

ANTENATAL CARE MANAGEMENT INFORMATION SYSTEM (ATCMIS), A CASE STUDY OF BISMILLAH MEDICAL CENTER (BMC) - KITEBI

Kalema Arafat¹, Lubega John Bosco²

1-St. Lawrence University, Uganda, Email: agendalubega@gmail.com

2-St. Lawrence University, Uganda, Email: kalemaarafat8@gmail.com

ABSTRACT

In a typical antenatal care management information system, records are usually kept for future reference, retrieval, reproduction and easy management. The daily activities, schedules and events are also recorded. If there is need to know the population of pregnant women, one may need to count the records obtained from different files that contain papers with information. The main objective of this project is to design and develop a new system of managing information in antenatal care. The system helps the hospital to enhances tidiness in record keeping. It also reduces costs incurred in purchasing files, books and papers for individual entities. The system manages records of doctors and pregnant women and their children. The system allows the user to book appointment, print appointment letter and keep records. In this study, qualitative and quantitative research design approaches were used. This is because the research aimed at obtaining non biased data from various respondents using both numerical and non-numerical figures such as feelings and emotions. The research design which was used for software development was the rapid application development (RAD) model. It is based on prototyping and iterative development with no specific planning involved. It also focuses on gathering user requirements, early testing of the prototype by the customer using the iterative concept, re use of the existing component and continuous integration. RAD was preferred because requirement would change during project. It is suitable for short term projects that may require quick delivery. By using RAD, it was easier to measure progress of the project.

Keywords:

Iterative, integration, Rapid Prototyping, maintainability, Antenatal

BACKGROUND

According to WHO , 2015 the adoption of health informatics can greatly improve operational performance of health facilities. Health informatics is used to describe the acquiring, storing, retrieving and using healthcare information to bring about better collaboration among patient's various healthcare providers (NLM, 2014). However, in Uganda, a number of health facilities offering antenatal services are yet to adopt health informatics. This has led to a number of challenges which include: unskilled, untimely and poor quality antenatal and delivery care, patient congestion because of many patients admitted per day, inadequate medical professional doctors, nurses, midwives, medical assistants/ clinical officers and nursing aids, male midwives; expecting mothers don't like the idea of male health workers helping them to deliver, episiotomy; fear of being cut during episiotomy to allow baby to come out easily and faster to avoid losing either mother, unborn child or both, abusive midwives; expecting mothers have been either abused or rejected to be worked on by midwives who especially in many cases need money so they can attend to mother's so they can handle them well during labor and childbirth - Rujumba (2013).

According to Kollmann et al., 2002, mobile health care applications are developed with the intent to facilitate communication between medical workers and their patients, as well as to store and convey information about the condition of user .

MIS provides advantages like effective and productive decision making to the managers by gathering information from different sources into a single database thus presenting the information in a more understandable manner (Ingram, 2012).

Designing Antenatal Care System

PHP was the main language used to develop ANCMIS; PHP is an open-source programming language, server site scripting language that encourages dynamic and creative programming. After successful completion of design and development the ACNMIS was then put on production environment to check whether the intended objectives were met.

Implementation And Validation Of Antenatal Care Management System

According to Rosenblatt (2014), implementation is the physical realization of an application, or execution of a plan, idea, model, design, standard, specification, algorithm, or policy.

ANCMIS was tested to check whether the system satisfied user needs and expectations. Four testing criteria namely unit testing, integration testing, system testing and user acceptance testing were used for checking the efficiency and effectiveness of the ANCMIS.

Several units of ANCMIS were tested against the inputs into the system to validate and verify their functionality

Entailed testing of all modules to check on quality assurance, verification and validation or reliability. The units that were tested as in unit testing above were tested as a whole to point on their performance.

The whole system functionality was tested. The researchers acknowledge that all the modules were tried on various devices using various inputs and the system showed consistency in giving the outputs as it had been required to do.

Involved a series of specific tests that helped to indicate whether or not the ANCMIS met the user needs and expectation. The testing was to continue even after software release.

Research Questions

- i. What is the relationship between antenatal care and management information systems.
- i. How can the antenatal care management system be designed and implemented.
- ii. Why should the antenatal care management system be validated

METHODOLOGY

The study employed qualitative and quantitative as the research design technique, Therefore, this study targeted 57 patients, 8 midwives, 9

doctors and 5 CEOs from different hospitals giving us a sample size of 79 respondents.

Findings , Discussions and Recommendations

The outcome of this research has provided insight and the advantages of the Information Management and over the manual or paper based system to manage the details of the expectants and pregnant mothers. That is to say data can be easily stored, accessed and retrieved at any time hence simplicity.

To maximize the utility, effectiveness and the efficiency of the ANCMIS web mobile application, it is recommended to use a desktop, laptop, smartphone or tablet. The system being of help to these antenatal cares, The reasearcher recommends the government to provide subsidized or free web hosting to each hospital for the ANCMIS web application.

CONCLUSION

ANCMIS provides information management solutions in antenatal care. It is secure, user friendly which makes it a proper solution to the manual systems used in managing records within antenatal care. Its user interface makes it easier to access all the information without necessarily moving from one page to another, therefore user does not have more hustle in accessing the content, creating, updating and retrieving records.

REFERENCES

Alexander GR, Kot el chuck M. Assessing the role and effectiveness of prenatal care: history, challenges, and directions for future research. Public health Rep. (2001).

Harry, J. Rosenblatt. (2014). Systems Analysis and Design, 10th Edition, International Edition. Course Technology, Cengage Learning.

Kothari, C. R. (2005). Research Methodology: Methods and Techniques (2nd Ed). New Delhi, New Age International (P) Ltd.

Kumar, R. (2005). *Research Methodology: A Step-by-Step Guide for Beginners* (6th Ed).

Laudon, K. C. (2009). *Essentials of Management Information Systems* (9th Ed.). Connecticut, Pearson College Divisions

Laudon, K. C. (2010). *Systems Analysis and Design* (9th Ed). New York.

Lisa M. (2008). *The sage encyclopedia of Qualitative research methods*. Los Angeles, California. Sage Publications ISBN 1-4129-4163-6.

Margret Rouse (2008) What you need to know about software testing automation. Retrieved from <http://searchsoftwarequality.techtarget.com/definition/unit-testing>.

Miller, C. (2008). *Reasons to Use A Content Management System* (8th Ed.).England, University of Nottingham.

Samira M Haddad & Renato Souza T. (2019). *Antenatal Care* 48 Saunders, M. Lewis, P. & Thornhill, A. (2012) *Research Methods for Business Students* (6th Ed). Pearson Education Limited.

U.S National Library of Medicine (2014).Health Informatics. Retrieved from. <https://healthinformatics.uic.edu/resources/articles/4-wavs-health-informaticsimproves-patient-care/>