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Letters to the Editor

New Trends for Practice in Telecommunication Applied to Preventive and Environmental Medicine

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Abstract

This paper presents survey results of connectivity to the Internet from preventive and environmental medicine-related departments in medical schools and other institutions in Japan and propose means to establish connectivity among them. Of 191 facilities surveyed, 134 (70%) responded by March 31, 1996. The data presented here are from 132 facilities. One hundred seventeen facilities (89%) answered that they were connected to the Internet. More than 80% of them got access to the Internet in the past two years. One hundred three facilities (78%) answered that e-mail was available. Despite the large percentage being connected, only 11 facilities (8%) had their own homepages. However, just 6 months later more than 25 facilities could be found by their own homepages. The Global Health Network (GHNet) has been developed in the USA based upon the concept that the best means to produce improved health is a better surveillance and information system applying the latest telecommunication technology to public health. The GHNet will offer an initial homepage for Preventive and Environmental Medicine related facilities in Japan to promote and establish sustainable connectivity among them.

Key words: Telecommunication, Internet, Connectivity, Homepage, Network

Introduction

One of the greatest inventions in the 20th century is the Internet. It is changing the way that people communicate at all levels. The number of hosts on the Internet has been increasing exponentially during the past three years and it is expected to exceed 100 million before the year 2000 [1, 2]. The current growth rate of the Internet in Japan is one of the fastest ones in the world [3].

In the field of health, telecommunication has been applied mostly as telemedicine and medical informatics [4, 5]. There has been little discussion as to the potential use in environmental and preventive medicine, which would probably hold the greatest promise for improvement of health in Japan and elsewhere [6]. One difficulty is that we know little about the use of telecommunication and connectivity regarding preventive and environmental medicine in Japan.

This research evolved from a telescience meeting in Gifu, Japan, on May 1996, hosted by the National Space Development Agency (NASDA), where the concept of the Global Health Network (GHNet) was presented by NASDA, the National Aeronautical and Space Administration (NASA), and the GHNet. The GHNet has developed based on the concept that the best means to produce improved health is through a better

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surveillance and information system in public health. The GHNet was begun through grass-roots efforts by people from the World Health Organization (WHO), the Pan American Health Organization (PAHO), NASA, International Business Machines (IBM), American Telephone and Telegraph (AT & T), and the United States Agency for International Development (USAID), to bring the latest telecommunication technology into public health for disease prevention in the 21st century[7-10]. The GHNet in Japan aims to provide a model to achieve this mission in Japan and throughout the world.

One of the components of the GHNet is establishment of connectivity among people in preventive and environmental medicine. This component is of critical concern. This paper presents, for the first time, survey results of connectivity to the Internet at preventive and environmental medicine-related departments in medical schools and other institutions in Japan and a means to promote connectivity is proposed.

Materials and Methods

Subjects for the survey were preventive and environmental medicine related departments in medical schools and the National Institute of Health in Japan. They were listed in the directory of The Japanese Educational Association of Directors of Departments of Hygiene & Public Health at Medical Schools, 1995, and totaled 191 facilities. During September 1995 and February 1996, one of the authors sent each facility a questionnaire by mail. They were asked to answer questions either by using a World Wide Web (WWW) home page (http://www.pitt.edu/~akira/qu-j.htm), e-mail, or fax. Questions asked were, 1) are you connected to the Internet?, 2) if so, when were you connected?, 3) is e-mail available?, 4) do you have your own homepage?, 5) please give your comments on Internet's application into public health, and other fields. In addition, the homepages offered by these facilities were surveyed in October 1996.

Results

Among the 191 facilities, 134 (70%) responded by March 31, 1996. Among the 134, answers from 2 facilities were invalid. Therefore, the data presented here represent 132 facilities.

One hundred seventeen facilities (89%) answered that they were connected to the Internet. More than 80% of them got access to the Internet in the past two years. One hundred three facilities (78%) answered that e-mail was available. Despite the large percentage connected, only 11 facilities (8%) had their own homepages. Seven of these facilities had an English version of the homepage.

