**Title : Internet Resources In Prosthodontics: A Review**

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**ABSTRACT**

**Objective:**

The internet has become an integral tool to access an information on everything including the science and art of practice of prosthodontics. This is because of the unlimited resources of information on the World Wide Web (www). The ebb and flow of internet content calls for an update of prosthodontic resources.

**Data Source:**

An extensive search on the Pubmed and Google scholar was done using following keywords: computer aided learning(CAL), prosthodontic resources, internet, patient education, prosthodontic portals, information technology. The available articles were reviewed and a literature compilation was done.

**Conclusion:**

This article reviews various prosthodontic resources available on net, making them useful knowledge bank for the teachers and the students.

**KEYWORDS:** computer aided learning(CAL), prosthodontic resources, internet, patient education, prosthodontic portals, information technology

**INTRODUCTION**

Health education institutions are assuring radical changes in the delivery of information. One of the notable technological changes is the evolution of a computerized network system that allows storage and dissemination of information in a variety of multimedia formats. The internet is undoubtedly the most significant of these systems. This powerful, universal system will have a significant impact on how health educators process and present information in the coming decades.1-2

Despite the fact that the WWW is a repository of much information, the search for information remains an uncoordinated, and often complex and time-consuming procedure. With the exception of those who understand the complexities of the Internet and search engines, the hunt for information is often a haphazard procedure in which obtaining useful material may prove tricky, time consuming and frustating.Hence there was need of a comprehensive literature review for better understanding of the prosthodontic information flow on the internet.

**METHOD**

An extensive search on the Pubmed and Google scholar was done using the following keywords: computer aided learning(CAL), prosthodontic resources, internet, patient education, prosthodontic portals, information technology. The available articles between years 1993 to 2013 were reviewed and a literature compilation was done.

**SOFTWARES FOR NAVIGATING THE INTERNET**

Telnet

Telnet provides teletype-style communications to other computers connected to the Internet as an alternative to telephone communication using modems.3,4 Telnet is a user command and an underlying [TCP/IP](http://searchnetworking.techtarget.com/definition/TCP-IP) [protocol](http://searchnetworking.techtarget.com/definition/protocol) for accessing remote computers. Through Telnet, an administrator or another user can [access](http://whatis.techtarget.com/definition/access) someone else's computer remotely. Telnet really offers video-display-terminal-style communication. With Telnet, you log on as a regular user with whatever privileges you may have been granted to the specific [application](http://searchsoftwarequality.techtarget.com/definition/application) and [data](http://searchdatamanagement.techtarget.com/definition/data) on that computer.

Client-server software

Client server describes the relationship between two computer programs in which one program, the client, makes a service request from another program, the server, which fulfils the request. Although the client server idea can be used by programs within a single computer, it is a more important idea in a network. In a network, the client server model provides a convenient way to interconnect programs that are distributed efficiently across different locations. Server software is distinguished from traditional online retrieval programs by its inability to respond directly to requests from terminals. Servers only respond to properlypackaged requests arriving over the network. Users must run suitable client software on their own computers to submit proper requests.3,4,5

File transfer protocol and Archie

File Transfer Protocol (FTP) is a standard Internet [protocol](http://searchnetworking.techtarget.com/definition/protocol) for transmitting files between computers on the Internet. Like the Hypertext Transfer Protocol ([HTTP](http://searchwindevelopment.techtarget.com/definition/HTTP)), which transfers displayable Web pages and related files, and the Simple Mail Transfer Protocol ([SMTP](http://searchexchange.techtarget.com/definition/SMTP)), which transfers e-mail, FTP is an application protocol that uses the Internet's [TCP/IP](http://searchnetworking.techtarget.com/definition/TCP-IP)protocols. FTP is commonly used to transfer Web page files from their creator to the computer that acts as their [server](http://whatis.techtarget.com/definition/server) for everyone on the Internet. Archie is a program used for finding files stored on FTP (File Transfer Protocol) servers. Archie is not used very much anymore because to use it effectively, you need to know the exact file name you're looking for. Most file searching is now done via the Web with a Web browser like Internet Explorer or Netscape.4,5

World Wide Web

A [system](http://www.webopedia.com/TERM/S/system.html) of [Internet](http://www.webopedia.com/TERM/I/Internet.html) [servers](http://www.webopedia.com/TERM/S/server.html) that [support](http://www.webopedia.com/TERM/S/support.html) specially [formatted](http://www.webopedia.com/TERM/F/format.html) [documents](http://www.webopedia.com/TERM/D/document.html). The documents are formatted in a markup language called [HTML](http://www.webopedia.com/TERM/H/HTML.html) (HyperText Markup Language) that supports links to other documents, as well as [graphics](http://www.webopedia.com/TERM/G/graphics.html), audio, and video [files](http://www.webopedia.com/TERM/F/file.html). This means you can jump from one document to another simply by[clicking](http://www.webopedia.com/TERM/C/click.html) on [hot spots](http://www.webopedia.com/TERM/H/hot_spot.html). Not all Internet servers are part of the World Wide Web. There are several [applications](http://www.webopedia.com/TERM/A/application.html) called [Web browsers](http://www.webopedia.com/TERM/B/browser.html) that make it easy to [access](http://www.webopedia.com/TERM/A/access.html) the World Wide Web; two of the most popular being Firefox and Microsoft’s Internet Explorer.5,6

