

Informatic tools and it's barriers in population health management



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Abstract

Health management of a group of people is considered to be vital stressing on the care of the entire cohort and not on single individual. Informatics plays a crucial role in providing information on health promotion and disease treatment and its prevention. However, the previous research is still not clear on informatics barriers such as maintenance of patient privacy and security and design and planning of work flow environment and their solutions. Therefore, the purpose of this review is to verify what has been done in terms of informatics research on the above-mentioned issues and the future course of work regarding these barriers. Databases such as google scholar and CINAHL has been used for retrieving studies. 5 journal articles for this review have been chosen from previous 2 years (2016-2018). Results suggest that informatics tools can be used for decision making and support, clinical research and population health to prevent issues related to patient privacy and security and other daily work flow logistics in providing quality care. Furthermore, results suggest that if the nursing informatics can be designed on the basis of specific requirements of a population or cohort, then it would prevent issues that are related to their health and privacy.

Keywords: informatics tools, population health, and barriers.

Introduction

Population health can be defined based on those who provide health care to patients, health settings where care is delivered (outpatient, emergency), by health insurance companies, and based on geographical location (rural and urban), and furthermore, in some cases, healthy cohorts. The scope of <https://assignbuster.com/informatic-tools-and-its-barriers-in-population-health-management/>

population health includes provision of treatment, health promotion, and prevention services by overcoming social, economic and structural barriers to health and well-being. Population health informatics includes the meaningful use of Health information and technology (HIT) tools in a population rather than an individual, that aids in health planning, monitoring, evidence-based decision-making tools, health promotion, care of clinical population, communication dissemination, and interdisciplinary collaboration. The efficiency, quality, and costs can be evaluated by measuring the capability of the informatic tool on the five rights: right information, on right people, being in the right place, in the right format and at the right time {Tierney, 2018}. Uptake of technology in the field of population health led to significant advancement of surveillance system, workforce development and provision of care. However, there are some areas such as communication, information exchange and privacy, and their coordination in their further development.

Review of Literature

Massoudi and Chester {Massoudi, 2017} aimed to examine advances in the public and population health and epidemiology informatics over the past 18 months. Results of the review were based on the model of relationship between the areas of informatics by Dixon et al {Dixon, 2015} and the American Medical Informatics Association (AMIA) Public health Agenda, 2011. The Dixon model illustrates the interconnection of the informatics with fields of global, population and public health systems which are aimed to provide health care services at limited resources, to the group of clinical population at risk and to public health services respectively. A well-designed preliminary <https://assignbuster.com/informatic-tools-and-its-barriers-in-population-health-management/>

planning is one of the crucial components of these three areas that is responsible for the success of the program. The recommendations from the updated agenda from AMIA are predominantly focused on five areas 1. Technical framework, 2. Research and evaluation, 3. Ethics, 4. Education, professional training and workforce development and 5. Sustainability. The study concluded that informatics adoption into fields of population and public health sectors led to the significant advancement in the surveillance and workforce development and health promotion. These advancements have taken place in the form of extensive use of Electronic health records (EHR) social media, emails, internet accessible information with an intention to exchange information, educate, assessment of risk factors, notify public and to advertise the prevention programs that enhance active participation in between health care providers and health care consumers. Furthermore, with the help of the semantic extract-transform-load (ETL) technology, the big data which is complex is simplified in to codes and transforms in to a useful data for analysis. This data is transformed in such a way that it enables health care providers, informaticists and researchers to be capable of procuring the data, interpret, inter-operable, analyze, exchange, maintain and in evidence-based decision making. However, in specific to the population health there are some pivotal areas that are in need for 1) the development of standardized interdisciplinary framework and infrastructure, 2) advancement in the technology tools and methods, and evidence-based knowledge, 3) policy and privacy related to the use of EHR and the sustainability. These are addressed by developing technology driven public health agencies. Moreover, public health leaders must take an active part in exploring and educating the strategies to incorporate technology in to the <https://assignbuster.com/informatic-tools-and-its-barriers-in-population-health-management/>

population and public health development. This can be achieved by creating an environment that is conducive for a leadership role in formulating policies and ethics, informatics competent workforce, increased research and educational programs.

