Medical Records; Present Status and Ways Forward in Nepal

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ABSTRACT

This study is a qualitative analysis of medical records, present record keeping practices and ways forward in Nepal. In this study, the history of medical records has been illustrated along with its basic contents, objectives, present legal provisions etc. in Nepal. Present medical recording system in Nepal is mostly paper based but there is also the practice of digitization of old records and starting over the digitalization. Electronic medical recording system is adopting in different hospitals. National and provincial governments have been contributing to implement the EMR system in order to make full digitalization. At present, different softwares have been used for EMR to enhance the quality of medical records and trying to make interoperable among them. Even though the National and subnational governments of Nepal have put efforts to develop the digital medical record management system through the digitalization of system but there are some challenges in the transition like physical infrastructures, finance, resistance to change, digital literacy, medico-legal management, data security, cyber threats etc. For making an efficient healthcare delivery system, there is no alternative for the development of digital medical recording system throughout the country. Similarly for the timely diagnosis, quality treatment and cure, as well as well as to reduce the out of pocket expenditure in health efficiently and effectively EMR should be implemented and overall medical recording system should be strengthened. There should be the strong commitment to implement full EMR system throughout the country by using the appropriate software making them interoperable so that the quality of health services can be provided efficiently and effectively. Transition of paper based system into paper less medical recording system should be the goal of the country, to achieve common goal, all the national and provincial governments should put equal efforts.

Keywords: Pokhara Academy of Health Sciences, Nepal, Digitization, Digitalization, Electronic Medical Records, Medical Record Department, Paper based system, Paper less system.

INTRODUCTION

Medical record is a scientific, systematic and chronological record of patients prepared by doctors, nurses and health workers in an orderly and organized manner, including the patient's condition, diagnosis, tests, drug and treatment. Medical record is the systematic documentation of a single patient's medical history and care across time within one particular health care provider's jurisdiction. The traditional medical record for inpatient care can include admission notes, on-service notes, progress notes, preoperative notes, operative notes, postoperative notes, procedure notes, delivery notes, postpartum notes and discharge notes.[1] The medical record is a means of communication among physicians, nurses, and allied health professionals who plan and conduct the care and treatment of the individual patient.[2] This is detailed evidence prepared during the treatment of the patient, including the opinions of the doctors and nurses involved in the treatment. Medical records are the property of the hospital or patient's medical practitioner. It is a confidential communication of the patient and cannot be released without their permission and all patients have right to access their records and obtain copy of those records.[3] Medical records are considered the property of the hospital and are compiled and kept primarily for the benefit of the patient.[4]

METHODOLOGY

This is a qualitative type of study in which different literatures on medical records have been studied for its preparation. A case study of Pokhara Academy of Health Sciences has analyzed. Present medical recording

system, national & subnational legal provisions and digital transition of Nepal has been studied. This article has made by the experience of the writer more than a decade in the same field in Nepal.

Content of Medical Records

Different forms and formats have been used for the treatment of patients in hospitals. Generally the admission form, necessary consent for the treatment, doctor's note, Nursing note, Operation note, Medicine cardex, discharge summary etc. are the major contents of medical records. In the discharge summary there should be final diagnosis, Reason for admission, including a brief clinical statement of the chief complaint and history of the present illness, diagnostic procedures and studies, Medical and/or surgical treatment, including the patient's response, and complications, Instructions for continuing care, including information on diet, medications, Prescribed medications, Follow up date, time and place, Emergency Contact information after discharge etc.[5] The general medical council in *good medical practice* advises that documents made, including clinical records, must be clear, accurate and legible. It is also advisable to document relevant medical history, examinations and relevant clinical findings, differential diagnoses, capacity and consent. It is prudent to detail the treatment options that are discussed, including not receiving treatment, and the benefits and risks of each option. If a referral or follow up arrangements have been made, these should be documented.[6]

History of Medical Records

Medical records are as old as medicine itself and some of the ancient records contain most admirably succinct and workmanlike accounts of conditions and their treatment. The running records are essential to the management of the patient's treatment. The records of the past also tell us a great deal about the development of medicine. Apart from their value in medical research, medical records have further functions which relate not only to the clinical management of the patient's treatment but also to the administrative management of the hospital. In the United States of America, even without a national hospital service, analysis of medical records for management purposes is now extensively undertaken.[7]

