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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Objectives: To elucidate current issues related to health statistics dissemination efforts on the Internet in Indonesia and to propose a new dissemination website as a solution. **Methods:** A cross-sectional survey was conducted. Sources of statistics were identified using link relationship and Google™ search. Menu used to locate statistics, mode of presentation and means of access to statistics, and available statistics were assessed for each site. Assessment results were used to derive design specification; a prototype system was developed and evaluated with usability test. **Results:** 49 sources were identified on 18 governmental, 8 international and 5 non-government websites. Of 49 menus identified, 33% used non-intuitive titles and lead to inefficient search. 69% of them were on government websites. Of 31 websites, only 39% and 23% used graph/chart and map for presentation. Further, only 32%, 39% and 19% provided query, export and print feature. While >50% sources reported morbidity, risk factor and service provision statistics, <40% sources reported health resource and mortality statistics. Statistics portal website was developed using Joomla!™ content management system. Usability test demonstrated its potential to improve data accessibility. **Discussion and conclusion:** In this study, government's efforts to disseminate statistics in Indonesia are supported by non-governmental and international organizations and existing their information may not be very useful because it is: a) not widely distributed, b) difficult to locate, and c) not effectively communicated. Actions are needed to ensure information usability, and one of such actions is the development of statistics portal website.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

This work is contextualized in research in modeling and simulation of infection spread within a community or population, with the objective to provide a public health and policy tool in assessing the dynamics of infection spread and the qualitative impacts of public health interventions. This work uses the integration of real data sources into an Agent Based Model (ABM) to simulate respiratory infection spread within a small municipality. Novelty is derived in that the data sources are not necessarily obvious within ABM infection spread models. The ABM is a spatial-temporal model inclusive of behavioral and interaction patterns between individual agents on a real topography. The agent behaviours (movements and interactions) are fed by census / demographic data, integrated with real data from a telecommunication service provider (cellular records) and person-person contact data obtained via a custom 3G Smartphone application that logs Bluetooth connectivity between devices. Each source provides data of varying type and granularity, thereby enhancing the robustness of the model. The work demonstrates opportunities in data mining and fusion that can be used by policy and decision makers. The data become real-world inputs into individual SIR disease spread models and variants, thereby building credible and non-intrusive models to qualitatively simulate and assess public health interventions at the population level.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Though improvements in infant and maternal mortality rates have occurred over time, women and children still die every hour from preventable causes. Various regional, social and economic factors are involved in the ability of women and children to receive adequate care and prevention services. Patient-held maternal and/or child health records have been used for a number of years in many countries to help track health risks, vaccinations and other preventative health measures performed. Though these records are primarily designed to record patient histories and healthcare information and guide healthcare workers providing care, because the records are patient-held, they also allow families a greater ability to track their own health and prevention strategies. A literature search was performed to answer these questions: (1) What are maternal information needs regarding pregnancy, post-natal and infant healthcare, especially in developing countries? (2) What is known about maternal information behavior in developing countries? (3) What is the history and current state of maternal and/or child patient-held healthcare records, do they provide for the information needs of the healthcare provider and what are the effects and outcomes of patient-held records in general and for maternal and/or child health in particular? Specific information needs of pregnant women and mothers are rarely studied. The small numbers of maternal information behavior results available indicate that mothers, in general, prefer to receive health information directly from their healthcare provider as opposed to from other sources (written, etc.) Overall, in developing countries, patient-held maternal and/or child healthcare records have a mostly positive effect for both patient and care provider. Mothers and children with records tend to have better outcomes in healthcare and preventative measures. Further research into the information behaviors of pregnant women and mothers to determine the extent of reliance on interpersonal information seeking is recommended before expending significant resources on enhanced patient-held maternal and/or child healthcare records including storage on mobile devices. In particular, research is needed to explore the utility of providing targeted health messages to mothers regarding their own health and that of their children; this might best be accomplished through mobile technologies.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Notifiable condition reporting and alerting are two important public health functions. Today, a variety of methods are used to accomplish these transfers of information. The increasing use of electronic health record systems by healthcare providers makes new types of electronic communication possible. We used the XForms standard and nationally recognized technical profiles to demonstrate the communication of both notifiable condition reports and patient-tailored public health alerts. This demonstration of bi-directional communication took place in a prototypical health information exchange environment. We successfully transferred information between provider electronic health record systems and public health systems for notifiable condition reporting. Patient-specific alerts were successfully sent from public health to provider systems. In this paper we discuss the benefits of XForms, including the use of XML, advanced form controls, form initialization and reduction in scripting. We also review implementation challenges, the maturity of the technology and its suitability for use in public health.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Background One goal in EMR development should be to facilitate a patient-centered clinical encounter. Methods Qualitative analysis and suggestions are offered for how the EMR can individualize patient care, in support of a patient-centered approach. Result Three promising target areas in efforts to develop a patient-centered EMR are: elicitation of the chief complaint, conduct of health screening activities, and evaluation of health literacy. Conclusion EMR design can facilitate a more patient-centered clinical encounter.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Introduction Loss of teeth and resultant resorption of the residual ridges is a major oral health problem in India. The resorption leads to irreversible loss of bone volume of the jaws and seriously undermines retention and stability of future dentures. Loss of masticatory efficiency causes nutritional deficiencies and affects quality of life also. However, construction of over-dentures (dentures anchored to modified teeth or roots), a sophisticated procedure requiring skills of several dental specialists, can arrest the resorption and provide retentive dentures. Dental specialists in India are, however, concentrated in urban areas leaving the rural populace underserved. The aim of our study was to find out whether newly graduated dentists, under remote guidance from specialists, can fabricate over-dentures that are functional and improve the oral health related quality of life. **Methods** Two groups of subjects were treated with over-dentures. Group 1 consisted of subjects attending a rural dental health clinic (site1) and group 2 at a university teaching hospital (site 2). 2 new dental graduates at each site carried out treatment. Operators at site 1 were guided remotely over a telemedicine link, cellphones and emails while those at site 2 were guided directly. Functional assessment of dentures was carried out at the end of the treatment period to determine the technical quality of dentures. Subjective evaluation was carried out by subjects completing the Oral Health Impact Profile (OHIP-EDENT) questionnaire for edentulous subjects before and after treatment. **Results:** No statistically significant difference was seen between the functional assessment scores of dentures from the two sites ($p=0.08$) at 95% confidence interval. Both groups also experienced significant improvement in all domains of OHIP - EDENT. **Conclusion:** Remotely supervised newly graduated general dentists can provide over-dentures of sufficient quality to rural population. This strategy has the potential to improve access to care and elevate the level of dentistry available to rural population when referral to specialists is not feasible. The results of the study provides pointers for dental public health policy makers and administrators in developing nations on how to leverage Information and Communication Technology infrastructure to enhance access to care in rural areas.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

