AN APPROACH TO MITIGATE CHALLENGES HOSPITALS FACE WHEN HANDLING NOMADIC PATIENTS.

Proposal for Dissertation by

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DECLARATION AND APPROVAL

I hereby declare that all the work presented in this proposal for dissertation has not been presented for any other degree in any other academic institution. All work is original unless otherwise acknowledged.

Signed …………….…………………

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This proposal for Dissertation has been submitted for examination with approval of the following supervisors:

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1. Introduction and Research Problem

There is an exponential growth of the national and international market in health care and patients. This exponential growth of the market has escalated the continuous movement of patients from different locations to others in search for better health care. This act is known as 'Patient Nomadism'. Many researchers have looked at Patient Nomadism as 'Patient Tourism' or Health Tourism. Mutalib, et al, (2016) have explained patient nomadism as the practice of travelling to other destinations or places for the intent of attaining health care services. Nomadic patients move from their home areas to access non-emergency medical care from different places or countries. Johnston, Crooks et al, (2010) explain that patient nomadism involves patients intentionally leaving their home areas and sometimes their countries to access health care services in other areas or even abroad. Johnston, Crooks et al, (2010) add that the activity of patients leaving their areas and countries of residence with the aim of accessing medical care. Nomadic Patients move long distances to access care motivated my several factors like costs, quality of services and technology.

The exponential increase in Patient Nomadism is largely due to the inherent challenges in the health care systems. Mirembe, (2015) denotes that health care facilities are facing challenges of low investment in core health infrastructures and ICTs. This is one of the drivers of patient nomadism. The state of Health care services in mainly developing countries like Uganda are characterised with challenges like lack of medical awareness, low penetration of medical insurance, low doctor population ratio, lack specialists in some ailments which largely contribute to the increase in patient Nomadism (Gopal, 2008).

Although there is a growing number of Nomadic Patients, there is no evidence on who is travelling from where, to where and for what purpose (Lunt and Mannion, 2014). This research will address this issue by coming up with a unique tracking system to track the movement of patients from one health facility to another. The research will also embrace the use of Biometric Patient Identification technologies when capturing patient information in hospitals.

Patient Nomadism is becoming a more popular option for patients to look for better health care which is unavailable in their home areas (Crooks et al, 2010). This shows that we cannot easily predict the future of patient nomadism therefore we carry out this study to look at the challenges associated with handling nomadic patients' information in hospitals and providing practical solutions to mitigate them.

1.2. Issues with hospitals face with Nomadic Patients as a result poor information management.

Concealment of medical history

Many times, patients don't disclose the entire truth about their health to doctors, this happens when there is no system to monitor movements of Nomadic Patients. The consequences of this patient dishonesty can be super serious. Physicians say that patients can be misdiagnosed and prescribed treatment that can worsen existing conditions.

Concealment of current and previous prescriptions

Patients tend to give misleading information about their drug use. This is more common with patients who move from hospital to hospital in search for better health care. These dishonest patients hide the truth about their medication to avoid being judged.

Poor adherence to medication

This is a challenge that hospitals face not only with nomadic patients but also other patients mainly the outpatients. Mirembe, (2015) agrees that patient management involves challenges like poor adherence to prescription which remains a challenge to health care service providers since they can't know the current state of the patients.

1.3 Drivers of Patient Nomadism

A number of researchers have identified several factors to explain the exponential growth in nomadic patients worldwide. Factors like soaring health care costs, longer medical procedures, and desire to gain access to Services that are locally unavailable and inappropriate health care insurances (Behrmann and Smith, 2010). The other factors that are responsible for the increase in nomadic patients include; advanced technologies, better quality care for medically necessary procedures, quicker access to medical facilities, lower costs (Kelly, 2013).

Prakash, Tyagi and Devrath, (2011) explain that there are multiple reasons for the movement of patients from their home areas to other places in search for better health care. The inability of many health facilities to deal with increase in demands of the patients compromises the level and quality of services, the long waiting lists and high costs also drives patients to look for alternative health care.

