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Contents

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

Abstract

We present a searchable repository of codes of ethics and standards in health informatics. It is built using state-of-the-art search algorithms and technologies. The repository will be potentially beneficial for public health practitioners, researchers, and software developers in finding and comparing ethics topics of interest. Public health clinics, clinicians, and researchers can use the repository platform as a one-stop reference for various ethics codes and standards. In addition, the repository interface is built for easy navigation, fast search, and side-by-side comparative reading of documents. Our selection criteria for codes and standards are two-fold; firstly, to maintain intellectual property rights, we index only codes and standards freely available on the internet. Secondly, major international, regional, and national health informatics bodies across the globe are surveyed with the aim of understanding the landscape in this domain. We also look at prevalent technical standards in health informatics from major bodies such as the International Standards Organization (ISO) and the U. S. Food and Drug Administration (FDA). Our repository contains codes of ethics from the International Medical Informatics Association (IMIA), the iHealth Coalition (iHC), the American Health Information Management Association (AHIMA), the Australasian College of Health Informatics (ACHI), the British Computer Society (BCS), and the UK Council for Health Informatics Professions (UKCHIP), with room for adding more in the future. Our major contribution is enhancing the findability of codes and standards related to health informatics ethics by compilation and unified access through the health informatics ethics repository.

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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: There is a growing interest concerning the potential of ICT solutions that are customized to consumers. This emerging discipline referred to as consumer health informatics (CHI) plays a major role in providing information to patients and the public, and facilitates the promotion of self-management. The concept of CHI has emerged out of the desire of most patients to shoulder responsibilities regarding their health and a growing desire of health practitioners to fully appreciate the potential of the patient. Aim: To describe the role of ICT in improving the patient-provider partnership in consumer health informatics. Methods: Systematic reviewing of literature, identification of reference sources and formulation of search strategies and manual search regarding the significance of developed CHI applications in healthcare delivery. Results: New consumer health IT applications have been developed to be used on a variety of different platforms, including the Web, messaging systems, PDAs, and cell phones. These applications assists patients with self-management through reminders and prompts, delivery of real-time data on a patient's health condition to patients and providers, web-based communication and personal electronic health information. Conclusion: New tools are being developed for the purposes of providing information to patients and the public which has enhanced decision making in health matters and an avenue for clinicians and consumers to exchange health information for personal and public use. This calls for corroboration among healthcare organizations, governments and the ICT industry to develop new research and IT innovations which are tailored to the health needs of the consumer.

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

Abstract

The overall aim of the project was to conduct a Clinical and Business Intelligence (CBI) gap analysis in the Broward Regional Health Planning Council's (BRHPC) Florida Health Data Warehouse environment, and when determined necessary, introduce the concept of CBI to the site. CBI is a powerful set of tools that has the potential to assist organizations such as BRHPC in the planning and coordination of health care services. The project was designed to reflect the System Development Life Cycle (SDLC) development methodology, which consists of five stages: planning, analysis, detailed system design, implementation, and support. In planning, we evaluated the current relationship between the health care data and the decision makers that utilize BRHPC's Florida Health Data Warehouse, which indicated a major disconnect between the respective participants and the data in the existing system. Based on this, a CBI system was proposed for development and implementation for BRHPC's Florida Health Data Warehouse to address this disconnect. The subsequent analysis included data collection and a number of meetings with different end-users in order to collect the site's requirements for the CBI system. System design, development, and implementation were then executed for each component of the system. Finally, BRHPC's technical team members were trained on how to support the system. Preliminary results of the developed system have already proven to assist in the planning and coordination of the health care services in Florida.

