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Exploring challenges and recommendations for verbal autopsy implementation in low-/middle-income countries: a cross-sectional study of Iringa Region—Tanzania

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ABSTRACT

Background Verbal autopsy (VA) plays a vital role in providing cause-of-death information in places where such information is not available. Many low-/middle-income countries (LMICs) including Tanzania are still struggling to yield quality and adequate cause-of-death data for Civil Registration and Vital Statistics (CRVS).

Objective To highlight challenges and recommendations for VA implementation to support LMICs yield quality and adequate mortality statistics for informed decisions on healthcare interventions.

Design Cross-sectional study.

Study setting Iringa region in Tanzania.

Participants 41 people including 33 community health workers, 1 VA national coordinator, 5 national task force members, 1 VA regional coordinator and 1 member of the VA data management team.

Results The perceived challenges of key informants include a weak death notification system, lengthy VA questionnaire, poor data quality and inconsistent responses, lack of clarity in the inclusion criteria, poor commitment to roles and responsibilities, poor coordination, poor financial mechanism and no or delayed feedback to VA implementers. Based on these findings, we recommend the following strategies for effective adaptation and use of VAs: (1) reinforce or implement legislative procedures towards the legal requirement for death notification. (2) Engage key stakeholders in the overall implementation of VAs. (3) Build capacity for data collection, monitoring, processing and use of VA data. (4) Improve the VA questionnaire and quality control mechanism for optimal use in data collection. (5) Create sustainable financing mechanisms and institutionalisation of VA implementation. (6) Integrating VA Implementation in CRVS.

Conclusion Effective VA implementation demands through planning, stakeholder engagement, upskilling of local experts and fair compensation for interviewers. Such coordinated endeavours will overcome systemic, technical and behavioural challenges hindering VA's successful implementation.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The participation of both the National Mortality and Cause of Death Task Force and community health workers offers insights into the execution and supervisory levels of the verbal autopsy (VA) implementation strategies.
⇒ The inclusion of reviews from various low-/middle-income countries where VA has been implemented broadens the study's perspective.
⇒ This study contributes to the limited literature on the VA implementation for practical implementation of VA data collection in resource-limited settings.
⇒ The study focused on the Iringa Region as a case study during the Civil Registration and Vital Statistics demonstration phase in Tanzania. Iringa Region is just one of the 31 administrative regions in Tanzania.
⇒ While the study findings could be limited to this specific region, lessons learnt can be applied to other similar regions in Tanzania and beyond.

INTRODUCTION

Cause of Death (CoD) statistics reflect society's conditions of morbidity and provide persistent patterns of health risks in communities. Though CoD indicators play vital roles in countries' healthcare interventions, globally, only one out of two deaths are certified with CoD.[1] The situation is worse in low-/middle-income countries (LMICs), where the majority die without hospital care.[2–5]

The struggle to generate reliable and adequate CoD statistics led to the development of the verbal autopsy (VA) method in the 1950s.[1] VA is an alternative method which can lead to the processing of CoD information using the series and duration of signs and symptoms leading to death.[2] Countries like Tanzania, Malawi, Ghana, Myanmar, Papua New Guinea, Bangladesh and the Philippines have used these VA tools to generate reliable CoD statistics which demonstrate the value of VA adoption in LMICs.[6 7] There is extensive literature on VA in research settings focusing

