



National Medical Record Retention Laws

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Abstract: *Background & Objective:* The aim of this study was to gain knowledge about the methods used in reviewing the retention and disposal periods of different types of medical records in different countries. *Method:* This was an applied and descriptive-comparative study and was carried out in accordance to the laws related to the time of retention of medical records from 2016. Data collection tools were data collection forms and information sources. The method of data collection was by reviewing articles, journals, books, reputable websites related to government centers, academic and professional associations and other written documents. *Data analysis* was done using comparative tables and determination of the common and different aspects of the system as a descriptive-theoretical analysis. *Result:* In the countries under study, medical record retention laws were updated according to the type and content of medical data, type of institution and according to national conditions and laws. *Conclusion:* Based on the law, healthcare institutions are required to keep patient records and documents. On the other hand, permanent record retention is not possible for reasons such as the decreased value of medical records' information after time expiration, lack of appropriate space, high cost of record retention, and overcrowding of archive space and the psychological effect on staff. Therefore, there should be clear guidelines and instructions for the retention and disposal of medical records.

Keywords: Time of Retention of Medical Record, Medical Record

INTRODUCTION

Medical records are powerful and sensitive information tools, including personal, health, emergency healthcare, and future healthcare information. (HassanKassem, Helmy, 2018-2019 ;MDA nationals, 2014 ;The Royal Australian College of General Practitioners, 2017) Government laws – in order to access patient privacy information. (The Royal Australian College of General Practitioners, 2017) and support the scientific approach of physicians – encourage healthcare institutions to keep medical records. (HassanKassem, Helmy, 2018-2019) Therefore, hospitals and health institutions keep paper and electronic medical records in support of legal, medical, supervisory and audit, scientific, and educational cases in accordance with retention and disposal policies. (MDA nationals, 2014; CCPP, 2008; Sloan and Juhnke, 2016) Despite the importance of the retention of medical records, no medical records department is able to keep records permanently. (AUMSHS, 2012) Decreased information value overtime, lack of storage space, document security, time consuming access and retrieval, high costs of purchasing and maintaining archive equipment and complexity of retention of

medical records, are among problems for healthcare organizations and institutions to store and keep medical records. (AUMSHS, 2012 ;Veisi-Nejad, 2017)

Therefore, careful planning for the timetable of retention of records is necessary to avoid file congestion. However, reviewing international and even national laws of different countries indicates that little attention has been paid to this issue. (IFHIMA, 2012)

For example, the World Health Organization has not set any specific policies regarding the amount of time of retention and disposal of medical records (Tavakoli, et al., 2012) and there are no specific and uniform laws in different countries for the duration of keeping medical records. (Hogan, 2017)

The Australian National Archives has confirmed the duration of retention of medical records based on information provided by the Department of Health, including the requirements for access, retention and management of medical records information, type of healthcare, the extent of organizational and professional needs and community expectations, (NAA, 2018) however, no specific rules have been defined to determine the way in which and how long hospital records should be kept. (Hogan, 2017) Therefore, organizations and health centers, in addition to being familiar with the state laws of the retention and control of medical records in their own country, must become familiar with and cooperate with licensing institutions or organizations because of increased legal responsibility or penalties. (HDAC, 2018)

The CSM did not provide a specific law for the retention of medical records given the challenges of storing paper files, but emphasized that despite electronic medical records, paper records must also be kept for legal purposes within the prescribed minimum period. (Margaret Young Levi, 2010)

Liu & Cheng's study showed that paper medical records, which require a lot of physical space for storage, are widely used in the United States. (Yunus and Mohammad, 2017)

Therefore, considering the importance of the retention of paper medical records on the one hand and the inability of healthcare organizations to keep such records permanently on the other and with the aim of becoming familiar with the different methods and of reviewing the retention and disposal periods of different types of medical records in different countries, a study was done in this regard.

Research Method

The present study is a review study. The study population consisted of printed and electronic documents containing federal laws and policies related to the retention of medical records in South Africa, Australia, the United Arab Emirates, England, the United States of America, Ireland, Egypt, and Canada. Inclusion criteria were the updating of laws and policies from 2016 onwards and the use of the English language in the formulation of laws and policies. Data collection tools were forms of information gathering and information sources including documents and evidence, articles, books and magazines. The method of gathering information in the chosen countries was the study of articles, journals, books, reputable websites related to governmental centers, academic and professional associations and other written documents. Data analysis using comparative tables and determination of the common and different aspects of the system is done as a descriptive-theoretical analysis.