Most of those who commented thought that the Internet was useful to get health information and data from homepages such as those of the Centers for Disease Control and Prevention (CDC), WHO, etc. Some mentioned that it could be used for education as well as domestic and international collaborative research.

Table 1 shows the names of the facilities and the Universal Resource Locators (URLs) surveyed in October 1996. More than 25 facilities had their own homepages.

Table 1 The Universal Resource Locators of the facilities belonging to the Educational Association of Hygiene and Public Health in Japan.

University/College	Department/Institute	Universal Resorce Locations (URLs)
1 Hokkaido University	Hygiene & Preventive Medicine	http://babu.med.hokudai.ac.jp/~hyg-w/
2 Hokkaido University	Public Health	http://babu.med.hokudai.ac.jp/~pubmed-w/
3 Hirosaki University	Hygiene	http://133.60.242.201/~hygiene/index.html
4 Hirosaki University	Public Health	http://133.60.242.201/~publich/index.html
5 Akita University	Hygiene	http://jazz.akita-u.ac.jp/eisei/Home.html
6 Akita University	Public Health	http://dips08.akita-u.ac.jp:8080/~pbhealth
7 Yamagata University	Hygiene & Preventive Medicine	http://www.id.yamagata-u.ac.jp/Hyg/Hyg.html
8 Jichi Medical School	Public Health	http://www.jichi.ac.jp/usr/publ/index.html
9 Gunma University	Public Health	http://ph1.sb.gunma-u.ac.jp/
10 Chiba University	Public Health	http://www.m.chiba-u.ac.jp/class/kousyu/index.html
11 Tokyo Medical & Dental Univ. Medical Research Institute	Preventive Medicine	http://www.tmd.ac.jp/mri/prm/home.html
12 Nihon University	Public Health	http://cortex.med.nihon-u.ac.jp/dept/public_health/index.html
13 Tokyo University*	Epidemiology and Biostatistics	http://epistat.m.u-tokyo.ac.jp/epistat/indexj.html
14 Yamanashi Medical University	Health Science II	http://www.yamanashi-med.ac.jp/~heal0sci/home.html
15 Kanazawa University	Public Health	http://kipcwww.ipc.kanazawa-u.ac.jp:8080/~med2/14/home.html
16 Kyoto University Grad. School	Environmental Medicine	http://minko.hyg.med.kyoto-u.ac.jp/
17 Osaka University	Public Health	http://www.med.osaka-u.ac.jp/~pbhel/www/welcome-j.html
18 Okayama University	Hygiene & Preventive Medicine	http://www.okayama-u.ac.jp/user/med/hyg/hygine.html
19 Okayama University	Public Health	http://dph5.med.okayama-u.ac.jp/dph_home.html
20 Hiroshima University	Public Health	http://163.130.200.1:8001/=@= :www.med.hiroshima-u.ac.jp/med/med/kiso/public_h/Welcome.html
21 Tottori University	Hygiene	http://tarou.med.tottori-u.ac.jp/hdd/eisei.htm/
22 Univ. of Occupational and Environmental Health	Hygiene	http://www.uoeh-u.ac.jp/uoeh/jpn 1/m023wh01.htm
23 Univ. of Occupational and Environmental Health	Public Health	http://www.uoeh-u.ac.jp/uoeh/jpn 1/m024wh01.htm
24 Univ. of Occupational and Environmental Health	Radiation Hygiene	http://www.uoeh-u.ac.jp/uoeh/jpn 1/m027wh01.htm
25 Univ. of Occupational and Environmental Health	Institute of Industrial Ecological Science	http://www.uoeh-u.ac.jp/uoeh/dept.htm

The list was based on the survey on October 1996.
*The other homepages were abridged.

Discussion

Since the beginning of the century, we have seen a dramatic improvement of health with life expectancy increasing over 25 years in Japan, the USA, and most developed countries. The vast majority of the improvement in life expectancy has come from public health measures. These measures include sanitation, immunization, maternal and child care, improved nutrition and primary and secondary preventive actions [11]. Most of these public health measures are related to information transfer.

