

SPECIAL ARTICLE

Use of the Internet by physicians in Puerto Rico

JOSÉ GREGORIO QUIJADA, MD*; HOMERO A. MONSANTO-PLANADEBALL, R Ph, Ph D†

Objective: To determine the extent of the use of the Internet by physicians in Puerto Rico to support their clinical practice.

Methods: Personal interviews were conducted among a representative sample of 385 physicians from different specialties and geographical regions in Puerto Rico.

Results: Eighty-one percent physicians who participated in the survey reported the use the Internet in their practices. Rheumatologists, endocrinologists and cardiologists were the specialties with the highest usage rate. Internet use decreased as age of the

physicians increased. The great majority of those who use the Internet do it from home (81%) followed by the office (68%). Almost two-thirds used dial-up to connect to the Internet at home or at office. The Internet was used mainly for professional purposes to look for references (92%), communicate with colleagues (33%) and obtain continuing education (31%).

Conclusion: There was a high Internet utilization rate among physicians in Puerto Rico, regardless of the specialty. The utilization rate was similar to that reported among physicians from other countries.

Key words: Internet, Physicians, Puerto Rico.

The Internet has become a widely used source of information and communication by members of our society. A number of recent surveys have shown the growing use of the Internet in the health care field (1-14). The Internet is becoming a major vehicle for quick access to health care information, communication between providers, patients, benefit managers and health care staff and marketing health care services. The ease of accessibility and speed of communication provides physician with an excellent tool to support patient care decision making. Although studies have been conducted elsewhere to assess physician use of the Internet, no information is available regarding physicians in Puerto Rico. The objective of this study was to determine the extent of use of the Internet by physicians to support their clinical practice.

Methods

Personal interviews were conducted by an independent contractor between January and February 2005 among a

representative sample of 385 physicians in active practice from different specialties and geographical regions in Puerto Rico. The sampling frame of physicians was obtained by the independent contractor from a list provided by the Puerto Rico Department of Health. Dentists were also included in the sample. The margin of error was 5% with a confidence interval of 95%.

Data were analyzed using descriptive statistics, such as mean, standard deviation and frequency distributions.

Results

Description of the sample

Nearly four out of ten physicians (37%; n=143) were primary care providers (general medicine and family medicine physicians). Internal medicine, pediatricians and obstetricians accounted for 12.5% (n=48), 10.6% (n=41) and 7% (n=27), respectively, of the sample (see Table 1).

The majority of physicians interviewed were from the San Juan region (42.1%; n=162), followed by Caguas (13.5%; n=52), Bayamón (11.9%; n=46), Ponce (11.4%; n=44), Arecibo (7.5%; n=29), Mayaguez (6.7%; n=26), Aguadilla (4.2%; n=16) and Fajardo (2.6%; n=10).

Use of the Internet

Eighty-one percent of physicians (n=312) reported using the Internet: 80% male and 83% female. As shown in Figure 1, Internet use decreased as age increased. The proportion of physicians above 66 years of age that do not use the Internet is greater than that who reported using it.

Rheumatologists, endocrinologists and cardiologists

*José Gregorio Quijada, MD, Medical Director, Merck Sharp & Dohme (I.A.) Corp. †Homero A. Monsanto-Planadeball, R Ph, Ph D, Outcomes Research Manager, Merck Sharp & Dohme (I.A.) Corp.

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Address correspondence to: José Gregorio Quijada, MD, Medical Director, Merck Sharp & Dohme (I.A.) Corp. PO Box 3689, Carolina, PR 00984-3689, Telephone: (787) 474-8116, Fax: (787) 474-8211, E-mail: jose_quijada@merck.com, Outcomes Research Manager, Merck Sharp & Dohme (I.A.) Corp.

Table 1. Summary of study findings

Use of the Internet by specialty	n (%)
General Medicine	84 (74%)
Internal Medicine	38 (79%)
Pediatrics	29 (71%)
Family Medicine	27 (90%)
Obstetrics/Gynecology	23 (85%)
Rheumatology	16 (94%)
Dentistry	13 (81%)
Cardiology	15 (94%)
Endocrinology	13 (93%)
Other	54 (86%)
Use of the Internet by geographical region	
San Juan Metro Area	131 (81%)
Rest of the Island	165 (74%)
Reasons for not using the Internet	
Not interested	34 (47%)
Lack of time	29 (40%)
Difficult/complicated	25 (34%)
Prefers books/medical journals	2 (3%)
Use of the Internet by purpose	
Professional	296 (95%)
Search for references	272 (92%)
Communicate with colleagues	98 (33%)
Continuing education	89 (30%)
Personal	278 (89%)
Personal purchases	161 (58%)
Electronic mail	156 (56%)
Search and read news	142 (51%)
On-line banking	100 (36%)
Administrative	143 (46%)
Materials procurement	43 (30%)
Financial affairs	39 (27%)
Main benefits of the Internet	
Information update	147 (47%)
Fast access to information	84 (27%)
Diversity of information	75 (24%)
Maximize use of time	75 (24%)
Obtain continuing education	9 (3%)

