ONLINE DIAGNOSTIC LABORATORY INFORMATION MANAGEMENT SYSTEM

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ABSTRACT

An Online Diagnostic Lab IMS is designed for Any Diagnostic Center to replace their existing manual paper based system. The new system has the control of the following information; patient information, staff information ant test information related to the diagnostic system. These services are to be provided in an efficient, cost effective manner, with the goal of reducing the time and resources currently required for such task. This study sought to develop the online diagnostic Lab Information Management System for Mengo hospital. A cross-sectional design was used. Both quantitative and qualitative approaches were used, Quantitative multi-stage cluster and systematic sampling as well as qualitative purposive sampling and focus group discussions were used. The following samples were selected; 30 technical staff, 25 supports staff. A questionnaire was used to obtain basic data about integrated information system from purposively selected respondents.

The study included 55 participants. 63% of the respondents were female while 37% were male. This shows that the researcher interviewed more female than male. Most participants were in the age groups of 36-45 years which was represented by 37% and 13 were below 24 years, 25-35 years were 25% and those above 45years, 25%.

Online Diagnostic Lab IMS", data will be secured. Using this application we can retrieve patient's history with a single click. Thus Processing information will be faster. It guarantees accurate maintenance of Patient details. It easily reduces the book keeping task and thus reduces the human effort and increases accuracy speed

Key words: Online Diagnostic Lab and Information Management System

INTRODUCTION

Information technology infusion that aids globalization refers to the degree to which various information technology tools integrate into organizational activities (Idowu et al., 2006). The application of information technology in health care is unceasingly evolving as the quality of patient care in contemporary times seems to depend on the timely acquisition and processing of clinical information related to the patient (Brailer, 2005).

A significant paradigm shift has occurred in health care service delivery from an era of physician centeredness to emphasis on quality of patient care; from isolationist practices by caregivers to networking in a global world, and from competition to collaboration among practitioners (Cholewka, 2006). In tandem with this trend, improvement in technology and advancement in information systems has been adopted in the health care industry as a business strategy to improve the quality of care (Wilcke, 2008).

An operating and robust information system provides the right information to the right person at the right time with the lowest cost (Mehdi et al, 2004). This is why existing laboratory data management needs to be upgraded to a level that is sufficient to improve data quality, reduce the manual interfaces and intervention by laboratory technicians, and aid in timely and routine reporting of disease trends. The emphasis is on reducing the margin of errors made during transcription in the laboratories and provides a single point of entry for all patient and specimen data.

Online Diagnostic Lab IMS is designed for Any Diagnostic Center to replace their existing manual paper based system. The new system has the control of the following information; patient information, staff information ant test information related to the diagnostic system. These services are to be provided in an efficient, cost effective manner,

with the goal of reducing the time and resources currently required for such task.

A significant part of the operation of any diagnostic center involves the acquisition, management and timely retrieval of great volumes of information. This information typically involves; patient personal information, staff information, test information including schedules and results and payment history. All of this information must be managed in an efficient and cost wise fashion so that an institution's resources may be effectively utilized. Online Diagnostic Lab IMS will automate the management of the diagnostic center making it more efficient and error free. It aims at standardizing data, consolidating data, ensuring data integrity and reducing inconsistencies

MATERIALS AND METHODS

Study Design and Setting

The study was a cross sectional study conducted, both quantitative and qualitative approaches were used.

Study population and sampling

The study respondents were 30 technical staff, 25 supports staff were selected. A questionnaire and an interview were used to obtain basic data about integrated information system from purposively selected respondents. The study used Quantitative multi-stage cluster and systematic sampling as well as qualitative purposive sampling and focus group discussions.

Data collection procedure

A questionnaire was used to obtain basic data about integrated information system from purposively selected respondents. Semi-structured questionnaires with limited closed questions were used. The researcher made an effort to imagine himself as being in 'the respondent's shoes' when designing the questionnaires for this study. Assurance of confidentiality of the data was provided at the beginning of the questionnaire.