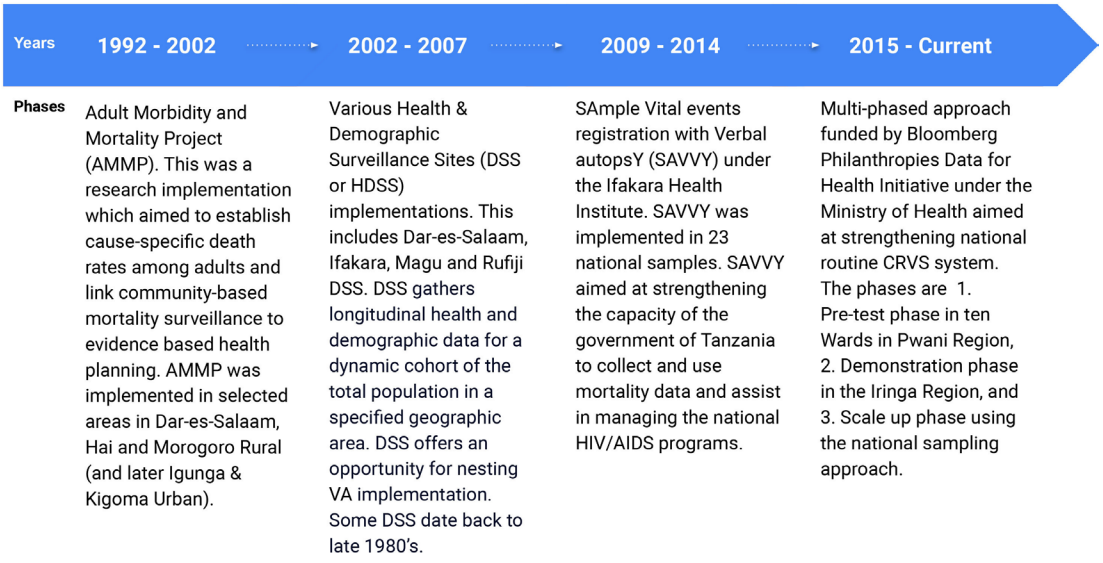

Figure 1 VA Implementation phases in Tanzania. CRVS, Civil Registration and Vital Statistics; DSS, Demographic Surveillance Sites; HDSS, Health and Demographic Surveillance Systems; VA, verbal autopsy.

on the automation of CoD computation[3 8–12] and exploration of international standards and concepts on the use of VA in augmenting Civil Registration and Vital Statistics (CRVS) systems,[6 8] but limited studies have focused on practical implementation settings and context-specific experiences on the adoption of VA in CRVS. Many LMICs are still struggling to yield sustainable quality and adequate data for routine CRVS,[13 14] thus implementation of VA continues to be challenging.[12]

VA history in Tanzania goes back over three decades.[15 16] Figure 1 summarises the different implementations. In 1992, as part of a new research collaboration with the Tanzanian Ministry of Health (MoH), the country started to collect VA documents through the Adult Morbidity and Mortality Project in three Demographic Surveillance Sites.[17] From 2002 to 2007, more VAs were conducted with the Ifakara Health Institute (IHI) under Health and Demographic Surveillance Systems research settings.[16 18] In 2009, through IHI the country received a 5 year project under the code name Sample Vital Events Registration and Verbal Autopsy (SAVVY) to strengthen the capacity of the government to collect and use mortality surveillance data to assist in managing the national HIV/AIDS programme by expanding community-based identification, reporting and processing death events to produce COD information.[19 20] SAVVY used statistical sampling techniques to produce nationally representative data on levels and causes of mortality from 23 councils in Tanzania. SAVVY implementation ended in 2014. At the beginning of the year 2017, the country embarked on another multi-phased approach funded by Bloomberg Philanthropies Data for Health Initiative to promote CRVS and use VA data to provide information on national mortality statistics.[21] The phases were (1) the pretest phase in the 10 wards in the Pwani Region, (2) the demonstration phase in the Iringa region and currently (3) the scale-up phase using a national sampling approach.

A typical VA implementation in each of these phases is conducted in four steps: (1) sensitisation of the local community leaders to report death events; (2) recruitment and training of the VA interviewers to conduct mortality surveillance; (3) implementation of the VA interviews through a guided mobile application and data submission to an online server managed by the MoH which has day-to-day Monitoring and Evaluation aspects of the overall VA data collection processes; (4) analysis and feedback dissemination which plays a vital role in intervention design, informing decisions and creating policies. Such a series of tasks from different players and sectors have interlinked dependencies and are further exposed to performance and data quality constraints. Despite the investment, Tanzania reached 26% of all deaths registered in the country.[22] Thus, this study intends to shed light on existing VA practical implementation challenges and recommended strategies for the effective adoption of VA. The contribution of this study is twofold: first, inform researchers, local authorities and related stakeholders in the healthcare system on the practical challenges of VA to improve its operationalisation. Second, inform policy-makers on the VA implementation strategies beyond surveillance systems or research environments to the routine application in CRVSs.

