Telemedicine on the internet

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References

- Sources are indicated by [RefSource] where the complete citation will be at the end
- Insite citations will be From: CitationSource

Numbers

<table>
<thead>
<tr>
<th>World Regions</th>
<th>Population (2010 Est.)</th>
<th>Internet Users Dec. 31, 2000</th>
<th>Internet Users Latest Date</th>
<th>Penetration (% Population)</th>
<th>Growth 2000-2010</th>
<th>Users % of Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1,013,779,050</td>
<td>4,514,400</td>
<td>110,931,700</td>
<td>10.9 %</td>
<td>2,357.3 %</td>
<td>5.6 %</td>
</tr>
<tr>
<td>Asia</td>
<td>3,834,792,852</td>
<td>114,304,000</td>
<td>825,094,396</td>
<td>21.5 %</td>
<td>621.8 %</td>
<td>42.0 %</td>
</tr>
<tr>
<td>Eastern</td>
<td>813,319,531</td>
<td>105,096,093</td>
<td>475,069,408</td>
<td>58.4 %</td>
<td>352.0 %</td>
<td>24.2 %</td>
</tr>
<tr>
<td>Middle East</td>
<td>212,336,924</td>
<td>3,284,800</td>
<td>63,240,946</td>
<td>29.8 %</td>
<td>1,825.3 %</td>
<td>3.2 %</td>
</tr>
<tr>
<td>North America</td>
<td>344,124,450</td>
<td>108,096,800</td>
<td>266,224,360</td>
<td>77.4 %</td>
<td>346.3 %</td>
<td>13.5 %</td>
</tr>
<tr>
<td>Latin America/Caribbean</td>
<td>592,556,972</td>
<td>18,068,919</td>
<td>204,689,836</td>
<td>34.5 %</td>
<td>1,032.8 %</td>
<td>10.4 %</td>
</tr>
<tr>
<td>Oceania / Australia</td>
<td>34,700,201</td>
<td>7,620,480</td>
<td>21,263,990</td>
<td>61.3 %</td>
<td>179.0 %</td>
<td>1.1 %</td>
</tr>
<tr>
<td>WORLD TOTAL</td>
<td>6,845,609,960</td>
<td>360,985,492</td>
<td>1,966,514,816</td>
<td>28.7 %</td>
<td>444.8 %</td>
<td>100.0 %</td>
</tr>
</tbody>
</table>

Notes: (1) Internet usage and population statistics are for June 30, 2010. (2) Users are population weighted for standard regional usage information. (3) Demographic (Population) numbers are based on data from the US Census Bureau. (4) Internet usage information comes from data published by Nielsen Online, by the International Telecommunications Union, by the World Internet Project, local regulators and other reliable sources. (5) For definitions, presentation, and usage help, please visit the site Surfing Guide. (6) Information in this site may be cited, giving due credit to www.internetworldstats.com. Copyright © 2000 - 2010, Miniwatts Marketing Group. All rights reserved worldwide.
The Internet

- Source of medical information
- "As physicians, we, too, use the Internet daily. Doctors now routinely consult the Web in search of diagnoses."
- "In 2006, two Australian specialists tested the diagnostic accuracy of Google searches by entering symptoms and signs from 26 published case records."
  - "Google searches revealed the correct diagnosis in 15 (58%, 95% confidence interval 38% to 77%) cases."

The Internet still

After evaluating a 16 year old water polo player who presented with acute subclavian vein thrombosis, one of us (HT) started to explain that the cause of the thrombosis was uncertain when the patient’s father blurted out, “But of course he has Paget-von Schrötter syndrome.” Having previously googled the symptoms, he gave us a mini-tutorial on the pathophysiology: hypertrophy of the neck muscles leading to dynamic compression of the axillary vein at the thoracic inlet—leading to thrombosis—and the correct treatment of the syndrome.

However

The Internet

- Reliability issues
  - Educate vs to ban from
    - prudent gathering of info
    - careful evaluation
The Internet still

Everything could be found on the web if only one knew the correct search terms.

From [GOOGLING]

Searching with Google may help doctors to formulate a differential diagnosis in difficult diagnostic cases.

From [GOOGLING]

The wave is changing...

- There’s a new trend to empower the patient
  - Set the focus on the patient
  - e-patients.net
  - epatientdave.com
  - Society for participatory medicine
  - Intel’s People Centred innovation

GP's associated Internet use with issues of patients’ “power and control” in healthcare and particularly within the primary care consultation. They felt that when patients used the Internet it was often to check up on them (i.e. the GPs), especially regarding medication, and that this was frightening.

Patients, on the other hand, described their use of the Internet as a means of creating a favourable impression during their consultation.

