The Internet as a Source of Information for Patients Prior to Rhinoplasty

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INTRODUCTION

The ability to obtain specialized information on aesthetic surgeries influences the patient’s understanding of therapeutic procedures and the doctor patient relationship. Informed individuals considering surgery are more aware of the proposed options for surgical treatment. The degree of patient involvement in devising a treatment plan increases significantly (1). There are different sources of information for patients. The most common one is a conversation with the doctor. Recently, the Internet has taken on the specific role as a tool for collecting and processing information which is stored in an ordered manner but is also increasingly used by patients to communicate with their doctor (2).

However, there are concerns about the lack of quality control of medical information contained on websites relating to aesthetic surgery. Substantive errors present in non-reviewed medical portals, can contribute to inadequate understanding of the procedure and its possible complications, as well as limiting communication with the physician, resulting in less satisfaction with the post-operative outcome (3).

As one of the most frequently performed operations in the field of plastic surgery in men and women is rhinoplasty, this procedure was selected for analysis. The aim of this study was to determine the prevalence of Internet use by patients considering rhinoplasty and to identify the impact of such information on their decisions.

MATERIALS AND METHODS

Ethical approval for the study was given by the Bioethics Com-
mittee of Lodz Medical University - No RNN/57/10/KE. For the current study we included 86 patients (46 women and 40 men) aged from 18 to 62 years old scheduled for either corrective surgery of post-traumatic distortion of the external nose and septum (52 people) or aesthetic rhinoplasty (34 people) seen in the Department of Plastic, Reconstructive and Aesthetic Surgery in Lodz or the private clinic of one of the authors (TZ) (4).

Before surgery, patients received a questionnaire consisting of 19 questions (Table 1). Due to the unique nature of the research, the area of interest was narrowed down to Internet use by patients considering rhinoplasty. Basic demographic and sociological data were collected in addition to information about the importance of the Internet to patients wishing corrective surgery of the nose.

Statistical analysis: In the majority of cases, the data were analysed using the χ² test. Where expected numbers were small, the Fisher's exact test was used. This is indicated in the tables. Where there is the possibility of multiple responses, each response has been analysed individually, by examining the numbers of patients with that response compared with the numbers without, using the χ² or Fisher's exact test as appropriate. The standard significance level of 5% was applied.

RESULTS

The questionnaire was divided into two parts: the first seeking the demographic and sociological characteristics of the patients (Table 1); the second studied differences in gathering pre-operative information between individuals seeking aesthetic or post-traumatic rhinoplasty (Table 2). In accordance to the first part of the research, there were no statistically significant differences in ratio between women and men within different age groups (18-25, 26-35, 36-45, 46-55, over 55 years old, P=0.44). It was found that most patients lived in rural areas (29.1%) and in cities with more than 500 K inhabitants (29.1%). We also determined that 33.7% of patients had had higher education. Nearly half of the respondents took an immediate decision to have rhinoplasty (48.8%), and almost one in four patients considered the possibility of surgery for more than 1 year.

The first source of information about surgical treatment was most frequently a family doctor (59.3% of cases). The Internet was first choice for 20.9% of patients. However, throughout the pre-operative period, more than half of patients (58.1%) accessed the Internet as a source of information on rhinoplasty. Of these, the majority of patients (80%) felt that they obtained more information directly from the doctor in comparison to the Internet.

Specifying the type of information sought by patients on the Internet on rhinoplasty has proved to be essential to identifying their needs. According to respondents, the most important kind of knowledge contained on websites was a description of medical procedures (40.7%), the possibility of making contact with other patients (24.4%), contact with a doctor (22.1%) and pictures of pre- and post-operative appearance (11.6%). One in ten patients enrolled in an online forum on corrective nasal surgery. None of the patients consulted a physician over the Internet or sent an e-mail with an inquiry about a potential operation.

In the second part of the research we analyzed data on the implications of the Internet information on the patients’ decisions about nasal surgery. One in three patients considered that the knowledge they obtained via the Internet was of help in planning their operation. At the same time however, 50% of people claimed that this information did not give them a complete understanding of the clinical problem. For more than half of the people (52.3%) the information on the website did not affect the choice of clinics and in 44.2% of cases it did not affect their level of preparedness for a face-to-face consultation with the doctor.

