

Health Care Management

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Abstract - Web-based technology open unlimited scope for online in almost every field. Similarly, the Covid-19 pandemic re-emphasized the need to re-imagine the health care system in the digital space. Online connectivity has now become essential for all the well organization and well management of the hospitals. The need to automate the traditional process and database processing is where the digitization should happen. The need of system that addresses particular region and provide an efficient way for the creation of a web-based platform that helps in easy management and provide Patients a digital front desk services. The system emphasis on idea of such a platform that reduce the dependence on paper prescriptions in the Hospitals that will increase the efficiency of patient management, schedule appointments of the doctors and grant universal access to the patient data and report in the hospital.

Key Words: Web-based, Digital Space, Digitization, Database, Front Desk, Universal Access.

1. INTRODUCTION

The traditional per existing hospital management is mostly manual and human workforce oriented which limits the efficiency of hospital staff. Even though hospitals try to provide the best medical facility to their patients concern to appropriate treatment. All the task associated with hospital's day-to-day procedure from appointment to room allocation are carried out by a reception personal, leaving a little time for the rest of important chores. OPD appointments which are the initial step for consulting a doctor are time consuming and hectic process for both the regular and new patients. Although hospital use offline closed-network software on hospital level for such registration and record keeping but are limited till hospital level only and excludes patients from the ecosystem . Data entry and updating are done manually and also requires a dedicated operator. The database lack in up-to-date and precise information and restricts the potential of institutions. A shift to online system will increase not only the efficiency but also the provide various features and freedom to all included individuals.

1.1 Objectives

To establish an integrated healthcare system linking practitioners with patients digitally based on real time health care system in most affordable, accessible, inclusive, safe and timely manner. Simplifying the hospital's track keeping of its day-to-day activities & records of its patients, doctors which ensure smoothly & successfully running of hospital. Recording and maintaining all these records is highly efficient and error free manner.

Finally, creating registries including all credible data, access to healthcare report and treatment. Providing hospitals IT enabled healthcare system and develop backbone necessary to withheld the integrated digital health ecosystem.

1.2 Research Gap

The current healthcare systems confront various issues, inadequate human and medical resource and low numbers of well-equipped institutions. The lack of infrastructure, shortage of trained manpower and unmanageable patient load demands solution based proper utility of such limited resources which will also address the limitation in a responsible manner.

2. LITERATURE REVIEW

1) "Study on information system of health care services management in hospital" Author(s): Daiping Hu, Antai Sch. of Manage., Shanghai Jiaotong Univ., China Weiguo Xu ; Huizhang Shen ; Mengyu Li. Services Systems and Services Management, 2005. Proceedings of ICSSSM '05. 2005 International Conference This paper reviews the HIS (Hospital Information Systems) which are widely used in many hospitals in China mainly to provide easier and faster way for daily medical tasks/activities with a GUI and overcome some of the limitations of HIS. So the paper proposes HSMS (Hospital Services Management System) which aims at improving quality of services, identifying cost reduction areas , analyses and evaluate/rate health care services . The ability to evaluate the services facilitates hospital achieve higher Customer satisfaction.[1]

2) "Specification of a Reference Model for the Domain Layer of a Hospital Information System" by Gudrun Hübner-Blodera, Elske Ammenwertha, Birgit Brigl, Alfred Winter, Institute for Health Information Systems, UMIT – University for Health Sciences, Medical Informatics and Technology, Hall in Tyrol, Austria; Institute for Medical Informatics, Statistics and Epidemiology, University of Leipzig, Germany, ENMI, 2005. Many enterprise projects get scrapped due to high costs involved in initial planning requirement gathering and design phase. The costs in this phase become unmanageable due to lot of unknown factors. Like lack of Subject area expertise, lack of knowledge on different Hospital enterprise functions 1) Patient admission 2) Patient Treatment planning 3) Order Entry 4) execution of diagnostic and treatment procedures 5) administrative documentation 6) billing 7) Clinical documentation 8) discharge and 9) referral to specialised medical institutions, lack of knowledge /experience on the entities types involved (example: patient, Clinical finding), their roles and responsibilities and the relationships /associations between different enterprise function and /or entity types. This paper aims at creating a reference data model that will serve as a generic starting point for any new HIS development projects so costs involved in studying and analyzing current state and coming up with gaps analysis and additional requirements can be significantly reduced. The model is Hierarchical in nature that is it is divided into 3 levels of sub models and units so a choice for full or partial implementation can be offered based on the requirements.[2]