The first documented major transition in the evolution of the clinical medical record occurred in antiquity with the development of written case history reports for didactic purposes. Benefiting from Classical and Hellenistic models earlier than physicians in the West; medieval Islamic physicians continued the development of case histories for didactic use. A forerunner of modern medical records first appeared in Paris and Berlin by the early 19th century. Development of the clinical record in America was pioneered in the 19th century in major teaching hospitals. However, a clinical medical record useful for direct patient care in hospital and ambulatory settings was not developed until the 20th century. Several lessons are drawn from the 4000-year history of the medical record that may help physicians to improve patient care in the digital age.[8]

At The New York Hospital, physicians began to maintain permanent patient case records in the early 1800s. At the end of the 19th century, the change from retrospective to real-time recording of cases and the imposition of a fixed chart structure through the use of forms dramatically reduced the narrative dimension of the hospital course. Gradually, physicians changed in record format, designed to manage increasing volumes of data.[9] In the ancient time ayurvedic treatment was prevalent in Nepal. In Nepal, allopathic treatment was firstly initiated by the establishment of Bir Hospital in 1989 A.D. which was the first hospital of Nepal. After three years of initiation, by 1991 A.D., Bir hospital had provided modern treatment service to public then after the hospital recording system was started. Gradually other hospitals were established. With regard to the different rulers in different time period, the number of improvements and changes in the health system of Nepal has been made. Moreover, the health system was further strengthened by the involvement of people and better management of health information and drug supply.[10]

Historians have divided Nepalese history into ancient (first century to 879 AD), medieval (879 AD to till control of the Kathmandu by King Prithvi Narayan Shah;1768 AD) and modern Nepal from 1769 AD onwards. The health development history also can be divided in the same way but the modern era for health should rather be considered from 1889 AD as a landmark of establishing the hospitals by the Nepal government to provide health services to common people as a state initiative. Rana Prime Minister Bir Shumsher launched modern health care system as he established 15 bedded Prithvi Bir Hospital in Kathmandu in the year 1889 AD along with Prithvi

Bir dispensaries in the same year in Hanuman Nagar, Jaleshwar, Birgunj, Taulihawa and Nepalgunj under King Prithvi Bir Bikram Shah Dev. In 1956 AD, the government declared to establish one health Centre in all 109 electoral constituencies and this scheme-initiated health services at the sub-district level and also made policy decision to establish hospitals in all 35 districts. In 1961 AD, the government declared to establish zonal hospitals in all 14 zones to provide secondary health care under the new administrative reform.[11] During the establishment of hospitals, the medical recording system was also started simultaneously.

Objectives of Keeping Medical Records

Medical records are the documents that explain all detail about the patient's history, clinical findings, diagnostic test results, pre and postoperative care, patient's progress and medication. If the medical records have made correctly, notes will support the doctor about the correctness of treatment. Medical records have been made and kept for the monitoring the treatment of patient, medical research, medical education, insurance cases, malpractice suits and medical audit & statistical studies.[3] Medical records are the proof of providing the treatment and it proves the treatment was carried out properly. Moreover, it will also help in the scientific evaluation and review of patient management issues. Medical records are equally important for the management of a patient, doctors and health facilities. It also helps in planning governmental strategies for future medical care and setting the issues of alleged medical negligence.[12] The legal system relies mainly on documentary evidence in a situation where medical negligence is alleged by the patient or the relatives. In an accusation of negligence, this is very often the most important evidence deciding on the sentencing or acquittal of the doctor.[13]

Medical records are a fundamental part of a doctor's duties in providing patient care. The records form a permanent account of a patient's illness. Their clarity and accuracy is paramount for effective communication between healthcare professionals and patients. The maintenance of good medical records ensures that a patient's assessed needs are met comprehensively. Information in medical records should be documented on a daily basis and in chronological order demonstrating continuity of care and response to treatment.[14] Despite this importance, medical record keeping is often given a low priority. Notes are often poorly maintained and sometimes patient notes are not readily available.[15] Poor record keeping is a major factor in litigation cases brought against healthcare professionals.[16] Different objectives of keeping medical records help to illustrate the importance of medical records too.

