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Sources of medical information appreciated by Slovenian student population

Key words:
family practice,
students,
physician-patient relations,
internet,
consumer health information

Abstract

Introduction: The traditional role of physicians as health educators is becoming more and more difficult to accomplish due to unprecedented amount of health information available in the Internet, magazines, newspapers, radio, television and other media. The increasing amount of health related information can be beneficial in improving behavioural outcomes but an adequate level of trust and critical appraisal of the inforamtion are needed. There is also present fear that recent changes in healthcare and growing number of other sources of information are undermining the patient-physician relationship.

Objective: We wanted to evaluate the level of trust to different health related information sources among population of students at the University of Ljubljana.

Participants and methods. We used an anonymous web questionnaire in a population of students at the University of Ljubljana. Questions in trust to various sources of health information had to be answered on a 7-point Likert scale.

Results. There was 1294 students in a sample out of which *991 (76.6%) were women. Mean age was of the sample was 22.4 ± 3.2 years.*

Mean score on trust scale was the highest for trust to physicians (6.2 ± 1.0), to pharmacists (5.5 ± 1.3) and books (5.3 ± 1.2). Women turned out to trust physicians ($p<0.001$), nurses ($p=0.016$) and pharmacists ($p=0.004$) more and the Internet ($p=0.022$) less than men. Students with medical topics in school curriculum trusted doctor ($p<0.001$), pharmacist ($p=0.004$) and books ($p=0.001$) more and homoeopathist ($p<0.001$), healer ($p<0.001$) and friends ($p=0.011$) less than students with no medical topics.

Conclusion. Physicians are still the most trustworthiest source of health related information also among young populations. Further studies should identify subpopulations at risk of recognizing the Internet as the most trustfull health related information source and draw appropriate measures.

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Introduction

Sources of the health related information could be divided into two groups: sources inside the health system and sources outside of the health system[1]. The era of web services and so-called e-health communication has dramatically changed the ways of attaining medical information[2]. The traditional role of physicians and especially nurses as health teachers is becoming more difficult to accomplish due to many factors, i.e. tight schedules, lack of reimbursement for education time, no specific training for performing this activity successfully and other. Advances in informatics and telemedicine have also broadened the reach of health care specialists beyond the constraints of the traditional office and increasing number of physicians is using new technology to communicate with their patients and majority of such information became public. Further on, increased consumerism is tantalizing for pharmaceutical companies that are launching more and more advertising campaigns. Entertainment industry has found new ways to exploit the market with the increasing number of health and disease related discussions[3]. Due to these reasons, the unprecedented amount of health information on the internet, magazines, newspapers, radio, television and other media is available[4]. Barriers to use these technologies appropriately and effectively include cost, geographic location, illiteracy, disability and other socioeconomic reasons[5]. Higher socioeconomic classes are as a consequence in the better position.

Undoubtedly, the increasing amount of medical information can be beneficial in improving behavioral outcomes, cut costs and improve the public health[2]. But current health communication efforts from experts have not consistently achieved desired effects. There are many reasons that delivered medical information is not successful in addressing the population. One of them is that one-way messages to individuals have not effectively engaged people. In order to promote behavioral change, communication must have special features like being participatory, meaningful, empathetic, empowering, interactive, personally relevant, contextually situated and convenient which is altogether difficult to achieve[2]. And even more important, do people understand medical information if most of this criteria is satisfied. Health education material by experts is often too sophisticated to be interpreted correctly by lay people. The term »health literacy« is used to denote not only the ability to read but also to comprehend and act on medical instructions[6]. On the other hand, the sources outside the health system with income as the driving force have often been considerably more successful in attaining attention of the public. But the level of trustworthiness of these sources is questionable. One of the most important sources nowadays – the Internet, has standards for the quality of information but are rarely respected[7]. Paradoxically, with the ever-increasing number of medical information available on the Internet and other media, the probability of finding relevant and accurate one decreases[8]. That is why the appropriate level of trust and critical appraisal in acquiring information from different sources is needed. And even more important, trust is central to the patient-physician relationship - the foundation of good medical care and lack of it makes physicians work considerably less effective[9,10]. There is a fear present that recent changes in healthcare and growing number of other sources of information are undermining it[11,12]. Patients are undoubtedly becoming more active partners in their own health care and many physicians have difficulties in adjusting, as they no longer have unique access to medical information. Often patients bring information to the medical office and want to discuss it or even demand specific treatment. It is not rare that a patient knows more about a disease he/she has than a physician, especially if the disease is rare. As a result many physicians feel that their professional authority is challenged and if lack of communication is present poor cooperation and consequently inadequate disease managing is common.