Interviews were used to obtain detailed information. The interviews were not only used to answer the research questions under study, but

also to obtain ideas of the person being interviewed.The proposed system is a web based version of the current diagnostic Lab Information Management System for Mengo hospital that fully supports the idea of going green by eliminating the continued use of paper.

Data management and analysis

Qualitative data collected was coded in the coding process, a coding sheet was constructed, and a number was then assigned to each answer in the questionnaire with a corresponding number on the coding sheet.

RESULTS AND DISCUSSION

Based on the above observations and findings the researches decided that although the current diagnostic Lab Information Management System for Mengo hospital seem to work, they are inefficient, paper materials that litter and pollute the environment and closely related, financially the cost of paper, printing and photocopying may seem small but accumulatively is a lot of money. This also affects accessibility and monitoring of diagnostic Lab Information Management System thus poor utilization of laboratory services.

Table 4.1.1: Gender of the respondents

Sex	**Frequency**	**Percentage**
Female	33	63
Male	22	37
Total	55	100

The study included 55 participants. The Background characteristics of respondents showed that 63% of the respondents were female while 37% were male. This shows that the researcher interviewed more female than male.

Table 4.1.2: Age of respondents

Age group	**Frequency**	**Percentage**
Below 24years	8	13
25-35years	13	25
36-45years	21	37

Total	55	100

Most participants were in the age groups of 36-45 years which was represented by 37% and 13 were below 24 years, 25-35 years were 25% and those above 45years, 25%. Additionally, majority of the respondents were degree holders with 60% of the total respondents, 8% were diploma holders, 20% A level, none of the respondents were O level, 4% masters and 8% primary level.

Table 4.1.3: A Table showing the distribution of respondents by level of education

Education level	**Frequency**	**Percentage**
O Level	0	0
A Level Diploma s	12	20
Degree Master	5	8
Primary	32	60
Total	55	100.0

From Table 4.1.3 above its' indicated that the categories of level of education, majority of the respondents were degree holders with 60% of the total respondents, 8% were diploma holders, 20% A level, none of the respondents were O level, 4% masters and 8% primary level. Therefore the researcher concluded that at least majority of the respondents had attained high level of education. This means they were familiar with online diagnostic Lab Information Management System for Mengo hospital.

Table 4.14 Number of years worked

Number of years worked	**Frequency**	**Percentage**
Less than 1 year	25	46
1-2 years	13	24
3-4 years	13	24
Above 5 years	4	6
Total	55	100.0

Source: Primary data

From Table 4.1.4: above its indicated that majority of staff at Mengo hospital had joined organisation for less than a year 46% of the total

respondents, 24% respondents for 1-2 years, 3-4 years was 24% and 7% of the respondents had been in services for above 5 years.

Table 4.1. 5: Showing Respondent marital status

Education level	**Frequency**	**Percentage**
Married	30	56
Single Divorced Widowed	25	44
Total	55	100

From Table 4.1.5 above its' indicated 56% were married, while 44% were single and none of the respondent was divorced or widowed. This implies that people who had been interviewed majority were married.

Table 4.1.6: How satisfied are you with the current diagnostic Lab Information Management System?

Respondents	**Frequency**	**Percentages**
Yes	10	18
No	40	72
Not Aware	5	10
Total	55	100 %

Results showed indicated that majority of the respondents 72% said they were not satisfied with the current mode of information delivery, 18% of the respondents said were satisfied with the current mode of information delivery and 10% were not aware. Therefore there is need for online diagnostic Lab Information Management System.

Table 4.1.7: How satisfied are you with diagnostic Lab Information Management System for Mengo hospital?

Respondents	**Frequency**	**Percentages**
Strongly disagree	20	36
Disagree	15	27
Strongly agree	10	18
Agree	10	19
Total	55	100 %

Results showed that majority of the respondents 36% strongly disagreed that they were satisfied with diagnostic Lab Information Management System for Mengo hospital, 27% of the respondents disagreed while only 18% of the respondents strongly agreed. Therefore there is need for diagnostic Lab Information Management System for Mengo hospital (Table 4.1.7).