Findings

Information contained in the laws and procedures studied, were reviewed and categorized by cases of outpatients, emergency, adult hospitalization, pediatric hospitalization, obstetrics, maternity and pre- and post-natal care, contraception, sexual health, family planning and genetics, fertilization services, abortion, mental patients, cancer, Bovine spongiform encephalopathy, occupational diseases, late-onset diseases, public medical services, dental services, deaths, legal cases, research and legal and administrative purposes, other hospital records (except unspecific secondary care records), scanned paper documents, electronic health records, radiology videos, and PACS images. (HassanKassem and Helmy, 2018-2019; The Royal Australian

College of General Practitioners, 2017; ADAD, 2018; The Australian Medical Association, 2017; The college of physicians and surgeons of prince Edward Island, 2018; Dubai Healthcare City Authority, 2018; Matsoso, 2017; MPS, 2016; The Information Governance Alliance, 2016; GMC, 2018; DMCOAS, 2018; BMA, 2019; PHHP, 2018; Shared Nations, 2018; PDRR, 2017; AAP, 2016; Trust Retention and Destruction Schedule as per the Department of Health Guidelines) (Table 1)

The findings of the study showed that the details of the laws of England and the United States of America were more closely considered and updated than those of other countries. On the other hand, the laws of Canada and Egypt are more general, and details of the laws have not been updated.

The findings also showed that in the countries under study, due to the specialization and diversity of the institution, the first priority in the setting of federal regulations of retention of medical records is related to the type of institution and the next priority is the type of illness. Therefore, since the primary categorization of the healthcare institution is based on the type of emergency, outpatient, and inpatient care, the laws related to the retention of these three types of cases are discussed below. (Ministry of Health Palackého nám, 2012)

Adult hospitalization information has been updated in all the laws of the countries studied, ranging from 6 years in South African laws to 15 years in UAE laws. Decision-making on the hospitalization of pediatric patients are made in two ways. In some countries the duration of care is considered until the pediatric patients reach a certain age – 21 years old in South Africa and 25 years old in Australia and, if the patient is 17 years old at the end of treatment, up to the age of 26, in Australian, Irish and English laws. In other countries, the laws relating to the amount of time considered appropriate is 10 years after reaching the legal age in Canadian and Egyptian laws or 15 years after reaching the legal age in the UAE laws.

The details of outpatient cases have been updated only in England's laws and are kept for a period of 5 years. The rules regarding the length of time of retention of emergency records have not been updated in any of the countries under study.

Discussion

A medical record is a document detailing the patient's history, clinical findings, test results, preoperative and postoperative care, progression of disease and medications, and other therapies. The purpose of providing complete and accurate documentation of patient records is to enhance the quality and continuity of care, to communicate between providers to provide prevention, planning and treatment services. Medical records are also necessary to defend a complaint or claim of clinical negligence and in forensic cases. (The Medical Protection Society Limited, 2019) This requirement specifies the formulation of retention of medical record laws appropriate to the type of content and medical data and by institution type. In the countries under study, there are complete and transparent federal laws that clearly specify the records of adult patients, children, outpatients, emergency, deaths, and even certain types of illnesses. These laws are updated periodically and in accordance with country-specific conditions as well as disease-specific conditions.

A review of state laws and policies reveals more detailed and accurate rules on retention of medical records. (PHHP, 2018; PBRHI, updated; HIPAA Journal, 2018; A division of the ARIZONA secretary of state, 2018) For example, Arizona state law has detailed patient records based on family plans, forensics, vaccination, mental health, laboratory evidence, mammography, medication prescription, and drug documents, dental, and nutrition records. (A division of the ARIZONA secretary of state, 2018) This means that federal laws determine the generalities of the retention of medical records and the details of the law may vary according to the needs and circumstances of each state. A review of the retention of medical record laws in the years before 2016 also reveals more details of the law. (Department of Health, Western Australia, 2014) This may be because, according to a study by the Federal Law Editor Agency, some details need to be updated and the passage of time has not affected the specific circumstances of the case.

