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Role of Non-Conventional Actors in Improving Vaccination Coverage: The Case of Ex-Combatants in Vaccinating Zero-Dose Children in the Central African Republic

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Abstract:- This research examines the important role of former combatants in assisting with the vaccination of Zero-Dose children (ZDC) in the Central African Republic (CAR). It shows how their participation enables access to hard-to-reach areas and builds trust with local communities. By leveraging their good integration into their environment, former combatants succeed in negotiating access to high-risk zones, allowing health teams to carry out vaccination operations. A mixed methodological approach, which combines quantitative analysis of vaccination rates and qualitative interviews with communities and health workers, highlights the effectiveness of including former combatants in public health strategies. The study demonstrates a significant increase in vaccination coverage in previously inaccessible areas, with former combatants contributing not only to better health outcomes but also to the reduction of conflicts and the building of peace. The research emphasizes the importance of adapting health programs to recognize and strengthen local skills, providing recommendations for more inclusive health policies that are tailored to the specific needs of fragile and post-conflict environments.

Keywords:- *Zero-Dose Children (ZDC),Central African Republic (CAR), Former Combatants, Vaccination Coverage , Public Health Strategies, Hard-to-Reach Areas, Community Trust , Access Negotiation , Post-Conflict Environments, Mixed Methodological Approach.*

I. INTRODUCTION

In fragile contexts such as the Central African Republic (CAR), vaccinating Zero-Dose Children (ZDC) poses a significant challenge due to security constraints and difficulties in accessing vulnerable populations. Studies show that in conflict or post-conflict situations, health infrastructures are often weakened, making access to essential services like vaccination extremely difficult (Gayer et al., 2007). This innovative study explores the role of ex-combatants in this dynamic. Their involvement, often underestimated in conflict contexts, has been crucial in facilitating access for vaccination teams and ensuring the protection of ZDC children. Using a rigorous scientific methodology, the study documents the motives, strategies, and outcomes of this involvement, offering a new and nuanced perspective on this complex and often overlooked dynamic (Sondorp & Zwi, 2004).

CAR, characterized by its socio-political fragility and constant security challenges, provides a particularly complex environment for public health interventions such as vaccinating ZDC. These children, who have never received vaccines, are often located in remote or conflict-affected areas, making access extremely difficult (Gavi, 2020). In light of these obstacles, this study focuses on the potentially transformative role of ex-combatants, a unique human resource often neglected in traditional health programs (Knight & Özerdem, 2004).

In post-conflict areas, ex-combatants, due to their in-depth knowledge of the territory and local networks, can play a key role in facilitating access for health teams to isolated or mistrustful communities. Their participation in vaccination campaigns goes beyond negotiating safe access; it also involves mediating between health teams and local communities, helping to overcome mistrust toward external interventions (Levine et al., 2009). Integrating ex-combatants into these activities not only contributes to the immediate improvement of vaccination coverage but also strengthens autonomous health management within communities (Betancourt et al., 2010).

This study employs a mixed methodological approach to analyze the impact of involving ex-combatants in ZDC vaccination. Through qualitative interviews with ex-combatants, healthcare professionals, and community members, combined with quantitative analysis of vaccination rates before and after their integration, the study aims to provide concrete evidence of the effectiveness of this strategy (Harrington et al., 2019).

The potential of this approach lies not only in the immediate improvement of vaccination coverage but also in strengthening community capacities for autonomous health management. By integrating ex-combatants into constructive roles, we can contribute to their social and economic reintegration, thus reducing the risks of a relapse into violence (Knight & Özerdem, 2004).

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II. MATERIALS AND METHODS

In this section, the study's methodology is outlined, focusing on how the problem was studied. The research employed a predominantly qualitative approach, supported by quantitative analysis to provide a robust examination of the roles and impacts of ex-combatants in vaccination campaigns.

➢ *Research Design:*

The study was designed to explore in-depth the roles and impacts of ex-combatants in vaccination campaigns. A predominantly qualitative approach was adopted, focusing on understanding participants' lived experiences and perceptions, supported by quantitative analysis to quantify impacts and validate qualitative observations.

➢ *Qualitative Data Collection:*

Semi-Structured Interviews: Interviews with ex-combatants, health team members, and residents of served communities were conducted using semi-structured interview guides.