3) "Developing Effective Hospital Management Information Systems: A Technology Ecosystem Perspective", by Dr Christopher Bain MBBS, Master Info. Tech Student No: 10054499 The author of this paper focuses more on needs of hospital manager and the ecosystem in which he/she operates. The internal and external Environment shaping factors ESFs that bear an impact or association on daily hospital activities and decision making process that the hospital manager has to go through in each situations. Some of the challenges that this ecosystem needs to work on are high demand pressure, greater customer satisfaction level and low profit margins. This paper more so contributes to Planning, Design and development aspects of any Hospital management system by highlighting ESFs that should be considered. The external and internal factors the author mentions are: Internal influencer authors can obviously also be at play in terms of what services are provided by the hospital and how they are provided. These can include: the skills and experience of staff, internal business strategies such as competition and subsidization, Soft factors such as morale and culture, Equipment availability.[3]

4) The design of the project is influenced by the paper "Intelligent Hospital Management System (IHMS)," by B. Koyuncu and H. Koyuncu" is used to set the kind of tasks to be done and handled. Z. Liu, "Design and Implementation of Hospital Emergency Nursing Information Management System," [4] From the paper "Integration of the regional public health resources and establishment of the digital hospital," by Hanping Jiang and Fulin Zhang, the idea about the overall design was conceived.[8] From the paper "The Design and Implementation of A Hospital Management Information System at Peking Union Medical College Hospital," by B. Li and Y. Zhonghua a clear idea of the components to be included into the software solution was guided, Journal for National Library of Medicine, vol 69, no. 11, 1999.[6]

5) The solution attempts to address the standards as per the paper "Hospital Services Quality Assessment," by M. Nekoel-Moghadam and M. Amiresmaili, Journal of Health Care Quality Assurance, vol. 24, no. 1, pp.57-66, [11]. The seamless transition is influenced the aspect highlighted in the paper, "Patients' adoption of the e-appointment scheduling service: a case study in primary healthcare." By Zhang X, Yu P, Yan J, Stud Health Technol Inform. 2014[13]

3. METHODOLOGY

The Health Care Management System is design & developed in MySQL, PHP, JavaScript, and HTML. These web based application facilitates the entire hospital management. Include a dedicated login console for both doctors & administration staff through the pre-provided credentials. The new patient can register through the specific login console by providing basic details and registered patient can also directly login through the pervious credentials.

The doctor's dashboard, doctor can view the appointment request by patients & can accepts the patient requests or may refer another available doctors. The status will be updated on patient's dashboard shown as appointment confirmed / pending to the patient. A doctor can also view the details and treatment history of the patient.

The patient dashboard, registered patients can selected from multiple department and from provided categories patients can select or book appointments as per their convenience & the type of problem patient is facing. Once approved the appointment schedule time will be visible on the dashboard for the patient.

The administration dashboard, the administrators and staff can ensure smoothly & successfully working of hospital by monitoring the day-to-day activities and records of its patients, doctors and management stuff.

4. PROCEDURE

The home page ensure easy navigation for multiple profiles. The user is redirected to their respective dashboard if a user is a staff member will be redirected to the admin dashboard profile page. The admin is provided with access and ensures the privacy of patients at certain limits. The admin controls and features flows entirely to make smooth functioning of the management and administrative work. The doctor is provides with minimum permission and restricted to practitioner’s access only. Also features that must not become hurdle in providing the services related to healthcare. Whereas patient provided with feature concern with treatment.