However, some countries are still in the early stages, despite evidence proving the importance of the retention of medical records. For example, the examination of the management and retention of medical records in India paints a very dark picture. Despite widespread national and international effort, basic healthcare needs have not yet been met. In this country, outpatient and inpatient cases must be kept for three years and legal cases for 10 years or as long as the court needs them. (Thomas, 2009; Bhawan, 2014) It is therefore recommended that more effort be made by hospital institutions / managers, physicians and medical record-retention authorities to improve standards of the retention of medical records. (Bali et al., 2011)

Conclusion

Since medical records are used as an official and credible source to meet the different needs of patients, physicians, hospitals, and other organizations, healthcare institutions are required to keep patient records and files in accordance with the law.

On the other hand, permanent file retention is not possible for reasons such as the decreased value of medical records information after time expiration, lack of appropriate space, high cost of retention of records, and overcrowding of archive space and the psychological effect on staff. Therefore, there should be clear guidelines and instructions for the retention and management of medical records. These policies cover the time of retention of any type of medical record and the disposal method of the record. In different countries, policies are set by federal and state public and private organizations and communicated to hospitals. Factors and indices such as type of illness or accident, location of event, patient's age, death, type of referral as well as the effect that these factors have on medical, legal, and scientific needs, are involved in determining the legal duration of the retention of the records. Of course, what is important here is that thorough and accurate evaluation of the conditions of the country in question should be considered before formulating policies and also guaranteeing the implementation of such policies.

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Table 1: Comparison of the laws of the retention of medical records in the countries under study

Country	Australia			Canada	Egypt	Ireland	Middle East (UAE)	South Africa	
Organization	Australian Dental Association (ADA)	RACGP (Royal Australian College of General Practitioners)	AMA (Australian Medical Association)	College of Physicians and Surgeons of Prince Edward Island (CPSPEI)	ministry of health and population	Medical Protection	Dubai healthcare city authority – Government Of Dubai	Health Republic Of south Africa	MPS (medical protection society of south Africa)
Outpatient	.	.	.	.	.	.	.	.	.
Emergency	.	.	.	.	.	.	.	.	.
Adult patients	7 years	7 years	seven (7) years	10 Years	10years	eight years after last treatment or death	15years (including dental records)	6 years	6 years

Records of patients that work under conditions that take a long period to manifest themselves	Occupational (accident) health records	mentally incompetent patients	Obstetric records, maternity records and antenatal and post natal records	Minors
-	-	-	-	at least until the individual has attend the age of 25 years
-	-	-	-	until a child turns 25
-	-	-	-	up to the age of 25 for children
-	-	-	-	10 years from the time the patient would have reached the age of majority (age 18 years in PEI)
-	-	-	-	10years after the day on have reached the age of 18 years
-	-	20 years after last treatment or eight years after death	25 years after the birth of the last child	until the patient' s 25th birthday, or 26th, or eight years after the patient' s death
-	-	-	-	15 years after the person has reached the age of 18 years old (including dental records)
25 years	20years	patient' s lifetime	until the child reached 21 years of age	until the minor' s 21st birthday
25 years	20 years	until the patient' s death	-	21st birthday

Electronic health record	Patient Burn Records	research and legal or administrative purposes	legal cases	deceased patients (Mortuary Records of deceased)
-		-	-	
-		-	-	-
-		-	may need to be kept for many years	-
-		-	-	-
-		-	-	-
-		-	-	-
-		for longer periods than specified	20 years	15years
-		-	until the matter has been finalized	-
-		-	-	-

Continue:

Country	UK	USA
Organization	information governance alliance (IGA)	HIPAA
	GMC (General Medical Council)	AHIMA
	NHS	AAP(American Academy Pediatrics)
	BMA (British Medical Association) ((For England, Wales, and Northern Ireland))	
	BMA (British Medical Association) ((For Scotland))	
	Cambridge University Hospitals NHS Foundation Trust	
	NHS (Lothian)	