Legal Provisions

Information is the strength and key of success, considering this fact Nepal has made different legal provisions related to the health information. As a fundamental right in the article 35 (2) of Constitution of Nepal 2015 A.D., there is the Right relating to Health which has enshrined that every person shall have the right to get information about his or her medical treatment.[17] For the fulfillment of the provision of article 35 (2), medical records should be well managed in all the hospitals. The fifteen periodical plans has the strategy to increase the use of data in monitoring, assessment, review, policy formulation and decision process by making health information systems more systematic, integrated, and technology-friendly with properly addressing the demand of health. The electronic health record system would be gradually expanded to all health institutions and the health data produced at the local levels would be integrated into the national main network.[18] The concept paper of sixteen plan has enshrined the quality and accessible health system for the adherence to special information disclosures, easy and accessible health services.[19]

Every health institution and health worker providing treatment shall provide the service recipient with information regarding his or her condition of health and treatment of every service recipient. It shall be the duty of the chief of the concerned health institution to make arrangement to safely maintain the records of every service recipient, as prescribed, who receives service from the health institution.[20]The health institution shall keep separate archives containing the personal details of the customers who have received services from a given health institution, their health condition, diagnosis and details related to treatment.[21] In the health policy of Nepal, there is written integrated health information system shall be developed. The Security of health information shall be ensured and health information of beneficiaries shall be maintained in e-recording system. Health institution shall be developed as information friendly and the rights of beneficiaries to informed consent, privacy and information shall be ensured and then the right to information related to health and right of a beneficiary to know

about the treatment shall be ensured in.[22] The third goal among the seventeen sustainable development goals is to build a healthy and prosperous society. Quantitative targets are reducing the maternal mortality rate, end preventable deaths of newborns and children under the age of five etc.[23] In this regards, scientific management of medical records is needed to achieve all health-related sustainable development goals.

Current Status of Medical Records in Nepal

Basically there is the paper based medical recording system in Nepal. In some hospitals there is the practice of e-HMIS with e-recording and e-reporting system by using the digital forms and formats. In some other hospitals partial EMR has been implemented which has been used for the registration, billing, admission, discharge, ICD coding etc. along with some outpatient/emergency/Inpatient modules to. IHIMS (Integrated Health Information Management System) is the apex body for the health data management in Nepal which is under the management division, Department of Health Services (DOHS), Nepal. This section develops different forms and formats and provides necessary trainings needed for the recording and reporting purposes. The reporting of health statistics with hospital statistics have been made to DHIS2 platform customized by IHIMS. IHIMS and provincial governments analyze the collected statistics, prepare the report and disseminate. Furthermore it coordinates the health facility centers, Health directorates and all other recording and reporting centers properly.

Medical Records Management System

Medical Record Management System (MRMS) is a complete system for the collection of information, designing standardized forms/formats, storage, retention & retrieval of records maintaining privacy and confidentiality under the existing laws. Paper based MRMS have some limitations so for the complete system, digital tools have been preferred. Medical records management system involves everything connected to the creation, use, handling, and disposal of patient records. There is a complex system of rules and regulations regarding the data lifecycle of patient records and for good reason: mismanaged records put patients and the facility at risk.[24] Well-kept medical records make easier to the healthcare provider and the patient too. Having a comprehensive view of a patient's medical history makes it easier for the physician to deliver appropriate treatment. Poor medical records management can have dire consequences. Record mismanagement can lead to life-threatening events such as medication errors, treatment lapses, and missed diagnoses, among other things. Medical record mismanagement creates more vulnerability for both those in your care and your institution.[25] The importance of the medical records management system lies in its ability to improve the quality of patient care and outcomes, streamline healthcare operations, and enhance patient privacy and security. This system helps for **improved patient care, to increase efficiency, for better data management and analytics and enhanced patient privacy and security.** MRMS are mostly computer-based systems used to manage and store medical records. There are several types of MRMS such as Electronic health record (EHR) system, picture archiving and communication (PACS) system, Clinical document management system (CDMS), Personal health records (PHR) system etc.[26]

Electronic Records

Digital system helps to improve the patient care in relatively short time reducing the possible errors. This saves the physical space to store the files. Electronically saved data can be exchanged easily from one system to another. It checks whether there is treatment conflict or not as well as repeated test too. It also tracks the results and supports data based decisions so that the need of electronic records has been increased in the present world. There are different types of electronic records like EMR, EHR, PHR etc.

