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COMMENTARY

Vaccine hesitancy – a potential threat to the achievements of vaccination programmes in Africa

Sara Cooper [a,b], Cornelia Betsch [c], Evanson Z. Sambala[a], Nosicelo Mchiza[a], and Charles S. Wiysonge[a,b,d]

[a]Cochrane South Africa, South African Medical Research Council, Parow Valley, Cape Town, South Africa; [b]School of Public Health and Family Medicine, University of Cape Town, Cape Town, South Africa; [c]Center for Empirical Research in Economics and Behavioral Sciences, Media and Communication Science, University of Erfurt, Erfurt, Germany; [d]Department of Global Health, Stellenbosch University, Tygerberg, Cape Town, South Africa

ABSTRACT

Vaccination programmes in Africa have made extraordinary progress over the last four decades. Yet, vaccine hesitancy threatens to erode these gains. Vaccine hesitancy is a continuum between vaccine acceptance and refusal. A growing number of people in Africa are delaying or refusing recommended vaccines for themselves or their children, even when safe and effective vaccines are available. This predisposes communities to infectious diseases, resulting in multiple disease outbreaks, ultimately consuming resources and costing lives. Vaccine hesitancy is currently receiving unprecedented global attention, however, there remains several knowledge gaps, particularly in Africa. The vast majority of research on this topic has been conducted in high income countries. Little is therefore known about the nature and causes of vaccine hesitancy in Africa, and evidence-based interventions in the region to address it are also limited. Moreover, tools to measure vaccine hesitancy are scarce, and none that exist have been validated in Africa. We discuss these knowledge gaps, and propose a research and capacity building agenda to better measure and overcome vaccine hesitancy in Africa. Ultimately, this is essential if we hope to enhance and sustain public demand for vaccination and preserve the tremendous achievements of vaccination programmes on the continent.

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Vaccination programmes in Africa have made extraordinary progress since the launch of the Expanded Programme on Immunization in 1974.[1] Routine childhood vaccination coverage has improved considerably across Africa, with coverage with the full series of three doses of diphtheria-tetanus-pertussis containing vaccines (DTP3) rising from 57% in 2000 to 74% in 2016.[2,3] Measles mortality declined by 85% between 2000 and 2015 in Africa,[4] and Nigeria, the last wild poliovirus endemic country in the region, has had no new cases since 2016. By the end of 2016, more than 260 million people in the African Meningitis Belt had been vaccinated with MenAfriVac, only 6 years after the introduction of the meningococcal group A conjugate vaccine.[5] Today, meningitis due to type A meningococcus has been virtually eliminated.[3] In addition, the region has made significant strides with introducing new and under-utilised vaccines, including hepatitis B, *Haemophilus influenzae* type b, rotavirus, pneumococcal conjugate, and human paillomavirus vaccines; among others.[6]

Despite these successes, vaccination programmes in African countries are challenged by vaccine hesitancy, which represents a continuum between vaccine acceptance and refusal.[7,8] Recently, various vaccination controversies in Africa have led people to delay or refuse recommended vaccines for themselves or their children, even when vaccines were available.[9,10] This made communities more susceptible to infectious diseases and resulted in multiple disease outbreaks. One of the most striking examples is the polio vaccine boycott in Nigeria in 2003–2004 which, driven by rumours and distrust, quintupled polio incidence in Nigeria between 2002 and 2006 and contributed to polio outbreaks across three continents.[11] Other examples[12] further suggest that vaccine hesitancy trends and risks are on the rise in Africa. Vaccine hesitancy poses significant risks not only for the hesitant individual, but also the wider community. Delays and refusals of vaccination make communities unable to reach thresholds of vaccine uptake that confer herd immunity; thus raising the possibility of an outbreak should a vaccine-preventable organism start circulating in that community.[13]

Encouragingly, vaccine hesitancy is currently receiving unprecedented global attention, stimulated by the World Health Organization identifying it as a priority issue.[14] Academic publications on vaccine hesitancy quadrupled during the first few years of this decade.[15] Yet, there remain several knowledge gaps in this area. Firstly, little is known about the nature and causes of vaccine hesitancy in Africa, with most research in this area conducted in high income countries.[7,15] Vaccine hesitancy is highly variable and context-specific,[7,8] and thus the generalizability of findings from high income countries is unclear. Most African countries face significant barriers in the 'access-supply side' of vaccination, and therefore vaccine hesitancy is likely to comprise a more complex interplay of structural and psychological influences than in high income countries.[15] A recent vaccine hesitancy model proposed by the World

CONTACT Sara Cooper Sara.Cooper@mrc.ac.za Cochrane South Africa, South African Medical Research Council, Francie Van Zijl Dr, Parow Valley, Cape Town, 7501, South Africa.

Health Organization[7] and expanded by one of the authors,[16] suggests the drivers of vaccine hesitancy include confidence, complacency, convenience, risk calculation, and collective responsibility ("5C model"). Yet these models are based on research predominantly conducted in and constrained to WEIRD (Western, Educated, Industrialized, Rich, and Democratic) societies,[17] and we lack empirical data to test, adapt and potentially apply these models to Africa. We thus need to expand understandings of the context-specific causes and implications of vaccine hesitancy within different African settings, and differentiate hesitancy from other reasons why individuals are not (completely) vaccinated in the region. This is essential for enhancing the generalizability of current causal models, and the development of more targeted and contextually-tailored interventions for Africa. Few interventions in Africa have been shown to be effective in decreasing vaccine hesitancy.[18] This may be due, at least in part, to the paucity of knowledge on the determinants of vaccine hesitancy and thus a lack of interventions which focus specifically on causal mechanisms.

Secondly, validated tools to measure vaccine hesitancy are scarce.[19] Those that have recently been developed, such as the Parent Attitudes About Childhood Vaccines survey[20] and Vaccine Hesitancy Scale,[19] were designed for high income countries and none have been validated in Africa. These measures also fail to incorporate the multiple dimensions of hesitancy and are lengthy, potentially discouraging their use in research and fieldwork. The World Health Organization recently appealed to national governments to incorporate a plan to measure vaccine hesitancy into national vaccination programmes.[21] The lack of validated and easy to use diagnostic tools in Africa is a major barrier to this. There is thus a need to test, validate, and adapt existing vaccine hesitancy measures, and potentially develop new ones, for application in Africa. These measures need to be concise to facilitate their usage and comprehensive to enable an assessment and differentiation of the different aspects of vaccine hesitancy. Such tools will help to monitor vaccine hesitancy trends over time, enhance the comparability of research results, and facilitate more evidence-informed interventions.[16]

Filling these knowledge gaps necessitates building capacity in Africa for vaccine hesitancy research. More specifically, we need to develop capabilities for socio-behavioural insights and multidisciplinary research on vaccine hesitancy.[21,22] Vaccine hesitancy is complex, shaped by multiple psychological, ideological and contextual factors. It is thus imperative to build skills that integrate knowledge and expertise from intellectual fields outside of the traditional scope of vaccination programmes and research, such as sociology, psychology, and education. The time has come to integrate a rigorous social science perspective into an area generally dominated by medical thinking. This is essential if we hope to enhance and sustain public demand for vaccination and preserve the tremendous achievements of vaccination programmes in Africa.

Disclosure of potential conflicts of interests

The authors report no conflict of interest.

ORCID

Sara Cooper http://orcid.org/0000-0001-9894-236X
Cornelia Betsch http://orcid.org/0000-0002-2856-7303

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