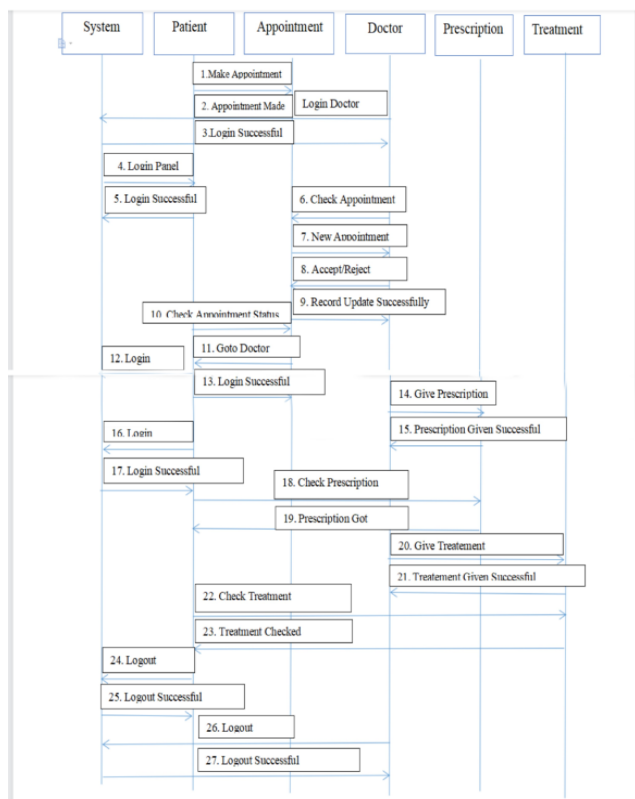


Fig -1: Data Flow Diagram

5. RESULT

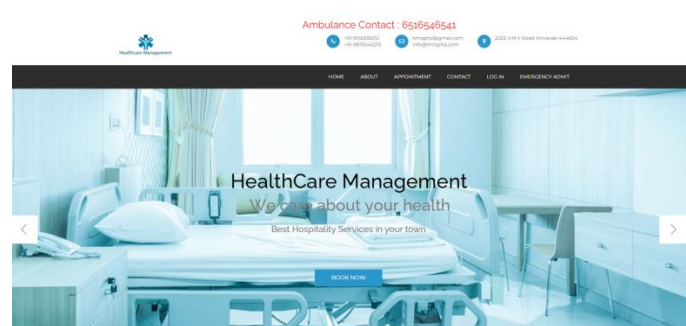


Fig -2: Home Page

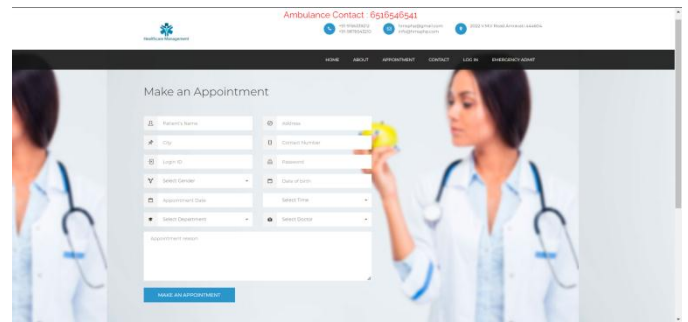


Fig -3: New Patient Registration Form

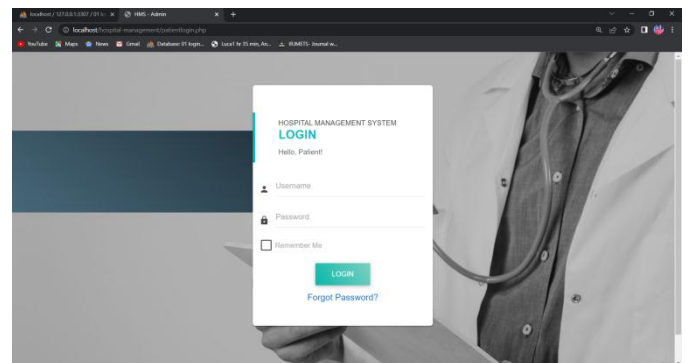


Fig -4: Patient Login page

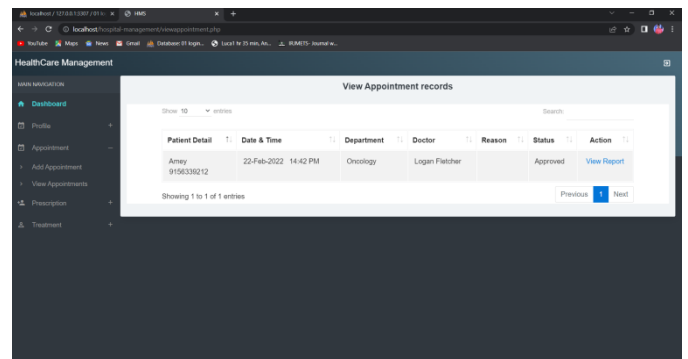


Fig -5: Patient Dashboard

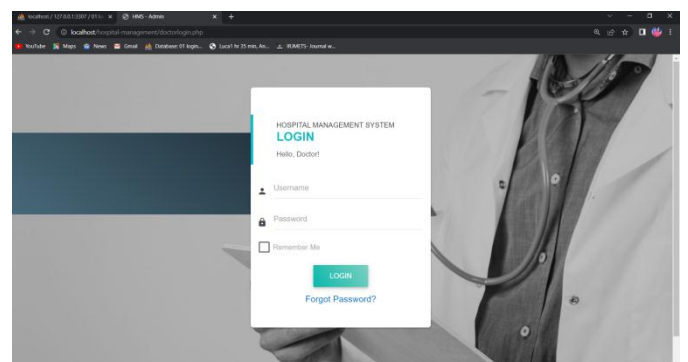


Fig -6: Doctor Login page

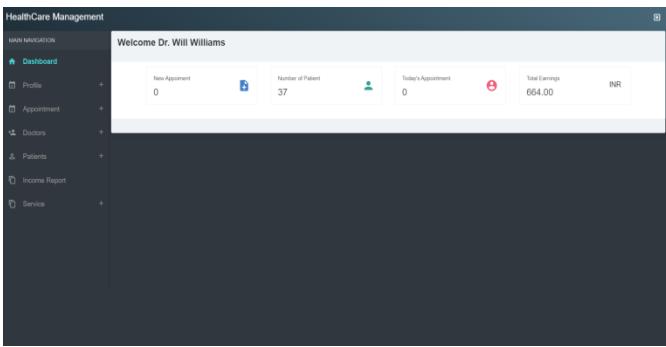


Fig -7: Doctor Dashboard

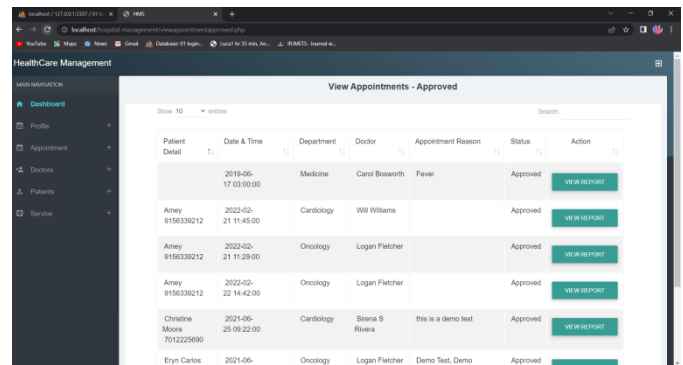


Fig -11: Appointment History

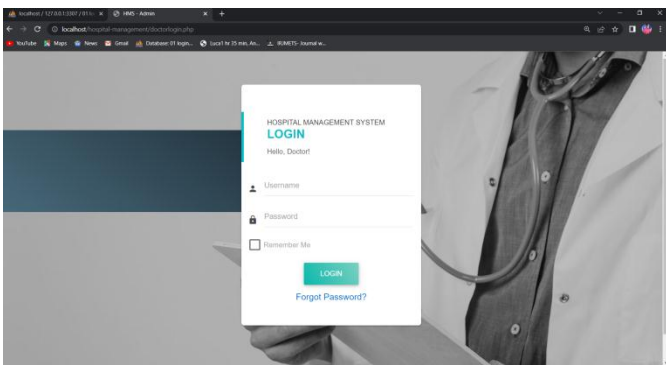


Fig -8: Admin Login Page

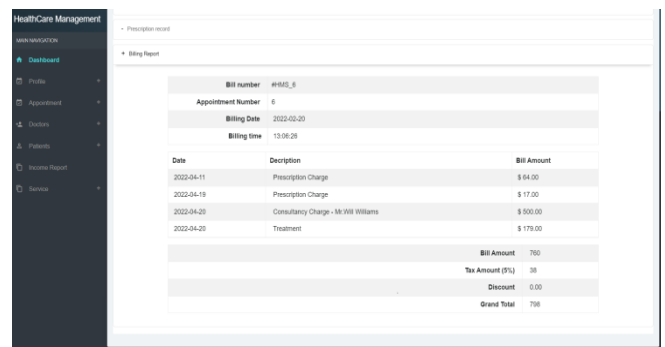


Fig -12: Billing Console

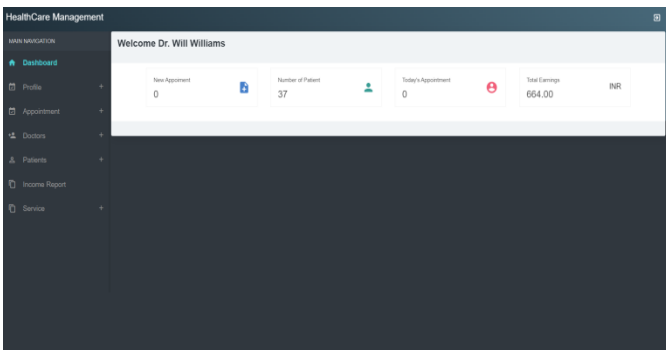


Fig -9: Admin Dashboard

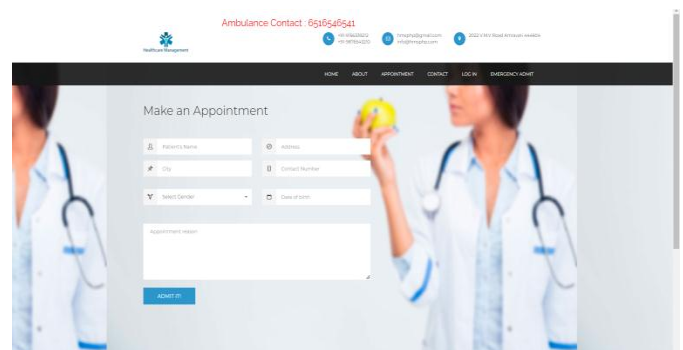


Fig -13: Emergency Admission Page

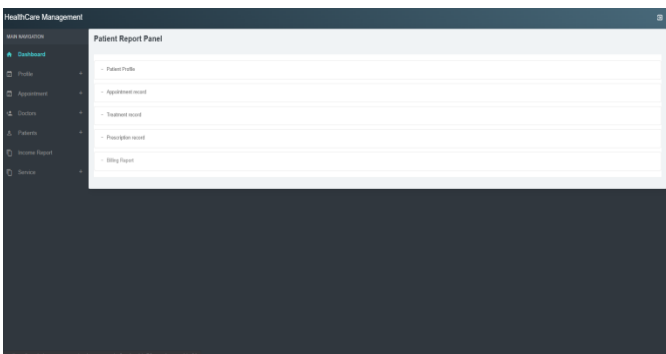


Fig -10: Patient Report Panel

