Construction of a Computer-aided System to Provide Medical Information Services with the Foreign Residents in Japan

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Abstract

In 2001, the number of foreign residents in Japan is 1.78million. However, Japanese society is not changed with concerns about foreign residents. So for foreign residents, many inhibitions exist in day-to-day lives, including medical services. Therefore, many organizations open Web sites to provide information services in many languages. Nevertheless, in many cases, foreign residents have to use Japanese to search such Web sites. In addition, many organizations cannot update information due to shortages of fund and human resources. Furthermore, there aren't information-sharing network among many organization. So we can say, foreign residents in Japan are lag behind informationization. For those reasons, we surveyed over the problems of foreign residents facing to receive medical services, to clarify the factors of the problems and developed the support system, which is composed two sub-systems, to provide necessary information with those who stand in need of such information.

Keywords:

foreign resident , multiple language, computer-aided consulting , information provision

Introduction

In 1947, when the Alien Registration Law came into force, the number of the foreign residents was around 600,000. In late 1980's, when Japan enjoyed the economic boom[1], numerous people from Asia and South America flowed into Japan for the purpose of working in Japan. Such foreigners are called "New Comers", which means "new the foreign residents in Japan"[2]. After the upsurge of "New Comers", the inflow of foreigners into Japan still shows an upward tendency, and the number of the foreign residents in Japan reached approximately 1.78million in 2001[3]. As many of such foreigners cannot speak Japanese, the information services in their native languages and interpretation services are in great demand[4]. However, changes made in the Japanese society and its public administration systems are not designed with specific concerns about the presence of increasing and diversifying the foreign residents in Japan[1]. Public administration systems seldom offer the interpretation services and information services in different languages. Nevertheless there are information of foreign languages, in many cases they are scattered and difficult to know where they are. So the current circumstances in Japan cannot be considered to be friendly and convenient for the foreign residents in Japan. For the foreign residents in Japan, various kinds of inhibitions exist in every corner of their day-to-day lives, including medical services[5]. Some public administration organizations and many NGOs provide the telephone counseling and interview-style counseling services, however, such human-assisted counseling services are not available for 24 hours. Therefore, many organizations open Web sites in order to provide the round-the-clock information services in Japanese and different languages. Nevertheless, in many cases, the foreign residents in Japan have to use Japanese to search such Web sites, and they can hardly find out such Web sites using their native languages. In addition, many organizations are caught in the dilemma not to update the information to provide due to shortages of fund and human resources. Furthermore, a mass of information variable and useful in supporting the foreign residents in Japan is not shared among many organizations because each NGO conducts its activities separately without having a huge information-sharing network among the NGOs which conduct similar activities.

For those aforementioned reasons, the survey is conducted over the problems that the foreign residents in Japan face when they receive medical services, in order to clarify the factors of the problems and develop the support system which provides necessary information with those who stand in need of such information.

System outline

We developed the computer-aided medical information service system for the foreign residents , which is comprised of two sub-systems (see Figure 1). The first sub-system is the computer-aided consulting service system, which is developed for the contact staff (doctors ,nurses ,hospital staff ,and public health workers) to share the information such as the problems related with the foreign residents, the case examples of the issues and problems the foreign residents consulted about, and the solutions for such problems and issues. The second sub-system is the information service system which provides the foreign-residents-related information on the Web in different languages. This sub-system is to translate the information about the case examples, which are quite frequently browsed in the computer-aided consulting service system, as well as the medical information described for the foreign residents into various languages and provide such translated information on the Web. To this multilingual medical information service system, the message-sending function is added, in order to provide the Web site update information and the news with registered users, using the automatic mailing services by e-mail (via e-mail and mobile phone mail services). This function is added to offer easy access to a Web site which has the detailed information by link the location of such Web site.
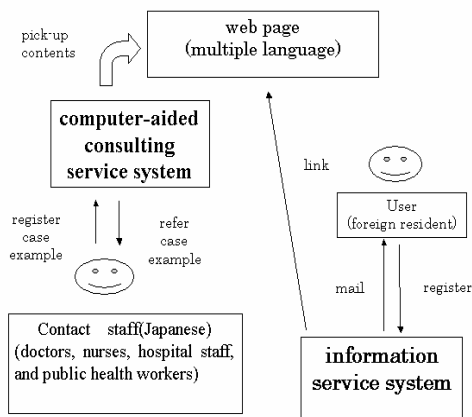
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Figure 1. The concept of the computer-aided system which provides medical information with the foreign residents in Japan

System specifications

The computer-aided consulting service system:
In order to identify the problems the foreign residents face in receiving medical services, interviews are held with the medical institutions, public administration systems, and NGOs which have offered medical services to the foreign residents in Japan. The obtained information is categorized by the ages, countries, and residence time of the foreign residents in Japan, as well as the categories, descriptions, and solutions for the issues. A message board is hosted on the Internet to allow those who have the information and knowledge for the individual issues to input the solutions for the purpose of creating the database for the issues and their solutions. This system is developed as the Web-based database which has the data searching, browsing, adding, and editing functions, using the Web browser from the client which is connected with the Internet. Whenever the client browses an issue, a count is taken in order to investigate which issue is browsed quite often, and the obtained outcomes are studied to optimize the contents for the future information services on the Web.