One GP said: ‘The Internet – yes, it’s fine. As long as we’re still in control.’
HON

- Health on the Net Foundation
- “promotes and guides the deployment of useful and reliable online health information, and its appropriate and efficient use”
- Created in 1995
- In 2002, recognized as a non-governmental organization and granted special consultative status with the United Nations Economic and Social Council
- Several tools developed for assessing/providing reliable sources

HONCODE Principles

- Principle 1: Authority
  - Give qualifications of authors
- Principle 2: Complementarity
  - Information to support, not replace
- Principle 3: Confidentiality
  - Respect the privacy of site users
- Principle 4: Attribution
  - Cite the sources and dates of medical information
- Principle 5: Justifiability
  - Ability to back claims
- Principle 6: Transparency
  - Accessibility, provide valid contact details
- Principle 7: Financial disclosure
  - Provide details of funding
- Principle 8: Advertising
  - Clearly distinguish advertising from editorial content

HON Code Accreditation Process

1. Web publisher submits a request to be accredited and to obtain the right to display the HONcode seal
2. The Web publisher fills in an online questionnaire
3. The HONcode review team conducts a thorough evaluation of the website
4. According to findings, website is:
   - accredited
   - accredited under condition to modify/add some statement on the website
   - not accredited
5. If accredited, a unique HONcode seal is granted
6. Each website is re-evaluated each year
7. The accredited website is integrated into the database of HONcode accredited websites, HONcodeHunt

HONCode

- Principle:
  - “The request for accreditation is usually backed by the willingness to improve”
- Toolbar available for
  - Accreditation status
  - Search for compliant
Tools

- Search only HONcode Certified sites: HONCodeHunt
- HONCode site evaluation form
- Targeted search engine
  - Wrapin
  - Search for terms and sources of information regarding terms of sites
  - Uses the results from Marvin

Marvin The crawler

- Web crawler
- Uses MeSH thesaurus and other medical dictionaries
- Detection of medical and health related Web pages
- Semi-automatic selection of most relevant health and medical Web pages
- Several languages processed
  - English, French, Spanish, Italian, German, Portuguese, Danish, Dutch

HON Code:

Automatic assessment

- Machine learning algorithms (see [HONWRAPIN])
- Several languages (English, French, Spanish, Italian)
- Give results according to the HONCode criteria
  - Authenticity, complementary, advertising, etc

HON Code:

Automatic assessment – results

- From [HON-PRES2] :
  - Globally results are very good for Privacy and Attribution_Ref
  - Good for Complementarily, Transparency, Sponsorship and Advertising
  - Small confusions between Sponsorship and Advertising
  - Small confusions between Authority and Reference
  - Confusions between Justifiability and Complementarity
- Informative 65% whereas general purpose was 59%
- Reliable 72% whereas general purpose was 41%
OTHERS

- **URAC:**
  - Accreditation company for health institutions
  - Also does web-site accreditation.

- **Discern:** is a questionnaire which can be used to judge the reliability of a publication as a source of information about treatment choices.

- **NETSCORING** was developed to provide a set of criteria that can be consistently used to assess the quality of health information on the Internet. There are 49 criteria which fall into eight categories: credibility, content, links, design, interactivity, quantitative aspects, ethics, and accessibility.

From [EUROQC]

**EU – Quality criteria for Health related websites**

"The purpose of the eEurope 2002 action on Quality Criteria for health-related Websites was to encourage the adoption of a common set of basic quality criteria for such sites. The issue of whether and how these criteria might be implemented at European level was not within the terms of the action."

From [EUROQC]

- **In addition to community law**
  - Which include “medical advertising”, “data protection”, “defective products”, etc.
EU – Quality criteria for Health related websites - Criteria

- Transparency and Honesty
  - (HON: Authoritative, Transparency)
- Authority
  - (HON: Attribution)
- Privacy and data protection
  - (HON: Privacy)
- Updating of information
  - (HON: None)
- Accountability
  - (HON: Some aspects on Transparency)
- Accessibility
  - (HON: Some aspects on Transparency)

Some points

- Health workers should have internet access
- Health workers should have/be provided training for assessing internet information
- Health workers should be knowledgeable on sites of his/her area
  - Societies driven
- Government should periodically peer-review their contents for accuracy

Some points (cont.)

- Treatment facilities should provide accurate information
- Quality standards should be applied
  - Enforced/re-assessed externally
- Information on practitioners should be accessible on the web
- Patient satisfaction surveys on the quality of information
- Consumer, patient, public education on information evaluation

Adapted from [AUTHUTIL]
BRIEFLY OTHER USES

As a tool
- Online disease Management
  - Register data, reminders, analysis
  - Example: Health Support Solutions (diabetes, obesity, hypertension), Sugar Stats (diabetes)
- Administration stuff
  - Repeat prescriptions, make appointments
    - Example: EmisAccess (UK)
- Support groups
  - Example: Self Management Stanford

Social networking
- Cure together
- Patients Like Me
- Enables sharing, searching, comparing symptoms, treatments, health data
- “Learn from others experience”
- Different business models associated
  - Selling non-identified/aggregated data (PatientsLikeMe)
  - Sending advertisement for clinical trials on behalf of drug makers, book and product sales (CureTogether)

As online EHR
- Examples:
  - Microsoft Health Vault
  - Google Health
Jeff Livingston, an obstetrician and gynaecologist in Irving, Texas, said his 10-doctor practice has about 600 Facebook fans and more than 1,500 Twitter followers. They not only use the social networking service to communicate through text messaging, but can read and comment on postings about birth control, breast feeding and a variety of other health care topics.

From E-health and Web 3.0: The doctor will tweet you now Computer World, May 20, 2010

END OF TELEMEDICINE ON THE INTERNET

References

- [HON-PRES] Celia Boyer "Health On the Net Foundation: assessing the quality of health Web page all over the world", presentation

References

Acronyms

- HON – Health On the Net
- MeSH – Medical Subject Headings
- UMLS – Uniform Medical Language System