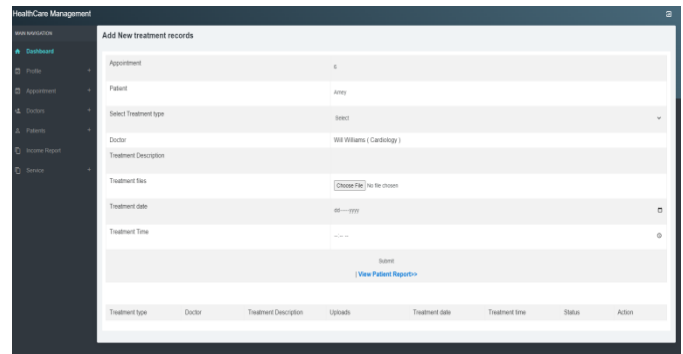


Fig -14: Treatment Page

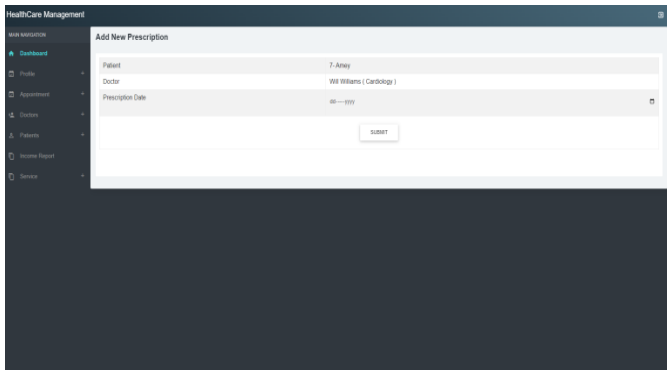


Fig -15: Prescription Page

6. CONCLUSION

The digital health care is transforming technologies fulfilling terms to provide objective as well as digital data to both practitioners and patients to achieve universal health access, quality of medical care, efficiently and effectively delivery of health services, a comprehensive and holistic eco-system. Conclusion content comes here

REFERENCES

- [1] Daiping Hu, Huizhang Shen and Mengyu Li, "Study on information system of health care services management in hospital" Antai Sch. of Manage, Shanghai Jiaotong Univ., China Weiguo Xu ;. Services Systems and Services Management, 2005
- [2] Gudrun Hübner-Blodera , Elske Ammenwertha , Birgit Brigl b "Specification of a Reference Model for the Domain Layer of a Hospital Information System", Alfred Winter b a Institute for Health Information