METHODS

This study adopted a cross-sectional research design from June 2021 to September 2022 through document review and key informants' (KI) semistructured interviews in five municipalities of the Iringa region. Iringa is the demonstration region for the VA implementation in Tanzania.

Patient and public involvement

Patients and/or the public were not involved in the design, conduct, reporting or dissemination plans of this research.

Data collection

Data collection involved KI semistructured interviews to unfold how the VA is practically implemented in the field. Document analysis provided background information on the VA implementation and helped in formulating potential interview questions, validating the claims of interviews and discerning themes in findings.

Documents review

Prior to semistructured interviews, a document review was conducted to enhance the credibility of the findings. Documents related to VA project implementation were extracted from open-access journals and archives of the MoH. Thirty-seven documents related to VA implementation were identified and read thoroughly by researchers in pairs. Content analysis was adopted to scrutinise the appearance of themes. Themes that appeared in more than one document were recorded.

KI semistructured interviews

Face-to-face and virtual interviews with KI took place immediately after the document analysis. Potential participants were identified using snowball sampling. The first group came from the National Mortality and CoD Task Force (n=7), which then recommended a VA regional supervisor (n=1) as the second group. The regional supervisor then recommended community healthcare workers (CHW) (n=11), one for each urban, peri-urban and rural ward, making a total of 33 wards represented.

Early findings of the document review were discussed with the KI to supplement more information and confirm the findings on the data and tools used for VA data collection. Data were gathered by administering a questionnaire with a set of open-ended questions. Questions were devised based on three categories: (1) VA adoption and implementation process (2) challenges, and (3) strategies. The CHWs were interviewed to understand how the VA data are being collected, the routine operation procedures of preconducting and postconducting VA, and the challenges faced in administering VA surveys. Interviews for the National CRVS task force focused on understanding how they derive diagnoses from VA questionnaires, monitoring the quality of VA implementation and interviewers' training; generally, the purpose was to get a high-level national overview of the implementation of VA into routine vital statistics.

Observation

The researchers participated in administering the questionnaire and observed the challenges while administering the WHO's VA questionnaire in the field.

Data analysis

A thematic approach was employed to analyse the collected data and identify insights related to the implementation challenges and recommendations for the adoption of VA in CRVS. The thematic analysis provides a flexible mechanism for data interpretation by identifying themes.[19 23] Themes were developed through an iterative process between the outputs of document analysis and semistructured interviews. Initially, each author critically analysed and examined data to generate all potential themes. Brainstorming sessions were conducted by the authors to identify key themes. KI were consulted to gather the richest and most in-depth information regarding the first deduced list of themes. After further review and consolidation of comments from KI, the final lists of the key themes on the implementation challenges and recommendations for the VA adoption in CRVS were produced.

To formulate strategies, we employed two methods. The first method used individual brainstorming techniques proposed by AlMutairi[24] in order to identify effective strategies for implementing VA. The second method involved validating the brainstormed strategies through consultation with the National Mortality and CoD Task Force and obtaining their contributions and recommendations on how to enhance VA implementation.

RESULTS

In total, 41 participants were engaged (33 CHWs, 1 VA national coordinator, 5 national task force members, 1 VA regional coordinator and 1 from the VA data management team). All of the selected CHWs participated in the stated VA implementation and had conducted at least five VA interviews. CHW with no VA interviews were excluded. CHW were grouped by location and residency representing three councils: Iringa Municipal, Kilolo District and Iringa Rural District and further urban, peri-urban and rural councils respectively. Twenty-one interviews were conducted in person. The remaining 20 interviews were done by telephone. Interviewees were free to respond and elaborate their answers in the language of their choice (English or Swahili).