Considering all this evaluation of trust to different sources of medical information among young adults is very important to predict how substantial and far reaching the changes are, but only a few surveys have been made concerning this issue. In order to evaluate the degree of trust to different information sources among population of students at the University of Ljubljana we performed a survey in this population. We were especially interested to answer what influences trust to different sources of medical information and what are the differences between the two groups that express higher or lower trust to a physician.

Method

This was a cross-sectional study in a form of an anonymous web questionnaire with 23 questions. A detailed description of the survey has been published elsewhere[13,14]. This type of survey was chosen due to convenience and high computer and Internet use of the selected population. It was placed on the web by GFK Slovenija tržne raziskave d.o.o.; it was active from 30. 3. to 21. 4. 2008.

Questionnaire development and contents

We developed a questionnaire. The questions were developed by the research team and were piloted before the release to diminish technical and structural flaws. The pilot results are not included in the statistical analysis of the study. The questionnaire consist of several topics. Four parts follow a short introduction and instructions. The first part is demographic data (faculty, grade, age, gender), the second part is the relationship toward health as a value and thrust to different sources of health information, the third part is health status,

and the fourth part is self-medication. The questions are of the single- and multiple-choice type. Participants were asked to click the answer selected with a mouse. No other personal data than demographic was selected to assure anonymity.

Questions on students' level of trust to different sources of health related information (trust scale) had to be answered on a 7-point Likert scale (1 not trustworthy; 7 very trustworthy).

Sampling procedure

Our target population were students of the University of Ljubljana. We tried to contact as many students as possible from different faculties through the internal mailing list of each faculty so that everyone would receive a personal invitation to participate. The invitation included a link to the questionnaire. This was only possible in the Faculty of Medicine and the Faculty of Pharmacy. In the Faculty of Medicine, we sent the invitations through the mailing list of SloMSIC (Slovenian Medical Students' International Committee) and in the Faculty of Pharmacy through the mailing list of the Students council. In the *Faculty* of Civil Engineering and *Geodesy, Biotechnical Faculty***,** Faculty of Maritime Studies and Transport, University College of Health Care and Faculty of Economics we were enabled – by kind permission of the deanship – to place the invitation on the official web page of the faculty. In the Faculty of Mechanical Engineering, we placed the invitation on the student's forum and in the Faculty of Education we used a chain mail.

Statistical analysis

Only the fully completed questionnaires were included into statistical analysis. In the statistical analysis only students were included, all other participants were excluded.

Only the questions related to trust to different sources of health related information and demographical data are analysed in this paper. We also analysed the differences in reported self-medication, chronic disease present, number of illness reported in the last year, number of consultations with the physician in the last year and lifestyle differences.

The SPSS software version 16.0 was used to enter and analyse all data. We performed univariate analysis and bivariate analysis. We set the limit of statistical significance at $p < 0.05$.

Results

Total number of filled questionnaires was 1294, of which 1059 came from the students of the following seven University of Ljubljana schools: Medical School – 300 (23.2%), School of Pharmacology – 194 (15.0%), *School* of Civil Engineering and *Geodesy –129 (10.0%)*, University College of Health Care – 125 (9.7%), *Biotechnical School – 114 (8.8%),* School of Education – 110 (8.5%) *and Academy of Arts – 87 (6.7%). There were 991 (76.6%) women in a sample. Mean age was of the sample was 22.4 ± 3.2 years. Considering the year of the study, there were 278 answers (21.5%) from the first-year students, 312 (24.1%) from second-year students, 243 (18.8%) from the third-year students, 52 (11.7%) from the fourth-year students, 47 (3.6%) from the fifth-year students, 35 (2,7%) from the sixth-year students, 195 (5.1%) from candidates for graduation and 32 (2.5%) answers were unclassified.*

The summary of the results is in table 1. Students reported that they trusted their physicians most when it comes to health related information (Table 1).

