Assessing medical student learning in assessing the quality of health information on the internet and communicating the skill to patients

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ABSTRACT

Background Patients increasingly turn to the internet for health information. However, seeking valid information can be difficult because of the speed of accumulation of information and lack of control. HealthInSite, the Canadian Health Network, the Health On the Net Foundation and the QUality Information ChecKlist have created criteria to assess internet health information. The fourth semester students at the Manipal College of Medical Sciences, Pokhara, Nepal, were taught to assess health information online and to communicate the same to simulated patients. Student feedback regarding the exercise was collected using a questionnaire.

Methods The exercise was carried out during the pharmacology practical sessions in small groups of seven or eight students each. The students developed their own checklist using information from the organisation websites mentioned above. Each group analysed a particular health website. During the second session the groups communicated the critical appraisal criteria to a simulated patient. Then the patient chose websites for a particular disease condition. Formative assessment of the sessions was carried out. A questionnaire was used to collect student feedback about the sessions. Basic demographic information was collected. Student attitude was studied by noting their degree of agreement with a set of seven statements using a Likert-type scale. The median score was calculated.

Results A total of 56 of the 73 fourth semester students participated. The gender ratio was equal. The common nationalities were Indians, Nepalese and Sri Lankans. The median score was 27 (maximum score 35) and the interquartile range was 4. There were no significant differences in the total scores among different subgroups of respondents. The students wanted similar sessions to be frequently incorporated during the course. Formative assessment revealed that the groups worked cohesively. They were able to analyse the given website appropriately and were successful in communicating the assessment criteria to the simulated patient.

Conclusions The sessions should be continued and strengthened and could be expanded to other semesters and especially to students during the clinical years of study. Preliminary feedback was positive but more detailed studies are required.

Keywords: assessment criteria, communication, internet health information

Background

The internet is becoming a major vehicle for health maintenance and health care. The internet has permitted doctors, other healthcare professionals, patients, and other consumers to access medical information quickly. A survey in the USA had found that 79% of respondents had used the internet to find health-related information, 73% used the information to make a health-related decision, and 50% shared the information with their healthcare provider.

Seeking useful and valid information on the internet can be difficult because of the speed of accumulation of information and the lack of control. There may be
incomplete, misleading or inaccurate information on the web. The quality of medical information is important, as misinformation could be a matter of life or death. Health-related websites should be judged by the quality of health information and by design features that may facilitate or impede use.

Quality has been defined as 'the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs'. Self-labelling of medical information by web authors along with systematised critical appraisal by users and third parties using a validated standard core vocabulary to improve information quality has been suggested. Critical appraisal of information by doctors, medical societies and associations can be useful. Critical appraisal is an essential part of evidence-based clinical practice that includes the process of systematically finding, appraising and acting on evidence of effectiveness. Critical appraisal is the process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision.

The Australian government has created HealthInSite as a portal to high-quality health information on the web. HealthInSite has created a set of questions that would be useful in assessing the quality of health information. The purpose of creating the site, the person(s) or organisation(s) responsible for the information, completeness and depth of subject coverage, frequency of updating of information, and ease of navigation of the site, are some of the criteria. The Canadian Health Network (CHN) has created its own checklist to assess information quality. The Health on the Net (HON) Foundation and the Quality Information CheckList (QUICK) guide from the UK also provide means to check the quality of internet health information.

The Manipal College of Medical Sciences (MCOMS), Pokhara, Nepal, mainly admits students from Nepal, India, and Sri Lanka to the undergraduate medical (MBBS) course. The basic science subjects (anatomy, physiology, biochemistry, pharmacology, pathology, microbiology, and community medicine) are taught in an integrated organ system-based manner during the first four semesters of the course. South Asia is a region of stark contrasts. Despite poverty and low socioeconomic development, there is a large middle class in these countries. Middle-class patients increasingly have access to the internet and use the internet to obtain information about treatment options and to guide treatment decisions.

The Department of Pharmacology with the help of the Department of Medical Education at MCOMS conducted two sessions for the fourth semester students on assessing the quality of health websites and communicating to patients the method of critical appraisal of internet health information. Role-plays were used for the second part of the exercise. The present study was carried out to obtain student feedback about the sessions. The theoretical basis of the study is as follows. The author wanted to test the hypothesis that it is possible to teach medical students in a resource-limited set-up in a developing country to access and assess the quality of health information on the internet using small group, activity-based learning, and for the students to communicate the same to selected simulated patients. (In later sessions, the possibility of using ‘real’ patients can be explored.) The objectives of the study were to:

- obtain basic demographic information about the student respondents
- study students’ attitude about the sessions using a modified Likert-type scale
- calculate the median total attitude score and compare the scores among different subgroups of respondents
- obtain freetext comments to improve the sessions and
- test the theoretical hypothesis underlying the study.

