Clinton Global initiative Commitment to Action

Innovation in Data Analysis to Prevent Gender-based violence

— September 2023

Vital Strategies

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Summary

In 2023, Vital Strategies Brazil committed to supporting public health partners to triangulate public health system data across sources to create a streamlined identification tool for cases of gender-based violence. Using data integration, textual analysis, and existing and tested AI methods, Vital Strategies and its partners will build a solution for health professionals in which the health information system itself will create an alert for potential cases of violence. The main goal of this commitment is to better equip health teams, local authorities, and policy makers to design and apply best practices and public policies for identifying and responding to potential cases of GBV, as well as raising awareness and strengthening GBV prevention.

Background

According to the World Health Organization, one in three women has been a victim of physical or sexual violence by their partner at some point in their lives. A striking majority of gender-based violence (GBV) remains uncounted and unseen. On average, 50% of all GBV cases go under-reported in Brazil. Brazilian public health systems data indicates that only 13% of GBV records come from primary care units. In most cases, the notification of suspect GBV cases only happens when the victim is admitted to a hospital and the record fulfillment is mandatory for health professionals.

Improved identification of GBV cases in primary care settings is integral to violence prevention efforts. According to national data, women who died by violence in Brazil die an average of 30 days after the violence notification. The literature (Garbin et al., 2015; Kind et al., 2013; Ribeiro & SILVA, 2018) describes that most women do not seek health services when they experience violence. However, even when they do, health professionals face challenges notifying the cases for different reasons. One of the main issues found by the Brazilian health teams are difficulties identifying that the injuries and other health conditions are related to a violent episode, as victims commonly don't verbalize that.

Data present in medical records, when linked to those in other databases (violence reporting system and hospitalization system) and properly analyzed for their semantic content, can potentially contribute to the identification of augmented risk of GBV. Thousands of women and health providers will benefit from such a tool. Interviews with health practitioners conducted by the Brazilian Health Ministry indicate that women victims of violence usually come to the health services with nonspecific complaints (BRASIL, 2002). It is important that these cases are identified early to ensure the root causes of the problem are addressed.

Approach

Vital Strategies Brazil commits to creating an identification tool for cases of GBV to better equip health teams, local authorities and policy makers to design and apply best practices and public policies for identifying and responding to potential cases of GBV, as well as raising awareness and preventing GBV in the territories.

Vital Strategies Brazil will use data integration and textual analysis to identify word patterns that suggest that women registered in the health systems are victims of violence. Vital Strategies will use existing and tested AI methods that draw from linguistics and semantic analyses to build a solution for health professionals in which the health information system itself will create an alert for cases that may be considered cases of violence, based on what has been written by the health professionals, even if the patient didn´t say she suffered violence.

The commitment will initially focus on two municipalities, using public health system data to develop and start initial implementation of the tool. Based on findings from early implementation, the approach will be expanded to municipalities with larger populations, with the potential to expand nationally.

Vital Strategies Brazil will draw upon its experience in strengthening local and national data systems to coordinate the project, engage with partners, and provide technical expertise in GBV. Its partner FrameNetBR, experts in linguistic methodologies, will be responsible for the analysis of semantic fields. Public-sector partners will provide the data for analysis and will be the first beneficiaries of the results; mapping potential GBV cases, notifying systems, and co-developing solutions.

To mitigate the risk of exposing potential victims of GBV, the data analyzed is fully anonymized for both the parameterized and open text fields. Candidate cases are only depicted at a territory level, and personal identification of candidate victims will be protected. Together with local governments, Vital Strategies and a group of experts consulting on ethical risk will develop policies for the tool's use and access permissions.

Furthermore, the system will not modify the medical records, and will only create alerts for physicians who will follow-up with patients according to established standards.

Expansion

Vital Strategies is piloting the methodology in a small city in the state of São Paulo, São Caetano do Sul. The pilot will then be expanded to larger cities with more data to generate better predictive models. Vital Strategies will test how the GBV identification tool can be applied to various regions with different language varieties. They intend to create and test the solution in Recife, Pernambuco´s capital and, possibly, an additional city. Once the results of these two localities are obtained, Vital Strategies will test the feasibility and complexity of nationalization of the tool through the Ministry of Health.

Vital Strategies and the Ministry of Health have already agreed on nationalizing these tools and approaches if the initial pilots are successful in modeling results. At the end of the project Vital Strategies will develop an analysis of the complexity to nationalize this solution and create a relevant work plan. By doing this, Vital Strategies Brazil is combining testing a new and unique strategy, scaling up to more complex environments, and developing a plan to roll the model out nationally.

Action Plan

- **Months 1 to 6**: Linkage of public health system datasets from one Brazilian municipality. Activities include: Making the data available through a cloud environment; Cleaning and organization of databases; Focus groups to gather qualitative information and guarantee data usage ethics; Linkage execution; Completion of the paired database.

- **Month 6**: Descriptive analysis of linked dataset focused on the GBV phenomenon. Activities include: Sample data analysis and annotation for identification of GBV related frames and lexical items associated with them, as well as for flagging potential instances of PII in open text fields; Adaptation of the FrameNet Brasil database for the representation of the GBV lexicon.

- **Month 7:** Descriptive analysis of linked dataset focused on the data quality and services provided.

- **Months 8 to 9:** Revised and expanded model of the lexicon associated with the domain of GBV, defined in terms of computationally implemented semantic frames. Activities include: Annotation of text data with frames and frame elements for building the gold standard dataset; Assessment of ML methods/techniques for suitability (problem and dataset); Test-implementation of selected algorithms; Ablation studies for defining the role of different data structures in the results.

- **Months 10 to 11:** Extendable, general framework for GBV risk classification of territories, based on public health records and their respective links and semantic information. This includes final implementation of the selected algorithm. During this time, a territorialized data visualization dashboard will be developed to inform public policy for the local partner surveillance health department.

- **Months 11 to 13:** Evaluation of the experience and development of the nationalization plan. Development of feasibility assessment for national tool in partnership with MoH.

- **Months 14 to 18:** Design and implement of national tool with support/in with MoH.

- **Month 18:** Evaluation of the experience; report drafting with policy recommendations and improvements.

Partners

Vital Strategies offers high qualified technical assistance on public health intelligence, strengthening of systems, and data analysis. Vital Strategies can provide data analysis and reports about public health issues based on data from public health systems; media support and designed factsheets; and best practice information and discussion with local teams about health services in general, culminating in enhancing public-sector capacities to deal with these issues.

FrameNetBR offers connections and expertise related to public health, and as subgrantees they will receive financial resources.

Public partners will contribute to discussions and planning of public health policies and services; with insight into how to optimize services workflows and training and support for health providers working with the new tool.