Mistrust and impatience among patients is another driver of patient nomadism. Many patients feel they are not getting better medical care and sometimes they don't trust the work of some medical physicians. This makes them to look for other hospitals.

1.4. Motivation and Research Problem

Basing on the issues associated with Nomadic Patients discussed in section 1.2, we are inspired to carry out the research to mitigate the challenges.

Nomadic patients have always been around and it is quite impossible to predict their future. Most of hospitals in Uganda face quite a number of challenges when it comes to health care for nomadic patients. Some of these challenges may include; concealment of medical history, concealment previous prescription and also being unsure if the patients will come back for the next visit. Vasudevan, (2014) explains that there are very many hospitals and this gives a reason for the increasing movement of patients from their home areas to another since they have many choices.

The purpose of this study is to see if the hospitals in Uganda are prepared to embrace the growing number of nomadic patients, leaving alone the income they bring in. In this study, we will choose two hospitals which provide outstanding medical care services and find out how they manage to handle nomadic patients despite the information management challenges associated with them. We shall also look at the various solutions in place that they employ to ensure proper information about the patients is collected.

1.5. Objectives of the Study.

1.51. Main Objective

Despite the financial intentions hospitals have when they receive new patients, little attention has been paid to ensure proper and relevant information is gathered from patients before any medical services are offered. According, *the main objective of this research will be to develop an approach to be used to track patient's visits to different hospitals*. This tool will focus on consolidating all the health information about a patient gathered from the different hospitals visited in a particular period of time.

1.52. Specific Objectives
1. To establish the challenges faced when managing nomadic patients
2. To design a nomadic patient data management approach

3. To evaluate the usability and usefulness of the Nomadic Patient Data Management Approach (NPdMA)

1.6. Central Research Question and Sub questions

1.61. Research Question

Basing on the background provided in the introduction, the research aims at answering the following question:

What elements should be included / adopted in the approach to sustainably mitigate the challenges hospitals face when handling Nomadic patients' data?

The main question could be under-pinned by several sub questions as indicated in the next section.

1.62. Other Research Questions
1. What is the current state of art and practice in the management of nomadic patient data
2. What are the requirements for a pragmatic approach to Nomadic patients data management

1.7. Research Approach

Research approach implies the mythology that has been used to conduct the Research. It basically involves the selection of a research paradigm or philosophy. Drake, (2015) defines research approach as the method that will be used to conduct the research.

Drake, (2015) conquers with Paul, (2012) who also explains that research approach involves the selection of a research philosophy, a research strategy that is adapted to aid in conducting research.

1.71. Research Philosophy

Information systems designed for different purposes in organizations are complex, unnatural and are designed because they are composed of people, technologies and work systems (Hevner et al, 2004).

Research is based on some assumptions about what is involved in research; what makes a valid research and the methods that are appropriate. Therefore there is need for research

philosophies that can unravel the complexity to enable us understand the entire process. The research philosophy explains the way in which data on the phenomenon studied is gathered and analysed (Ssemaluulu, 2012). Every research philosophy or paradigm has distinctive way of expressing the nature of true reality, knowledge and values so as to yield different results.

Sarandakos (2005) notes that there are two research paradigms which are mainly put to use by scholars. These are quantitative and qualitative research paradigms. In relation to this study, a qualitative approach will be employed. This is because a few respondents will be involved in supporting, guiding and providing relevant answers to the already existing research questions.

According to Ssemaluulu, (2012) there are three major paradigms for research and these include positivism and anti-positivism which are also called the interpretivisim theory and critical theory / realism. The positivist research paradigm is the back-bone to the scientific research method. This research paradigm seeks to explain and predict what happens in the social world by looking for regularities and relationships in the constituent elements.

To have an in-depth understanding of the research topic, there is need to have a case study research design (Babbie, 2010). There are multiple Health Centres in Uganda however, Rubaga Hospital and Kampala Medical Chambers Hospital will act as our case studies since they are also affected by nomadic patients challenges and also generate multiple Health information and also face a number of challenges to manage them hence being good representatives of other hospitals Uganda.

