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Service Delivery Innovation in Health Sector – Micro-Hospital

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Abstract

This is a theoretical paper presenting the concept of Micro-hospitals for service delivery innovation in hospitals. Micro-Hospital is in news for the past few years; however, it lacks the empirical evidence with regard to their economic feasibility, patient satisfaction or the role of information communication technology. This research will take a holistic view on, what factors drive service delivery innovation in health services provided by Micro-hospitals and how developed and emerging nations are dealing with the health services issues and how ICT innovations act as an enabler for health services’ provision. This specific paper makes a case for Micro-hospitals as a service delivery innovation, strategy in an emerging country.

Keywords: Health Service Delivery, Micro-Hospital, Innovation, ICT4D

1. Introduction

The ratio of health practitioners per ten thousand of the population is declining, a concerning trend identified by the World Health Organisation (WHO). For countries such as New Zealand, where this ratio was 21.3 in 2009 is reduced to 2.74 in 2015. This case is the same for most countries; the US went down from 26.7 in 2009 to 2.45 in 2015 (WHO, 2011, 2015). In emerging countries, the trend is similar but more devastating. This trend means that we need to deliver the health services using the resources including the health practitioners and facilitators effectively to cater for the large demanding population (Omachonu & Einspruch, 2010).

Recent advances in Information, Communication, and Technology (ICT) have been transforming health care services in both developed and emerging nations and will continue to revolutionize this industry (Cullen, 2017; Haluza & Jungwirth, 2015; Kachienga, 2008). Nonetheless, there is a knowledge gap in how ICT enable services can improve health care delivery in Micro-hospitals. These healthcare providers have traditionally been constrained by access to technology and expertise. With the advancements ICT and ubiquitous computing, the consumer expectations towards availability of services have also boosted a need for innovation in health services’ delivery (Bitner, Zeithaml, & Gremler, 2010). Healthcare innovation is under research by many information systems researchers and is defined as an introduction of a process, product, and service for the improvement in well-being of the stakeholders (Akenroye, 2012). The constantly changing field such as ICT needs to be incorporated into the design and delivery of effective health-services (Tello & Barbazza, 2015). The fast-changing nature of healthcare delivery and patient’s desire for convenience in treatment services has led to the emergence of modern trends such as the urgent care clinics, stand-alone emergency rooms, and now ‘micro-hospitals'(Numerof, 2018). ICT is predicted to increase the impact of Micro-hospitals. In this regard, the aim of our research is to investigate the impact of ICT factors that can substantially improve the delivery of health care
services despite a decrease in health professionals. This paper derives a conceptual model for the first phase of the research, in which the objective is to explore the impact of ICT on the success of Micro-Hospitals in an emerging country. Specifically, we are interested in investigating, “How ICT improves service delivery of Micro-hospitals and enhances patient satisfaction?” The unit of analysis in this research is “health service”, while unit of observation is the “stakeholders”.

As this is an exploratory study where the intention is to study the social constructions in their natural settings, we will follow qualitative research design and carry out a case study research (Holliday, 2007). We will be carrying out a case study research at a Micro-hospital in an emerging country to gather the factors essential for such innovation to succeed and to see how ICT can enhance Micro-Hospitals in their service delivery for greater patient and employee satisfaction.

This is a research-in-progress paper and the research being in its initial stages covers the literature review around the Micro-hospitals, health services innovation and health services in the emerging countries and makes a case that “Micro-Hospitals can be an effective HSD innovation strategy” with respect to the profit generation for the stakeholders and efficient service provision for the patients. The paper’s contribution is a conceptual model from the literature to effectively carry out further research in the area. Following the conceptual model, the paper suggests a roadmap for this research and the future directions.

2. Literature Review

2.1 Micro-Hospital

Micro-hospitals run 24/7, throughout the year utilising 10 and 20 beds. Micro-hospitals are minimal inpatient facilities on two to three-story buildings built on 20,000 to 50,000-square foot spaces that offer a wide range of medical services in a small setting (“A Rising Trend: Micro-hospitals,” 2017; Berkeley, 2019). The patients in these hospitals are observed or admitted for a short time period. Different micro-hospitals may not have the same design or service mix, but most of them have services such as emergency medical care, laboratories, and lab services, inpatient care, imaging, and pharmacy services (Numerof, 2018). Some also have operating rooms to handle complicated surgeries. They are at best a step lower than tertiary care centres where almost all the admissions and procedures are done excluding medical emergencies as stroke and heart attack and major surgeries like of head and neck and Coronary artery bypass graft (CABG).