A total of 12 documents were reviewed to complement the insights gained from the interviews. The documents included: (1) vital statistics reports, (2) CRVS Fellowship report: A national scale-up strategy for Tanzania, (3) VA Questionnaires for Tanzania and WHO VA Data Collection tool of 2016, (4) SAVVY report,[22] (5) WHO CRVS strategic implementation plan 2021–2025, (6) Published articles related to the VA implementation projects in Tanzania[16] and other LMICs including India,[25] Ethiopia,[26] Sierra Leone,[27] Uganda,[28] Zambia[23] and Brazil.[5]

Two major themes emerged from the preliminary analysis: (1) implementation challenges and (2) recommendations. These are summarised in table 1.

VA implementation challenges

From the semistructured interviews, the implementation challenges as perceived by CHW and the national task force members included the following subthemes, (1) weak death notification system, (2) lengthy VA questionnaire, (3) lack of clarity in the inclusion criteria for VA interviews, and (4) no or delayed feedback to VA implementers. Conversely, the task force members highlighted

Table 1 Summary of VA implementation challenges and recommendations

VA implementation step	Death notification	VA interview	Data analysis	Data use and dissemination
Challenges	► Weak death notification	► Lengthy VA ► Poor data quality and inconsistent responses ► Poor financing mechanism ► Lack of clarity in the inclusion criteria	► Poor commitment to roles and responsibilities ► Poor coordination	► No feedback loop
Recommendations	► Legislative procedures for death notification ► Effective stakeholder engagement	► Optimal VA Questionnaire and Quality Control ► Sustainable financing mechanism	► Integrating VA Implementation in CRVS	► Engage stakeholders with feedback ► Effective capacity building on data collection, analysis and interpretation

CRVS, Civil Registration and Vital Statistics; VA, verbal autopsy.

(5) poor VA data quality, (6) poor commitment to roles and responsibilities, and (7) poor financing mechanisms as main VA implementation challenges. Both CHW and task force members pointed out that the weak death notification system and lack of clarity in terms of interview inclusion criteria (community vs facility deaths, residence vs non-residence deaths) are among the VA implementation challenges. The document's review indicated that there is poor coordination in VA implementation in most LMICs.

Weak death notification system

This theme relates to the perspective on how deaths are being notified. For deaths that occur outside health facilities, the nearest relatives or caretakers of the deceased are required by law to notify the authorities. This process triggers death documentation to the Tanzania Registration Insolvency and Trusteeship Agency (RITA) at the local level and puts a provision for issuing death certificates. However, many KI reported that the notification process does not take place in most rural areas. Most people who die are directly buried at home or on farms, contrary to designated burial areas which could have enforced the need for the notification process. If VA is conducted, they are often conducted weeks or months after the death has occurred and therefore responses to the VA interview may suffer recall bias and affect the overall quality of the VA document.

> In most villages, the majority of the people die in their residences and are buried on farms or other rural dedicated properties/areas without formal notification to the responsible authorities. (CHW, Iringa Rural District)

Lengthy VA Questionnaire

This theme relates to perspectives on the length of VA questionnaire instruments. The length of time required to conduct a VA interview is among the barriers to the widespread implementation of VA in CRVS. About 67% of the KI were not happy with the length of the VA questionnaire or the time spent interviewing a single person. The VA implementation exercise in Iringa used the standard WHO 2016 VA questionnaire with 481 questions. MoH added 10 extra country-specific questions relating to health insurance coverage. This questionnaire was adapted and translated into Swahili to fit into the local context. An average of 45 min has been observed as required to administer one complete VA interview.