Obstetric records, maternity records and antenatal and post natal records	Minors	Adult patients	Emergency	Clinical Audit
25 years	until 25th birthday or if the patient was 17 at the conclusion of the treatment, until their 26th birthday	8 years	-	5 years
-	-	-	-	-
25 years	until 25th birthday or if the patient was 17 at the conclusion of the treatment, until their 26th birthday	8 years	-	5years
20 years or 8 years after the patient has died	until the patient's 25th birthday or 26th if young person was 17 at conclusion of treatment	8 years after death	-	-
25 years after the birth of the last child	Until the patient's 25th birthday, or 26th if an entry was made when the young person was 17; or 3 years after death of the patient if sooner	6 years after last entry, or 3 years after the patient's death	-	-
25 years	-	8 Hospital records (health records)	-	5 years
25 years from date of last contact	-	6 years after date of last entry or 3 years after death if earlier Hospital records (health records)	-	-
-	-	six years from the date of creation or the date the record was last in effect	-	-
-	-	Ten years after the most recent encounter	-	-
At a minimum, pediatric medical records should be retained for 10 years or the age of majority plus the applicable state statute of limitations				

legal cases	deceased patients (Mortuary Records of deceased)	Record of long term illness or an illness that may reoccur	Occupational (accident) health records	mentally incompetent patients
-	10 years	30 Years or 8 years after the patient has died	-	20 years or 8 years after the patient has died
-	-	-	-	-
-	10years	30 Years or 8 years after the patient has died	-	30 years
-	-	-	-	-
-	-	-	-	20 years or 3 years after the death
-	8 years after death	-	-	20 years after last entry in the record or 8 years after the patients death if patient died while receiving treatment
-	-	-	-	20 years after date of last contact
-	-	-	-	-
-	-	-	-	-

Cancer/Oncology - the oncology records of any patient	General Practitioner (GP) Patient records	General Dental Services records	Electronic health record	Patient Burn Records	research and legal or administrative purposes
30 Years or 8 years after the patient has died	10 years after death	10 Years	C	-	-
-	-	-	-	-	-
30 Years or 8 years after the patient has died	10 years after death	10 Years	Similar (IGA)	-	-
-	10 years after death	-	Electronic patient records (EPRs) must not be destroyed, or deleted, for the foreseeable future	-	-
-	For the patient's lifetime and 3 years after the patient's death	-	Electronic patient records (EPRs) must not be destroyed, or deleted, for the foreseeable future	-	-
30	-	-	-	-	-
30 years	-	-	Retain in main records and retain for the period of time according to the standard minimum retention period appropriate to the patient/specialty	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Paper documents that have been scanned	HFEA records of treatment provided in licenced treatment centres (Human Fertilisation & Embryology Authority)	Contraception, sexual health, Family Planning and Genito-Urinary Medicine (GUM)
Not having a long term plan to enable the digitised records to be stored or accessed over the period of their retention	3, 10, 30, or 50 years	8 or 10 years
5 years (electronic ' original' retained in line with the retention categories above)	-	-
-	3, 10, 30, or 50 years	8 or 10 years
-	-	-
-	-	-
A	-	10
B	-	-
-	-	-
-	-	-

Abortion – Certificate A (Form HSA1 and Certificate B (Emergency Abortion)	Medical record of a patient with Creutzfeldt-Jakob Disease (CJD)	All other hospital records (other than non-specified secondary care records)
-	30 Years or 8 years after the patient has died	-
-	-	-
-	30 Years or 8 years after the patient has died	-
-	-	8 years after the conclusion of treatment or death
-	-	-
3	-	-
3 years beginning with the date of the termination	-	-
-	-	-
-	-	-
-	-	-

- A. If a live child is not born, records should be kept for at least 10 years after conclusion of treatment. If a live child is born, records should be kept for at least 30 years after the child’s birth. If there is no evidence whether a child was born or not, records must be kept for at least 50 years and the
- B. 1. If a live child is not born, records should be kept for at least 8 years after conclusion of treatment 2. If a live child is born, records shall be kept for at least 25 years after the child’s birth 3. If there is no evidence whether a child was born or not, records must be kept for at least 50
- C. Where the electronic system has the capacity to destroy records in line with the retention schedule, and where a metadata stub can remain demonstrating that a record has been destroyed, then the Code should be followed in the same way for electronic records as for paper records with a log being kept of the records destroyed.
- D. 8 yrs adults (after conclusion of treatment) 25 children (26 if child 17) 20 yrs for mentally disordered persons (MH Act) 8 yrs after death Maternity- 25 years after the birth of the child including stillbirths Clinical Trials – 15 years after completion of treatment Litigation – Records should be reviewed 10 years after the file is closed. Once litigation has been notified (or a formal complaint is received) images should be stored until 10 years after the file has been closed.
- E. Policy reviewed and agreed with radiology clinical lead and National Clinical Advisory Group. Also reviewed by Clinical Change Leadership Group. Local site: Originating site remains at 18 months storage. Primary archive site: All data compressed to Royal College of Radiologists profile at 36 months

from date of ingest. At 7 years data is aggressively compressed to 50:1 Backup site: Partial DR site 12 months of rolling lossless, full data base storage plus all data are copied to tape immediately.