were the specialties with the highest utilization rate. Geographic variations were observed; metropolitan area physicians were more likely to use the Internet when compared to their counterparts from outside the metropolitan area (81% vs. 74%). The top reasons for not using the Internet were “not interested”, “lack of time”, and “too difficult”. The great majority of those who used the Internet did it from home (81%) followed by the office (68%) and the hospital (3%). Almost two-thirds used dial-up to connect to the Internet at home or the office. The main reasons for using the Internet were for professional reasons (95%), followed by personal reasons (89%) and

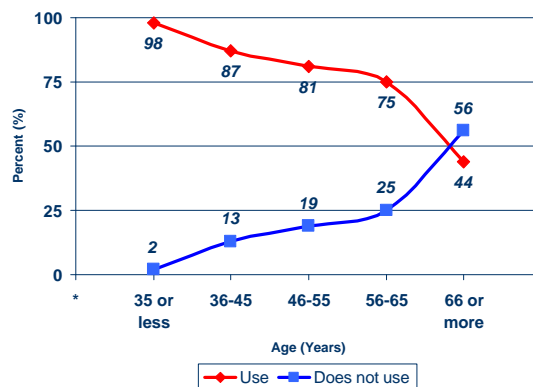


Figure 1. Internet use by age

for administrative purposes (49%). Those who used the Internet for professional purposes did it to look for references (92%), to communicate with colleagues (33%) and to obtain continuing education (30%). The use of the Internet for professional reasons ranged from 77% among dentists to 100% among rheumatologists, endocrinologists and internal medicine physicians. The principal benefits perceived by the respondents from accessing the Internet were “current information” (47%) and “fast access” (27%). The sites that respondents visit more often for professional purposes are Merck Medicus (73%), JAMA (61%) and WebMD (59%).

Discussion

The Internet represents an ideal source of information and communication for health care practitioners because the information is transmitted in real time and may help optimize patient care. The use of the Internet may be affected by several factors, including lack of interest, lack of computer literacy, lack of access to equipment and connections, type of connection and speed of communication. In this study we found a rate of Internet use among physicians comparable to the rates reported in the literature for physicians in other countries (Table 2). As reported in other studies, specialists and younger physicians were more likely to use the Internet. Although the use of the Internet for professional and personal reasons was high, its use for administrative purposes was lower than expected. This may be related to the outsourcing of administrative functions to external companies or that this function is done by a centralized department within the institution to which the physician is affiliated.

Although this study provided some interesting information regarding the use of the Internet by physicians

in Puerto Rico, further studies must look into the specific use of the Internet to support clinical practice, particularly

with the increasing use of wireless handheld devices such as personal digital assistants and notebooks. Issues that

Table 2. Review of reported Internet use among physicians

Country	Sample	Use	Access	Age	Specialty	Comments
Brazil ¹	99 physicians (60% pediatricians, 40% otolaryngologists)	100%	Home:52%Office: 42%Both:6%High Speed:18% Dial-up:77%	NA	NA	81% of those responding regularly used the Internet for medical updating.
Canada ² (Nationwide)	2,882 physicians	89%	Work (office or clinical practice): 57%	Older physicians (>55y/o) less likely to use it and access at work than younger physicians.	Specialists more likely (72%) to use and access at work than GP/FP's (48%) and surgical specialists (56%)	46% use it for e-mail, 44% for MEDLINE searching, 38% for browsing or reading online medical journals, 27% to access drug databases.
Ontario, Canada ³	30 physicians	100%	100%	NA	NA	More than 90% of physicians reported that patients had brought information from the Internet to them.
Spain ⁴	302 physicians in 8 Spanish hospitals	80%	80%	NA	NA	Physicians in smaller hospitals and male physicians spend more time on the Internet than their counterparts. 37% have taken course on the web, 35% consult electronic journals, 12% receive e-mail from patients.
United Kingdom and New Mexico, USA ⁵	107 residents from two programs (82 in UK, 25 in USA)	100%	Home: 88% UK, 80% USA Work: 74% UK, 100% USA	NA	NA	70% used the Internet to access online medical journals. More than having access at work was related to greater use for work-related purposes.
United Kingdom, Sweden, and Norway ⁶	522 dermatologists	95%	Home: 83% Work: 77%	Older physicians less likely to use it for medical (professional) purposes	NA	79% used the web for medical updating and other professional purposes. Use of the Internet for medical or educational purposes has not yet replaced traditional ways of obtaining CME.
Germany ⁷	31 physicians, 35 medical students, 10 medical librarians, 14 other medical professionals.	100% (sample obtained from internet discussion groups)	NA	NA	Physicians, medical students, and others used the Internet at a similar rate	Physicians (68%), students (80%) and librarians (90%) claimed to be better informed by using the Internet.
Glasgow, United Kingdom ⁸	160 General Practitioners (GP's) and 96 General Practice Nurses (GPN's)	79% of GP's and 73% of GPN's	Home: 56.3% GP's, 35.4% GPN's Practice: 67.5% GP's, 62.5% GPN's NA	NA	NA	Time (20%) and lack of skills (17%) were the most common reasons cited for not accessing the Internet. Both groups reported using it mainly to obtain disease information, read online journals and obtain new medical information
Japan ⁹	NA	50%	NA	NA	NA	65% of physicians were searching for medical/treatment information and 56% were "corresponding."