Methods

The exercise was carried out during the practical sessions in pharmacology (of 2.5 hours duration). The batch of 37 or 38 students was divided into five small groups of seven or eight students each. During the first session, the students were familiarised with the HealthInSite, CHN, HON and the QUICK criteria. The groups were instructed to use these criteria to develop their own checklists to assess internet health information.

In the first session there was a general discussion on internet sources of health information, their advantages and problems. The facilitator discussed various methods to assess the quality of information. Then each group assessed a health website in the computer laboratory. A South Asian website was given to some groups while others got a Western website. The various groups presented their findings and this was followed by a general discussion.

During the second session each group was given a simulated patient suffering from a particular disease condition. In the computer laboratory the group informed the patient about the criteria for assessing the quality of internet health information. The simulated patient then selected relevant websites for his/her disease.

Student feedback was collected at the end of the second session. The students had the objectives of the study explained to them and were invited to participate. Written informed consent was obtained from the
participants. Appendix 1 shows the participant consent form.

A questionnaire was used to obtain student feedback (see Appendix 2). Basic demographic information regarding gender, nationality, place of residence (urban/rural), familiarity with using the internet, occupation of parents, and method of financing of medical education were noted. A set of seven statements was used to study student attitudes towards the sessions. The statements concerned the sessions and the respondent’s knowledge of internet health information sources. The degree of agreement with each statement was denoted using a modified Likert-type scale. The respondents were assured that confidentiality of their information would be maintained. The responses and the demographic characteristics would only be reported as a group. The responses were de-identified from the individual respondent.

The median total score was calculated for each respondent. The median total scores among various subgroups of respondents were compared using appropriate non-parametric tests ($P<0.05$). The Mann–Whitney test was used for dichotomous variables and the Kruskal–Wallis test for the others. Freetext comments from the respondents were invited and were grouped together. The common comments were recorded.

### Results

A total of 56 of the 73 fourth semester students (77%) participated in the study. Twenty-eight (50%) participants were male, 20 (35.7%) were Nepalese, 27 (48.2%) were Indians, eight (14.3%) were Sri Lankans, and one was from Canada. Fifty-three students (94.6%) were from an urban area. Table 1 shows the demographic characteristics of the student respondents.

The median total score was 27 (maximum score 35) and the interquartile range was four. No significant difference in the median total scores was seen among the different subgroups of respondents. The median score for each individual statement except statement number five was four. The interquartile range was one.

The students wanted similar sessions to be frequently incorporated during the course. They wanted website assessment to be carried out according to the topics being covered in the theory classes. One respondent was worried that internet sites may increase the risk of self-medication among patients.

Formative assessment revealed that the groups worked cohesively and in a co-ordinated manner. They were able to assess the given website properly. They successfully taught the simulated patients critical appraisal skills for internet health websites. The simulated patients generally chose appropriate websites for a given disease condition.

### Discussion

The students had a positive opinion regarding the sessions. No significant differences in the median total score were seen among different subgroups of respondents.

Critical analysis of information is a crucial skill for future prescribers. The *Guide to Good Prescribing* emphasises the development of efficient reading habits among students. Students at the end of their undergraduate medical (MBBS) training should be equipped with the skills to critically review medical literature, promotional material and the prescribing patterns of fellow doctors.

Solving simple problems in therapeutics, prescribing appropriate drugs for a disease condition, and delivering drug-related and disease-related information to patients in a meaningful way are important transferable skills in pharmacology. The department is teaching students to critically evaluate the promotional activities of the pharmaceutical industry. The department also teaches students to critically analyse the rationality of prescriptions as a means of developing good prescribing habits.

The revised curriculum of Kathmandu University, to which our college is affiliated, has a module on medical informatics for medical students. Retrieving information from the internet is a skill to be learned by all future doctors.

### Table 1 Demographic characteristics of student respondents

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>$n$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>28 (50)</td>
</tr>
<tr>
<td>Female</td>
<td>28 (50)</td>
</tr>
<tr>
<td><strong>Nationality</strong></td>
<td></td>
</tr>
<tr>
<td>Nepalese</td>
<td>20 (35.7)</td>
</tr>
<tr>
<td>Indian</td>
<td>27 (48.2)</td>
</tr>
<tr>
<td>Sri Lankan</td>
<td>8 (14.3)</td>
</tr>
<tr>
<td>Canadian</td>
<td>1 (1.8)</td>
</tr>
<tr>
<td><strong>Place of residence</strong></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>53 (94.6)</td>
</tr>
<tr>
<td>Rural</td>
<td>3 (5.4)</td>
</tr>
<tr>
<td><strong>Internet-savvy</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>45 (80.4)</td>
</tr>
<tr>
<td>No</td>
<td>7 (12.5)</td>
</tr>
<tr>
<td><strong>Occupation of parents</strong></td>
<td></td>
</tr>
<tr>
<td>Both doctors</td>
<td>10 (17.9)</td>
</tr>
<tr>
<td>One doctor</td>
<td>11 (19.6)</td>
</tr>
<tr>
<td>Neither doctor</td>
<td>31 (55.4)</td>
</tr>
<tr>
<td><strong>Method of financing</strong></td>
<td></td>
</tr>
<tr>
<td>Scholarship</td>
<td>10 (17.9)</td>
</tr>
<tr>
<td>Self-financing</td>
<td>45 (80.4)</td>
</tr>
</tbody>
</table>
This exercise had two main aims. The first was to teach students to assess the quality of health information on the internet. The second was to teach students to communicate this information to patients so that patients can access quality internet health information. The author wanted to expand the already existing communication skills sessions to include communicating critical appraisal of internet health information.