These guides covered specific themes while allowing for open-ended explorations on participants 'responses. Participant Selection; Participants were selected using targeted sampling to include a variety of ex-combatants directly involved in vaccination efforts, as well as indirect witnesses to their involvement. Quantitative Data Collection: Surveys and Questionnaires: Questionnaires were distributed to families of zero-dose children (ZDC) to collect data on vaccination rates before and after the intervention of former combatants. statistical Analysis; Collected data were analyzed using descriptive and inferential statistics to evaluate variations in vaccination rates and other campaign success measures. Data Analysis: Qualitative Analysis: interview transcripts were coded and analyzed using thematic content analysis, allowing the identification and categorization of recurrent themes and emerging patterns in participants' narratives.

Data Triangulation; Triangulation was conducted between qualitative and quantitative data to ensure cross-validation of results and increase the study's reliability. Validity and Reliability Several strategies were employed to ensure the study's validity and reliability, including participant data verification, the use of multiple data sources, and regular review of analysis methods by experts in qualitative and quantitative research.

III. RESULTS

Research on the involvement of ex-combatants in the vaccination of Zero Dose children (ZDC) in CAR has revealed significant contributions to public health in post-conflict contexts. These results are further developed and contextualized to better understand their scope and implications. Strengthening Community Ties:

Ex-combatants served as a bridge between health teams and local communities. Their respected status and familiarity with local dynamics facilitated communication and trust, leading to improved vaccine acceptance and ongoing collaboration essential for maintaining public health in the region. Their intervention helped locate 38 villages and camps in the Boda area. Access to Previously Inaccessible Areas Ex-combatants, leveraging their knowledge of the terrain and networks, played a crucial role in facilitating vaccination teams' access to isolated or armed group-controlled areas. They used trusted men and collaborated with other active groups in the region to negotiate safe passages, enabling the vaccination of populations in otherwise inaccessible areas. This negotiation with 24 counterparts, mainly armed groups, significantly expanded the vaccination program.

➢ *Improved Security*

The presence and commitment of ex-combatants strengthened the security of vaccination operations. Their understanding of local risks and ability to manage conflicts reduced incidents of violence, protecting medical personnel and ensuring continuity of vaccination services in perilous conditions. Their involvement led to the vaccination of 3,210 children in the Boda and Kemo districts, contributing to broader and more equitable vaccination coverage.

➢ *Strategic Implications:*

- *Importance of Local Inclusion:*

The effectiveness of involving ex-combatants demonstrates the value of including local resources in the planning and implementation of health programs.

- *Flexibility and Adaptation of Health Programs:*

Vaccination programs should be designed to adapt to changing local conditions, integrating innovative approaches to overcome physical and social barriers.

- *Valuing Local Skills:*

The success of this initiative underscores the importance of valuing and strengthening local skills, highlighting the potential of ex-combatants as agents of positive change.

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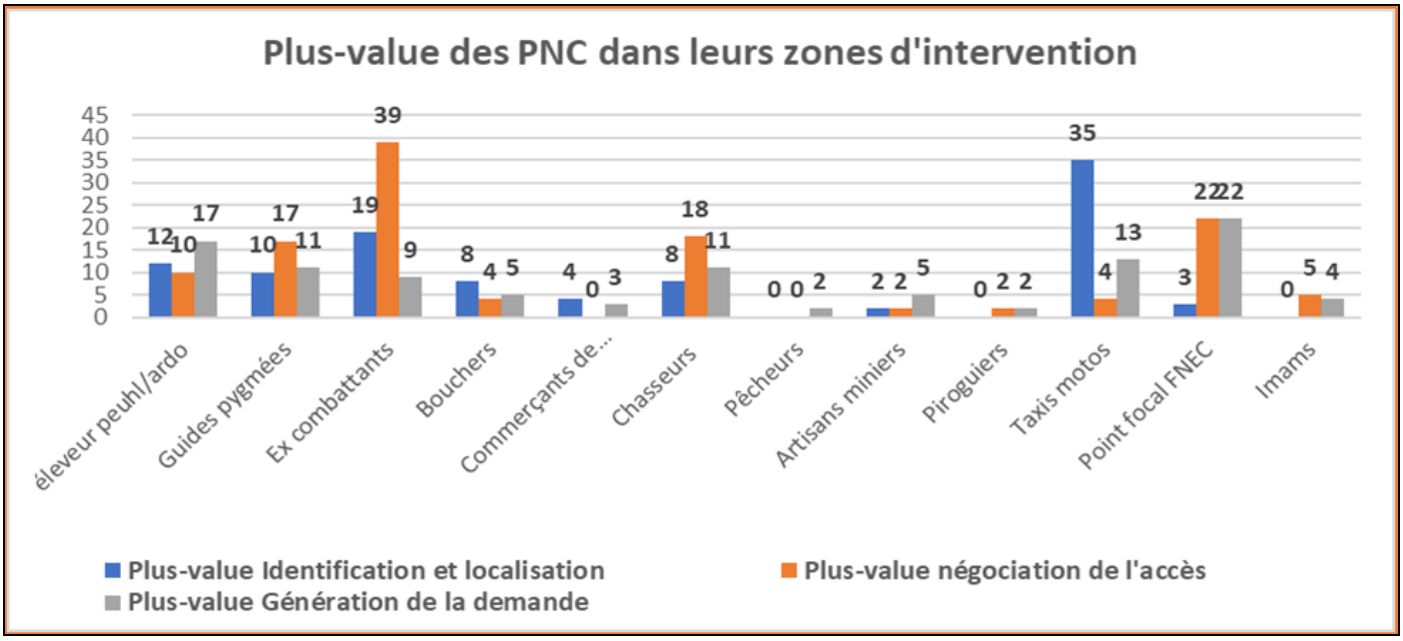