Hevner et al, (2012) explains that the best philosophy that can be used in information systems design is known as design science (DS). The goal of this research is to design an approach that will help to consolidate nomadic patients' information in hospitals hence mitigating the challenges faced by hospitals when managing nomadic patients. Since the research has an objective of designing an information system, we therefore followed the design science philosophy. Ssemaluulu, (2012) explains that DS is aimed at problem finding and solving through creating and evaluating IT artefacts intended to solve organization problems.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

To understand the challenges encountered in hospitals when handling Nomadic patients, an extensive overview of literature will be conducted. It has been established that there is enough literature in relation to this topic of study therefore, relevant sources like technical reports, scholarly articles, published journals and dissertations will be reviewed, however, a few sources have been reviewed. The literature reviewed will be structured in relation to the research questions. Themes and sub themes will be further developed at an advanced stage of research. The broad outline is indicated below:

2.1. The current state of art and practice in the management of nomadic patient data.

The need and use of information about patients in health facilities is increasing and this increment has participated in the improvement of patient safety in hospitals. In current Health Care Systems, patient safety is very fundamental in all aspects and it has led to development of several patient data management systems with safety goals such as reducing medical errors that may come up due to poor tracking of patients.

Ford and Savage, (2008) explain that by adopting the use of Electronic Records Management Systems (ERMS) can help to control costs and also provide actionable data to the physicians. Ford and Savage add that Applications like Evidence Based Medicine (EBM) can boost the management of patient information since they help clinicians to have information about different prescriptions and treatments that a patient is getting or got during previous visits to hospitals.

Ghassemi, Celi and Stone, (2015) explain that vast medical information has accumulated ni data bases but the challenge is the transformation of the collected data into usable and useful medical knowledge. Nomadic patients in hospitals especially in Critical / Emergency care are a great challenge to the clinicians since most times little information is known about them.

We should get to understand that a lot patient information is scattered in databases in different hospitals in the country. If all this information is consolidated and put into one

system, there will be a great improvement in the management of nomadic patients and their data. Ghassemi, Celi and Stone, (2015) say that a lot of information like, clinical notes, laboratory results, vital signs, treatments, medications and procedures are captured and can be shared and lead to new perspectives on solving challenging problems about nomadic patients. The introduction of Information and communication Technologies (ICTs) in the Management of Nomadic Patients Data has a great potential in enhancing access to health information and making services more effective and efficient. Looking at long time illnesses like Diabetes, Hypertension, Autism, Cardiovascular diseases, maternal and child health problems that need monitoring and treatment for a long period of time, unified systems should be established to monitor and track patients with those conditions so that information about them can be accessed by any physician in any health facility they visit. (World Health Organization, 2012).

Looking at the state of art of nomadic patient data management, World Health Organization, (2012) looks at the development Medical records Systems and Computerised Systems as a way of reliable medical informatics. There is need to monitor the way data is collected so as to ensure that information collected is correct and also policies on data protection and confidentiality. O'Farrell, (2010) explains that Proper Medical records often serve as a critically important means of communication among health care providers; they are source of information that supports the desire for particular laboratory and diagnostic tests and particular treatments. Malpractice of physicians should be controlled since these PDMS (Patient Data Management Systems) have plenty of information right from patient history, diagnosis, current treatment and medications which is highly sensitive. O'Farrell, (2010) Says Medical Records are Referred to as the "Witness whose Memory is never lost". This implies that extra attention should be used when creating, modifying and storing health information.

2.2. The requirements for a pragmatic approach to Nomadic patients data management

Patient Data Management Systems should not merely be taken as technical systems, but rather as Health Social Networks. This calls for a functional approach that can aid the management of Nomadic Patients data.

Abdusamadovich, (2013) explains that a typical NPDMS should be composed of both administrative and health care delivery system. This supports management decision making as well as health care delivery.

Paper based HIMS (Health Information Management Systems) are still dominant in many Hospitals despite the efforts that projects such as SUSTAIN have put in place by introducing the ICT infrastructure in the Management of Patient Data. Manda, (2015) explains the need to enact technology in the Patient Data Management System as this will support the development of collaborative systems that can share information electronically. Technology such as Mobile Phones can aid in supporting collaborative Nomadic Patients Data Management system. This can be done by using mobile phone applications to capture patient information on to the NPDMS. Manda, (2015) also looks at DHIS (Digital Health Information Systems) that are aided by the use of 'mHealth' (Mobile Health) applications.