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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: The Refined Semantic Network (RSN) for the UMLS was previously introduced to complement the UMLS Semantic Network (SN). The RSN partitions the UMLS Metathesaurus (META) into disjoint groups of concepts. Each such group is semantically uniform. However, the RSN was initially an order of magnitude larger than the SN, which is undesirable since to be useful, a semantic network should be compact. Most semantic types in the RSN represent combinations of semantic types in the UMLS SN. Such a “combination semantic type” is called Intersection Semantic Type (IST). Many ISTs are assigned to very few concepts. Moreover, when reviewing those concepts, many semantic type assignment inconsistencies were found. After correcting those inconsistencies many ISTs, among them some that contradicted UMLS rules, disappeared, which made the RSN smaller. **Objective:** The authors performed a longitudinal study with the goal of reducing the size of the RSN to become compact. This goal was achieved by correcting inconsistencies and errors in the IST assignments in the UMLS, which additionally helped identify and correct ambiguities, inconsistencies, and errors in source terminologies widely used in the realm of public health. **Methods:** In this paper, we discuss the process and steps employed in this longitudinal study and the intermediate results for different stages. The sculpting process includes removing redundant semantic type assignments, expanding semantic type assignments, and removing illegitimate ISTs by auditing ISTs of small extents. However, the emphasis of this paper is not on the auditing methodologies employed during the process, since they were introduced in earlier publications, but on the strategy of employing them in order to transform the RSN into a compact network. For this paper we also performed a comprehensive audit of 168 “small ISTs” in the 2013AA version of the UMLS to finalize the longitudinal study. **Results:** Over the years it was found that the editors of the UMLS introduced some new inconsistencies that resulted in the reintroduction of unwarranted ISTs that had already been eliminated as a result of their previous corrections. Because of that, the transformation of the RSN into a compact network covering all necessary categories for the UMLS was slowed down. The corrections suggested by an audit of the 2013AA version of the UMLS achieve a compact RSN of equal magnitude as the UMLS SN. The number of ISTs has been reduced to 336. We also demonstrate how auditing the semantic type assignments of UMLS concepts can expose other modeling errors in the UMLS source terminologies, e.g., SNOMED CT, LOINC, and RxNORM that are important for health informatics. Such errors would otherwise stay hidden. **Conclusions:** It is hoped that the UMLS curators will implement all required corrections and use the RSN along with the SN when maintaining and extending the UMLS. When used correctly, the RSN will support the prevention of the accidental introduction of inconsistent semantic type assignments into the UMLS. Furthermore, this way the RSN will support the exposure of other hidden errors and inconsistencies in health informatics terminologies, which are sources of the UMLS. Notably, the development of the RSN materializes the deeper, more refined Semantic Network for the UMLS that its designers envisioned originally but had not implemented.

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

Abstract

The objective of this study was to assess the use of telemedicine services at community health centers. A national survey was distributed to all federally qualified health centers to gather data on their use of health information technology, including telemedicine services. Over a third of responding health centers (37%) provided some type of telemedicine service while 63% provided no telemedicine services. A further analysis that employed ANOVA and chi-square tests to assess differences by the provision of telemedicine services (provided no telemedicine services, provided one telemedicine service, and provided two or more telemedicine services) found that the groups differed by Meaningful Use compliance, location, percentage of elderly patients, mid-level provider, medical, and mental health staffing ratios, the percentage of patients with diabetes with good control, and state and local funds per patient and per uninsured patient. This article presents the first national estimate of the use of telemedicine services at community health centers. Further study is needed to determine how to address factors, such as reimbursement and provider shortages, that may serve as obstacles to further expansion of telemedicine services use by community health centers.

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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: Routine Health Information Systems (RHIS) are increasingly transitioning to electronic platforms in several developing countries. Establishment of a Master Facility List (MFL) to standardize the allocation of unique identifiers for health facilities can overcome identification issues and support health facility management. The Nigerian Federal Ministry of Health (FMOH) recently developed a MFL, and we present the process and outcome. **Methods:** The MFL was developed from the ground up, and includes a state code, a local government area (LGA) code, health facility ownership (public or private), the level of care, and an exclusive LGA level health facility serial number, as part of the unique identifier system in Nigeria. To develop the MFL, the LGAs sent the list of all health facilities in their jurisdiction to the state, which in turn collated for all LGAs under them before sending to the FMOH. At the FMOH, a group of RHIS experts verified the list and identifiers for each state. **Results:** The national MFL consists of 34,423 health facilities uniquely identified. The list has been published and is available for worldwide access; it is currently used for planning and management of health services in Nigeria. **Discussion:** Unique identifiers are a basic component of any information system. However, poor planning and execution of implementing this key standard can diminish the success of the RHIS. **Conclusion:** Development and adherence to standards is the hallmark for a national health information infrastructure. Explicit processes and multi-level stakeholder engagement is necessary to ensuring the success of the effort.

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

Abstract

Telemonitoring is being increasingly used to provide services to patients with developmental disabilities in residential community settings. The objective of this study is to assess the feasibility, benefits and challenges of using telemonitoring for aging patients with developmental disabilities. We also assess the benefits and challenges of telemonitoring for the caregivers of these patients. Focus groups and questionnaire-based surveys were used to collect data from patients and caregivers. The study found that telemonitoring was feasible and beneficial for the aging with developmental disabilities, albeit for those who are moderate to high functioning. It was not beneficial or feasible for those with very low functional capabilities. The study found that telemonitoring was beneficial towards providing more independence, more self-confidence in carrying out daily activities, and more knowledge regarding their disease. The study also found that telemonitoring was useful for caregivers to better understand their patients and their needs, better coordinate the services delivered, and to enhance the satisfaction of caregiving. The discussions include limitations of using quantitative methods in this type of setting. Telemonitoring is being increasingly used to provide services to patients with developmental disabilities in residential community settings. The objective of this study is to assess the feasibility, benefits and challenges of using telemonitoring for aging patients with developmental disabilities. We also assess the benefits and challenges of telemonitoring for the caregivers of these patients. Focus groups and questionnaire-based surveys were used to collect data from patients and caregivers. The study found that telemonitoring was feasible and beneficial for the aging with developmental disabilities, albeit for those who are moderate to high functioning. It was not beneficial or feasible for those with very low functional capabilities. The study found that telemonitoring was beneficial towards providing more independence, more self-confidence in carrying out daily activities, and more knowledge regarding their disease. The study also found that telemonitoring was useful for caregivers to better understand their patients and their needs, better coordinate the services delivered, and to enhance the satisfaction of caregiving.