> The VA interview guide is too long, sometimes it takes 1 hour to finish one interview (CHW, Iringa Municipal)

Poor data quality and inconsistent responses

This theme relates to the usage of VA data particularly in assigning the probable CoD. Despite built-in data quality control and question-by-question skip logic measures, some VA records were encountered with no or inconsistent responses. This includes, for example, missing age or unknown age information, inconsistent signs and symptoms for a given sex or age group and poor completion of the narrative section. Our results indicate that the inappropriate selection of interviewees may have contributed to this behaviour. This may happen when the family selects a respondent other than the designated one (a close relative who provided care to the deceased during the final days before death). CHWs noticed that some families selected a different person other than caretakers as they were expecting financial support from the interviewer or the government from the VA interview. Challenges were also observed when the caretaker was too old to recall important information which led to death.

Some of the local traditions do not allow women to speak on behalf of the family (National Task Force member).

These inefficiencies observed at a lower level compromise the quality of VA data.

Lack of clarity in the inclusion criteria

This theme relates to perspectives on who is supposed to be included in the VA interviews. It was not clear who should be included in the VA interviews. Either the residents of their locality or anyone buried in the locality. Furthermore, people who died at health facilities vs community. Notably, health facilities also report mortality statistics through routine health facility reporting channels. Reporting health facility deaths in the VA module could result in double counting in reports. In addition, different VA interviews provided contradicting information about the duration a person must reside in a specific location before their death to be considered a resident. The responses ranged from 3 months to 6 months.

Normally, we interview deaths that have occurred within the last one month. We allow the family to mourn for two weeks before we can engage for an interview. However, when we started this program, we were interviewing deaths that had occurred up to two months back (CHW, Iringa Municipal)

Poor commitment to roles and responsibilities

This theme relates to perspectives on the commitment of accountable personnel in VA implementation. Specific concerns regarding volunteering vs specific job accountability in VA implementation were raised by KI. Most positions, particularly VA interviewers (CHWs and Agricultural Officers), Ward Executive Officers (WEO) and other coordination positions, are often perceived as secondary commitments. In this perspective, several tasks are easily left behind or accumulated over time and result in attrition, where most of these positions pick other responsibilities and VA work remains undone.

This is an additional task that does not have any incentive, I have primary responsibilities which often require my immediate attention (WEO, Iringa Rural District)

Poor coordination

This theme relates to perspectives on the coordination of VA implementation. Documents review revealed different uncoordinated initiatives by the different stakeholders in the country including vertical programmes, government entities (the MoH, National Statistics Office, and the Registration Office) and local governments. The disconnection between death events, notification, registration, certification and ascertaining the COD. SAVVY implementation in Tanzania, Zambia and Malawi unanimously reported challenges stemming from poor coordination among public institutions. For instance, attempts to integrate VA data into routine CRVS were often unsuccessful due to a lack of interoperability among different national systems.

Poor financing mechanism

This theme relates to perspectives on finances in VA implementation. Some KI, mainly national task force members, expressed that poor financing mechanisms affect the efficiency of the VA interviews. During the VA implementation pretesting and demonstration phase, Tanzania commissioned pay for performance modality to incentivise and compensate for time effort. The approach was successful as more VAs were reached. However, the financial component relied on donor funds and, hence, was not sustainable. Furthermore, this modality motivated quantity but not quality. Interviewers were paid flat rates without considering transport costs and geographical coverage. When this modality was changed to a flat compensation within a defined period, other issues of quality and coordination arose. VA implementation in the Iringa suffers from low production of VA data as interviewers have not been receiving their tokens consistently. They tend to ignore reporting some of the deaths or visit the families of descendants until they have official duties in the area. This resulted in over 50% underreporting in most areas. Furthermore, limited resources for digital implementation such as poor internet connectivity and limited electricity to power digital devices also have been a barrier to VA implementation in LMICs.[29]

No or delayed feedback to VA implementers

This theme relates to perspectives on the dissemination of feedback to VA implementers. KI noted that the VA implementation lacked a feedback mechanism. Despite conducting event notifications for over a year, none had received feedback on their contribution. The KI and leaders of the local government authorities reported not having received any feedback on the number of VAs collected and analysis performed on the data. This means that they are hosting the VA exercise as couriers and thus unmotivated. Similar to many programmes at national levels or with global interest, little attention and resources are often put into disseminating results to local or to the ground where the data originate. Much of the focus and resources are narrowed and directed to influencing policies at the ministry or government level. It appears much easier logistically and financially to have one dissemination at the ministry level vs multiple dissemination at regions, councils or ward levels. In addition, the language starts to differ as you move down to different levels, and therefore this requires a different packaging or communication strategy.