Table 1. Mean scores of trust scale to different sources of health information

	Mean	SD	Percentiles		I do not know (%)
			5	95	
Physician	6.2	1.0	4	7	0.4
Pharmacist	5.5	1.3	3	7	1.5
Books	5.3	1.2	3	7	0.9
Nurse	5.1	1.3	3	7	1.2
Parents, relatives	4.0	1.4	2	7	1.0
Internet	3.9	1.3	2	6	1.0
Friends	3.5	1.2	2	6	1.2
Television	3.4	1.2	1	5	1.5
Healer	3.3	1.6	1	6	8.0
Homoeopathist	3.2	1.6	1	6	14.0
Radio	3.2	1.2	1	5	1.9
Magazines	3.2	1.3	1	5	1.2

Women turned out to trust physicians ($p<0.001$), nurses ($p=0.016$), pharmacists ($p=0.004$), homoeopathist ($p=0.004$), healer ($p=0.026$), television ($p=0.019$) and books ($p=0.039$) more and the Internet ($p=0.022$) less than men. Younger students (study year ≤3) trusted nurses ($p=0.026$), homoeopathist ($p=0.026$), healer ($p=0.026$), parents and relatives ($p=0.026$) more than older students (study year >3). Students with medical lessons in school curriculum trusted physician ($p<0.001$), pharmacist ($p=0.004$) and books ($p=0.001$) more and homoeopathist ($p<0.001$), healer ($p<0.001$), friends ($p=0.011$), parents or relatives ($p=0.005$), television ($p=0.010$) and magazines ($p=0.047$) less than students with no medical lessons (Table 2).

Table 2. Correlations between trustfulness of health information and demographic characteristics

	Gender			Study year			Medical lessons in school curriculum		
	Men (N=303)	Women (N=991)	p value	≤3 (N=833)	>3 (N=429)	p value	Yes (N=619)	No (N=440)	p value
	Mean	Mean		Mean	Mean		Mean	Mean	
Physician	6.1	6.2	<0.001	6.2	6.2	0.830	6.4	6.0	<0.001
Nurse	4.9	5.1	0.016	5.2	5-0	0.020	5.1	5.0	0.055
Pharmacist	5.2	5.5	0.004	5.5	5.3	0.096	5.6	5.4	0.004
Homoeo pathist	2.9	3.3	0.004	3.3	3.0	0.030	3.0	3.5	<0.001
Healer	3.0	3.4	0.026	3.5	2.9	<0.001	3.0	3.6	<0.001
Friends	3.5	3.5	0.523	3.6	3.4	0.060	3.4	3.6	0.011
Parents, relatives	4.1	4.0	0.655	4.2	3.8	<0.001	3.8	4.2	0.005
Television	3.2	3.4	0.019	3.4	3.4	0.333	3.3	3.5	0.010
Radio	3.1	3.2	0.097	3.2	3.2	0.927	3.1	3.2	0.263
Magazins	3.2	3.2	0.713	3.3	3.1	0.106	3.1	3.3	0.047
Books	5.2	5.3	0.039	5.3	5.3	0.181	5.5	5.2	0.001
Internet	4.0	3.8	0.022	3.8	4.0	0.341	3.9	3.8	0.194

Students who practiced self-medication in the previous year trusted nurses (p=0.032) more than students who did not perform self-medication.

Students who reported to have consulted their physician once or never in the past year trusted nurses (p=0.008), parents or other relatives (p=0.016) and books (p=0.012) more and those who consulted physician more frequently trusted magazines (p=0.030) more. There were no statistically important differences among students who reported at least one chronic disease present and students that reported no chronic diseases. Similarly, there were no significant differences between those who were ill less than 3 times and those ill 3 and more times in the last year.

Discussion

Our study showed that students seem to regard health related information obtained from the inside of health care system more trustfull as those obtained from the outside of the health care system. Physicians are the most trustful source, followed by pharmacists[13]. This ranking order is appropriate if we take into account the medical knowledge these two groups of professionals posses. Books and nurses closely follow the first two ranked sources. Books are rated high, but this is appropriate due to the fact that medical books contain proved information. Other sources which all came outside the health system are rated far lower. In the middle of the ranking are parents or other relatives, Internet and friends. All mass media like television, radio and magazines are rated lower. Healer and homoeopathist are also at the bottom, but the answers were widely dispersed (SD=1.58 and 1.61) compared to a physician (SD= 0.97) and the answer "I do not know" was frequently chosen. This could suggest that most of students are not familiar to these practices or they have different experience but further investigation is necessary. Our results confirm the results of other surveys, but we found some minor differences. Physicians are the most trusted source in all studies, but in some the Internet and television follow the physicians as very trusted sources of information, which differs from our findings[15,16].

Considering gender and study year there are a lot of differences. It is interesting that women trust all sources of medical information more than men with the exception of Internet. Other studies also report higher use of Internet as a source of medical information by men (17) and higher trust to other sources by women[12]. The year of the study also plays an important role. Younger students trust all sources of information more except the books and the Internet. Other studies showed similar results, but the low trust of younger students to Internet differs from other observations[12]. The reasons for the differences in gender and study year are yet unknown, but data shows that younger and women are more suggestible to medical information.