Mobile Health applications are health care information systems that use cellular networks to capture, communicate, share and retrieve data about patients in hospitals. They have a multitude of benefits such as rapid communication of information, data capture in real time since they are handy, improving patient access to medication via e-prescription systems, improvement of data quality through validation options and reduced use of paper based systems (Manda, 2015). There is need for heath institutions in Uganda to take an initiative of embracing technological development so as to strengthen NPdM (Nomadic Patient Data Management.

2.2. Challenges faced when managing nomadic patients

Several health facilities that take care of Nomadic patients raise concerns and most of them are associated with uncoordinated Patient information from them.

Non adherence to prescription is a very resounding challenge in management of nomadic patients. Many patients intentionally don't adhere to treatment because they are not well monitored. This exposes them to risks of adverse health outcomes. Law, Cheng et-al, (2012) look at financial instabilities as a cause of non-adherence to treatment. Law, Cheng et-al, (2012) also report that patients on long term medications and out patients are commonly faced with problems like MDR (Multi-Drug Resistance)

Lack of information on patients especially in Intensive Care Unit (ICU) / Critical Care Unit (CCU) is a resounding challenge in hospitals. Patients in ICU with unknown medical

conditions have greater complications and poorer out comes during their stay in hospitals. "Unconscious, unknown patients pose a serious threat to patient safety" (Trader, 2015). Dealing with unconscious patients in hospitals can be a very dangerous event since there is no proper identification and there are very many unanswered questions about their past medical history which poses a great threat to the patient safety.

Contraindicating medications due to unknown history is also a great challenge when handling Nomadic Patients in hospitals. According to WHO, (2005), contraindication is a situation that occurs when a drug, procedure or operation / surgery should not be used because it may be harmful to a patient. When patients give wrong or uncoordinated health history to a health physician, there are high risks that may come up due to contraindicating procedures that may be performed.

2.3. Designing a nomadic patient data management approach

Many systems have been designed to handle patient / medical information in many hospitals today. Cheung, et al, (2014) ICT systems have been established to collect and store data, manipulating clinical information, and aid decision making. These systems include; Electronic Health Records (EHR), Hospital Information Systems (HIS) and Clinical Information Systems (CIS).

2.4. Evaluating the usability and usefulness of the Nomadic Patient Data Management Approach (NPdMA)

Any NPDMA must ensure that the information provided is unbiased, consistent and there should be assurance that all the data available is not speculation based but rather evidence based. It gets really absurd when the information about a patient is wrong and not able to be used for reference in case a patient revisits the hospital (Ruka, 2015). Researchers have emphasized that in order to have a valid approach to solving Nomadic Patient Information Management problems, the following information must be vigilantly captured;-*"Patient Profile _Age, Gender, Addresses, Diagnosis and Enhanced Medical Condition"*

CHAPTER THREE: METHODOLOGY

3.0. Introduction

In the previous chapter, we looked at different sources and studied different approaches that different researchers have expressed about Nomadic Patients' information management. We looked at the current state of nomadic patients, the requirements needed for a pragmatic approach and also the challenges that hospitals face with management of nomadic patients.

In this chapter (Three), we look at the different methodologies and philosophies that the researcher will use in conducting the study. This chapter contains; the data collection tools and techniques that researcher will use, the study objectives and study approach. It also highlights sections like validity, quality control and reliability of the research data.

3.1. Study Objectives

The researcher will use a case study research design for purposes of getting an in-depth understanding of the topic understudy (Babbie, 2010). The case study inquiry will result into evidence based findings which will be valuable in the study.

3.1.1. Data collection Techniques

In order to obtain quality data during the research, the researcher will employ various methods namely; questionnaire, interview method and document review.