Micro-hospitals’ business model is increasingly being adopted in the developed countries despite the fact that nobody is certain about its consequences strategically and economically (Russell, 2016). Therefore, we are taking up this research with an assumption that that Micro-hospitals can prove to be a health service delivery (HSD) innovation strategy to outreach to the people in need. Micro-hospitals constitute a rising trend that shows signs of taking over the healthcare industry. These small compact hospitals have revolutionized the health care delivery system by decreasing the pressure on large tertiary care centres and developing more personalized care. The experts in the field are interested to see whether these will bring the change the patients want (Berkeley, 2019; Emerus, 2018; Stacie Prosser, 2017; The Advis Group, 2019).

The practitioners are looking towards micro-hospitals as a new trend. However, there is hardly any research done on service delivery, patients’ satisfaction and economic feasibility of such a hospital. The concept, however, new in developed countries, is not as new in emerging countries. The reason being, emerging countries are faced with a large population, less-efficient health services and a greater mass of rural areas (Kachienga, 2008). They also have
several people who prefer to go to privately-owned small hospitals which are equipped and
can provide urgent health-care as there is a long-wait in public hospitals. Unlike, developed
countries, these privately-owned hospitals often compete on their pricing and therefore
affordable to middle-class earners. Moreover, the health regulations are not stringent enough
(Braa, Hanseth, Heywood, Mohammed, & Shaw, 2007); therefore, the registered practitioners
can build their own hospitals and provisions most of the facilities and care of a hospital. There
is no coherent body of research on such small hospitals in emerging countries.

2.2 ICT Innovations in Health Services Delivery
The constantly changing field such as information technology needs to be incorporated into
the design and delivery of effective health-services (Tello & Barbazza, 2015). Moreover, for
telecommunication to reduce the time of service availability has opened more avenues for
patients especially in rural vicinities (Kachienga, 2008) and for the ageing population (Haluza
& Jungwirth, 2015).
There are many examples, which prove IT as a key driver of innovation in healthcare; drug
safety monitoring on a global scale, tracking software to tag patients, and given rise to
wearables, which prevented infant abduction, helped Alzheimer patients etc. The tagging is
now expanded to many other surgical equipment so that that they are not sewn inside a
patient. The technology also helps in reducing the waiting times in emergency rooms. The
doctors use high definition television signals for a decade now to see through the patients’
体检s for tumours, removing diseased gallbladders, etc. The use of robots is the latest, which
is helping the rehabilitation patients (Omachonu & Einspruch, 2010).
The benefits of ICT are not limited to healthcare advancements, but they found to be useful
for all other tasks relevant to HSD. For example, the education and training purpose for both
the patients and healthcare professionals, help in the planning of resources, management of
clinics and hospitals, collection and transfer of health data, connection of community with the
experts (Cullen, 2017), high quality of information to the health practitioners (Omachonu &
Einspruch, 2010).
Andargoli, Schepers, Rajendran, & Sohal (2017) conducted a systematic literature review of
current HIS by applying content, context, and process (CCP) framework and found that most
of the studies do not address all the five main questions i.e. the who, what, how, when and
why about a health information system (HIS). The success of ICT solutions in healthcare is
associated to the communication and cooperation between the stakeholders (Haluza &
Jungwirth, 2015). Heeks ITSOMO model specifically discusses the success and failures of
health information systems (HIS) as a risk management tool and suggest the mitigation
actions needed during the implementation of HIS (Heeks, 2006) with respect to developing
countries.
In addition, researchers have concluded that once reluctant health practitioners towards the
use of IT are now highly aware of ongoing trends towards digitisation (Haluza & Jungwirth,
2015).
Considering the literature around ICT innovations in health services, it can be deduced that
the practitioners and researchers are looking for ways to improve the condition of patients
through effective service designs and ICT usage. However, due to the lack of resources and
health practitioners, it has become more and more difficult (Akenroye, 2012). Therefore, the
concept of Micro-hospitals in various vicinities gives a hope to the patients that they can be
seen by the doctor before their condition deteriorates.

2.3 Health Services in Emerging Countries
According to the WHO report on the health indicators of various emerging countries, there is a decline of doctors to ten thousand patients’ ratio and number of beds per ten thousand patients from 2009 to 2015 (WHO, 2011, 2015). This trend is not as bad for the number of beds per ten thousand patients for developed or emerging countries, though the trend of declining number of doctors remains the same. Thus, there are two things, one the resources that money can buy and others the services of health practitioners which are needed to be developed by any country.

There are many factors, which lead to problems in health services in the emerging countries, and it differs even in those countries based on their geographical placement. For example, the problems associated with tropical countries such as Pacific Islands can become worse because of their weather conditions as opposed to conditions in South African countries (Braa et al., 2007). However, the factors which remain the same for all the developing nations, include less funding, availability of technicians at especially far-off places and health professional in the rural settings, corruption at various levels, limited resources, power disruption, dispersed and diverse rural population (Cullen, 2017). Some of these issues have also led to IT system failures in the regions, which meant more reluctance to use IT systems. Another important factor to consider here is the health regulations. Most of the developing countries do not follow any regulation, even if they have it in the books (Braa et al., 2007; WHO, 2015). This, however, goes in the favour of Micro-hospitals implementation in developing countries, because the hospitals can set up the facilities without waiting for as many approvals as in developed countries.