Table 4.1.8: Do you find the current diagnostic Lab Information Management System for Mengo hospital useful?

Respondents	**Frequency**	**Percentages**
Strongly disagree	20	36
Disagree	15	27
Strongly agree	10	18
Agree	10	19
Total	55	100 %

Results showed that majority of the respondents 36% strongly disagreed that they find the current diagnostic Lab Information Management System for Mengo hospital useful, 27% of the respondents disagreed while only 18% of the respondents strongly agreed. Therefore there is need for diagnostic Lab Information Management System for Mengo hospital. (Table 4.1.8)

The system enables systems to view posts put up by the system administrator. In addition, the system allows the administrator to filter messages that end systems are to view in order to avoid vulgar output from data system administrators.

The system enables systems to request for past information that had been posted earlier by requesting queries from the archived Database records. The system is also able to provide updates to diagnostic Lab Information Management System for Mengo hospital in real time though sending emails and notification messages.

The system also provides a help function as per its operations. This helps first time systems of the application and those systems that get stuck while using the application.

CONCLUSION

Based on the above observations and findings the researches decided that although the current diagnostic Lab Information Management System for Mengo hospital seem to work, they are inefficient, paper materials that litter and pollute the environment and closely related, financially the cost of paper, printing and photocopying may seem small but accumulatively is a lot of money. This also affects accessibility and monitoring of diagnostic Lab Information Management System thus poor utilization of laboratory services.

By the grace of Almighty Allah, we have come to the end of our project report. It took us a year to complete. Our group members work hard to make this project efficient and viable. Diagnostic services are critical to delivering high-quality patient care, but constantly changing reimbursement levels, rapidly evolving technology, and chronic shortages of skilled professionals can be daunting.

Since we are entering details of the patients and their diagnostic information electronically in the "Online Diagnostic Lab IMS", data will be secured. Using this application we can retrieve patient's history with a single click. Thus Processing information will be faster. It guarantees accurate maintenance of Patient details. It easily reduces the book keeping task and thus reduces the human effort and increases accuracy speed.
The system also provides the facility of backup as per the requirement. It will be able to adequate scope for modification in future if it is necessary. It will be able to reduce potential errors in regulatory compliance, operational processes, and patient safety in the diagnostic system.

RECOMMENDATIONS

System systems like the central administrator who has full access to the system should be trained on how to make of the functionalities of the system.

Enhancement can be done on the system to incorporate more features to improve on its functionality such as designing a dedicated mobile phone application for performance of the system.

The other recommendation action is that final year projects should be done in groups, because with the little knowledge student are, it would help students develop more advanced systems than if they do the alone. It would also easy some of the challenges that students undergo during the project.

REFERENCES

Abdulkadir, M. B., & Abdulkadir, Z. A. (2017). A cross-sectional survey of parental care- seeking behavior for febrile illness among under-five children in Nigeria. Alexandria Journal of Medicine, 53(1), 85-91.

Abdulraheem, I.S. & Parakoyi, D.B. (2009). Factors affecting mothers' healthcare-seeking behavior for childhood illnesses in a rural Nigerian Setting. Early Child Development and Care 179(5), 671-683.

Abera Abaerei, A., Ncayiyana, J., & Levin, J. (2017). Health-care utilization and associated factors in Gauteng province, South Africa. Global health action, 10(1), 1305765.

Abrokwah, S. O., Callison, K., & Meyer, D. J. (2019). Social health insurance and the use of formal and informal care in developing countries: Evidence from Ghana's National Health Insurance Scheme. The Journal of Development Studies, 55(7), 1477-1491.

Adam, V. Y., & Aigbokhaode, A. Q. (2018). Sociodemographic factors associated with the healthcare-seeking behavior of heads of households in a rural community in Southern Nigeria. Sahel Medical Journal, 21(1), 31.

Adam, V. Y., & Awunor, N. S. (2014). Perceptions and factors affecting utilization of health services in a rural community in Southern Nigeria. Journal of Medicine and Biomedical Research, 13(2), 117-124.