References

1. A division of the ARIZONA secretary of state. (2018). General Records Retention Schedule. Available https://apps.azlibrary.gov/records/general_rs/GS-1022.pdf (Access 14 may 2018).
2. Alborz University of Medical Sciences and Health Services. (2012). Instructions for Removing Obligatory Clinical Documents. Available at: <https://hitdept.mums.ac.ir/images/hitdept/hospital/83.pdf> (accessed 15 Apr. 2019).
3. American Academy of Pediatrics (AAP). (2016). Retention of Pediatric Medical Records. available at: <https://www.aap.org/en-us/professional-resources/practice-transformation/managing-practice/Pages/Retention-of-Pediatric-Medical-Records.aspx> (access 1 march 2019).
4. Australian dental association dental. (2018). Policy Statement 5.17 – Dental Records (Including ADA Guidelines for Dental Records). Available at: https://www.ada.org.au/Dental-professionals/Policies/Third-Parties/5-17-Dental-Records/ADAPolicies_5-17_DentalRecords_V1.aspx (access 13 April 2019)
5. Bali, A., Bali, D., Iyer, N., & Iyer, M. (2011). Management of medical records: facts and figures for surgeons. *Journal of maxillofacial and oral surgery*, 10(3), 199. Published online 2011 Apr 20. doi: 10.1007/s12663-011-0219-8.
6. Bhawan N. (2014). Retention of patient records – NRCeS. Ministry of Health and Family Welfare. India. Available at: [https://www.nrce.in/download/files/pdf/resources/notices/Retention %20of%20patient%20records.pdf](https://www.nrce.in/download/files/pdf/resources/notices/Retention%20of%20patient%20records.pdf) (Access 10 may 2018).
7. BMA(British Medical Association). (2019). Retention of health records. Available at: <https://www.bma.org.uk/advice/employment/ethics/confidentiality-and-health-records/retention-of-health-records> (access 29 April 2019).
8. Corporate Compliance Policies and Procedures. (2008). Legal Medical Record Standards. Available at: <https://policy.ucop.edu/doc/1100168/LegalMedicalRecord> (accessed 25may 2019).
9. Department of Health, Western Australia. (2014). Patient Information Retention and Disposal Schedule. Approved by: the State Records Commission of Western Australia Department of Health 2014.
10. Directorate Manager Centralized Outpatient and Administration Services. (2018). Clinical records policy. Publisher: East Lancashire Hospitals NHS Trust.
11. Dubai Healthcare City Authority. (2018). Medical Records, DHCR Policy. Available at:
12. General Medical Council. (2018). Records Retention and Disposal Policy V1.3. Published by: GMC (General Medical Council).
13. HassanKassem A. & Helmy G. (2018-2019). Medical Records, Mansoura University.
14. Health data archiver Creating. (2018). A Medical Record Retention Policy. Available at: [https:// www.healthdataarchiver.com/creating-a-medical-record-retention-policy/](https://www.healthdataarchiver.com/creating-a-medical-record-retention-policy/) (access 11 April2019).
15. HIPAA Journal. (2018). Clarifying the HIPAA retention requirements. Available at: <https://www.hipaajournal.com/hipaa-retention-requirements/> (Access 21May 2018).
16. Hogan L. (2017). Defining the boundaries: Retention of medical records. Available at: <https://www.lexology.com/library/detail.aspx?g=e48d4376-f26f-4d57-91e2-29cc64c42912> (accessed 20 Apr. 2019).
https://www.dhcr.gov.ae/_.../download.aspx?.../PoliciesAndStandards/Medical%20Rec(access 21April2019).