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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 The purpose of the article is to share a modus operandi and a tool that allows the recruitment and management of thousands of patients and their treatment by using a simple software created by the author and made freely available to all colleague-pharmacists. The author, a pharmacist, created this database because there were no tools on the market with all the features needed to manage the treatment of patients and the orders of drugs to ensure continuity of care without waste of public money. **Methods** The data collection is facilitated by the software and allows the monitoring of treatment of the patients and their re-evaluation. This tool can create a table containing all the information needed to predict the demand for drugs, the timing of therapies and of the treatment plans. It is an effective instrument to calibrate the optimal purchase of drugs and the delivery of therapies to patients. **Conclusions** A simple tool that allows the management of many patients, reduces research time and facilitates the control of therapies. It allows us to optimize inventory and minimize the stock of drugs. It allows the pharmacist to focus attention on the clinical management of the patient by helping him to follow therapy and respond to his needs.

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

Abstract

Objective: Automated syndrome classification aims to aid near real-time syndromic surveillance to serve as an early warning system for disease outbreaks, using Emergency Department (ED) data. We present a system that improves the automatic classification of an ED record with triage note into one or more syndrome categories using the vector space model coupled with a 'learning' module that employs a pseudo-relevance feedback mechanism. **Materials and Methods:** Terms from standard syndrome definitions are used to construct an initial reference dictionary for generating the syndrome and triage note vectors. Based on cosine similarity between the vectors, each record is classified into a syndrome category. We then take terms from the top-ranked records that belong to the syndrome of interest as feedback. These terms are added to the reference dictionary and the process is repeated to determine the final classification. The system was tested on two different datasets for each of three syndromes: Gastro-Intestinal (GI), Respiratory (Resp) and Fever-Rash (FR). Performance was measured in terms of sensitivity (Se) and specificity (Sp). **Results:** The use of relevance feedback produced high values of sensitivity and specificity for all three syndromes in both test sets: GI: 90% and 71%, Resp: 97% and 73%, FR: 100% and 87%, respectively, in test set 1, and GI: 88% and 69%, Resp: 87% and 61%, FR: 97% and 71%, respectively, in test set 2. **Conclusions:** The new system for pre-processing and syndromic classification of ED records with triage notes achieved improvements in Se and Sp. Our results also demonstrate that the system can be tuned to achieve different levels of performance based on user requirements.

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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: Identifying the gaps in public knowledge of women's health related issues has always been difficult. With the increasing number of Internet users in the United States, we sought to use the Internet as a tool to help us identify such gaps and to estimate women's most prevalent health concerns by examining commonly searched health-related keywords in Google search engine. **Methods:** We collected a large pool of possible search keywords from two independent practicing obstetrician/gynecologists and classified them into five main categories (obstetrics, gynecology, infertility, urogynecology/menopause and oncology), and measured the monthly average search volume within the United States for each keyword with all its possible combinations using Google AdWords tool. **Results:** We found that pregnancy related keywords were less frequently searched in general compared to other categories with an average of 145,400 hits per month for the top twenty keywords. Among the most common pregnancy-related keywords was "pregnancy and sex" while pregnancy-related diseases were uncommonly searched. HPV alone was searched 305,400 times per month. Of the cancers affecting women, breast cancer was the most commonly searched with an average of 247,190 times per month, followed by cervical cancer then ovarian cancer. **Conclusion:** The commonly searched keywords are often issues that are not discussed in our daily practice as well as in public health messages. The search volume is relatively related to disease prevalence with the exception of ovarian cancer which could signify a public fear.

