

Medical Online Consultation Service in CAM at the University Hospital Zurich

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Keywords

Medical online consultation service · Telemedicine · Herbal medicine · Patient empowerment

Summary

Background: The University Hospital Zurich offers medical online consultation services in individual health concerns. We examined the need for users' information in the field of CAM. For this purpose, the content of the questions, the users' profiles, and the online responses of the physicians were analyzed. **Methods:** The retrospective study analyzed 154 (1.3%) out of 11,827 questions and responses, selected by a literature-based keyword list between 2006 and 2007. They were evaluated by means of an inductive category system described by Mayring using a professional text analysis program (MAXQDA). Frequencies and mean values of the categories were statistically determined. **Results:** Users (aged 39.2 ± 16, females 61%) asked questions, which were in 73% allocated to herbal medicine, 7% to homeopathy, and 2% to acupuncture. The questions referred to medical fields, such as gynecology (18%), dermatology (13%), psychiatry (11%), and oncology (8%). One third of the responses provided detailed information about herbal treatment options. **Conclusions:** The email-based online consultation service was used as a source of medical information in order to get more professional consultation in the field of CAM. Future scientific evaluation should investigate if online consultation services which are embedded in an environment of highly qualified health professionals may contribute to a better health literacy and empowerment of the patients.

The first two authors contributed equally to the paper.

Schlüsselwörter

Medizinische Onlineberatung · Telemedizin · Pflanzenheilkunde · Patientenmündigkeit

Zusammenfassung

Hintergrund: Das Universitätsspital Zürich bietet eine medizinische Onlineberatung zu individuellen Gesundheitsfragen an. Ziel der Studie war, das Informationsbedürfnis der Nutzer im Bereich der Komplementärmedizin zu analysieren. Wir evaluierten daher die Inhalte der Fragen, die Profile der Nutzer sowie die Onlineantworten der Ärzte. **Methodik:** In der retrospektiven Studie wurden zwischen 2006 und 2007 154 (1,3%) von 11 827 Fragen und Antworten mittels einer literaturbasierten Stichwortliste ausgewählt und anhand eines professionellen Textanalyse-Programms (MAXQDA) mit induktiver Inhaltsanalyse nach Mayring kategorisiert. Häufigkeiten und Mittelwerte der Kategorien wurden statistisch berechnet. **Ergebnisse:** Von den Nutzern (39.2 ± 16 Jahre, 61% weiblich) wurden zu 73% Fragen aus dem Bereich der Pflanzenheilkunde, zu 7% aus der Homöopathie und zu 2% aus der Akupunktur gestellt. Die Fragen wurden in 18% der Fälle dem Gebiet der Gynäkologie, in 13% der Dermatologie, in 11% der Psychiatrie und in 8% der Onkologie zugeordnet. Ein Drittel der Antworten enthielt detaillierte Informationen zu Behandlungsoptionen in der Pflanzenheilkunde. **Schlussfolgerungen:** Die E-Mail-basierte medizinische Onlineberatung wurde als Quelle für Informationen und Beratung im Bereich der Komplementärmedizin genutzt. Zukünftige Forschungsarbeiten sollten evaluieren, ob eine medizinische Onlineberatung, die in einem professionellen medizinischen Umfeld eingebettet ist, zu einer besseren Gesundheitskompetenz und Mündigkeit der Patienten beitragen kann.

Introduction

eHealth is a new field of healthcare gaining increasing significance. State of the art information and communication technologies (ICTs) are used with the purpose of improving treatment quality and safety and reducing costs [1]. In telemedicine, a subdomain of eHealth, the telecommunication technologies are utilized in a diagnostic and curative environment, thus facilitating remote patient care [2].

The patient's role has markedly changed in recent years. The patient evolved from a passive and reliant recipient of medical care to an active, well-informed, and responsible participant in the public health sector, hoping to have a vote in his treatment plan [3]. Patients as well as healthy individuals gather information about health-related topics predominantly from the media, with the Internet playing a major role in this regard. According to a study conducted by Kummervold et al. [4], 52.2% of Internet users in Europe searched for medical information in 2007. However, it is not always easy for laypersons to understand the flood of information, and they are often overwhelmed and even confused by the material found on the Internet [5]. A high-quality medical online consultation service provides reliable and clear information and can complement conventional medicine [6, 7]. Telemedicine thus promotes patient empowerment and contributes to the patient's independence [8].

With its virtual consultation service, the University Hospital Zurich (USZ) provides efficient, time-insensitive, anonymous, and free professional advice for personal health concerns since

1999. From August 1999 to December 2007 33,886 questions had been asked. Since 1999 the number of inquiries has risen steadily and reached up to 17 requests per day in 2007. The majority of users are medical laypersons residing in Switzerland.