The full form of EMR is Electronic Medical Record. This system saves the patient's health treatment records in the software system. EMR system is not only software, network and devices but a complete package which needs to manage the human resources, trainings, maintenance mechanism, data security & confidentiality mechanism, disaster management mechanism for its continuous operation. It is an alternative scientific system for reliable, rapid documentation of paper based medical records. When this documentation is effectively automated it reduces the time taken in recording than the time taken for patient care. This is possible only with EMR system which ensures accuracy, accessibility, security, confidentiality and timely availability of data.[27] EHR stands for Electronic Health Record. An electronic health record is an electronic collection and analysis of all the details

related to a patient's health. It is a sophisticated system of EMR. While an EMR can manage only patient records related to a particular healthcare institution, an EHR system manages the patient's overall health information. The principal benefits identified for the introduction of an electronic health record system are supporting patient care and improving the quality of that care.[28] Moreover there are also different digital systems like Personal Health Record (PHR) system, Lab Information System (LIS), Radiology Information System (RIS) etc.

It appears that the implementation and use of a bedside electronic medical record in nursing homes can be a strategy to improve quality of care. Information gleaned from this qualitative evaluation of four nursing homes that implemented complete electronic medical records and participated in a larger evaluation of the use of an electronic medical record will be useful to other nursing homes as they consider implementing bedside computing technology. Using electronic health record data in real-time for decision support and process automation has the potential to both reduce costs and improve the quality of patient care.[29] As the world healthcare delivery system is moving forward in the direction of paper less system, for this there is the major role of EMR or EHR system.

Current Status of EMR System in Nepal

Nepal has developed a National e-health strategy in 2017 A.D., Digital Nepal Framework in 2019 A.D. and integrated electronic medical records operation and management directives in 2025 A.D. etc. All these are the major operational guiding documents in the field of digitalization in Nepal. Different attempts have been done to implement EMR system by the government of Nepal. Some Provincial governments like Gandaki, Lumbini etc. also have attempted to implement EMR through the different software developed by private institutions and some have adopted open MRS system like Bahmni software customized by different institutions. WHO also has supported technically to the interested hospitals. The biggest hospitals of Nepal like Bir Hospital, Tribhuvan University Teaching hospital, Pokhara Academy of Health Sciences, BP Koirala Institute of Health Sciences, Patan Hospital etc. have been implementing EMR partially in government sector and private hospitals like Grande International Hospital, Norvic International Hospital etc. have adopted similar type of EMR. Similarly some hospitals like Bayalpata hospital Achham, Trishuli Hospital Nuwakot etc. have adopted EMR by the technical and financial support of different organizations. Primarily there are some Challenges for the implementations of EMR in Nepal so that it is not implementing throughout the country like Infrastructure development, software and interoperability, Server and Data storage, Privacy and confidentiality, Security of data, Retrieval and disposal of data as well as the sufficient instruments like guidelines, directives etc.

A Case Study of Pokhara Academy of Health Sciences

Pokhara Academy of Health Sciences is one of the government academies in Nepal which was developed by a separate act ratified by the parliament of Nepal in 2016 A.D. It is located in Pokhara; a most beautiful place of Nepal. Before the establishment of academy, it was Western Regional Hospital; one of the biggest hospital in the western Nepal. Now this academy has conducted post graduate medical degree; Doctor of Medicine, Master of Surgery (MD/MS), Bachelor of Science in Nursing (BSN). Nursing, Bachelor of Nursing Studies (BNS) and Bachelor of medicine, bachelor of surgery (MBBS) classes too along with as usual hospital services. There is a high flow of patients especially in Outpatient department. Statistically annual OPD patients in the hospital is more than 4 lakhs, inpatients more than 22 thousands and emergency patients more than 48 thousands. Similarly there are nearly 10 thousands operations, 7.5 thousands deliveries and 1.8 million laboratory tests per year. Nearly Nine hundreds medico-legal cases including five hundred autopsies have been performed in the academy.[30]

Medical Recording System in the Academy

The medical records of all patients have been mainly documented in the physical forms and formats developed by IHIMS section. The consent forms have been designed by Academy itself and professional association of doctors too. In the academy, the medical records of the patients made in the inpatient wards have been documented and kept safe under the medical record department of the academy but the physical medical records of OPD and Emergency patients take away with them but the medical records of medico-legal cases have been

preserved in the academy.