Patients accessed the Internet to obtain medical information about a planned operation, with having a home Internet connection (P<0.001), and living in large urban areas (P=0.011) significant influences on this factor. Patients were more likely to access the Internet for information if they lived in smaller communities. There were no differences in the use of the Internet based on: gender (P=0.35), or marital status (P=0.10), while age group (P=0.006), education (P=0.023), and the time taken to consider surgical treatment (P=0.02) were all significant. No differences were found in the prevalence of own Internet connection by place of residence in rural (village or city <50,000 inhabitants) versus urban areas (P=0.87).

Patients were also divided into two groups, according to the purpose of their surgical treatment (aesthetic [n=34] and/or remedial following traumatic distortion [n=52]) (Table 2). Only 38% of patients who underwent aesthetic surgery were male (group 1), whereas men represented more than half of those eligible for posttraumatic rhinoplasty (group 2). In addition to place of residence (question 4), people living in city <50 K population were more likely to have aesthetic surgery than post-traumatic, whereas habitants of city 50-100 K and city >500 K were more likely to have traumatic surgery (P=0.004). Level of education (question 5) did not influence the rate of post-traumatic and aesthetic surgery (P=0.45). In relation to marital status (question 6), singles were more likely to have aesthetic surgery, whereas married and in relationship were more likely to have post-traumatic surgery (P=0.004). Post-traumatic patients were more likely to decide immediately (question 8), and aesthetic patients decided more often in groups <1 month, 1-6 months, and 6-12 months (P=0.03).

In the main, patients from group 1 were initially informed of the possibility of undergoing aesthetic surgery by a third party (2.9%, a friend; 14.7%, a person who had a similar operation in the past). People from group 2 were most frequently advised to undergo surgery by their family doctor (67% of cases) com-
Table 1. Answers obtained to an anonymous, pre-operative questionnaire for patients after septorhinoplasty