We have been conducting VA interviews for years, but we have received no feedback or insights regarding the results of the analysis (CHW, Iringa MC)

Strategies for effective adoption of VA

Recommendations were extrapolated from the analysis of the KI' feedback and insights obtained from reviewing documents. These recommendations were articulated from the authors' perspectives forming six themes under the category of strategies for effective VA adoption: (1) legislative procedures for death notification, (2) stakeholder engagement, (3) effective capacity building, (4) optimal VA questionnaire instruments and quality control mechanism, (5) sustainable financing mechanism and (6) integrating VA implementation in CRVS.

Legislative procedures for death notification

The sustainable implementation of VA into routine CRVS requires proper governing structures and procedures. Without legislation, the VA will only be used as an ad hoc means. Countries should establish and supervise legislative procedures that bind the family members to report deaths to the relevant authorities. A CRVS legal framework should be established at the national level to bind coordination among responsible authorities. In Tanzania, the national VA programme is hosted by the MoH and has members from the National Bureau of Statistics, RITA, the President's Office of Regional Administration, Local Government, and other stakeholders. However, there is no linkage between the implementation and data collection systems. To improve data efficiency and reduce data quality gaps, it is recommended that MoH and RITA should link their data systems and processes.

Stakeholder engagement

Stakeholder engagement is a cornerstone of quality VA data collection. It is observed that some families did not provide enough cooperation which eventually affected the quality of VA data. Most of the ongoing community engagements are limited to creating awareness, little attention is being paid to the feedback which has significant potential to create community ownership of the VA exercise. There is a need to conduct a thorough investigation using tailored approaches to engage communities with the intention of increasing awareness and acceptance of the unfamiliar nature of VA in the community.

Effective capacity building

Collection of quality VA data

Informants emphasised the strengthening of the VA workforce's capacity for yielding high-quality data for routine CRVS. Staff turnover witnessed during Tanzania's VA pretesting and demonstration phase necessitated ongoing training opportunities. Therefore, the MoH developed a sustainable training programme by integrating the VA module into the VA interviewer training syllabi. Training is provided to council-level supervisors (one per council), regional supervisors and one dedicated national supervisor. Informants recommended refresher programmes to deliver ongoing support and feedback to VA interviewers.

Analysis and interpretation of VA sata

Data need to be translated to action immediately among policy-makers, local government authorities and communities for timely interventions. Hospital and community death need to be integrated and local governments should be able to translate the data into actions so that they are not left behind as couriers of data rather than development partners. The CHWs should be able to promptly access the VA results and incorporate insights into their healthcare interventions. VA data are analysed and interpreted at the MoH.

Optimal VA questionnaire and quality control mechanism

The KI identified that the lengthy questionnaire is among the limitations of the current VA implementation. The questions should be reduced by removing questions that appeared repeated but asked differently. In addition, introduce a dynamic flow of questions to guide the VA interview administration. The MoH has emphasised the use of standard operating procedures and put emphasis on refresher training to continually support VA implementation at the ground level. Ultimately, this will contribute to reducing the duration of the VA interview and improve the overall VA implementation experience.

Sustainable financing mechanism

VA interviews are usually conducted by the CHWs who have other core responsibilities. The additional scope to conduct VA interviews needs to be financed. A healthy and sustainable approach would be to include the cost of VA interviews in local government financial plans. The KI also recommend the use of incentives such as support for children's welfare, to attract communities to cooperate in VA interviews.