The interest in CAM has risen considerably in recent years; a study conducted by Wolf et al. [9] indicates that half of Switzerland's population is using CAM.

In this study, we examined the need for online medical consultation provided by the USZ in the field of CAM. For this purpose we analyzed the content of the users' questions, their profile as well as the responses of the doctors. This study has been approved by the cantonal ethical committee.

Methods

The users of the online consultation service access the questionnaire via homepage of the USZ or directly via www.onlineberatung.usz.ch where they enter their question, their consent for scientific evaluation, and further patient information in a HTTPS (hypertext transfer protocol secure) form and send it to the online consultation service via a secure SSL connection [9]. Questions are generally answered within 24 h. The doctors are specially trained in telemedicine and qualified as consultant physicians experienced in CAM; one of them has special qualification in CAM. In case of complex issues they were supported by specialists of the Institute of Complementary Medicine at the USZ.

Users are provided with a well-founded response based on the complete patient-focused range of experience combined with the latest scientific know-how. The range of services embraces all medical disciplines, and competent advice in all fields of medicine is ensured. Finally, users receive an email containing an active link to the response stored on the server of the USZ and therefore protected from unauthorized access. So

Table 1. Categories and subcodes

<i>Personal characteristics of the user</i>
Gender
Age
Concerned person
<i>Content of inquiry</i>
<i>Information on disease, visits to the doctor, and complementary therapy already used</i>
Symptoms allocated to medical disciplines
Course of disease
Previously sought medical attention
Previously complementary and alternative medical procedures used
<i>Reason for the consultation</i>
Information on therapy; support on therapy decision by general physician or naturopath
Second opinion
General therapy
<i>Allocation to the fields of CAM</i>
Herbal medicine
Homeopathy
Acupuncture
Paramedicine
Several fields
Cross-disciplinary
<i>Content of the physicians' response</i>
Detailed information and advice on the effects of CAM treatment
Recommended medical attention

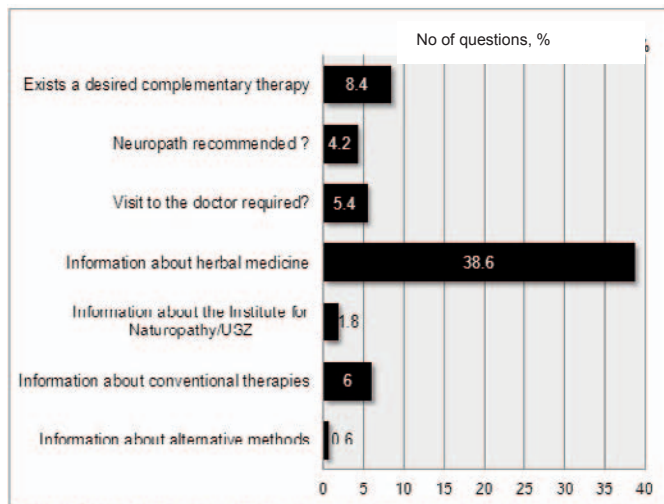


Fig. 1. Reasons for the consultation: qualitative subdivisions by the various determinants of the subcode 'information' (total 65%).

far, this kind of broad and high-quality service is unique in the entire German-speaking region.

Since all enquiries are coded in ICD-10 (International Classification of Diseases), the database can be searched for diagnosis, but not for specific content in the field of CAM. Therefore all enquiries received in 2006 and 2007 were searched by means of a list of 112 different keywords relating to CAM. The keywords were compiled from the following sources:

1. List of herbal medicines of the SMGP (Swiss Medical Society for Herbal Medicine) that corresponds to a list of the herbal medicinal products contained in the pharmacopoeia [10]; a compilation of herbal medicines in the book entitled 'Das grosse Kräuterheilmittelbuch' (The Comprehensive Book of Herbal Medicines) by Johann Künzle [11]; and 'Der kleine Doktor' (The Little Doctor) by Alfred Vogel [12], all being firmly established in Swiss medical tradition.
2. Terms of CAM therapies such as acupuncture, homeopathy, naturopathy, TCM, balneotherapy, antroposopic medicine.
3. Company names of selected manufacturers of CAM products.

A limitation of our study might be the keyword-based selection of all enquiries due to the lack of CAM-based diagnosis classification systems. Following further evaluation, 602 inquiries remained. After reviewing the 602 requests, 154 were identified with content in the field of CAM and were included in the retrospective study. As for the non-included inquiries, their focus was mainly on aspects of conventional medicine, e.g., the keyword was related only to a treatment option or recommendation for herbal medical procedures in the past, without a link to the content of the question. Further incomplete or incomprehensible questions were excluded.