Medical topics in schools' curriculum also play an important role as we showed that students attending schools with medical lessons trust information inside the health system more and the information outside the health system less with the exception of Internet and books. This was expected but the high trust to the Internet is surprising because other data show that especially physicians believe that Internet is not very trustworthy source of education for lay public[18,19].

This indicates that Internet will probably become an important source of new knowledge for future medical personnel.

Self-medication is an important tool when minor self-limiting conditions are present and is widely used in students population[20]. There were no major differences in trust to sources of medical information among students who self-medicated in the last year with the exception of nurses who seem to have an important role in self-medication practice.

Health status did not have an impact on the trust to a health information source, which is in line with other surveys[21]. But there were some differences among students who consulted physician less frequently and those who consulted him more often. High trust to nurses, parents or relatives and books have an important role for lower number of consultation with a physician and high trust to magazines seems to increase the number of consultations, which is similar to other surveys[22].

There were some differences in lifestyle. It is interesting that students who reported less stressful life expressed more trust to the healer. Surprisingly those who eat more fruit and vegetables trust less to their parents or other relatives. High trust to books is associated with more breakfasts and exercise per week. No similar data is found in the literature and further research is necessary to evaluate these findings.

At the end we would like to state that the interpretation of the results should be careful due to the specificity of the survey. We have to consider the type of method used, the so-called web questionnaire. It was impossible for us to know how many students saw the invitation so the response rate remains unknown. The other thing we do not know is the number of students that do not use the computer. We assumed that this number is very small, less than 1%. But generally we can say that in seven schools with the biggest number of participants 10-20% of all students registered at the faculty agreed to cooperate. Thus a large number of participating students gives validity and reliability of the results and allows us to draw generalizing conclusions.

Conclusions

We can summarise the main findings of the survey in the next points:

- young highly educated adults rated the level of trust to information sources inside the health system much higher than other sources;
- younger students and women are more likely to trust all sources of information except the internet which is the domain of men;
- students with medical lessons trust sources within the health system more, but internet could be a very important source of education for the future medical personnel;
- high trust to nurses is associated with higher rate of self-medication and lower number of consultation with a physician;
- the high trust to printed media increases the number of consultations with a physician.

Our survey showed young generations especially students follow several information sources, however they still trust doctors most. Family physicians have to take into account these facts and develop communication skills with knowledgable patient in their practices.

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Извори медицинских информација које цене словеначки студенти

Кључне речи:
породична медицина,
студенти,
однос пацијент–лекар,
интернет,
корисници здравствених информација

Сажетак

Увод. Лекарима је све теже и теже да испуне своју традиционалну улогу здравствених васпитача, због до сада невиђене количине здравствених информација доступних на интернету, у часописима, новинама, радију, телевизији и другим медијима. Повећање количине информација у вези са здрављем може да користи у побољшању бихевиоралних резултата, али за то је неопходан одговарајући ниво поверења и критичка процена тих информација. Присутан је и страх да ће недавне промене у здравственој заштити и све већи број других извора информација поткопати однос између пацијента и лекара.

Циљ рада. Желели смо да оценимо ниво поверења који студенти Медицинског факултета Универзитета у Љубљани имају у различите изворе информација.

Метод: Користили смо анонимни *web* упитник за популацију студената Универзитета у Љубљани. Одговори на питања о поверењу у различите изворе здравствених информација су давани према седмостепеној Ликертовој скали.

Резултати. Учествовало је 1.294 студента, од којих је 991 (76,6%) било женског пола. Просечна старост узорка је била 22,4±3,2 године. На скали поверења, највишу вредност имају поверење у лекаре (6,2±1,3), фармацеуте (5,5 ± 1,3) и књиге (5,3±1,2). Испоставило се да жене имају више поверења у лекаре (p<0,001), медицинске сестре (p=0,016) и фармацеуте (p=0,004) него мушкарци, а мање поверења у интернет него мушкарци (p=0,022). Студенти који у наставном програму имају медицинске предмете, имају више поверење у лекаре (p<0,001), фармацеуте (p<0,004) и књиге p<0,001), а мање поверења у хомеопате (p<0,001), исцелитеље (p<0,001) и пријатеље (p=0,011), у односу на студенте који немају ове предмете

Закључак. Лекари су још увек извор информација у вези са здрављем, којима млада популација највише верује. Даља испитивања би требало да идентификују субпопулацију код које постоји опасност да интернет сматрају најпоузданијим извором медицинских информација и омогуће предузимање одговарајућих мера.

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