Fig 1 Added value of Non-conventional Partners in Vaccinating Zero-Dose Children"

- *Note:*

The above graph illustrates the added value of Non-Conventional Partners (NCPs) in their areas of intervention, specifically the number of ZIP sites or camps where special communities are present, categorized by the domain of intervention. The Peuhl herders/Ardos are involved in all three domains. Meanwhile, ex-combatants are primarily engaged in access negotiations. Motorcycle taxis play a significant role in facilitating access to ZIP special communities through identification/localization and by accompanying vaccination teams.

- *Success of Ex-Combatant Integration:*

Ex-combatants have significantly improved vaccination rates by facilitating access to remote areas and building trust in health interventions. Their role as mediators and protectors has helped overcome logistical and security barriers, showcasing the potential of unconventional strategies in managing health crises.

- *Implications for Future Interventions:*

The results provide valuable insights for designing future health programs, emphasizing the importance of an adaptive and inclusive approach that leverages local knowledge and networks.

- *Sustainability and Expansion of Programs:*

The success of this initiative in CAR encourages its application in other conflict zones where public health challenges are exacerbated by security and accessibility issues. Long-term sustainability should be considered by integrating these strategies into national health policies and securing international support.

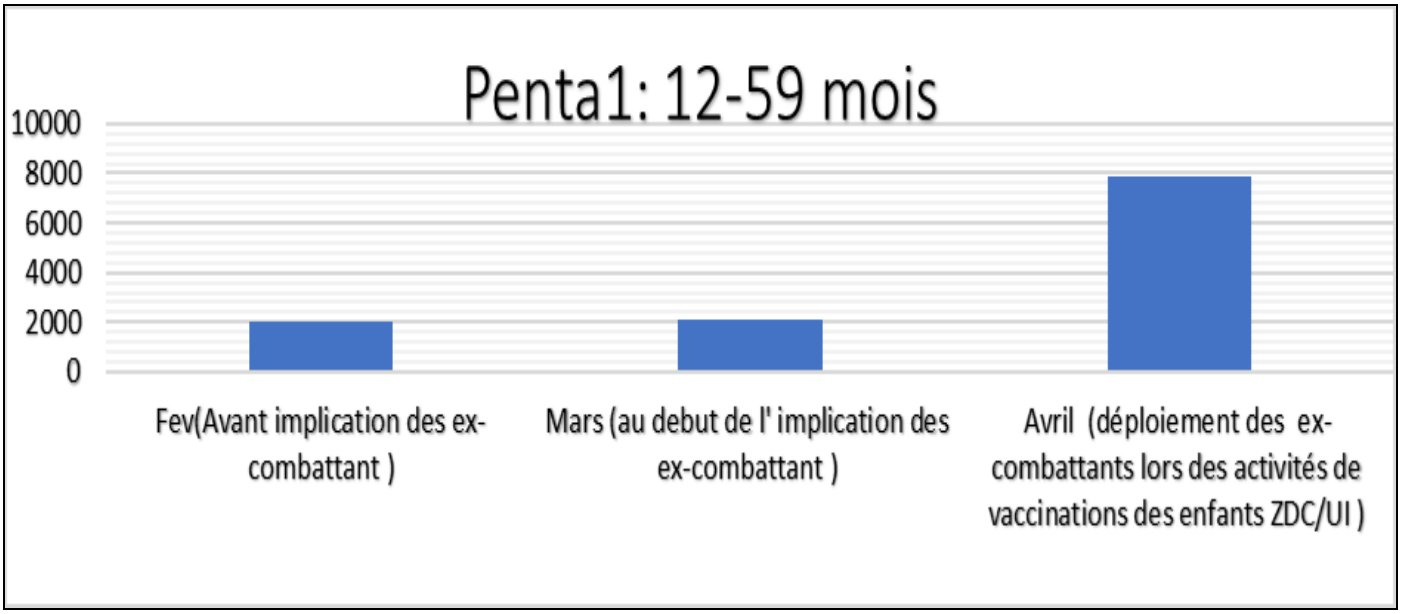

Fig 2 Vaccination Coverage Results after the Involvement of Ex-combatants"

- *Notes:*

The presence and commitment of ex-combatants have strengthened the security of vaccination operations. Their understanding of local risks and ability to prevent or manage conflicts have significantly reduced incidents of violence. This has not only protected medical personnel but also ensured the continuity of vaccination services in otherwise perilous conditions. As a result, their involvement has enabled the vaccination of 3,210 children in the Boda and Kemo districts, contributing to broader and more equitable vaccination coverage.

- *Strengthening Local Capacities:*

Ongoing training and support of ex-combatants and other local actors as health partners can transform former conflict dynamics into productive collaborations for community well-being.

IV. DISCUSSION

The results of this study convincingly demonstrate the positive impact of integrating ex-combatants into the no-dose child vaccination programs (ZDC) in the Central African Republic. The involvement of these unconventional actors has helped to overcome major obstacles related to accessibility and safety, which are often exacerbated in post-conflict contexts. Ex-combatants, as respected mediators and knowledgeable about the terrain, have not only facilitated access to previously inaccessible areas but have also strengthened the trust of local communities in health interventions. This model of local inclusion has revealed the critical importance of valuing local skills and networks, thereby paving the way for more adaptive and resilient approaches to managing health crises.