Digitalization Practice in the Academy

Academy has own software for ticketing, billing etc. The demographic information of all patients whether in OPD, Emergency or Inpatient wards have been recorded in the software. Basically Registration, Billing, finance etc. have recorded digitally. Similarly diagnosis on the basis of ICD-11, Operation summary, birth and death information have been recorded digitally. System generated discharge certificate has been issued to the patients. All prescriptions of patients registered in health insurance program have been scanned and stored digitally in the system. Similarly there is lab information system (LIS) in the laboratory so the entire test data has been recorded in the same software so that patients can take their reports by showing their unique QR code generated by the system automatically. There has been the provision of online ticketing, online and QR payment of the bill. Similarly there has been the provision of digital discharge of the patients generated by the same software in the inpatient wards. In this regards there has been the partial electronic medical record system in the academy. Academy has also worked in the direction of complete digitalization implementing the full EMR system. Similarly the old physical medical records prepared before some decades in the inpatient wards of the academy have been digitized recently.

Revolution in Medical Records

In the field of health information system, the paper based era has shifted into partial digitization era and then it will be transformed into complete digitization era with less paper system and finally the paperless era will be started in complete digitalization era. In the most developed countries there is the implementation of EHR/EMR system. In some other countries there is the use of partial EMR system. Along with EHR system, there might be the practice of PHR system too. When the medical record system turned into the digitalization era then the whole medical system will be more reliable. Implementing the scientific technology in the field of health information system automatically improves the quality of overall health system. The quality of the health care delivery and overall health system have interlinked so that the medical recording system should not be left behind or neglected. It is not difficult to understand that the present development status of developed countries was not made overnight, it was a gradual phenomenon with consistent and continued effort in digitalization sector. When there are the better health information system then health indices, life expectancy, human development index would also be improved along with the quality of health.

Challenges to Digital Transition

The transition of existing paper based system into the digitalization has following challenges which should be overcome by the effective means

Digital Infrastructures: It includes the regular electricity supply and proper power backup plan, Connectivity, dedicated internet connection, hardware and software issues. Ensuring the availability of all the digital infrastructures is one of the main challenges.

Financial limitation: The largest portion of national and subnational budget is used for the operational expenditure whereas nearly one fifth of the budget is only allocated for the capital expenditure in which there is negligible amount for the digitalization and IT sector. Without proper investing, no the expected result can be achieved in digital transition.

Lack of IT Professionals: IT professionals are the system drivers. In the present government setup there are extremely limited IT related post. Present organogram in the health sectors including hospitals have no IT unit till time. In one side the production of IT man power from the colleges should be increased in other side there should be scientific organization and management survey including IT unit in each office, it is also the challenges for the transition.

Medico-legal Documentation: During the transition to digitalization, medico-legal documentation its storage, retrieval and access is the biggest challenge. Till date the present judiciary is mostly the paper based, in one side

digitalization should support the judiciary procedures and in other side possible misuse should be prevented which is another challenge.

Data Storage and Security: For the **c**omplete shifting of paper based system into digitalization, there should be proper data storage system with sufficient security provisions. At present there is the Lack of well managed national data repository system as well as data security plan in national and subnational level.

Lack of Digital Literacy: People even in the twenty first century, prefer to use paper based system rather using digital services because of the lack of digital literacy. In another side there are some security issues so that the people hesitate to use of digital services. To change this type of tendency, there is another challenge.

Privacy and Confidentiality: The overall data management system is poor so that there is also the risk of disclosing the privacy and confidentiality issues. Controlling the unauthorized access to documents in order to maintain the privacy and confidentiality is also another challenge.

Cyber Threats: Different kinds of cyber threats like Malware, phishing, data/software hacking etc. have been contributing the digital sector unsafe. Especially in the least developed countries setup Ensuring the cyber security is one of the biggest challenge**.**

Resistance to Change: Ad-hoc management is becoming a culture of bureaucracy till now. No new innovative activities can be easily adopted because of the lack of willingness and resistivity to change and lack of strong commitment. Behavioral and perceptional change is the great challenge at present.

