

**Benefits and challenges of adopting electronic health record
system: A qualitative study of stakeholders in Macao**

by

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**Institute of Chinese Medical Sciences
University of Macau**

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Preface

Healthcare innovation is a trend for discussion in the healthcare development and management in the world. As a student of Medicinal management, and a citizen of Macao, I have great interest in discussing the healthcare innovation in Macao. Macao is a special city that it combines the Chinese and Western culture and is a fast moving city with tourism being the center industry. While, healthcare development is a key project for the government and is concerned by most citizens. Being a citizen, I noticed that there is a need for further improvement in the healthcare units, such as the electronic health records that I have discussed in this thesis.

Having qualitative interviews were not easy for me, it was my first time to do this kind of research, and it took time and questioning techniques. I have to thank Dr Hu Hao for guiding me to finish this survey, he told me how to make a good qualitative study and told me the meaning of doing innovative research. He guided me to do the research step by step during my busy working days, in which I learnt to organize work more systematically. At the same time, I have to thank the respondents of the survey, they have given many precious opinions, which was very important to the survey.

Moreover, I have learnt a lot from the patient teaching and generous experiences sharing of medicinal management from the professors, Professor Wang Yitao, Professor Bian Ying, Professor Hu Hao, Professor Cheng Li Jen, Professor Leung Siu Wai and Professor Hu Yuanjia, and other academic staffs. It has been a precious learning time in the University of Macau.

Abstract

Electronic health record systems were the health innovation tools and widely adopted in the world. While, there was gap between policy makers and physicians, and distance to use meaningfully to its full capacity. It was shown that the adoption rate remained low around the world. There were arguments on the benefits and challenges for the stakeholders, including the hospitals, the physicians and the patients, which needed to be evaluated. Macau was a slow adopter of electronic health records, most physicians were using the computer systems for medical records partially, where paper recording still existed and some physicians relied on using it. At the same time, there was no linkage and systematic health information exchange between different government and private healthcare sectors. There was only linkage between the government hospital and government health care centers individually. Patients who were referred between these sectors needed to bring the printed medical records and referral letters, and even repeated the medical check-ups done before. Comments from the stakeholders of electronic health records could be acted for information for further local improvements and reference to other cities. Semi-structured interviews were made to the stakeholders, 6 hospital executives, 32 outpatient physicians and 30 patients in Macau. Comments of the benefits and challenges for the stakeholders, that were the hospitals, physicians and patients, and further improvements of electronic health records were collected and summarized. The summarized information was analyzed in descriptive way to compare different comments of different stakeholders

Interviews from the stakeholders of electronic health records in Macau shown that Macau had basic function of electronic health records, and was developing to the next level of adoption. It was at the level of adoption that was to have implementation

begun and resources allocated. Benefits of hospitals agreed by most of the stakeholders were to have systematic recording systems for keeping medical records and for further data analysis and research. And, for the physicians, the benefits suggested were to be convenience for work and assist diagnosis and reduce cognitive load. For the patients, the main benefit would be having good drug safety. However, there were challenges for the stakeholders, the hospitals would meet the challenges of privacy lost and insufficient IT human resources for adoption and maintenance of system, and lack of training to physicians. While, the key challenges to physicians were inefficiency or unfamiliar to current system, and insufficient information read. At last, the patients would be mostly meeting the challenges of privacy concern. Suggestion on current electronic health record and further development would be maximizing the capacity of electronic health records in its potency of helping decision support to include better information sharing such as clearer imaging reports and disease guidelines. At the same time, sufficient human resources should be allocated for implementation, maintenance and training. Advanced training should be provided for the physicians to ensure fully utilization of all the functions of the system, and also the physicians needed to be familiar to the systems. The physicians were suggested to have better communications with the hospitals and patients, by giving opinions to hospital and obtained good communication skills during daily practices when using computers. Moreover, the patients had the role to support the usage and trust the physicians and the privacy settings. The key factor of sustaining trust would be increasing communication between the stakeholders, so that they would understand others' needs and reasons for any action such as new systems adoption. Further improvement of any electronic health records was suggested to be obtained through analyzing the comments from stakeholders. It would be a trend for using advanced

level of electronic health record, which would require increasing health information exchange, disease management and personal information record by patient self-use.