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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: Practice guidelines can be used to support healthcare decision making. We sought to identify the use, and barriers to the implementation, of electronic based guidelines to support decision-making in maternal and child healthcare (MCH) and the rational use of medicines, in developing countries. **Methods:** Graduates who had gained the Master of Public Health degree through the Peoples-uni (postgraduate public health education in developing countries) were sent an online survey questionnaire which had been piloted. Two reminders were sent to non-respondents at intervals of 10 days. Results were explored using descriptive analyses. **Results:** 44 of the potential 48 graduates from 16 countries responded – most were from Africa. 82% and 89% of respondents were aware of guidelines on MCH and the rational use of medicines respectively. Electronic guidelines were more available in university hospitals than in provincial hospitals or rural care. All respondents thought that guidelines could improve the delivery of quality care, and 42 (95%) and 41 (93%) respectively thought that computers and mobile or smartphones could increase the use of guidelines in service delivery. Lack of access to computers, need to buy phone credit, need for training in the use of either computerized or phone based guidelines and fear of increased workload were potential barriers to use. **Conclusion:** There is support for the use of electronic guidelines despite limited availability and barriers to use in developing countries. These findings, and other literature, provide a guide as to how the further development of ICT based guidelines may be implemented to improve health care decision making.

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

Abstract

Healthy public policy plays an essential role in a comprehensive public health approach to preventing cancer and chronic disease. Public policies spread through the 'policy diffusion' process, enabling governments to learn from another's enacted policy solutions. The Prevention Policies Directory (the Directory), an online database of municipal, provincial/territorial, and federal cancer and chronic disease prevention policies from across Canada, was developed to facilitate the diffusion of healthy public policies and support the work of prevention researchers, practitioners, and policy specialists. Through a participatory engagement approach, this information technology solution was implemented as a communication channel or policy knowledge transfer tool. It also addressed the intrinsic shortcomings of environmental scanning for policy surveillance and monitoring. A combination of quantitative web metrics and qualitative anecdotal evidence have illustrated that the Directory is becoming an important tool for healthy public policy surveillance and policy diffusion in Canada.

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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: Poison control centres provide information on the management of poisoning incidents. The British Columbia (BC) Drug and Poison Information Centre recently implemented an electronic database system for recording case information, making it easier to use case data as a potential source of population-based information on health services usage and health status. This descriptive analysis maps poisoning case rates in BC, highlighting differences in patient age, substance type, medical outcome, and caller location. **Methods:** There were 50,621 human exposure cases recorded during 2012 and 2013. Postal code or city name was used to assign each case to a Health Service Delivery Area (HSDA). Case rates per 1,000 person-years were calculated, including crude rates, age-standardized rates, age-specific rates, and rates by substance type, medical outcome, and caller location. **Results:** The lowest case rate was observed in Richmond, a city where many residents do not speak English as a first language. The highest rate was observed in the Northwest region, where the economy is driven by resource extraction. Pharmaceutical exposures were elevated in the sparsely populated northern and eastern areas. Calls from health care facilities were highest in the Northwest region, where there are many remote Aboriginal communities. **Conclusions:** Case rates were generally highest in the primarily rural northern and eastern areas of the province. Considering these results alongside contextual factors informs further investigation and action: addressing cultural and language barriers to accessing poison centre services, and developing a public health surveillance system for severe poisoning events in rural and remote communities.

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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: The lack of aggregated longitudinal health data on farmworkers has severely limited opportunities to conduct research to improve their health status. To correct this problem, we have created the infrastructure necessary to develop and maintain a national Research Data Repository of migrant and seasonal farmworker patients and other community members receiving medical care from Community and Migrant Health Centers (C/MHCs). Project specific research databases can be easily extracted from this repository. **Methods:** The Community Based Research Network (CBRN) has securely imported and merged electronic health records (EHRs) data from five geographically dispersed C/MHCs. To demonstrate the effectiveness of our data aggregation methodologies, we also conducted a small pilot study using clinical, laboratory and demographic data from the CBRN Data Repository from two initial C/MHCs to evaluate HbA1c management. **Results:** Overall, there were 67,878 total patients (2,858 farmworkers) that were seen by two C/MHCs from January to August 2013. A total of 94,189 encounters were captured and all could be linked to a unique patient. HbA1c values decreased as the number of tests or intensity of testing increased. **Conclusion:** This project will inform the foundation for an expanding collection of C/MHC data for use by clinicians for medical care coordination, by clinics to assess quality of care, by public health agencies for surveillance, and by researchers under Institutional Review Board (IRB) oversight to advance understanding of the needs and capacity of the migrant and seasonal farmworker population and the health centers that serve them. Approved researchers can request data that constitute a Limited Data Set from the CBRN Data Repository to establish a specific research database for their project.

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

Abstract

We describe building an avatar-based self-report data collection tool to be used for a specific HIV prevention research project that is evaluating the feasibility and acceptability of this novel approach to collect self-reported data among youth. We discuss the gathering of requirements, the process of building a prototype of the envisioned system, and the lessons learned during the development of the solution. Specific knowledge is shared regarding technical experience with software development technologies and possible avenues for changes that could be considered if such a self-report survey system is used again. Examples of other gaming and avatar technology systems are included to provide further background.

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