Injury Surveillance with District Health Information System 2 (DHIS2)

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Objective

To customize and pilot an open source public health information tool (DHIS2) for injury surveillance in a resource constrained setting, Sri Lanka.

Introduction

Injuries are a major but neglected global public health problem. In the low- and middle-income countries (LMIC), the problem is particularly acute due to disproportionately high incidence of injuries. Most of these injuries are preventable with appropriate interventions. Lack of complete, accurate and timely injury data is one of the main obstacle for injury prevention in LMICs. In 2001, World Health Organization (WHO) published injury surveillance guidelines emphasizing the importance of injury surveillance at country levels to cope with this grave problem. Although most of the developed countries have developed their own injury surveillance systems, there is no customizable generic injury surveillance system which can be used in LMICs. However, *District Health Information System 2* (DHIS2) is a free and open source application used in many countries to collect aggregated public health data. Although it is being used for aggregated public health data it has not being used for injury surveillance.

Methods

DIHS2 is mainly used for aggregated data and it has a tracker module still in the development. For injury surveillance the tracker module was used to create the data entry form in order to capture individual patient records. Then these records were aggregated to generate custom reports.

Data elements were created according to WHO injury surveillance guidelines and categorized according to the recommended data-sets. Data entry form was designed according to the end user requirements. Javascript was used to customize the data entry form and enhance user friendly layout. Some hard coding was done to further enhance the usability of the data entry form speeding up the data entry.

In Sri Lanka, injury data are collected on a paper based form and are subsequently entered into computer systems. In March and April 2013, we collected data from 654 patients with injuries admitted to a base-hospital which has a group of Nurses trained on (basic) injury surveillance.

Results

We commenced the paper based data collection process at the time of admission and continued until the patient was disposed. Subsequently, the data were entered into the customized DHIS2 application. Out of 654 patients, 27% were injured due to road traffic crashes, 13% due to violence, and the other 60% due to unintentional causes.

Customized DHIS2 solution provided following features 1. comply with the changing data and process needs without a major retooling; flexible enough to capture new data items and reporting/care process as needed, 2. data validation, 3. handling missing information, 4. data backing-up, and 5. flexible report generation. By piloting in the tertiary care setup, it was noted that an injury surveillance system has to have an effective mechanism to identify duplicates during the transfer process. Also, the time taken to reporting was an important consideration among the participating nurses.

Conclusions

Our experience reveals that the open source public health information tool, DHIS2 has the potential to be customized for injury surveillance in resource constrained countries like Sri Lanka and it is a sustainable option for injury surveillance in such countries.

This study shows that the DHIS2 is a cost-effective solution for resource constrained contexts. Being an open source framework, it has a potential to be customized to different requirements/scenarios. The flexibility of the DHIS2 allowed system designers to accommodate any changes in the business process quickly in the system.

Human Computer Interaction should be a major concern in designing such a system since the information system (electronic reporting forms) may consume majority of the time taken in the reporting process.
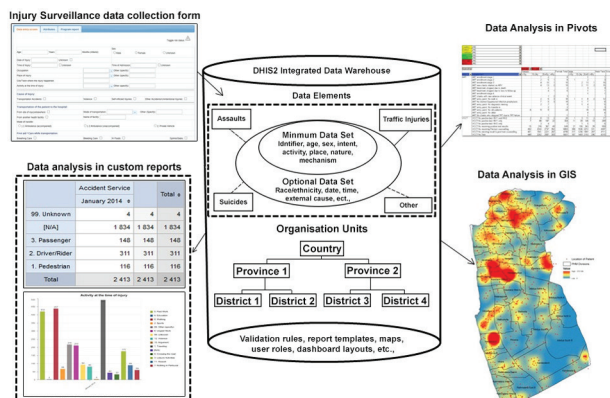
Keywords

Injury surveilllance; DHIS2; trauma

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