The multilingual medical information service system:
Meanwhile, the multilingual medical information service system on the Web is developed as the medical information services for the foreign residents. In this system, the issues that the foreign residents tend to face are picked up from the computer-aided consulting service system, and the information related with such issues are provided on the Web page. As one of the grounds for deciding what contents of the information should be provided, the number of counts that the computer-aided consulting service system registers whenever an issue is browsed is used. The information which is provided includes the contact and linked Web page of a NGO which specializes in handling specific problems, as well as the scattered information such as multilingual information, the copies distributed by various NGO's news, and the foreign-residents-related events information. Currently, information is provided on the KINS (Kansai International Network For Solidarity) web page.
URL:http://homepage3.nifty.com/kins/index.htm

The message-sending function:
This information service system has the message-sending function which is added for the purpose of identifying the location of the controlled information. Those who desire to

have information distributed register themselves as users at first. Whenever a Web page is updated, this function is used to deliver e-mail or mobile phone mail which is linked with the Web page to the registered addresses in order to inform those resistered users that the Web page is updated.
The aforementioned system developed this time uses Microsoft IIS (Internet Information service) and ASP (Active Server Programming) technologies for a Web server.

Results

The computer-aided consulting service system: Figure 2 shows the interface which appears on the issue registration screen. Figure 3 shows an at-a-glance list of the issues registered through the registration screen. When a user clicks the title of the issue he or she wants to browse, the list of the solutions appears on the right on the screen. This system has solution search function. Figure 4 shows an example of the search result. The searching and browsing functions are used as the tools for sharing information among the contact staff (doctors, nurses, hospital staff, and public health workers) in order to respond to the questions from the foreign residents and give consultations to them. The computer-aided consulting service system makes it possible for such staff to interchange information and views with one another, and advice about solutions is given to the staff who don't know the solutions from other staff.

The information service system:
Currently, the information services such as **"FY 2003 Vaccination Guidance for Foreign Children in Japan (Japanese version)"**, **"Multilingual Medical Interview Sheet"** and **"Daily-life-related Information for The foreign Residents in Japan in 13 Different Languages"**, are available on the KINS Web page. In addition, the once-scattered information is now consolidated, which helps the foreign residents and the counselors who had troubles in finding the information, by introducing them to institutions and organizations which specialize in different specific problems. This system also contributes in developing the network among the foreign residents supportive organizations, and provides a setting for information sharing.

The message-sending function of the information service system:
At present, approximately 90 users are registered. The information about the KINS study sessions has been provided by e-mail and mobile phone mail using this message-sending function, and many participated in.

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Figure 2. Registration screen

Figure 3.   At-a-glance list

Figure 4. Search result screen

Discussion

The computer-aided medical information service system for the foreign residents is considered to be the tool which consolidates the once-scattered information and accommodates individual foreign residents supportive organizations in a huge network. The information services provided by different organizations in the past are summarized and compared in terms of information distribution methods (Table 1).   Using the Internet Web site, the computer-aided medical information service system for the foreign residents can offer information services with general public at any desired time for 24 hours at low cost. The disadvantage of having difficulties in "finding necessary information", which is specific with the information services provided on the Web, is surmounted by using the relatively well-known organization among the foreign residents in Japan, KINS, as the field to offer information services, and by registering with various search engines.   Another disadvantage of having difficulties in finding "if the provided information is recently updated" is surmounted by adding the message sending function via mail distribution

services. Currently, many Japanese institutions and organizations provide variable information for the foreign residents, such as multilingual information services. It is quite critical and necessary in supporting the foreign residents to construct a network under a huge parent institution or organization for the purpose of consolidating the scattered variable information. The computer-aided medical information service system for the foreign residents in Japan is considered to be a useful and effective system for the foreign residents supportive organizations which lag behind in informationization

	Advantages	Disadvantages
Information services using paper media	1. Anyone can prepare easily.	1. Once the information is missing (or prepared materials are provided completely), it's gone. 2. Cost consuming 3. Need to meet users or post to users in order to provide the information 4. Time-wise restriction is imposed 5. Each individual has to control the information. 6. Information cannot be shared with those who are widely separated by geography.
Information services provided via mail services	1. Information can be provided easily. 2. Information can be provided with those who are in need of such information (as far as acknowledged) 3. Low cost 4. Information can be shared with those who are widely separated by geography.	1. Information can be provided only in a narrow circle of acquaintances 2. It is difficult to participate into a new circle of information services.
Information services provided on the WEB	1. Information can be provided with general public. 2. Information services are available anytime for 24 hours. 3. Low cost 4. Information can be shared with those who are widely separated by geography. 5. A user doesn't need to worry to control the information.	1. An administrator who controls information is required. 2. Needs to find out where the information is located. 3. A user needs to check if the information is updated.

Table1.   Comparison among information services methodologies

Future issues and prospects

Computer-aided consulting service system:
It is expected that the information services can be provided more systematically on the information service system when the problems that the foreign residents face are investigated and analyzed after data are accumulated.

Information service system:
In the future, the network will be broadened to cover more organizations to enrich the information which is to be provided.

The message-sending function of the information service system:
The future challenge is to develop the method by which the necessary information
is provided with those who stand in need of such information using the filtering function, while increasing the number of registration.

Future issues for the entire system:
It is expected that increasing name recognition of this system will help more people use this system, which will consequently make full use of not only the computer-aided medical information service
system for the foreign residents in Japan but also KINS, and, likewise, vitalize Japanese supportive organizations for the foreign residents in Japan.

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