| No. | Question                                                                 | Possible answers                                                                 | No. of responses (% of patients) |
|-----|---------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------|
| 1   | Please specify the type of surgery                                       | Post-traumatic rhinoplasty                                                       | 52 (60.5)                        |
|     |                                                                           | Aesthetic rhinoplasty                                                            | 34 (36.9)                        |
| 2   | Indicate gender, please                                                  | Female                                                                          | 46 (53.5)                        |
|     |                                                                           | Male                                                                             | 40 (46.5)                        |
| 3   | How old are you?                                                         | Mean (SD)                                                                        | 31.5 (11.3)                      |
| 3a  | How old are you (age groups)                                             | >26                                                                              | 31 (36.0)                        |
|     |                                                                           | 26-35                                                                            | 30 (34.9)                        |
|     |                                                                           | 36-45                                                                            | 14 (16.3)                        |
|     |                                                                           | 46-55                                                                            | 7 (8.1)                          |
|     |                                                                           | 56+                                                                              | 4 (4.7)                          |
| 4   | Indicate your place of residence, please                                 | Village                                                                          | 25 (29.1)                        |
|     |                                                                           | City below 50,000 inhab.                                                        | 19 (22.1)                        |
|     |                                                                           | City from 50,000 to 100,000 inhab.                                              | 7 (8.1)                          |
|     |                                                                           | City from 100,000 to 500,000 inhab.                                             | 10 (11.6)                        |
|     |                                                                           | City above 500,000 inhab.                                                       | 25 (29.1)                        |
| 5   | What is your educational background?                                      | Primary                                                                          | 7 (8.1)                          |
|     |                                                                           | Secondary                                                                        | 50 (58.1)                        |
|     |                                                                           | Higher                                                                           | 29 (33.7)                        |
| 6   | Indicate the marital status, please                                      | Single                                                                           | 27 (31.4)                        |
|     |                                                                           | In relationship                                                                   | 30 (34.9)                        |
|     |                                                                           | Married                                                                          | 26 (30.2)                        |
|     |                                                                           | Separated                                                                        | 1 (1.2)                          |
|     |                                                                           | Divorced                                                                         | 2 (2.3)                          |
|     |                                                                           | Widowed                                                                          | 0 (0)                            |
| 7   | How did you learn about the possibility of performing the surgery?*       | Family doctor                                                                    | 51 (59.3)                        |
|     |                                                                           | Friend                                                                           | 12 (14.0)                        |
|     |                                                                           | Television                                                                       | 1 (1.2)                          |
|     |                                                                           | Person after similar operation                                                   | 12 (14.0)                        |
|     |                                                                           | Press                                                                            | 1 (1.2)                          |
|     |                                                                           | Internet                                                                         | 18 (20.9)                        |
|     |                                                                           | Not previously learned                                                           | 5 (5.8)                          |
| 8   | How long have you considered undergoing surgery?                          | Immediately                                                                      | 42 (48.8)                        |
|     |                                                                           | Below 1 month                                                                    | 9 (10.5)                         |
|     |                                                                           | From 1 to 6 months                                                               | 8 (9.3)                          |
|     |                                                                           | From 6 to 12 months                                                              | 6 (7.0)                          |
|     |                                                                           | Over 1 year                                                                      | 21 (24.4)                        |
| 9   | Do you have the Internet at home?                                        | Yes                                                                              | 69 (80.2)                        |
|     |                                                                           | No                                                                               | 17 (19.8)                        |
| 10  | Did you use the Internet, searching for information prior to surgery?*   | Yes                                                                              | 50 (58.1)                        |
|     |                                                                           | No                                                                               | 33 (38.4)                        |
| 11  | If yes, was the information obtained on the Internet helpful in understanding the health problem and in making decision about treatment?* | Very                                                                             | 25 (50.0)                        |
|     |                                                                           | Moderately                                                                       | 20 (40.0)                        |
|     |                                                                           | Not at all                                                                       | 3 (6.0)                          |
| 12  | Do you think the knowledge on the Internet is satisfactory?               | Yes                                                                              | 18 (20.9)                        |
|     |                                                                           | No                                                                               | 44 (51.2)                        |
| 13  | Did the information on the website have an impact on the choice of clinic? | Yes                                                                              | 22 (25.6)                        |
|     |                                                                           | No                                                                               | 45 (52.3)                        |
| 14  | What kind of information on the websites you think is the most important? | Description of operation                                                         | 35 (40.7)                        |
|     |                                                                           | Contact with other patients                                                      | 21 (24.4)                        |
|     |                                                                           | Contact with doctor                                                              | 19 (22.1)                        |
|     |                                                                           | Pre-and post-operative photos                                                    | 10 (11.6)                        |
| 15  | Did you consult the doctor on the Internet?                               | Yes                                                                              | 0 (0)                            |
|     |                                                                           | No                                                                               | 76 (88.4)                        |
| 16  | Did you send an inquiry such as by e-mail, about the surgery?            | Yes                                                                              | 0 (0)                            |
|     |                                                                           | No                                                                               | 76 (88.4)                        |
| 17  | Did you participate in an online forum?                                   | Yes                                                                              | 8 (9.3)                          |
|     |                                                                           | No                                                                               | 65 (75.6)                        |
| 18  | You obtained more information from:                                       | Internet                                                                         | 7 (8.1)                          |
|     |                                                                           | Interview with the doctor                                                        | 57 (66.3)                        |
| 19  | Did the information on the Internet help you to be better prepared for interview with the doctor? | Yes                                                                              | 29 (33.7)                        |
|     |                                                                           | No                                                                               | 38 (44.2)                        |

*The possibility of ticking more than one response was not excluded in the questionnaire, so this is the number of people who selected each response, but not exclusively. *Only patients who answered ‘yes’ for question 10. †Percentage of all patients (n=86) unless otherwise stated.
pared with 47% of people in group 1. There was no difference between the 2 groups in terms of the availability of home Internet access (74% and 85%, respectively). In group 1 it was the prime source of information about the possibility of the operation in 32% of responders compared with 13% of those in group 2. Throughout the pre-operative period, respondents from group 1 benefited from the Web more often than patients from group 2. In the study carried out by Losken et al. (1), 92% of patients living in the U.S. who underwent reconstructive breast surgery had the possibility of using the Internet, while 71% had access to websites from home. Our findings confirm this earlier study (*P* = 0.04). 