**PROSTHODONTICS PORTALS**

Within a second, the google search engines retrieves over a million websites relating to the search term “Prosthodontics”. Despite the availability of an immense quantity of information on the internet, performing a search is often a complex, uncoordinated and time consuming procedure. Portals are more reliable gateways to smaller selections of prosthodontic resources because they are repositories of websites chosen or edited by humans for their quality. A list of various prosthodontic sites are given in table 1, making them useful resources and knowledge bank for the teachers and the students. 7

Table 1:

|  |  |  |
| --- | --- | --- |
| Site Name | URL | Site Description |
| The American College of Prosthodontists | [www.prosthodontics.org](http://www.prosthodontics.org) | The American College of  Prosthodontists is the professional association of dentists with advanced specialty training who create optimal oral health, both in function and appearance including dental implants, dentures, veneers, crowns and teeth whitening. |
| Dentistry internet resources, university of Hong Kong | www.hku.hk/lib/DenLib/den.html | It is a very good guide, providing links to dental education resources, electronic libraries and journals, and associations. The dental resources are listed according to subject, such as cariology, cleft lip and palate, dental implants, dental materials,endodontics, forensic dentistry, HIV and dental care, oral and maxillofacial radiology, oral and maxillofacial surgery, oralcancer, orthodontics, pediatric dentistry, periodontics, prosthodontics, and temporomandibular joint disease. |
| MedWeb at Emory University, Educational Resources: Dentistry. | [www.gen.emory.edulMEDWEB/keyword/educationaLresources/dentistry](http://www.gen.emory.edulMEDWEB/keyword/educationaLresources/dentistry) | This site is not very extensive, providing links to only 17 dentists related sites. Perhaps more useful are the links are given to general scientific and health sciences sites,including sites dealing with biology, chemistry and genetics. |
| Dentistry Resources at the University of Alberta. | [www.ualberta.ca/cbidwelllhsmslhsresdnt.htm](http://www.ualberta.ca/cbidwelllhsmslhsresdnt.htm) | This site provides links to professional organizations, companies, educational, research and social sites. |
| Dental Related Internet Resources. | [www.dental-resources.com](http://www.dental-resources.com) | This is a site with a commercial orientations providing, for example, links to dental suppliers and laboratories, although it provides links to dental education, continuing education sites and associations as well. It includes a search engine. |
| The Clinical Dentistry Page, Harvard School of DentalMedicine. | www.hsdm.med.harvard.edulpages/clindent.htm | This site provides links to educational sites which provide tutorials on topics including periodontology, systemic antibiotic therapy in oral surgery, odontogenic tumours, oralanatomy, temperomandibular joint, facial and mandibular fractures, and oral health. In addition, it provides links to sites with case studies, including cases in diagnosis and treatment planning, periodontology, oral and maxillofacial radiology, and oral and maxillofacial surgery. |
| Internet Resource, Dentistry, University of Pittsburgh | [www.hsIs.pitt.edulintreslhealthldental.html](http://www.hsIs.pitt.edulintreslhealthldental.html) | This site provides numerous links to dental schools, sites for dental education, associations and information for the lay person. |
| MedNets Dental Database. | [www.internets.comlmednets/sdental.htm#chid](http://www.internets.comlmednets/sdental.htm#chid) | This is a searchable database, i.e. one with a search engine that enables the user to locate material in its repository. The extensive database contains abstracts of books, pamphlets, brochures, fact sheets and journal articles, many of which are written by top researchers in their respective fields. In addition, links to other searchable dental databases are provided. |
| Dental Study Club Online Archives. | [www.tambed.eduIDentaICE/dsc/ARCHIVES/](http://www.tambed.eduIDentaICE/dsc/ARCHIVES/) search.html | This is a searchable database that provides structured abstracts of journal articles. The structured abstracts contain summaries of research objectives, results and conclusions. Suggested reading lists and self-assessment tests are also given. |
| Biomaterials Properties Database, University ofMichigan. | [www.lib.umich.edu/libhome/Dentistry.lib/DentaUables.ltoc.htm](http://www.lib.umich.edu/libhome/Dentistry.lib/DentaUables.ltoc.htm) | This site provides data on the physical properties of biomaterials. It is perhaps more useful to the researcher than the student or teacher, as only physical data is provided. |
| Dental Materials School of Dentistry, University of North Carolina at Chapel Hill. | www.dent.unc. edu/bayneldentmtls/dm-lectures.htm | This site provides lecture notes on dental materials.The topics include resin modified glass ionomers, filling materials, gold casting alloys, the mercury controversy, anddental cements. |
| Anatomy Modules: TMJ tutorials, University ofWashington Department of Radiology. | [www.rad.washington.edu/Anatomy/TM J/TMJ.html](http://www.rad.washington.edu/Anatomy/TM%20J/TMJ.html) | This excellent site features tutorials on the temperomandibular (TMJ) joint. The topics covered include the following: TMJ anatomy, TMJ artrography, TMJ computed tomography, and TMJ magnetic resonance image. The notes provided are interesting and concise, while the graphics and QuickTime movie clips are of high quality |
| Dental Education Resources on the Web (DERWeb),University of Sheffield . | www.derweb.ac.uklindex.html | This is by far the best dental education resource the authors have come across. In addition to an extensive database of images, it provides web conferencing, a virtual bookshop and links to professional organizations. DERWeb features case studies, a CAL program on dental caries, revision notes on periodontology, immediate dentures, and removal of foreign objects from root canals, a history of occlusal concepts and the dental articulator, and a quiz on root canals(with hints, if required), and patient education pages. |