Integrating VA implementation in CRVS

Countries would need to design VA integration strategies and assess their impact on the overall CRVS to implement VA beyond research settings. Integration strategies should adopt an intersectoral approach, ensuring interoperability is at the forefront of considerations. There is considerable evidence that a few countries like Brazil,[5] Uganda,[23] Zambia[24] and South Africa[20] managed to integrate and use VA data into routine health systems.

DISCUSSION

This study explored the prevailing challenges in the practical implementation of VA in the Iringa region in Tanzania and proposed strategies to enhance its effective adoption. The study fills an important gap in the literature regarding the effective implementation of VA beyond research settings. By exploring the novel challenges faced during the VA implementation in Iringa, this study offers valuable recommendations for effective VA implementation. The insights gained from these challenges and experiences have the potential to enhance VA implementation not only in Tanzania but also across LMICs. However, more studies in different areas

should be conducted to provide a comprehensive view of diverse challenges that exist across LMICs since the study focused only on one region in Tanzania as a case study during the CRVS demonstration phase. Also, due to the limited peer-reviewed publications on the implementation of VA in real-world settings, we have incorporated grey literature into our document review to enhance its breadth. However, this grey literature may exhibit varying levels of consistency and be accessible online only temporarily.

The study discovered that despite the extensive experience of VA implementation in Tanzania which dates back to the 1990s,[15 16] there are still noticeable gaps, which present opportunities for enhancing current implementation methods. The study showed that a weak death notification system, lengthy VA questionnaire, poor data quality and inconsistent responses, poor coordination, poor financial mechanism, and lack of feedback loop were the main perceived VA implementation challenges that hindered its operationalisation in Tanzania. Some of the aforementioned challenges, such as poor data quality, inconsistent responses and poor financial mechanisms have been previously raised by Aborigo *et al*[30] and persist to this day beyond due to systemic inefficiencies.

Further, while different factors shape VA implementation, this study has unveiled poor coordination and the absence of a feedback loop as prevalent challenges in LMICs. These challenges were also observed during SAVVY implementation in Zambia and Malawi. The absence of a feedback mechanism, as pointed out by the KI in Iringa, results in a significant operational gap. Even after a year of performing VA interviews, no feedback was received, and they feel disconnected from the results of their work. Local government authorities also reported a lack of feedback on VA data collection and analysis, suggesting that stakeholders operate merely as data couriers. VA insights should be digested for consumption at the local levels. Otherwise, such a scenario can demotivate stakeholders, compromise data quality and undermine VA implementation goals.

The study proposed various strategies encompassing four key aspects of the VA implementation process (as summarised in table 1) aimed at promoting the successful integration of VA in the region: (1) legislative procedure for death notification: tt was observed that the motive to notify death is often to secure certificates for inheritance. This incentive may not apply to deceased without dependents, and where local beliefs oppose reporting child deaths. (2) The length of time required to conduct a VA interview using the WHO 2016 questionnaire is over 45 min. A study by Serina *et al*[31] suggested that sufficient accurate and consistent subsets of symptoms are required to enable VA models to assign the right CoD. The study by Serina *et al*[13] reported that the length of a VA questionnaire was shortened by almost 50% without a significant drop in the performance of CoD computation. Shortening the VA questionnaire will improve the overall efficiency of VA implementation[14] (3) Integrating VA implementation into CRVS is vital for a holistic view of mortality data. However, it is a complex task demanding intersectoral considerations. There is notable tension regarding the standardisation of digital tools to ensure interoperability across systems.[1 32] (4) Engaging stakeholders with feedback is a cornerstone to VA data collection quality; however, consistent and timely feedback mechanisms often remain a challenge, leading to potential gaps in data integrity and stakeholder motivation.

CONCLUSION

VA data have significant potential to fill the vital statistics gap in LMICs. This paper discusses challenges in the practical implementation of VA and provides strategies for successfully integrating VA into routine CRVS. Effective VA implementation demands through planning, stakeholder engagement, upskilling of local experts and fair compensation for interviewers. Such coordinated endeavours will overcome systemic, technical and behavioural challenges hindering VA's successful implementation.

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