Sharma et al {Sharma, 2018}, through their review were trying to 1) understand the current position of digital technology use in the health care delivery and clinical trials, 2) identify issues and barriers to the development and adoption of these technologies, and 3) identify potential solutions using perspectives from providers, industry, regulatory agencies, payers and professional societies. Authors observed that digitalization in health care industry and research led to enormous technological advancements in respective fields. These are achieved using digital technology as a decision-making tool, disease management and decision support tool, by enhancing patient's participation in one's own care, continuation of care, prescription from a healthcare provider, timely communication, and user-friendly options. However, in order to use such digital applications, the organization should procure the approval from the regulatory bodies certifying that the software application satisfies the terms and conditions of the definition of a device under section 201 (h) of the federal Food, Drug, and Cosmetics (FD&C) Act (ref). In the research field, digital health is widely used in the form of subject recruitment (Apple research kit), electronic informed consent (video, mobile app based), digital biomarkers for the clinical trials. The adoption of digital health in research plays a vital role in reducing the financial burden, saves times, and patient friendly and secures patients autonomy in the research participation.

Ng et al {Ng, 2018}, examined common strategies in the design of mHealth applications and to describe the role and strategies that can be used by nurse informaticists to improve health care delivery and outcomes for patients. The mobile usage in the health care technology is contributing to provision of high-quality health information in a cost-effective manner that can be accessible to remote areas where there is limited availability of medical facilities. Among the mobile technologies SMS platform have been identified as one of the effective tools that can reach the population needs irrespective of the type of mobile (Basic and smart). However, there are barriers identified that leads to diminished sustainability of mHealth technologies such as evaluation of efficacy, costs, transformations in the healthcare delivery systems, supporting policies and data security and privacy. They are six decision making strategies for nurse informaticists that are proposed by the study to participate in the selection of mhealth applications for health initiatives and the strategies are Recognition, Identification, Recommendation, Education, Evaluation and Personalization. The above decision-making strategies helps nurse informaticists in decision making of selecting mhealth initiatives that are best suitable for the organizations HIT initiatives in terms of provision of care, reimbursement, information dissemination, patient education, evaluate the effectiveness of the mhealth application and can improve the professional competency of the staff by training and collaboration.

Tierney et al {Tierney, 2018} reviewed the emerging health technologies and their future opportunities for enhancing population health. Innovative Information technology and communication tools in the field of population

health are designed according to the scope of practice, characteristics and needs of the people and the geographical location. Electronic Health Records (EHR), Health information exchange (HIE), Patient portals and personal health records (PHRs), telemedicine, internet and social media, mobile devices and wearable sensors and monitors, and privacy and security innovations are identified as some of the efficient tools that have potential positive impact on the population health. Some of the potential benefits are easy accessibility, user friendly, manageable care, information dissemination, cost effective and improve quality of care and safety.

However, in the present world, the tools are appropriately utilized in the field of population health. Because, of the framework the current EHR that is not compatible with the population health needs and the vast amount of data, makes it arduous to the health care providers to enter data in to the system, leading to insufficient data entry, and medical errors. In an attempt to focus on this issue, authors of this review encourage use of Natural Language Processing tools (NLP) to make use of the necessary data from the free text notes and reports. Furthermore, HIE is an important tool that enhances the easy exchange of the information from one provider to the other in no time. This facilitates the chance for avoiding unnecessary financial burden on the patient in the form of re-doing lab works and diagnostic procedures such as imaging studies. However, the present HIE is lacking a standardized platform named as Application programming interface (API) that enables collection of data from various EHRs and merge in to a single individual record. PHRs adoption has facilitated easy communication between the patient and health care provider. However, there are some factors such as 1) not being patient friendly 2) not easy to comprehend and 3) has limited scope for the patient

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accessibility to the EHRs and HIE leading to limited use of patient portals by the patients. Telehealth platforms serves as an effective means of delivering health care to population that are residing in remote areas, lack of family support, and transportation difficulties. In order to further develop these tools current payment options must be made flexible on the individual visits related to health promotion and disease management services. Mobile devices and wearable sensors are the most current technological innovations that are widely used in various populations in an attempt to manage the disease, health promotion, prevention and communication purposes. However, barriers such as complexity of the applications and the data, and lack of data integration in to EHR and HIEs and software design in specific to population health needs makes this tool less usable among the populations and providers. Further research on the infrastructure and the data integration is one of the recommendations to improve the uptake of wearable devices usability. Information breach is one of the burning issues that is putting patient's privacy and security at risk. This can be addressed by developing standardized tools of data coding, accessibility of necessary information which is in simple terminology to the patient, allowing accessibility of information sharing to the others whom the patient agrees to share with, accountability on the information exchange and strictly obeying the privacy regulations.

