitor these activities.

Discussion

This qualitative research highlights multiple factors that influenced the ability of UDAMs to maintain their services after the end of the project in 2017. According to the theory (Pluye et al., 2004), some activities contributing to sustainability were organized well before the end of the project, such as actuary studies, communication and awareness-raising processes. The ownership of the model proposed by the UDAMs by national and local authorities and political support have largely contributed to sustainability. In addition, community organization, innovation, and mobilization capacities contribute to the enabling factors. However, UDAMs face recurring challenges, especially in the external environment, where they need more room to maneuver. These include the public administration's problems regarding the deadlines for funding grants for memberships, the supply of medicines, and medical supervision.

Since 2015, the achievement of UHC has been at the top of the international public agenda, and the solutions to achieve it are multiple. They will, of course, consider each country's national contexts and political histories. What happened in Rwanda, Ghana, South Korea, or Belgium will not necessarily be adapted to what might be relevant to Senegal (Cashin and Dossou, 2021; Olugbenga, 2017). Given the low coverage of health insurance in Africa (Chen et al., 2022) and their equity challenges (Barasa et al., 2021), some believe that there are better solutions for poor countries, mainly when they are organized through payment of formal sector premiums (Yazbeck et al., 2020). But others suggest that efforts must be continued to expand these insurances to reach more populations (Chen et al., 2022) and organize solutions for equity (Cashin and Dossou, 2021; Watson et al., 2021).

In Senegal, public health resources are limited (Paul et al., 2020), and the history of user fee policies has confirmed the financial barrier they impose. Thus, the country has implemented policies to subsidize user fees and move to CBHI (Daff et al., 2020; Alenda-Demoutiez and Boidin, 2019). Like Gabon, Ghana, and Rwanda, Senegal has shown political commitment (Chen et al., 2022), learning and adapting from the model proposed by the UDAM and adapting their approach to CBHI, particularly in the face of the need for professionalization (Rouyard et al., 2022). Senegal is slowly departing from its historical deployment model of communal CBHI deployment for UHC. Although there needs to be more evidence of the effectiveness of UDAMs for their beneficiaries (lack of research and TFP willingness), historical adherence levels for the region and their current sustainability make it an unavoidable option for UHC today. Although it will not be the only solution, 38 of the country's 46 departments wrote to the Agency stating they wanted to adopt it in 2022. ANACMU continues to support this UDAM model while keeping the departmentalization of CBHI as an alternative solution whose effectiveness will have to be studied. In its September 5, 2022 bulletin, the ANACMU announced '*the restructuring of CBHI, which will increase from 676 communal mutuals to 46 departmental units*'. The increase in the pooling of health risks at a departmental level and the viability of departmental CBHI are two of the outputs of ANCMU's new strategic development plan for 2023–2027. Following the evaluation of UHC's national strategy (CRES, 2021), discussions began to consider transforming ANACMU into a National Health Insurance Fund (CNAM), whose future will tell us the relevance and integration capacity of UDAMs.

This study confirms the dimensions of sustainability that conceptual maps, with a quantitative and inductive approach, had highlighted: adapting to the needs of the population and members, professionalism and leadership, responsiveness and governance, collaboration with health professionals, communication and commitment, support from the authorities, etc. (Authors). The empirical evidence identified by our study and forming part of Schell et al. (2013). proposals confirms the importance of planning before the termination of a project to promote its sustainability (Pluye et al., 2004; Niang, 2022). It highlights the role of leadership, contextual and community anchoring, and the importance of ownership and political and institutional anchoring (Fadlallah et al., 2018; Schell et al., 2013; Niang, 2022). Olugbenga (2017) showed how political will and leadership have been central to developing health insurance in Ghana, Rwanda, South Africa, and Nigeria. The study in Senegal also confirms the importance of the two factors Pluye et al. (2004) put forward to ensure sustainability, namely the taking of organizational risks and the stability of resources. In addition, factors more specific to sustainability in the African context have been highlighted, such as community ownership and leadership, considering local resources or the availability of relevant infrastructure (Seppey et al., 2021; Iwelunmor et al., 2016).