Table 2. Review of reported Internet use among physicians

Country	Sample	Use	Access	Age	Specialty	Comments
Wyoming, Montana, and Idaho ¹⁰	Rural physicians	85% have access to it; 75% use it daily or one to four times a week.	NA	NA	NA	E-mail was the most frequently used category followed by on-line literature search, professional organizations, special interest Web sites, clinical reference Web sites, on-line journals, and patient education. Lack of time and having no computer were the most important barriers cited.
Scotland ¹¹	920 General Practitioners	21% used the Internet once a month or more, 13% used it to communicate with colleagues by e-mail and 4% with patients.	NA	Younger GPs were more likely to use the Internet.	NA	Only 8% of physicians found it useful for medical purposes though more than half thought it would be a significant part of practice in five years time.
United States ¹² (Nationwide)	4570 Family Physicians	59% regularly use the Internet to access clinical information daily or weekly.	Modem: 47%	NA	Specialists reported using the Internet more for professional purposes than family physicians.	73% perceived the Internet as useful and important to physicians. Credibility was ranked as the most important characteristic of the Internet related to clinical information.
United States ¹³ (Nationwide)	1,662 physicians (family practice, internal medicine, pediatrics, anesthesia, cardiology, surgery)	NA	NA	Fewer years since medical school graduation was strongly associated with greater IT use.	Primary care specialty was associated with greater use of all tools except e-mail with other clinicians.	41% "frequently" use real-time computerized decision support, 39% online journals, 30% e-mail with clinicians, 24% online CME and 3.6% e-mail with patients.
United States ¹⁴	2850 physicians, nurses, physician assistants and other healthcare professionals	100%	97% reported having Internet access (72% at home and office, 14% only at home, 10% only at office)	NA	NA	72% said they use the Internet regularly for medical or professional updating. 51% responded that the Internet influences their healthcare practice (33% group practice, 57% private practice, 58% hospital practice)
Puerto Rico (This study)	385 physicians	81%	Home: 81% Office: 68% Hospital: 3%	Older physicians use the Internet less than younger physicians.	Specialists reported using the Internet slightly more for professional purposes than of family physicians and general practitioners.	Those who used the Internet for professional purposes did it to look for references (92%), to communicate with colleagues (33%) and to obtain continuing education (31%).

NA = Not Available

must be addressed include the use of the Internet for detailing, communicating with patients, suppliers or pharmaceutical companies, marketing services, exchanging clinical information with peers and sending physician orders.

Conclusion

In conclusion, there was a high Internet utilization rate among physicians in Puerto Rico, regardless of specialty. The utilization rate was similar to that reported among

physicians from other countries and was related to the location of the physician's practice and his/her age. The use of the Internet as a tool for patient care decision making appears to be limited by the lack of access, particularly in the hospital setting, and physician's time. Practice settings will have to be equipped to accommodate for the increasing use and reliance on the Internet for patient care. As technology continues to evolve into wireless handheld devices, it is critical to study in more detail the impact of the Internet and these handheld devices on clinical practice.

Resumen

Objetivo: Determinar el uso del Internet para apoyar la práctica clínica de parte de médicos en Puerto Rico.
Métodos: Se realizaron entrevistas personales a una muestra representativa de 385 médicos de diferentes especialidades y regiones geográficas de Puerto Rico.
Resultados: Ochenta y un por ciento de los médicos reportaron ser usuarios del Internet. La mayor tasa de utilización fue reportada por reumatólogos, endocrinólogos y cardiólogos. El uso del Internet fue menor entre los médicos de mayor edad. La gran mayoría de los que usan el Internet lo hacen desde su casa (81%) o desde su oficina (68%). Casi dos terceras partes usaban conexión telefónica al Internet desde su casa u oficina. El Internet era utilizado mayormente para propósitos profesionales para buscar referencias (92%), comunicarse con colegas (33%) y obtener educación continua (31%).
Conclusión: Se observó una alta tasa de utilización del Internet entre los médicos de Puerto Rico, independientemente de la especialidad. La tasa de utilización fue similar a la reportada para médicos en otros países.

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