We live in an era of information revolution. In the past decades, there has been considerable interest in telemedicine [4]. Applying the latest telecommunication technology to preventive medicine and public health will bring a broad improvement of health in Japan, the USA, and the rest of the world. Telemedicine targets a small number of sick patients with expensive high band width technology for disease diagnosis and treatment. Connectivity among hospitals and other medical facilities is vital for telemedicine. In contrast, the application of telecommunication to public health and preventive medicine; {telepreventive medicine}, is designed to reach a large number of well people with inexpensive low band width information for health promotion and disease prevention. Connectivity among public health and preventive medicine facilities is crucial for telepreventive medicine.

Connectivity should be based upon e-mail and WWW homepages. E-mail enables people to communicate through the Internet. The WWW has made the Internet extremely popular for several reasons. It unlocks the Internet's multimedia capabilities. Its hypertext permits rapid {jumping} from key information to key information that exists on different computers throughout the world and the search engine tool makes searching for information easy and powerful [1].

The survey results showed that e-mail was available at almost all the facilities connected to the Internet. However, only 25 facilities had set up their own homepages. One of he reasons might be that constructing a homepage seems to be difficult for people who are not technically trained. Setting up an initial homepage is easy if a facility is connected to the Internet. One of the authors has taught physicians from various countries how to use the Internet and construct homepages [12]. Within an hour almost all of them learned how to browse WWW's homepage, and within a few days, many became able to develop their own homepages.

Thus, while it is clear that Internet use by these facilities is increasing; for example, links from the homepage of the second author (http://babu.med.hokudai.ac.jp/~hyg-w/) provide access to all the facilities in Table 1, each institution uses the Internet independently. In other parts of the world, added to independent Internet use, institutions actively participate in cooperative global systems, such as the GHNet, including universities, institutes, governmental organizations and companies concerned with preventive and environmental medicine, facilitating substantial