Adebayo, A. M., & Asuzu, M. C. (2015). Utilisation of a community-based health facility in a low-income urban community in Ibadan, Nigeria. African Journal of Primary Health Care & Family Medicine, 7(1), 1-8.

Adedini, S. A., Odimegwu, C., Bamiwuye, O., Fadeyibi, O., & Wet, N. D. (2014). Barriers to accessing health care in Nigeria: implications for child survival. Global health action, 7(1) 23499.

Adewuyi, E. O., Auta, A., Khanal, V., Bamidele, O. D., Akuoko, C. P., Adefemi, K., ... & Zhao, Y. (2018). Prevalence and factors associated with underutilization of antenatal care services in Nigeria: A comparative study of rural and urban residences based on the 2013 Nigeria demographic and health survey. PLoS One, 13(5).

Adewuyi, E. O., Zhao, Y., Auta, A., & Lamichhane, R. (2017). Prevalence and factors associated with non-utilization of healthcare facility for childbirth in rural and urban Nigeria: Analysis of a national population-based survey. Scandinavian Journal of Public Health, 45(6), 675-682.

Adil, S. O., Akber, S., Sheikh, H., & Mustafa, M. W. (2016). Health Insurance Coverage and Utilization of Health Services among Educated Urban Citizens of a Developing Country. Journal of Community Med Health Educ., 6(469), 2161-0711.

Araujo, M. E. A., Silva, M. T., Galvao, T. F., & Pereira, M. G. (2017). Prevalence of health services usage and associated factors in the Amazon region of Brazil: a population-based cross- sectional study. BMJ Open, 7(11), e017966.

Babitsch, B., Gohl, D., & Lengerke, T. V. (2012). Re-revisiting Andersen's behavioral model of health services use: a systematic review of studies from 1998-2011. GMS Psychosoc-Med, 9.

Baicker, K., Taubman, S. L., Allen, H. L., Bernstein, M., Gruber, J. H., Newhouse, J. P. & Finkelstein, A. N. (2013). The Oregon experiment—effects of Medicaid on clinical outcomes. New England Journal of Medicine, 368(18), 1713-1722

Barton, P. L. (2010). Understanding the U.S. health services system. Chicago, IL: Health Administration Press.

Bastos, G. A. N., Duca, G. F. D., Hallal, P. C., & Santos, I. S. (2011). Utilization of medical services in the public health system in the Southern Brazil. Revista de Saúde Pública, 45, 475- 484.

Bastos, G. A., Santos, I. S., & Capilheira, M. F. (2011). Ambulatory care utilization in the past 15 years: comparison between two population-based studies. Revista brasileira de epidemiologia= Brazilian Journal of Epidemiology, 14(4), 620-632.

Burstin, Swartz, K., & O'Neil, A. (1998). The effect of change of health insurance on access to care. Inquiry 35, 389-397.

Carpenter, C. E. (2009). We've been down this road before-healthcare reform in the united states. Journal of Financial Services Professionals, Health Policy and Employees Benefits, July 2009, 23-26.

Chen, L. M., Wen, S. W., & Li, C. Y. (2001). The impact of national health insurance on the utilization of health care services by pregnant women: the case in Taiwan. Maternal and Child Health Journal, 5(1), 35-42.

Chen, L., Zhang, X., & Xu, X. (2020). Health Insurance and Long-Term Care Services for the Disabled Elderly in China: Based on CHARLS Data. Risk Management and Healthcare Policy, 13, 155.

Mendoza-Sassi, R., & Béria, J. U. (2003). Prevalence of having a regular doctor, associated factors, and the effect on health services utilization: a population-based study in Southern Brazil. Cadernos de saúde pública, 19, 1257-1266.

Mills, A. J., & Ranson, M. K. (2006). The design of health systems. In M. H. Merson, R. E. Black, & A. J. Mills (Eds.), International public health: diseases, programs, systems, and policies (pp. 43-69). Sudbury, MA: Jones and Bartlett Publishers.