

Implementation of a Multilingual Electronic Medical Questionnaire: For Use Inside or Outside the Hospital

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Abstract. We implemented a multilingual medical questionnaire system, which allows patients to answer questionnaires both in and out of the hospital. The response data are sent to and stored as structured data on the server in hospital information system, and could be converted to Japanese and quoted as part of progress notes in the electronic medical record.

Keywords. Electronic medical questionnaire, EMR, multilingual questionnaire

1. Introduction

Patient-reported outcomes (PROs) including medical questionnaire have received more attention [1]. However, there are few reports on the system in which PRO is imported into hospital information system (HIS) electronically and utilized for secondary use as structured data. In addition, the native languages of patients visiting hospitals are becoming more diverse, and support for foreign languages is also needed.

2. Methods

We have developed and implemented an electronic medical questionnaire (EMQ) system that is multilingual and can be cited in progress notes of electronic medical records (EMR) without manual transcription.

The patients read the QR code for identification by a tablet connected to the HIS network and answers the EMQ. The response data is sent as XML data to the EMR server for storage and further secondary use [2]. Since the EMQ is a web application, patients can also answer it using their own smartphones at home.

The Japanese version of the EMQ are translated into English, Chinese, and Vietnamese. The questionnaire consists of two types of questions. One is numerical questions, which the patient answers by entering numbers (e.g. age), and the other is

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single or multiple-choice questions. Because medical records should be written in Japanese in general, it's necessary to convert the patient's answers into Japanese. We prepare an EMR template for the physicians that is written in Japanese and consists of the same questions and same options as the EMQ. In addition, we change some patient-oriented redundant phrases to suitable medical terms. When writing a progress note, the physician activates this EMR template and quotes the corresponding data from the patient's response data stored on the EMR server. In this way, it became possible whatever language version of the EMQ the patient answers, the response data would be written in the progress notes in Japanese (Figure 1).

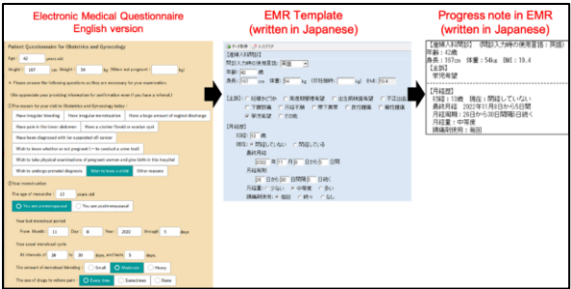


Figure 1. Response to EMQ is quoted to the EMR template written in Japanese, and then converted into a narrative language and recorded as a progress note.

3. Results

After implementation of our EMQ system, 5016 patients used it between March 2021 and February 2023. Fifty-eight of them selected the foreign language versions.

4. Conclusions

We implemented a system that allows patients to answer EMQ in any of several languages and answer it either at the hospital or at home. Their responses are converted into EMR templates written in Japanese and recorded as a part of their progress notes.

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