

The Use of Wireless Technologies in Contemporary Healthcare Settings: A Case Study Evaluation of the Performance of the Asthmapolis Sensor

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Abstract--- Contemporary health care approaches have been exposed to a workplace environment that is characterized by changing needs of patients, as well as alterations in the goals and objectives of the stakeholders. This trend continues to attract in-depth analysis on the manner in which technologies could be incorporated into care provision to achieve improvements in patient outcomes.

Keywords--- Asthmapolis Sensor, Wireless Technologies, Workplace Environment.

I. INTRODUCTION

SPECIFICALLY, technological adoptions have been perceived to account for creativity, inventions and innovations occurring in the health care sector (Rosser, Colwill, Kasperski & Wilson, 2010). This paper provides an analysis of interview outcomes expert opinion on the use of Asthmapolis, upon which valid and reliable inferences might be made.

According to the Global Initiative for Asthma (2012), Asthmapolis sensors refer to mobile applications that track the trigger, symptoms and use of medication among individuals suffering from asthma. The sensors operate alongside Bluetooth technologies in the users' phones by pairing the devices to foster automatic capturing of data from the sensors and storing, to be transferred to the phones for observation, analysis and interpretation. The data collected concerns the frequency of attack, interval of inhaler medical use, location of medications and, the date and time of medication. The purpose of monitoring asthma using Asthmapolis sensors is to enable the care providers to make informed decisions by reducing overreliance on the patients' memories. Specifically, data from the sensors aids in situations that may prompt alterations to therapy provision (Reid, Fishman & Yu). Overall, Asthmapolis sensors are crucial and emergent technologies whose timely arrival and application in the current health care sector proves critical in reducing medication errors. The following section provides interview outcomes regarding the outcomes and views of experts - on the use of Asthmapolis sensors in monitoring and managing asthma.

II. METHODOLOGY

To collect data, three participants were selected. The first participant was a respiratory therapist while the second participant was a pulmonologist. The third participant was a pediatrician. A simple random sampling procedure was used to select the participants, critical for shunning social desirability bias that could arise within the multicultural context in which the participants operated. It is also worth noting that video chats were selected as the most appropriate approaches to data collection, necessitated by time constraints on the part of the executives interviewed and, resource limitation in covering the physical distance to the interviewees' proximity.

III. RESULTS: SECONDARY DATA AND INTERVIEW OUTCOMES



Figure 1 - Asthmapolis Sensor Functionality

Source: Global Initiative for Asthma (GINA) (2012)

Regarding the role and criticality of using mobile information technologies in evidence-based practice, mixed outcomes were received. The first participant indicated that mobile information technologies pose both merits and

demerits. On one hand, merits were reported to arise through convenience and reduction in medication errors. On the other hand, the demerit of using such applications was reported to arise in situations where illiterate patients are handled; as the group is unlikely to adhere to the instructions and use the applications are required. The second participant affirmed that mobile information technologies should form a sole driver of the current and future operations in care provision, seen as a reaction to globalization that continues to demand improvements and flexibility in the health care sector. On the other hand, the third respondent indicated that mobile information technologies are important because they complement the physician's data, reducing errors that could arise in situations where the participants' memory is relied upon.

However, the participant observed that mobile information technologies falter in such a way that they reduce the provider-patient interaction, a critical element in fostering health care among asthmatic conditions. Overall, the participants concurred that there is a need to adopt mobile information technologies but the manner in which they should be applied should match with the conditions, literacy level, and needs of patients.

The second issue concerned technical information regarding the use of mobile information technologies. Each of the participants noted that mobile information technologies are crucial in complementing efforts provided by care providers, projected to improve accuracy in the services. Specifically, mobile information technologies were reported to aid in testing and evaluating the correlation between the type of care provided and the perceived outcomes among patients. However, the role of care providers and other stakeholders, as well as family members and friends of the patients was reported to include operating, using, and maintaining the devices used in providing health care services; associated with optimal results.

The issue of financial costs, ethical and social concerns received mixed outcomes. Whereas the first participant indicated that it is unethical to monitor the condition of patients using applications such as Asthmapolis sensors, the second participant suggested that it remains ethical to monitor the patients using the devices. Reasons for opposition to the devices (on the ethical ground) included the need to observe the patients' privacy and, security reasons. On the other hand, the second participant supported the use of the devices, citing that it remains ethical because the patients affected are usually exposed to training on the use of devices and have their permission confirmed through consent, including pediatric set-ups in which parents or guardians consent on behalf of the patients. The third participant indicated that it is ethical to use mobile devices to monitor progress among patients because the chief reason is about the patient's health and that violations of the principle have their counteractions stated in the national and state laws governing the rights and freedom of citizens.

Also, the three participants indicated that mobile information technologies pose a social concern regarding data

disclosure. Persons to whom patient data should be disclosed was reported as one of the huddles faced by care providers, as patients who may be reluctant to use the devices express concern regarding the privacy of their personal information.

Regarding the cost of mobile information technologies, a general concern by all the participants was that the applications form a burden on the part of care providers and patients. Therefore, suggestions included subsidization by state and national governments to engage in cost-sharing practices during the purchase and maintenance of the devices, and the need to educate patients, their families and other concerned guardians regarding the proper use of devices (to minimize breakages and other losses). A concern about the cost of the devices was also raised regarding some of the accompanying devices that aid in relaying data. For instance, the Asthmapolis sensor was perceived to pose more expenses in such a way that it requires the users to have Smartphones (such as the iPhone), an extra burden to the patients.

IV. SUMMARY AND RECOMMENDATIONS ON THE USE OF ASTHMAPOLIS SENSORS

To adopt Asthmapolis sensors, care providers ought to utilize various resources. For instance, adequate staffing is required because changes in the people's lifestyles have led to the prevalence of chronic conditions, including asthma. The projection is that the care providers are likely to be overburdened with the population of patients, hospitalization and re-hospitalization occur at a time when sections of the patients are discharged and allowed to use the Asthmapolis sensor while away from the hospitals.

The latter group requires continuous monitoring, yet the same care providers are expected to attend to more and more patients. Therefore, the adoption of Asthmapolis sensors prompts the stakeholders to employee "float staff" groups that may help in monitoring patient records. The application is also demanding in such a way that devices are used on the part of the patient, as well as the care provider's side, which forms the recipient of the data. The implication is that patients are expected to have Smartphones to be used alongside the sensors (which are attached to the inhalers) while care providers are expected to have devices on their part to detect and aspects such as alterations in the criticality of the condition and take a proper action.

Therefore, three teams are expected to facilitate the process. On one hand, the part of patients requires them and their families to facilitate the process by ensuring that Smartphones with Bluetooth-enabled technologies are acquired for synchronization and data collection. On the other hand, the care providers, who are on the receiving side, are expected to be equipped with devices that are designed to interpret the data; prompting their organizations to purchase the same. Lastly, companies responsible for manufacturing Asthmapolis sensors are expected to engage in adequate staffing and the purchase of materials (to be assembled) to ensure that health care demands are met.

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