3.1.2. Questionnaire Method

ETA (2008) defines a questionnaire as a set of questions for gathering information from individuals. You can administer questions by mail, telephone and many other ways. **UOJ, (2005)** explains that questionnaires can either be in form of a self-administered questionnaire where the respondent is requested to complete the questionnaire in his or her own time or in a form of a structured interview, where the interviewer writes down the answers of the respondent. In addition to the above views about what a questionnaire is, Mbaaga, (2000:25) explains that questionnaires may be defined as sets of comparable questions designed to gather and accumulate information from respondents on an a desired topic. This Method will be used to gather data from the respondents who will be identified to take part in this study.

3.1.3. Interviews

This can be defined as a person to person verbal communication in which a respondent answers questions set by the researcher in need of particular opinions in a particular field of research. Woods, (2011) interview method as a conversation with a purpose. He then explains that interviews are used to supplement and extend knowledge about individuals' thoughts, feelings and behaviours, meanings and interpretation. Therefore, this method was used to ask respondents questions relating to the management of historical records management. Oso and Onen, (2008) define interview as a person to person verbal communication in which one person (or group of persons) as the questions intended to elicit information or opinions.

This method will be used to mainly to complement the questionnaires and it will involve the researcher getting in a one on one conversation with the respondents to collect information about the handling of Nomadic Patients and their information in hospitals. This method will be possible through the use of an interview guide.

3.1.4. Observation Method

This involves the use of tools like observation guides to assist the researcher to look and analyse how currently nomadic patient information is generated and managed in hospitals and later record the relevant findings. Kawulich, (2005) refers to observation as the process enabling researchers to learn about the activities of the people or objects under study in the natural setting through observing and participating in those activities. Kawulich, (2005) further explains that observation methods provide researchers with ways to check for nonverbal expression of feelings and for how much time is spent on various activities

3.1.5. Document Review

The review of documents will be used to study and analyse already existing literature that is related to the study. This will help the researcher to explore the gaps and the state of the art of the research done in the related area of study.

3.2. Data Management and quality control

According to **Oso and Onen, (2008)**, quality control entails ensuring acceptable levels of reliability and validity of instruments used in research. Quality control ensures the truth of the information got from the study.

3.3. Reliability

According to **Bashir, (2008)** reliability is a concept used for testing or evaluating research, it ensures the quality of the research results. **Golafshani, (2003)** refers to reliability as the extent to which the results are consistent over time and accurate representation of the total population under study. Joppe, (2000) further explains that the research is reliable if similar results of the study are obtained when using a similar methodology.

3.4. Validity

Bashir, (2008) explains validity in three approaches and these are investigation, communication and action. It's further noted that many researchers think that element of validity is not applicable in qualitative researcher but however they have realized the need for qualifying and measuring their research. Validity also implies the; truth, actuality, reason and facts in research (**Golafshani, 2003).** Validity will be used to determine whether the research truly measures that which it was intended to measure or how truthful the research results are.

3.5. Work Plan

NO.	SECTION	TASTS	APRIL	MAY	JUNE	JULY
1	PROPOSAL	Writing abstract, introduction and subsequent sections	██			
2	CHAPTER 2	Literature Review		██		
3	CHAPTER 3	Methodology and Research Instruments		██		
4	CHAPTER 4	Research and Result Analysis			██	
5	CHAPTER 5	Recommendations			██	
6	CHAPTER 1	Review of the Proposal				██
7	EDITING	Addressing Corrections				██
8	SUBMISSION	Dissertation Submission				██

References

1. Amy Cheung, Floris H.P. Van Velden, Vera Lagerburg, Niels Minderman, 2015. The organizational and clinical impact of integrating bedside equipment to an information system: A systematic literature review of patient data management systems (PDMS). *International Journal of Medical Informatics. B4 (2015)155-165.*

2. Babbie, E.2010. The Practice of Social Research. (12th ed.). Australia: Wadsworth Cengage Learning. https://portal.solent.ac.uk/researchandinnovation/ethics/resources/ethics-reading-list.pdf

3. Drake Patrick Mirembe. 2015. The Threat Nets Approach to information Security Risk Analysis. www.rug.nl/research/portal/files/24366706/Complete_thesis.pdf

4. Edward Kelly. 2013. Medical Tourism: WHO Patient Safety Program. http://www.who.int/global_health_histories/seminars/kelley_presentation_medical_tourism.pdf

5. Eva Ruka, 2015. Medical Tourism.http://www.bmgf.gv.at/cms/home/attachments/3/9/5/CH1161/CMS1182951248070/hope_medical_tourism_september_2015.pdf

6. Ford, E. W. and Savage, G. T (2008). Patient Safety: State-of-the-Art in Healthcare Management and Future Directions. *Advances in Healthcare Management.* Volume 7, pp. 1-14.