The ability of UDAMs to stabilize their endogenous financing and reduce their dependence on TFPs is a central factor in their sustainability, as in the work of Pluye et al. (2004) and Samb et al. (2013) in Burkina Faso has shown perfectly. The challenges of aid dependency and the ability to have endogenous financing are at the heart of sustainability so that it does not become just a buzzword or a doctrine (Marten, 2022). CBHI in Ethiopia or Cambodia experienced significant difficulties in surviving after the cessation of international funding (Zelelew, 2015; Kolesar, 2019). Olugbenga (2017) is also concerned about Rwanda's "

foreign donor-propelled health insurance" sustainability. At the central level, the ANACMU budget between 2015 and 2021 was financed by TFPs at 14%. Given the success and sustainability of the UDAMs model, since 2021, Lux-Dev have decided to support the transition to scale in seven regions including the two existing UDAMs (project ended at the end of 2023). Enabel have committed to fully subsidize the membership of pregnant women on the condition (following the UDAM proposal) that four contributing/paying people also enroll (support until March 2024). WB have committed to fully subsidize the membership of children under 5 only in Koungheul until the end of 2025. Lux-Dev's support is limited to three years and corresponds to less than 2% of UDAM's operating costs. The amount of benefits paid by the UDAMs to the health structures was 1.3 and 1.4 times greater than the grant provided by Enabel in 2021 and 2022 to subsidize women's membership. The amount of benefits paid by the UDAMs to the health structures was 0.9 times the grant provided by WB in Koungheul in 2022 to subsidize children under 5 membership. Although this technical and financial support is currently limited, it will be important to ensure that these donors (and the Senegalese government) adopt strategies that promote the sustainability of future UDAMs and not their dependence on aid. Moreover, it will undoubtedly be a matter of paying attention in the future to the financial challenges posed by the ongoing epidemiological transition and the management of chronic diseases, the burden of which is expected to increase (MSAS, 2022). On the other hand, the challenges remain immense for sustainability when considering the issues related to public finances and the State's ability to have an organization that allows it to meet its commitments to finance public subsidies (Paul et al., 2020).

Furthermore, there is a need to address the challenges of power and collaboration between UDAM and healthcare providers. Unlike the situation in the Democratic Republic of Congo (Criel et al., 2020), UDAM seems to have negotiating power with healthcare providers. The contractual arrangements these critical actors can engage in, with the support of their oversight bodies, can contribute to their ability to maintain access to care, as studied elsewhere in Africa (Ndiaye et al., 2018). Institutional anchoring is key. The question now arises as to whether this bargaining power positively impacts the quality of care.

Using the dimensions of an a priori conceptual framework to facilitate data collection, as recommended in health systems research, has not constrained us (Jones et al., 2021). We highlighted a new aspect concerning the importance of innovations for the sustainability of UDAMs. Of course, the dimensions proposed by Schell et al. (2013) are not rigidly defined, and we could have placed the proposed innovations in the category of adaptations or financial stability. But like several other authors (Niang, 2022; Greenhalgh et al., 2017), we believe that innovation issues are an integral part of the sustainability factors of an intervention. Damschroder et al. (2022) proposed adding innovation to the dimensions to be studied in implementation science. While UDAMs are innovations, they have also been creative in maintaining their services to their members. It will now be a matter of seeing and understanding how this innovation, lasting in two departments of Senegal, can be extended on a larger scale. Replication in other departments applying fees for services and not flat-rate pricing will make it possible to compare their challenges and scaling up. Research tells us that the path can still be long because we have to move away from a linear and mechanical vision of innovations "*that risks minimizing any sense of controversy, opposition, or even rejection that potential adopts might have towards it. However, all innovations do not spread spontaneously*' (Niang et al., 2021).