Gap analysis

The current informatics tools such as EHR, HIE, mobile technology, patient portals, internet and social media and telehealth offers enormous benefits and advancements to the health care industry, research and population

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health. However, these benefits are achieved to the maximum if the technology is used in an appropriate manner. In this present world, the information technology is facing predominant barriers that are related to data quality and exchange, software system complexity, privacy and security, regulations, and application of technology in clinical research. The Big data can be understood as large volumes of data from different informatics tools especially EHRs that are primarily used to understand the high-risk population, exchangeable information that serves to identify disease outbreaks, treatment responses and trends in health care utilization {Sharma, 2018}. However, factors related to the data management, inter-operability, data merging, language, and ethics are responsible for its minimal use and have to be focused for further development. In addition, the current system is lacking the option of including the data that is feasible to include the clinical and non-clinical data that is specific to the scope of practice for population health management such as demographics and living conditions. Reliability of the tool has to be performed, irrespective of the tool, that is capable to monitor and store the health information. This enables the filtration of unwanted digital technology and prevent malware possibilities. The application of universal application programming interface (API) facilitates the easy operability, saves time, global exchange, and cost effective. Furthermore, the software framework has to be designed that it is capable of providing training to the population who are using it, patient and provider friendly, easy accessibility to the EHR and HIEs, and self-managed tool. This enhances patient's autonomy on their data which indirectly motivates to take part in self-care and can share the

data with the multiple care providers that helps in reducing unwanted costs in the form of re-doing labs and imaging studies.

Summary

Health information privacy and security is one of the most important issues in the present health care sector. There is legal obligation of the companies that develop the tools and the governing body in the form of regulations, providers to provide assurance to the population that their sensitive information is in safe hands. Nurse informaticist in his or her indirect role as a provider should be competent in his or her leadership role in designing the process and implementation of quality improvements. Periodical upgradation of informatics knowledge will further enhance the opportunities of technology utilization in the field of research and evidence{American Nurses Association, 2015}. This can be achieved by clear description of the terms and conditions before involving others access to the patients EHR, ownership of the EHR, sharing the information that is necessary for the patient so that they can comprehend the information without any difficulties. Furthermore, it is important to abide to the Health Insurance Portability and Accountability (HIPAA)

Every organization needs to abide by HIPAA act regulations, organizational information security policies, and they have to train their staff on information breaches and consequences. Moreover, digital technology innovations which are evolving at a fast pace are posing many challenges in terms of regulations and ethical use. This necessitates formulation of strong governance policies and regulations that match the current technology

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application in the population health management. In an effort to focus on the current ethical use of mobile applications, FDA has released clarification based on the recent passing of the 21 century cures act {Sharma, 2018}. Furthermore, government should take the responsibility of assessing the reliability of the tool based on the evidence on safety, and effectiveness. In addition, standardization privacy and security regulations, educating public on the data sharing and transparency, and prior planning and fiscal allotment for this sector will further enhance the technological meaningful use among the population and providers. Furthermore, the expanding role of nurse informaticists in the utilization of current technology, on organizational boards as an informatics leader, predominantly influence the potential benefits of technology on the population health management. Nurse in her multiple role as a community health provider is well aware of the population, their health needs in terms of their social, cultural, economic and environmental conditions and as an informatics exponent is capable of efficiently analyze, apply and implement the technological use wherever is needed. Furthermore, the informatics nurse specialist can influence the decision-making bodies to improve the professional practice environment and healthcare consumer outcomes, facilitate the effectiveness of interprofessional team and can educate the role of informatics to the population, families and others which influences their social responsibility towards the meaningful use of technology {American Nurses Association, 2015}.

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