3 Research Design

For evaluation purpose, every research design has to follow a certain path. The characteristics of qualitative research, which include the use of multiple interactive methods, and observing the decision-making process of humans in context (Hollday, 2007; Klein & Myers, 1999), make it ideal to be used in this research. The research is in progress and a qualitative research design using interpretive paradigm in the case study methodology for data-collection will be followed (Klein & Myers, 1999). Also, the data collected will be analysed following thematic analysis, from the philosophical perspective of hermeneutics (Klein & Myers, 1999). The unit of analysis in this research is “health service”, while unit of observation is the stakeholders. The sampling technique will be purposive maximum variation sampling as it is an exploratory study and we are interested in wide range of characteristics, experiences and behaviour of the stakeholders (Coyne, 1997).

The case organisation is a twenty-bed hospital with almost all the specialities catering to the needs of the thickly populated locality. It is a compact four-story hospital consisting of all the major requirements of health services under one roof. It has state-of-art operation theatres, fully furnished private and executive rooms, labour room, dialysis unit, laser treatment, vaccination facility and neonatal and adult ICU. There is a well-equipped pharmacy, which is open 24/7. The centre has highly qualified medical and surgical staff for most of the specialities. Surgical and allied department consists of general and laparoscopic surgery, paediatric surgery, orthopaedic surgery, neurosurgery, ENT surgery, eye surgery, urology, plastic surgery including hair transplant. Medical department includes medical specialists, cardiologist, nephrologists, pulmonologist, gastroenterologist and dermatologist. The hospital runs a busy gynaecology/obstetrics and paediatric department with all the facilities and round the clock coverage. The hospital accident and emergency department work for 24/7 with well-trained medical officers on duty. Psychiatrist and psychologist are also part of our team. In addition, the hospital has physiotherapy and dental departments run by experienced doctors. The hospital has also teamed up with a renowned diagnostic centre.
Initial collaboration with the Hospital management is established, and management of the hospital is taken into confidence. It has been identified by many studies that it is difficult for doctors to adopt changes considering, their time is very precious and, it has been seen as a bottleneck for many investigations around health care services (Omachonu & Einspruch, 2010). However, one of the researchers is a physician in the same hospital, therefore, it is hoped to get first-hand data quickly. To keep the data unbiased, primary researcher, an information systems’ researcher will collect the data and then get a review on the collected information as and when required from the health practitioner.

This hospital has been running for the past two years. The data collection will be done through interviews, questionnaires and observations. The major stakeholders involved in the research will be physicians, patients, non-medical staff and higher-level management staff (Andargoli et al., 2017; Omachonu & Einspruch, 2010). It is expected to collect 20 interviews from the staff and more than 50 questionnaires from the people who visited the hospital as patient. The research questions will only cover service delivery questions from people above the age of 18 and are not current patients will be asked to participate in the research. Therefore, a low-risk ethics application is submitted for approval to the university’s ethics committee.

4 Theoretical Model

The debate on how to define service innovation goes back to almost a century and differs on different dimensions such as a new service or a redesign of the service, combination of services, novelty, evolutionary, radical (Omachonu & Einspruch, 2010), outcome of the process or process development and an invention not marketed (Witell, Snyder, Gustafsson, Fombelle, & Kristensson, 2016). Therefore, for this research, we needed a framework, which identifies what is innovation, specifically with respect to health services. Accordingly, Andreassen, Kjekshus, and Tjora (2015) argued that innovation project cannot be considered as innovation until, it becomes normalised in the management work. Hence, for effectively covering all the aspects of a Micro-hospitals, we are following two existing frameworks to capture service delivery holistically. The first one is an experience-based collaborative service system model (expCSSD) (Atiq, Gardner, & Srinivasan, 2017) as it combines on different levels of details, the three existing framework in the domain of service systems (Alter, 2011; Grönroos, 2012; Spohrer, Vargo, Caswell, & Maglio, 2008). The second is the conceptual model for healthcare delivery innovation by Omachonu and Einspruch (2010, Pg.10). The authors have defined healthcare innovation as “Healthcare innovation can be defined as the introduction of a new concept, idea, service, process, or product aimed at improving treatment, diagnosis, education, outreach, prevention and research, and with the long term goals of improving quality, safety, outcomes, efficiency and costs” (Omachonu and Einspruch 2010 Pg. 05).