If there are no challenges, there will not be any progress so challenges themselves are supposed to be the back force for success and progress. For the complete digitalization in Nepal, all the challenges should be faced by the power of strength in order to overcome them.

DISCUSSION

Medical records are facts in themselves. It is a mirror of the patient's health condition and is also a proof of the services, treatment, medication and care taken by the patient. Even today, in many hospitals there is the discrepancy between the resources and service utilization. If there is no correlation between the resources and services then it might create the problematic situation, the simple reason behind it might be ignoring of medical records. Records always show data and data reveals facts. The truth is that the decisions made without the study of facts and data, will never solve the problems. In these contexts, if the relevant agencies ignore the importance of medical records today, the quality services will surely be deteriorated. Government of Nepal also has advocated the evidence based planning which enlightens the importance of medical records too.

There is a widespread discussion throughout the country to implement the much-awaited EMR system in hospitals. In a research conducted in India, 85% doctors agreed EMR resulted in a reduction in errors while maintaining data, 100% doctors mentioned the use of EMR improved data management & report generation. 98% healthcare administrators were satisfied with the efficiency of the software, 100% administrators agreed that EMR improved coordination with beneficiaries.[31]

There are many benefits like to improve the quality of care, documentation, reduction of errors etc. EMR has been set a burning issue in Nepal. Similarly the officials of medical records in Nepal have been also leading the ICD 11; a system of classification of diseases. To complete both tasks, efficiently and effectively the medical record department has to be strengthened further more. Medical records are not only important for hospital management but also for policy makers and planners, researchers and public health officials and activists too.

Medical record officials have also playing the key role in the sentinel site surveillance of diseases and have been directly contributed in the study of epidemiology. Medical record department might bridge the public health sector and curative sector. To implement the overall implementation of health-related rights in the Constitution of Nepal 2015 as well as to fulfill the global commitment in timely manner whether it was achieving universal health coverage or to increase the access to quality health services or to achieve health-related sustainable

development goals and many more, evidence based planning should be promoted in real sense.

CONCLUSION AND WAYS FORWARD

While developing or implementing a plan in the health sector without the study of objective reality and facts like medical records, the planning will no more sustainable, effective and efficient too. To make an efficient and effective health system in the right sense, it should be understood that the medical record is not only the pillar of the health sector but also the driver. Therefore, no matter whether it is the new construction or upgrade or management or expansion of any health institution, evidence and facts should be trusted and used it properly. For this, the government of Nepal should make the sufficient instruments and arrangements for the real implementation of evidence based health policy practice. The health research might be the domestic contribution but a global asset so that to invent a medical treatment and to plan and develop the citizen friendly health system, the best medical recording system should be developed and implemented properly.

On the other side the quality and comprehensiveness of medical record should not be compromised but should be made more scientific, reliable, systematic and IT friendly by using the latest technology. For this, the physical medical records should be transformed into paperless system by implementing the EMR/EHR system. There are a lot of proofs that even unimagined development of any country in a very short time is directly associated with the proper analysis of statistics. Assimilating a fact that the strong information system is major infrastructure and reason of dramatic development of developed countries in a very short period of time, Nepal has to implement the best medical recording tools by adopting the full EMR system ensuring interoperability feature throughout the country which is the major way forward. Surely there might be some threats for its implementation but should be overcome by the strong commitment with full of integrity and dedication along with a sustainable plan furnished by sufficient budget. Development of scientific medical recording system is undoubtedly an indispensible part of the quality of health services and development of entire health system in Nepal. This will not only increase the quality of health services, but also builds an environment of trust by bridging the gap of mistrust between citizens and health institutions. For making an efficient healthcare delivery system, there is no alternative for the development of digital medical recording system throughout the country. Similarly for the timely diagnosis, quality treatment and cure, as well as well as to reduce the out of pocket expenditure in health efficiently and effectively EMR should be implemented and overall medical recording system should be strengthened.

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None

Conflict of Interest

The author declares no conflict of interest.

Limitation of Study

Article has been made by the study of qualitative aspect of the medical record in descriptive format and only one case study of Pokhara Academy of Health Sciences has been presented here which is the limitation of this study.

Ethical Issues

Being a descriptive study, Personal information of any patients has not been analyzed. For the case study the writer employed in the same academy has studied with due permission of the academy authority so it is declared that there is no any ethical issues.

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