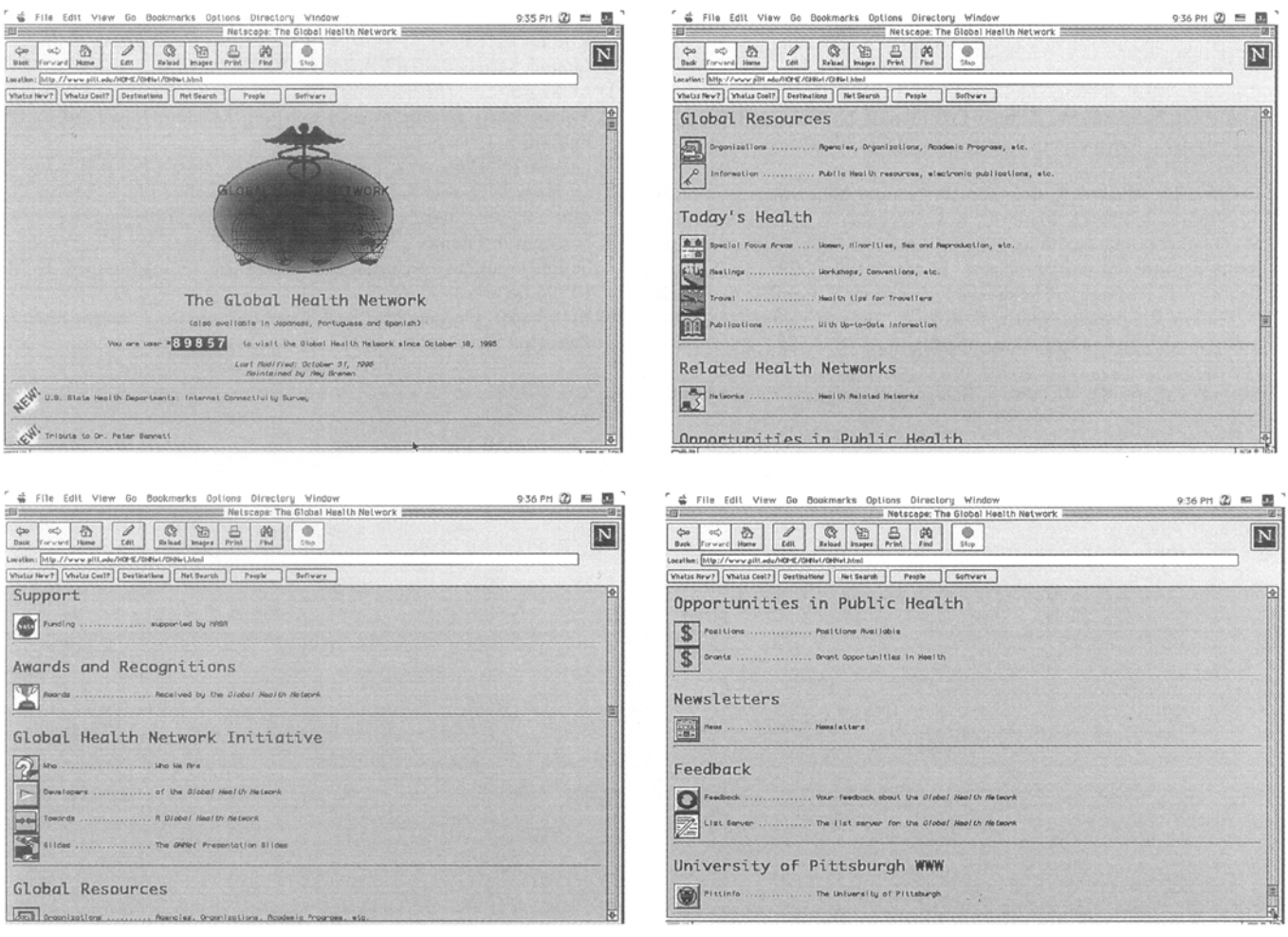

Fig. 1 The homepage of the Global Health Network (http://www.pitt.edu/HOME/GHnet/GHNet.html)

advances through education, research, and practical action[10].

One of the accomplishments of the GHNet is its homepage (http://www.pitt.edu/HOME/GHNet/GHNet.html) in English, Japanese, Portuguese and Spanish[13]. This has been developed as a one-stop shopping center for health. Figure 1 shows the initial pages of the homepage of GHNet. This homepage has many connecting items consisting of 1) Support: funding supported by NASA, 2) Awards and recognitions received by the GHNet, 3) GHNet Initiative, 4) Global resources, 5) Today's health, 6) Related health networks, 7) Opportunities in public health, 8) Newsletters, 9) Feedback, and 10) University of Pittsburgh WWW, and was rated in the Top 100 homepages by PC magazine (1996; 15(3): 100-142). Upon entering the homepage, one can go throughout the Internet to find public health information around the world.

Homepages of public health schools and programs currently available on the Internet are listed in the GHNet homepage. Most public health schools in the USA have their own homepages. However, many of them resemble school bulletins and provide information on admission and programs for prospective students. Connectivity of public health facilities on the WWW based on a more standardized approach.

The GHNet in Japan is developing seven components, 1) establishment of connectivity among people in preventive and environmental medicine, 2) telemonitoring of disease, 3) a global health network university, 4) connection of nongovernmental organizations, 5) training cyberdocs, 6) an electronic scientific server, and 7) a homepage on the WWW[6-10]. Information included should be simple, such as a name, an address, an e-mail address, research interests, etc. both in Japanese and English. The GHNet in Japan will offer an initial homepage for preventive and environmental medicine facilities to promote and establish sustainable connectivity among them in a standardized manner for free.

Consequently, through proactive networking between the worldwide network and preventive and environmental medicine related departments in medical schools and other institutions in Japan, cooperative research and practical applications into crisis intervention in such cases as earthquakes and epidemics, development and use of databases for research, development and use of a comprehensive interdisciplinary education system for professionals and lay people[14], worldwide epidemiological surveys and so on, will bring considerable advantages to preventive and environmental medicine.

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