The conceptual model illustrated in Figure 1 outlines all the constructs, which will be covered during the investigation. The research will be around the implementation of a Micro-Hospital, in an emerging country, this makes up the context. The content makes up the quality of services, costs, safety, efficiency and outcomes. In addition, we will evaluate the performance based on the associated costs. How are safety measures for the stakeholders carried out? How is efficiency gauged? How are the outcomes quantified? Our research will investigate how the patients are treated, diagnosed, prevented, educated, researched and how they access help using ICT? Similarly, we will look at the increased efficiency of health practitioners and other stakeholders that use ICT to reach their patients. The framework will make use of expCSSD model (Atiq et al., 2017) as it adds the constructs of value co-creation and effectively covers the IT as the context where service provider and patients’ interact. However, because there is
face-to-face interaction as well, both patients and health practitioners are half-inclusive to Information technology domain in the Figure 1.

The next section discusses the conceptual model in regard to the gap identified in the introduction and literature sections.

5 Discussion and Future Direction

In the recent years, health systems are inclined towards micro-hospitals because they can provide more services to the community than a freestanding emergency room, and their activity levels are much broader than your average urgent care centre. The acuity level of a micro-hospital is slightly lower than that of a community hospital, but it serves a significantly different patient population than an urgent care centre (Numerof, 2018). The conceptual model in Figure 1, is expected to evaluate the quality, costs, safety, efficiency and outcomes constructs as they form the value-generating network for the consumers, i.e. our patients and the health providers (Atiq et al., 2017). The interaction between the two entities is enabled by IT where the patients’ diagnosis, treatment, prevention, education, research and outreach is concerned.

The value proposition of the micro-hospital manifests when it is considered as part of an overall delivery system (Stacie Prosser, 2017) is uniquely positioned to deliver care in a more cost and operationally efficient manner. The result is a branded healthcare destination that facilitates continuous patient engagement (Numerof, 2018).

The metric of “bed numbers” is commonly used in hospital planning, but it fails to capture key aspects of how hospital services are delivered. Hospital capacity planning should not be based on beds, but rather on the ability to deliver. We argue that it is beneficial to look at the hospital, not from the perspective of beds, rather from the path taken by the patients who are treated in them, the respective processes delivered by health professionals and the facilities
appropriate to those processes. We propose using approaches that focus on the value that different processes add for the primary customer, i.e. the patient (Andreassen et al., 2015). The leverage that micro-hospital business model have, is the size (Becker, 2017). The small format helps drive high-quality care and higher patient satisfaction by allowing providers to focus on fewer patients and produce better outcomes (The Advis Group, 2019).

Micro-hospitals offer faster discharge times, shorter length of stay and less wait times, and can operate as a one-stop shop, for both primary and secondary care onsite. They help patients feel more taken care of and can help build the patient relationship with a hospital brand, which ultimately improves the patient-doctor association. The idea is we want to capture that patient in the system, align them with a medical home, preferably our partner system, so they can be treated at the right place and the right time for their future needs (Berkeley, 2019). They can accommodate patients suffering from diseases and conditions such as acute abdominal pain, sprained and broken bones, pneumonia, dehydration, seizures, minor trauma, bladder infections, lacerations, and more. Others also offer ancillary services such as primary care, labour and delivery, dietary services and paediatric care (The Advis Group, 2019).

Micro hospitals are not without the challenges. These projects have the tendency to grow over time and suddenly become 100,000 square feet and 25 beds, eliminating many of the cost benefits of a smaller facility (The Advis Group, 2019).

Another challenge is advertising or marketing; the owners need to remember that Micro-hospital notion is new for the patients too. Therefore, the marketing campaigns are needed to assist patients in understanding the value of the facility (Becker, 2017). Next challenge is the work environment and recruitment. Thus, the health providers need to consider the functioning challenges accompanying the micro-hospitals which require distinctive workflows, effective policies and even EMR design to maximize productivity (Tello & Barbazza, 2015).

The growth trend for micro-hospitals is not likely to slow down soon. Now, most micro-hospitals are set in large urban and suburban metropolitan areas because they are deemed too complex or large for the rural market. However, there are experts who believe that the facilities would also be great for people in underserved areas to help communities that lack access to medical care (Emerus, 2018).

6 Conclusion

This research-in-progress paper presents a case for a service-delivery innovation strategy, Micro-hospitals for effective availability of health services to the patients. Such hospitals are a new concept in developed countries and yet to be evaluated. In the developing countries, they have been opted by the private sector but not evaluated. Through this research, we are interested to see how the implementation of such a hospital can be improvised and how ICT can make the services’ delivery easier and efficient for both the health practitioners and the patients. The major challenge associated with such projects are the motivations of the health practitioners and other stakeholders throughout the research. However, through proper project management, planning and resources such risk factors can be mitigated.

References


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