**DATA BASE AND JOURNALS**

A database is an organized collection of [data](http://en.wikipedia.org/wiki/Data), typically in digital form. A single click on google retrives more than 20 database related to prosthodontics. Of which the most commonly use databases are the PubMed and Cochrane library.

A journal is a [periodical publication](http://en.wikipedia.org/wiki/Periodical_publication) intended to further the progress of [science](http://en.wikipedia.org/wiki/Science), usually by reporting new [research](http://en.wikipedia.org/wiki/Research). Most journals are highly specialized, although some of the oldest journals such as [Nature](http://en.wikipedia.org/wiki/Nature_%28journal%29) publish articles and [scientific papers](http://en.wikipedia.org/wiki/Scientific_paper) across a wide range of scientific fields. Most online journals are reproduction of their print counterparts. Sadly, the idea of free online journals has not yet being realised in prosthodontic, and full text access mostly requires a paid subscription.

PubMed

PubMed comprises of over 20 million citations for biomedical literature from MEDLINE, life science journals, and online books. PubMed citations and abstracts include the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and preclinical sciences.

PubMed also provides access to additional relevant Web sites and links to the other NCBI molecular biology resources. PubMed is a free resource that is developed and maintained by the National Center for Biotechnology Information (NCBI), at the U.S. National Library of Medicine (NLM), located at the National Institutes of Health (NIH).

Publishers of journals can submit their citations to NCBI and then provide access to the full text of articles at journal Web sites using LinkOut. 8,9

The Cochrane Library

The Cochrane Library is a collection of six databases that contain different types of high-quality, independent evidence to inform healthcare decision-making, and a seventh database that provides information about groups in The Cochrane Collaboration.9 The Cochrane Library is a subscription-based database, originally published by Update Software and now part of the [Wiley Online](http://en.wikipedia.org/wiki/John_Wiley_%26_Sons) system. In many countries, including [Canada](http://en.wikipedia.org/wiki/Canada),the [UnitedKingdom](http://en.wikipedia.org/wiki/United_Kingdom), [Ireland](http://en.wikipedia.org/wiki/Ireland),the [Scandinavian](http://en.wikipedia.org/wiki/Scandinavia) countries, [NewZealand](http://en.wikipedia.org/wiki/New_Zealand), [Australia](http://en.wikipedia.org/wiki/Australia), [India](http://en.wikipedia.org/wiki/India),  [South Africa](http://en.wikipedia.org/wiki/South_Africa), and [Poland](http://en.wikipedia.org/wiki/Poland), it has been made available free to all residents by "national provision". There are also arrangements for free access in much of [Latin America](http://en.wikipedia.org/wiki/Latin_America) and in "low-income countries", typically via [HINARI](http://en.wikipedia.org/wiki/HINARI). All countries have free access to two-page abstracts of all Cochrane Reviews and to short plain-language summaries of selected articles.

The Cochrane Library consists of the following databases:

1. The Cochrane Database of Systematic Reviews
2. The Cochrane Central Register of Controlled Trials.
3. The Cochrane Methodology Register.
4. Health Technology Assessment Database.
5. NHS Economic Evaluation Database

**PATIENT EDUCATION**

The use of computer-aided learning ( CAL ) systems for patient education using media such as floppy discs, digital cd-roms, and analogue interactive videodiscs. CAL is as effective as conventional paper-based and oral communication methods.

Compared with traditional teaching methods, multimedia appeals to patients with different learning styles and CAL systems can be used in the privacy of the patient's home at a convenient time determined by the user.

Web browser interfaces are easy to use, the patient has only to click a mouse button to interact with the program and different programs utilise the same familiar looking screen layout. The information content of the Web page can be personalised for individual patients using data from their electronic patient record.

In the next decade, television-based Web browsers controlled by a pointing device built into the infra-red remote control handset will become as commonplace as the videocassette recorders and satellite television receivers of today. On-demand digital video delivered through a fibre-optic cable television network has recently been shown to work effectively in the home but it needs great supercomputing power and therefore it is not yet commercially viable. 10-18

**CONCLUSION**

There is no reason to be daunted by the quantity of information on Prosthodontics on the internet. Large volumes of high quality information are provided by a small selection of portals. Keeping abreast of the further progress in prosthodontic merely requires leaner to embrace the concept of being updated by email, and keeping an eye on various information resources.

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