Regarding the generalizability of the findings, it should be noted that the context of the two departments concerned needs to represent the diversity of the country's departments. However, these two cases were selected as the population under study because no other cases in Senegal (and West Africa) represent the phenomenon of sustainability examined in this research. Furthermore, to our knowledge, this is the only project in Africa where an international organization has supported the creation of a CBHI on such a large scale that a department then withdrew its support to study its sustainability. The long-standing proposals for district CBHI have yet to be followed up by donors (Criel, 1998). It is, therefore, too early to generalize the findings of this study beyond Senegal. However, in the future, this study could be replicated in Mali, for example, where the *Agence française de développement* has supported and co-financed two districts mutuals for five years, ending in 2021 (Touré et al., 2023), or in Niger, where the same Belgian technical cooperation is supporting UDAM-type CBHI in one department, although the project only just begun in 2023.

This research has certain methodological limitations. First, like any research in the context of development aid, it is impossible to rule out social desirability bias in interviews. But the triangulation of information as well as our thick knowledge of the context and our long periods of immersion in the field allow us to strengthen the credibility of our analyses. Using a conceptual framework has been fruitful in organizing our data, although it was not always easy to choose the correct dimension for some empirical data. We also tried not to be solely oriented by the dimensions of the conceptual framework and remained open to the emergence of original perspectives. This type of conceptual framework, which proposes a restricted list of dimensions, may increase the risk that researchers will limit themselves to a descriptive view of these dimensions without attempting to understand the interactions and the full complexity of the phenomenon (like sustainability), along the lines of the criticism levelled at the WHO's famous building blocks for health systems (Van Olmen et al., 2012). The study highlights the potential challenges of understanding the factors that lead to sustainability and the characteristics of a sustainable intervention. There is still a significant amount of work to utilize this framework, or others, as tools for measuring sustainability. It should also be noted that while this retrospective study shows a high level of sustainability for the UDAMs at a given time (2021–23), it does not foreshadow the situation in 10 years. Our analysis is not forward-looking. We cannot state for certain that these two UDAMs will remain in place in several years. Suppose the State does not give greater priority to the health sector and donors do not align themselves or are not concerned about the effects of their actions on sustainability (Ridde et al., 2023). In that case, it may call the continuation of the UDAMs' activities into question.

Nevertheless, the UDAMs are aware of these challenges and are organizing actions to strengthen their sustainability. In addition, the departmentalization of CBHI is now part of the new national UHC strategy for their institutionalization, the highest degree of sustainability according to Pluye et al. (2004). Further studies are needed to understand the challenges of scaling up and the impact on the sustainability of UDAMs.

Conclusion

This study uncovered the factors that make it possible to understand a relatively exceptional situation in the region, the sustainability of two health insurance, professionalized and organized on a departmental scale in Senegal. The study contributes to the still under-explored field of sustainability analyses in Africa. It shows that UDAM social innovation is a possible solution for Senegal, and maybe elsewhere in the region, to engage further in UHC. There is still a long way to go because maintaining the quality of health care and insurance services will require adapting to changing population health needs and public financial management challenges. Finally, sustainability can always be taken with a grain of salt, particularly in fragile contexts where political leadership (Olugbenga, 2017) and donors' influence often significantly impact health insurance in Africa (Mladovsky et al., 2023). It will be essential to continue to act in favor of sustainability and to pursue studies into this complex, multifaceted concept.

Ethics

The research was accepted by Senegal's National Health Research Ethics Committee (42/MSAS/CNERS/SP/2021). Everyone was informed about ethical issues and had the opportunity to withdraw from the study at any time. They all agreed to participate through verbal informed consent.

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Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: NM and IS are directors of both UDAM but did not obtain any financial compensation in this study. BK was paid for this study. All other authors have no conflict of interest.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.ssmhs.2023.100006.

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