**DISCUSSION**

Until recently, the only way to achieve substantive health knowledge was by direct contact with a specialist. Currently, the Internet is becoming an increasingly popular source of medical information because of its wide availability, the frequent updating of its content and the use of multimedia formats in presenting data (5). In the study carried out by Losken et al. (1), 92% of patients living in the U.S. who underwent reconstructive breast surgery had the possibility of using the Internet, while 71% had access to websites from home. Our findings confirm this earlier study with 81% of our respondents having home Internet access. Similar results were obtained in patients living in urban and rural areas. Our study indicates that the vast majority of the Polish population have access to web based information. That being said, those living in villages and towns sought medical information less frequently than those living in cities.

### Table 2. Answers to the questions from an anonymous questionnaire, provided by patients after aesthetic rhinoplasty or posttraumatic correction

| Question                                                                 | Possible answers | Aesthetic (n=34) | Posttraumatic (n=52) | P-value* |
|--------------------------------------------------------------------------|-----------------|-----------------|----------------------|----------|
| 2. Indicate gender, please                                               |                 |                 |                      |          |
|                                                                           | Female          | 21 (61.8)       | 25 (48.1)            | 0.21     |
|                                                                           | Male            | 13 (38.2)       | 27 (51.9)            |          |
| 7. How did you learn about the possibility of performing the surgery?    |                 |                 |                      |          |
|                                                                           | Family doctor   | 16 (47.1)       | 35 (67.3)            | 0.06     |
|                                                                           | Friend          | 1 (2.9)         | 11 (21.2)            | 0.024    |
|                                                                           | Television      | 1 (2.9)         | 0 (0)                | *        |
|                                                                           | Person after similar operation | 5 (14.7)       | 7 (13.5)            | 0.67     |
|                                                                           | Press           | 1 (2.9)         | 0 (0)                | *        |
|                                                                           | Internet        | 11 (32.4)       | 7 (13.5)            | 0.04     |
|                                                                           | Not previously learned | 4 (11.8)       | 1 (1.9)             | 0.075    |
| 9. Do you have the Internet at home?                                     | Yes             | 25 (73.5)       | 44 (84.6)            | 0.21     |
|                                                                           | No              | 9 (26.5)        | 8 (15.4)             |          |
| 10. Did you use the Internet, searching for information prior to surgery?| Yes             | 22 (64.7)       | 28 (57.1)            | 0.49     |
|                                                                           | No              | 12 (35.3)       | 21 (42.9)            |          |
| 11. If yes, was the information obtained on the Internet helpful in understanding the health problem and in making decision about treatment? | Very           | 10 (45.5)       | 15 (57.7)            | 0.14     |
|                                                                           | Moderately      | 9 (40.9)        | 11 (42.3)            |          |
|                                                                           | Not at all       | 3 (13.6)        | 0 (0)                |          |
| 12. Do you think the knowledge on the Internet in satisfactory?           | Yes             | 6 (25.0)        | 12 (31.6)            | 0.58     |
|                                                                           | No              | 18 (75.0)       | 26 (68.4)            |          |
| 13. Did the information in the website have an impact on the choice of clinic? | Yes           | 9 (32.1)        | 13 (33.3)            | 0.92     |
|                                                                           | No              | 19 (67.9)       | 26 (66.7)            |          |
| 18. You have obtained more information from:                             | Internet        | 3 (11.5)        | 4 (10.5)             | 0.90     |
|                                                                           | Interview with the doctor | 23 (88.5)    | 34 (89.5)            |          |
| 19. Did the information on the Internet help you to be better prepared for interview with the doctor? | Yes           | 11 (42.3)       | 18 (43.9)            | 0.90     |
|                                                                           | No              | 15 (57.7)       | 23 (56.1)            |          |

*Indicates that numbers are too small to test.

†By *χ²* test, unless otherwise stated. The possibility of ticking more than one response was not excluded in the questionnaire, so this is the number of people who selected each response, but not exclusively. Therefore, each answer will be analysed individually, by examining those who answered (e.g.) family doctor vs. those who did not. *Only patients who answered ‘yes’ for question 10.* Fisher’s exact test, due to small numbers in some cells.
someone who has already had rhinoplasty.