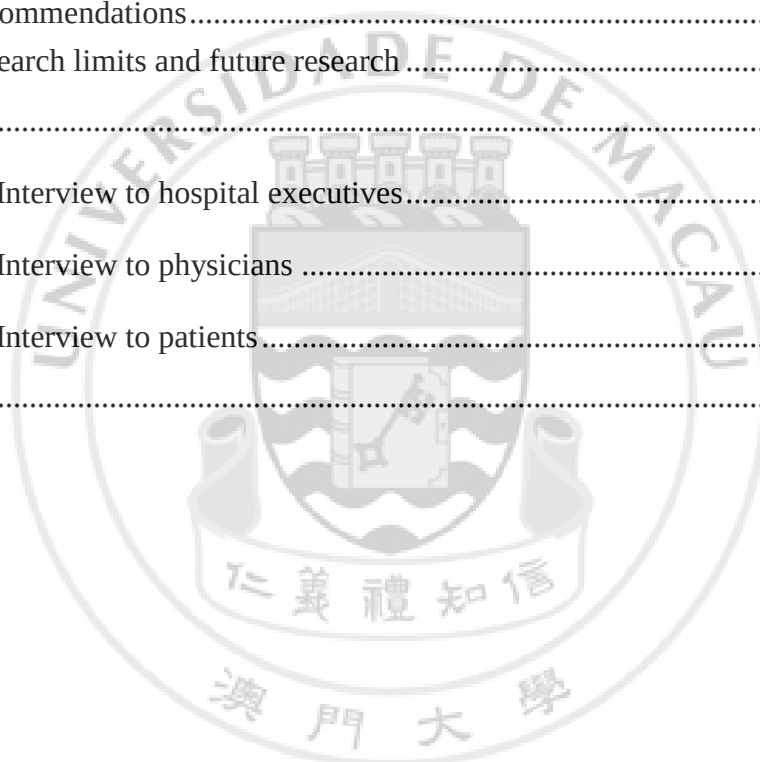
Our study had limitation as there was no statistical analysis for further evaluation of the level and extends of adoption and quantitative measuring of the benefits and challenges that the stakeholders suggested. Our study concentrated mainly on the situation of outpatient clinic settings of the key healthcare services in Macau. Comments from the stakeholders might reflect most situations but not all related to electronic health records in Macau. Therefore, the comments could be used for reference and direction for further evaluation on the usage and any renewal of system. Further study on the quantitative measurement of changes of electronic health record systems and interoperability could be done. In conclusion, electronic health records needed to be used in an advanced and meaningful way to give better quality of healthcare services through better decision support and disease management.

Key words: electronic health record, stakeholder, physician, hospital, patient

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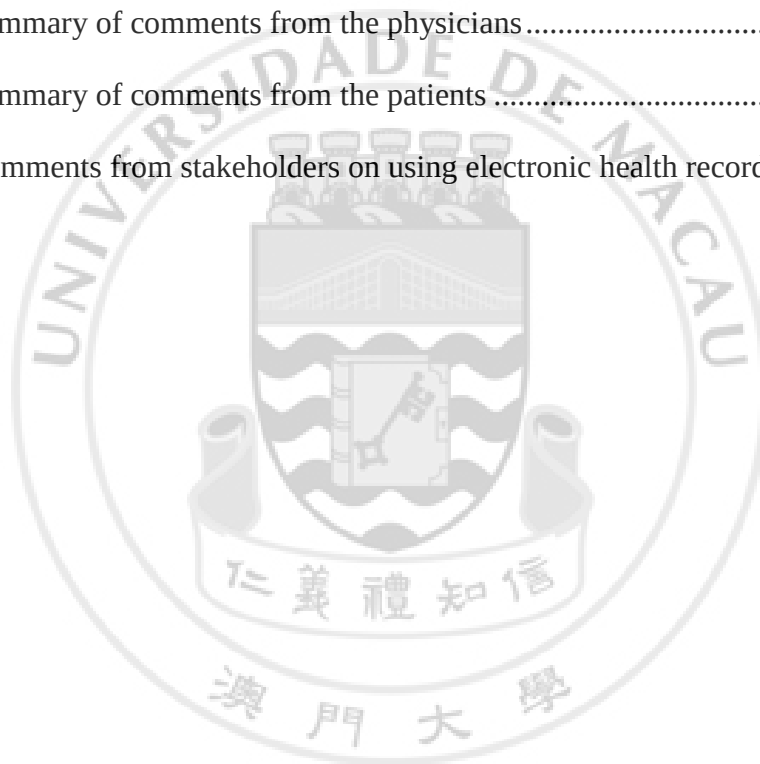
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