The theoretical basis for the study was the premise that it is possible to teach students in a resource-limited set-up in a developing country to assess the quality of internet health information and to communicate the same to simulated patients. Based on the formative assessment and the feedback from the questionnaire, this pilot session can be considered successful in both these objectives. During the formative assessment, the group was able to access and assess the given website. The assessment during the first and the second session was basically of the groups. The role play was witnessed by the faculty but only the communication skills of the student playing the role of the doctor were assessed. Individual assessment of these skills was not carried out. The author has not come across previous studies on teaching students to assess the quality of health information on the internet.

The internet sites to be assessed during the first session were selected by the author. However, the low number of health websites from South Asia may have introduced bias. A minority of students were not competent in using the internet. No special sessions were held for them but they could have learnt the basics while working in groups. The groups were selected to comprise both internet-savvy and internet-naive individuals.

The websites selected by the simulated patients at the end of the second session were, in general, appropriate. The students effectively communicated information about assessment of internet health information to the simulated patients.

At present, internet usage by patients to access health information is not common in South Asia. The upper-class and middle-class patients do access the internet but this is not common among the lower classes. Most of the websites are in English and are primarily tailored to a Western audience. Internet penetration is low. These may be barriers to access. However, by the time the students start to practise the author expects things may have improved.

Two different teaching interventions, one regarding critical appraisal skills and the other regarding communication skills, were combined in the sessions. Student feedback was obtained using a questionnaire. Detailed responses were not obtained. The questionnaire was not pre-tested and there were only 7 statements. The number of respondents was small (56). The communication session was carried out using simulated patients. The simulated patients were more educated than the general public. However, the level of literacy in South Asia varies by region. These were the limitations of the study.

Conclusions

The sessions were successful in teaching students to critically assess health information on the internet. The students were able to communicate successfully to simulated patients the criteria for assessing health information online. The sessions should be continued and strengthened. Closer integration with the topics covered during the theory classes can be considered. Real patients may be used. However, it has to be ensured that these patients have at least a basic idea of the internet. The sessions can be expanded to other semesters and especially to students during the clinical years of study. Preliminary feedback was positive but more detailed studies are required.

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14 The Quality Information Checklist. www.quick.org.uk/menu.htm


**CONFLICTS OF INTEREST**

None.

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Appendix 1: Participant consent form

Study title: Sessions on assessing the quality of health information on the internet – Student feedback

Chief investigator: Dr Ravi Shankar

Investigator’s statement: We are conducting a study and are obtaining student feedback on the sessions on assessing the quality of health information on the internet. Feel free to ask the investigator any questions you may have about the study. When you feel your questions have been answered you can decide if you want to participate. All information about you will be kept confidential and will be used for the purposes of the study only.

Purpose and benefits: The purpose of the study is to obtain your feedback on the newly-introduced sessions on assessing the quality of internet sources of health information. There may be no personal benefit for you but your comments will help us modify, strengthen and focus the sessions for the benefit of future students. The practical exercises which you appreciated were constantly modified based on the feedback of earlier students before they could reach their current level.

Procedure: Kindly fill in the details and indicate your degree of agreement with each of the seven statements. Kindly fill in all the details so that we can analyse them.

If you have any questions after we complete the analysis then meet the chief investigator. If you are interested in knowing the results kindly write your email address on the separate sheet circulated.

I have read and understood the above and consent to participate in the study.

Signature of participant Date

Signature of person obtaining consent Date

Appendix 2: Questionnaire used for the study

Sessions on assessing the quality of health information on the internet – Student feedback

Sex: M/F  
Nationality:  
Urban/rural  
Internet-savvy/internet-illiterate  
Occupation of parents: Both doctors/One doctor/None doctor  
Scholarship/self-financing

For the following statements, score from 1 to 5 (whole numbers only) according to the following scale:

1 = totally disagree with the statement, 2 = disagree, 3 = neutral, 4 = agree, 5 = totally agree with the statement

1 The sessions have made me confident about assessing the quality of health information on the internet.
2 I would be able to teach my patients about accessing quality sources of health information.
3 This is an important skill in the South Asian context.
4 Authority, complementarity, confidentiality, attribution are some of the features of a good website.
5 There is no dearth of good websites for the general public in South Asia.
6 The internet will become an increasingly important source of health information.
7 The sessions were interesting and informative.

Any other comments