In the current study having an Internet connection at home had the greatest impact on the use of websites about plastic surgery of the nose. However, sociological factors such as gender, age, education level, marital status and period of time spent considering surgery did not contribute to greater use of the Internet to obtain information prior to surgery. Thus the widespread availability of Internet access amongst the Polish population would appear to minimise the differences in Internet usage between persons of different social background.

Patients find information on the Internet mainly through using search engines. In theory this should allow them to acquire widely available medical knowledge from Web pages and make better use of the limited time that they spend with the doctor. However these search engines are not able to distinguish between accurate information put on the web by reputable medical sources and inaccurate information provided by unreliable or non-professional sources. It is hard for the patient to distinguish between web sites with high or low factual accuracy. This is an important issue because according to Fox et al. (8), the information obtained on-line had significant impact on the decision to undergo medical treatment for about 70% of Internet users.

In our study, the impact of Internet information on making a decision about surgery was not directly determined, since only those patients who chose to undergo surgery were included. Yet, most of them considered this information was not sufficient to allow them to understand the health problem and to make a decision about treatment. Interestingly, in most cases the information contained on the website did not affect the choice of clinic nor did it contribute to higher familiarization with the problem before interview with the doctor. This suggests that there may be an insufficient number and/or poor availability of professional, thematic websites about rhinoplasty on the Web.

The Internet has opened up new ways of communicating with potential patients, by making the contact with the wider public. Carraway (9) recommend that any plastic surgeon website should contain a link to a forum in which patients, who had previously undergone surgery, could exchange views about the results of their surgical treatment. They would also influence the scope of the information presented on the web in line with their expectations. We identified the information that was most frequently searched for on the Internet by patients considering rhinoplasty. In the current study, of the information currently available on the web, the patients considered descriptions of medical procedures and contact with other patients as being the most important whilst also stressing the importance of being able to see pre- and post-operative images and the opportunity of being able to contact their doctor. Only a few patients participated in an online forum on rhinoplasty, consulting a doctor via the Internet, or sending e-mails relating to the operation. In the present study we did not analyze whether web pages visited by patients included those options or whether not respondents availed themselves of this modern method of doctor-patient communication. However, our results may be useful when designing and updating websites on plastic surgery of the nose.

It is indisputable, however, that with the development of telemedicine and the increase in the substantive quality of existing websites, electronic forms of contact will be chosen more readily by people considering cosmetic surgery because of the simplicity and speed of information exchange, its anonymity and the possibility of selecting the doctor they consider to be the best for them at one and the same time. Therefore, we should note the legal implications of giving medical advice via the Internet. It is important to place a statement about the information being there purely for educational purposes and that it does not create nor can it be interpreted as constituting a physician-patient relationship (10).

Currently, patients deciding on plastic surgery want to be informed in detail about their clinical problem, using all possible means to obtain information about the planned operation and the choice of the surgeon (1). The Internet has become a frequently used tool for this purpose, particularly among those considering aesthetic surgery, as compared with other patients (11). During the consultation facial plastic surgeons must be aware that many patients around the world use the Internet as their primary source of medical knowledge (8). Accordingly, in the present study a significant number of those who were considering aesthetic surgery obtained information from friends and the Internet, whereas patients requiring post-traumatic rhinoplasty were most often sent for surgical treatment by an ENT specialist or their family doctor. Similarly, patients planning aesthetic rhinoplasty evaluated the information obtained on the Internet more critically as compared to patients requiring post-traumatic correction. In general, the patients considered the information obtained during consultation with a surgeon to be more useful. This suggests that patients have a high level of conviction about the professionalism of Polish doctors. The Internet cannot, for many reasons, replace direct patient-surgeon contact.

In conclusions, for the patients, the Internet is an important source of obtaining medical information about rhinoplasty. But direct contact with the doctor helps patients to obtain more accurate, personalised knowledge. Patients planning nasal aesthetic surgery form their opinion mostly after consulting their friends and the Internet in contrast to patients requiring posttraumatic rhinoplasty. According to respondents, currently available web sites do not provide sufficient information about rhinoplasty.

**CONFLICT OF INTEREST**

No potential conflict of interest relevant to this article was reported.
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