17. IFHIMA Education Module 8. (2012). Planning a Health Record Department. Available at: <https://docplayer.net/18259248-Education-module-for-health-record-practice-module-8-planning-a-health-record-department.html>.
18. Margaret Young Levi. (2010). Retention of Paper Medical Records after Converting to Electronic Health Records. In: A legal blog about consumer and business data privacy and security in a high tech world. Available at: <https://wyatthitechlaw.com/2013/09/30/retention-of-paper-medical-records-after-converting-to-electronic-health-records/> (access 11 April 2018)
19. Matsoso M.P. (2017). National Guideline for Filing, Archiving and Disposal of Patient Records in Primary Health Care Facilities. Publisher: Department of health republic of south Africa.
20. MDA nationals. (2014). Australian Privacy Principles, your Privacy Policy and Medical Record Management. Available at: [https://www.mdanational.com.au/~/_media/Files/MDAN.../ Medical-Records.pdf?la=en](https://www.mdanational.com.au/~/_media/Files/MDAN.../Medical-Records.pdf?la=en) (access 14 May 2018).
21. Medical Protection Society. (2016). Medical Records in South Africa - An MPS Guide. Publisher: Medical Protection Society.
22. Ministry of Health Palackého nám. (2012). Types of healthcare delivery services. Available at: https://www.mzcr.cz/Cizinci/obsah/types-of-healthcare-delivery-services_2660_23.html (access 25 June 2019).
23. National Archives of Australia. (2018). Records Authority. Available at: <http://www.naa.gov.au/naaresources/ra/2018-00061621.pdf>. (access 11 April 2019).
24. Patient Dental Record Retention. (2017). Minimum standards for patient health care record retention. In: Dentistry Examining Board. Published under s. 35.93, Stats pp.740.
25. Practice Brief—Retention of Health Information (updated) State Laws or Regulations Pertaining to Retention of Health Information. Available at: <https://www.xrayline.com/jkjjfytwaseryy7654a8a7a654/Retention-of-Health-Information.pdf> (access 26 April 2018).
26. Public Health and Health Policy. (2018). Records Management Policy Incorporating Retention and Destruction of Records Procedure. Publisher: NHS Lothian
27. Shared Nations. (2018) 2018 Medical Records Retention Laws and Guidelines. Available at: <https://www.shrednations.com/articles/2018-medical-records-retention-laws-guidelines/> (access 02mar.2019).
28. Sloan, P., & Juhnke, D. H. (2016). Secure Disposal of Medical Practice Records. *Missouri medicine*, 113(4), 264.
29. Tavakoli, N., Saghaiannejad, S., & Habibi, M. R. (2012). A comparative study of laws and procedures pertaining to the medical records retention in selected countries. *Acta Informatica Medica*, 20(3), 174.
30. The Australian Medical Association. (2017). Privacy and Health Record Resource Handbook For Medical Practitioners in the Private Sector. Published by AMA, Canberra.
31. The college of physicians and surgeons of prince Edward Island. (2018). Retention, Access and Transfer of Medical Records. Available at: <http://cpspei.ca/wp-content/uploads/2019/06/Retention-of-Records-June-42019.pdf> (access 19 April 2019).
32. The Information Governance Alliance. (2016). Records Management Code of Practice for Health and Social Care. Published: the Information Governance Alliance – July 2016.
33. The Medical Protection Society Limited. (2019). The importance of keeping good medical records. Available at: <https://www.medicalprotection.org/southafrica/junior-doctor/volume-7-issue-1/the-importance-of-keeping-good-medical-records>(access 25 June 2019).
34. The Royal Australian College of General Practitioners. (2017). Privacy and managing health information in general practice. East Melbourne, Vic: RACGP.

35. Thomas, J. (2009). Medical records and issues in negligence. *Indian journal of urology: IJU: journal of the Urological Society of India*, 25(3), 384.
36. Trust Retention and Destruction Schedule as per the Department of Health Guidelines. Cambridge University Hospitals NHS Foundation Trust, Addenbrooke's Hospital.
37. Veisi-Nejad S. (2017). Document and archive management. *Negah-E-No Danesh*, 22 dec, 16.
38. Yunus, A. M., & Mohammad, A. (2017). A Proposed framework based electronic medical records (ERM) for implementation of technology acceptance in healthcare service. *International Journal of Academic Research in Business and Social Sciences*, 7(9), 96-115.