Systems,UMIT – University for Health Sciences, Medical Informatics and Technology, Hall in Tyrol, Austria b Institute for Medical Informatics, Statistics and Epidemiology, University of Leipzig, Germany, ENMI, 2005.
- [3] Dr Christopher Bain, "Developing Effective Hospital Management Information Systems: A Technology Ecosystem Perspective" MBBS, Master Info. Tech, 2014.
- [4] B. Koyuncu and H. Koyuncu "Intelligent Hospital Management System (IHMS)",. Medicine, Computer Science,International Conference on Computational Intelligence and Communication Networks (CICN)2015
- [5] Z. Liu, "Design and Implementation of Hospital Emergency Nursing Information Management System,"
- [6] B. Li and Y. Zhonghua, "The Design and Implementation of A Hospital Management Information System at Peking Union Medical College Hospital," Journal for National Library of Medicine, vol 69, no. 11, 1999.
- [7] N.D. Johnson, G. Garofolo and W. Geers, "Demystifying the Hospital Information System Information System Integration Process," Journal of Digital Imaging, vol. 13, pp. 175-179, 1999.
- [8] Hanping Jiang and Fulin Zhang, "Integration of the regional public health resources and establishment of the digital hospital ," IEEE, Conference Paper, 2004
- [9] R. van Wynsberghe and S. Khan, "Redefining Case Study," The International Journal of Qualitative Methods, vol. 6, no. 2, pp. 1-10, 2007.
- [10] Waban Charles, "Project report on Computerized Health Records Management System," 2007.
- [11] M. Nekoel-Moghadam and M. Amiresmaili, "Hospital Services Quality Assessment," Journal of Health Care Quality Assurance, vol. 24, no. 1, pp.57-66, 2011.
- [12] C. Chang, S. Chen and Y. Lan, "BMC Medical Informatics and Decision Making," vol. 12, 2012.
- [13] Zhang X, Yu P, Yan J. "Patients' adoption of the eappointment scheduling service: a case study in primary healthcare." Stud Health Technol Inform. 2014