To date, little has been written about the implementation of utilizing food safety informatics as a technological tool to protect consumers, in real-time, against foodborne illnesses. Food safety outbreaks have become a major public health problem, causing an estimated 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths in the U.S. each year. Yet, government inspectors/regulators that monitor foodservice operations struggle with how to collect, organize, and analyze data; implement, monitor, and enforce safe food systems. Currently, standardized technologies have not been implemented to efficiently establish “near-in-time” or “just-in-time” electronic awareness to enhance early detection of public health threats regarding food safety. To address the potential impact of collection, organization and analyses of data in a foodservice operation, a wireless food safety informatics (FSI) tool was pilot tested at a university student foodservice center. The technological platform in this test collected data every six minutes over a 24 hour period, across two primary domains: time and temperatures within freezers, walk-in refrigerators and dry storage areas. The results of this pilot study briefly illustrated how technology can assist in food safety surveillance and monitoring by efficiently detecting food safety abnormalities related to time and temperatures so that efficient and proper response in “real time” can be addressed to prevent potential foodborne illnesses. Key words: foodborne illness, surveillance, technology

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

BACKGROUND: Emergency Department (ED) overcrowding is an important healthcare issue facing increasing public and regulatory scrutiny in Canada and around the world. Many approaches to alleviate excessive waiting times and lengths of stay have been studied. In theory, optimal ED patient flow may be assisted via balancing patient loads between EDs (in essence spreading patients more evenly throughout this system). This investigation utilizes simulation to explore “Crowdinforming” as a basis for a process control strategy aimed to balance patient loads between six Emergency Departments within a mid-sized Canadian city. **METHODS:** Anonymous patient visit data comprising 120,000 ED patient visits over six months to six ED facilities were obtained from the region’s Emergency Department Information System (EDIS) to (1) determine trends in ED visits and interactions between parameters; (2) to develop a process control strategy integrating crowdinforming; and, (3) apply and evaluate the model in a simulated environment to explore the potential impact on patient self-redirection and load balancing between EDs. **RESULTS:** As in reality, the data available and subsequent model demonstrated that there are many factors that impact ED patient flow. Initial results suggest that for this particular data set used, ED arrival rates were the most useful metric for ED ‘busyness’ in a process control strategy, and that Emergency Department performance may benefit from load balancing efforts. **CONCLUSIONS:** The simulation supports the use of crowdinforming as a potential tool when used in a process control strategy to balance the patient loads between emergency departments. The work also revealed that the value of several parameters intuitively expected to be meaningful metrics of ED ‘busyness’ was not evident, highlighting the importance of finding parameters meaningful within one’s particular data set. The information provided in the crowdinforming model is already available in a local context at some Emergency Department sites. The extension to a wider dissemination of information via an Internet web service accessible by smart phones is readily achievable. Similarly, the system could be extended to help direct patients by including future estimates or predictions in the crowdinformed data. The contribution of the simulation is to allow for effective policy evaluation to better inform the public of ED ‘busyness’ as part of their decision making process in attending an emergency department. In effect, this is a means of providing additional decision support insights garnered from a simulation, prior to a real world implementation.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Dengue fever, including dengue hemorrhagic fever, has become a re-emerging public health threat in the Caribbean in the absence of a comprehensive regional surveillance system. In this deficiency, a project entitled ARICABA, strives to implement a pilot surveillance system across three islands: Martinique, St. Lucia, and Dominica. The aim of this project is to establish a network for epidemiological surveillance of infectious diseases, utilizing information and communication technology. This paper describes the system design and development strategies of a “network of networks” surveillance system for infectious diseases in the Caribbean. Also described are benefits, challenges, and limitations of this approach across the three island nations identified through direct observation, open-ended interviews, and email communications with an on-site IT consultant, key informants, and the project director. Identified core systems design of the ARICABA data warehouse include a disease monitoring system and a syndromic surveillance system. Three components comprise the development strategy: the data warehouse server, the geographical information system, and forecasting algorithms; these are recognized technical priorities of the surveillance system. A main benefit of the ARICABA surveillance system is improving responsiveness and representativeness of existing health systems through automated data collection, process, and transmission of information from various sources. Challenges include overcoming technology gaps between countries; real-time data collection points; multiple language support; and “component-oriented” development approaches. Keywords: outbreak, surveillance, syndromic surveillance, forecasting, emerging infectious diseases, Caribbean

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