7. Jason Behrmann, Elise Smith. 2010. Top 7 issues in medical tourism: Challenges, Knowledge gaps, and future directions for research and policy development. Global Journal of Health Science. 2010, 2(2),80-90

8. John Trader, 2015. Identify Unconscious, Unknown Patients with Biometric Identification Technology. http://www.rightpatient.com/

9. Kawulich, Barbara B. 2005. *Participant Observation as a Data Collection Method.* Retrieved June 14, 2014, from http://nbn-resolving.de/urn:nbn:de:0114-fqs0502430

10. Marzyeh Ghassemi, Leo Anthony Celi and David J Stone, (2015). State of the Art Review: the data revolution in critical care. [online] http://ccforum.com/series/annualupdate2015

11. Mbaaga Frank, 2000. Introduction to Social Research.
12. Michael R. Law, Lucy Cheng, Irfan A. Dhalla, Deborah Heard, Steven G. Morgan, 2012. The effect of Cost on adherence to prescription medications in Canada. http://www.cmaj.ca/content/184/3/297.full.pdf+html

13. Monika Prakash, Nanita Tyagi and Ramesh Devrath. 2011. A study of problem and challenges faced by medical tourists visiting India.

14. Muhammad Bashir, Muhammad Tanveer Afzal and Muhammad Azeen. (2008). Reliability and Validity of Qualitative and Operational Research Paradigm. Retrieved June 28, 2014, from http://www.pjsor.com/index.php/pjsor/article/viewFile/59/38

15. Nahid Golafshani. 2003. Understanding Reliability and Validity in Qualitative Research. Retrieved June 28, 2014, from http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf

16. Neil Lunt, Russell Mannion. 2014. Patient Mobility in the global market place: a multidisciplinary perspective. Int. J Health Policy Manag 2014, 2(4),155-157

17. Nur Syafiqah Abd Mutalib, Long Chiau Ming, Siew Mei Yee, Poh lee Wong and Yee Chand Soh. 2016. Medical Tourism: Ethics, Risks and Benefits. Indian Journal of Pharmaceutical Education and Research 2016, 50(2), 261-270

18. Oso, W. &Onen, D. 2009.*Research Methods,* Nairobi: Kenyatta University, Institute of open Learn. http://eaihesd.mak.ac.ug/sites/default/files/How_to_Write_a_Doctoral_Research_Proposal_at_Makerere_University.doc

19. Paul, S. (2012). An Instrument to Assess Information Systems Success in Developing Countries. PhD Thesis. University of Groningen, the Netherlands. https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#

20. R. Gopal. 2008. The key Issues and Challenges in Medical tourism sector in India. (A Hospital Perspective. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.534.8458&rep=rep1&type=pdf

21. Sarantakos, S. 2005. Social research. (3rd ed.). New York: Palgrave Macmillan. https://he.palgrave.com/page/detail/Social-Research/?K=9780230295322
22. Tiwonge Davis Manada, 2015. Developing HIS Infrastructure: Negotiating Tensions to Design, Implementation, and Maintenance. [Thesis] http://www.mn.uio.no/ifi/forskning/aktuelt/arrangementer/disputaser/2015/pressemelding_manda.pdf

23. World Health Organization, 2005. WHO guidelines on basic training and safety in chiropractic. http://www.who.int/medicines/areas/traditional/Chiro-Guidelines.pdf

24. World Health Organization, 2012. Management of patient information: trends and challenges in Member States: based on the findings of the second global survey on e-Health. https://www.google.com/webhp?sourceid=chrome instant&ion=1&espv=2&ie=UTF-8#