However, the integration of ex-combatants also presents challenges, particularly in terms of coordination, ongoing training, and managing power dynamics within communities. To ensure the sustainability of these interventions, it is imperative to establish strong support structures that promote continuous collaboration between local actors and health teams. The ability to adapt vaccination programs to fluctuating local conditions while maintaining a high level of safety and effectiveness is essential for meeting the needs of populations in conflict-affected areas.

In summary, this study highlights the need to adopt flexible and inclusive strategies that integrate non-traditional actors into public health interventions. The lessons learned from this experience in the CAR could be applied to other similar contexts, offering a promising perspective for improving health services in unstable and hard-to-reach regions.

V. CONCLUSION

The involvement of ex-combatants in the vaccination of Zero Dose Children (ZDC) in CAR represents a major breakthrough in implementing public health programs in conflict-affected areas. This innovative strategy has not only proven effective in the field but has also opened new avenues for addressing health challenges in fragile contexts.The results revealed that, despite efforts to achieve full vaccination coverage, inequalities persist, particularly regarding gender and access to vaccination services for older children.

The analysis of correlations showed that sequential vaccination strategies are not yet optimized to ensure complete vaccination coverage, particularly for children aged 24 to 59 months. Additionally, the strong reliance on community involvement emphasizes the importance of mobilizing and integrating local actors into vaccination strategies to overcome logistical barriers and strengthen trust in health systems. This study concludes that to achieve universal and equitable vaccination coverage, it is essential to develop targeted interventions that address gender disparities, enhance logistical management, and support education and awareness within communities. These efforts, coupled with ongoing commitment from local stakeholders, are crucial for making significant advances in protecting children against vaccine-preventable diseases in the Central African Republic and beyond.

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- *Conflict of Interest*

In research involving non-conventional partners for vaccinating zero-dose children in the Central African Republic, it's crucial to manage potential conflicts of interest. These might arise from the personal motivations of the partners or influences from funding sources and institutional partnerships. To maintain the integrity and objectivity of the research, implementing conflict of interest declarations, ensuring oversight by independent ethics committees, publishing data transparently, and training participants in conflict management are essential steps. These measures help ensure the research is reliable and equitable, benefiting the vulnerable populations it aims to serve.

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