The question and response texts were evaluated by means of computer-assisted inductive content analysis according to Mayring using the professional text analysis program MAXQDA 2007. MAXQDA supports the content analysis of the questions, answers, and the profile of the inquirer by creating a code matrix. The categories and subcodes of the content analysis were defined as a result of the content of the text data and were set up by the medical online consultant and the researcher. The 3 main categories consisted of individual users' characteristics, the contents of their inquiries, and the information contained in the responses of the physicians, each with appropriate codes, subcategories, and individual determinants. The complete code matrix is illustrated in table 1. The collected data of the final code matrix was subsequently exported into the PASW statistics software, and the means and frequencies of the categories and subcodes were determined. A limiting factor of content analysis is the intersubjective reliability of the coder. Therefore the analysis should be conducted only by trained members of the research/medical team.

Table 2. Age distribution of the users

Age distribution, years	n = 154, frequency (%)
< 21	12 (7.8)
21–30	38 (24.7)
31–40	35 (22.7)
41–50	26 (16.9)
51–60	14 (9.1)
> 60	18 (11.7)
Not applicable	11 (7.1)

The analysis included gender, age, and the person concerned, i.e. the user himself or a relative or friend. The reason for the consultation was analyzed and the symptoms of medical complaints were allocated to the various medical disciplines based on the affected parts of the body. The course of the disease was classified into acute (shorter than 3 weeks), chronic (longer than 3 weeks), progressive, relapsing, and healthy. In addition, it was documented whether the patient had previously sought medical attention and whether complementary medical procedures had already been used. The subcode 'information' was further divided into various determinants (fig. 1). A further subcode evaluated questions within the meaning of a second opinion. Under the heading 'general therapy', the users expected a therapy recommendation which could be based on principles of both CAM and conventional medicine. The inquiries were allocated to the fields of CAM, such as herbal medicine, homeopathy, and acupuncture. Inquiries which are not part of the 3 traditional subcodes mentioned above, relating to e.g. hair mineral analysis, were allocated to the field of paramedicine. Questions concerning several fields of CAM were classified under the subcode 'several fields' and questions regarding CAM as a whole under 'general inquiries'.

The physicians' responses were analyzed with respect to the details of information and advice they had given regarding CAM. In addition, it was documented whether the user was encouraged to seek medical attention. Multiple coding was possible.

Results

Overall, 154 (1.3%) out of 11,827 questions and responses between 2006 and 2007 were analyzed.

Individual Users' Characteristics

The majority of users (n = 95, 61.7%) were women. The average user age (n = 143) was close to 39.2 ± 16 years. Most patients were between 21 and 30 years old (n = 38, 24.7%), followed by the age group of 31- to 40-year-olds (n = 35, 22.7%). For an overview of the age distribution see table 2. The majority of inquiries concerned the user in person (n = 121, 78.6%), while 24 users (15.6%) contacted us on behalf of someone else (child, parents, spouse, friend). No information was provided in 9 cases (5.8%).

Content of Inquiry

The symptoms based on the affected areas of the body were classified to special medical disciplines. 28 inquiries (18.2%) concerned gynecological questions: chaste tree berry was of particular interest in pre-menstrual syndrome or irregular menstrual cycles (n = 13). Dermatological disorders ranked

second (n = 20, 13.0%), with 6 questions relating to sexual concerns. 17 inquiries (11.0%) pertained to the field of psychiatry, followed by oncology with 12 questions (7.8%).

With respect to the course of the disease, chronic conditions (n = 91, 59.1%) prevailed, followed by relapsing and acute courses (n = 23, 14.9% and n = 21, 13.6%, respectively). 5 users (3.2%) described a progressive character, e.g., in connection with progressive multiple sclerosis. Most of the 6 inquiries (3.9%) from users classified as 'healthy' concerned women who were pregnant or tried to get pregnant. In 8 cases (5.2%), there was no information about the course of the disease. 89 users (57.8%) described that they had already sought medical attention for their condition, and 30 of them had visited several doctors. A prior visit to the doctor was presumably excluded in 36 cases (n = 23.4%). A total of 83 users (53.9%) had already used CAM.

Reasons for Consultation

65% (n = 108) of users contacted the online consultation service to obtain general and further information about treatment procedures and to make sure if a visit to the doctor or naturopath is indicated or even necessary (fig. 1). The majority of inquiries concerned information about specific therapies (n = 64, 38.6%) in CAM, followed by the question whether a CAM method is available at all for the mentioned symptoms (n = 14, 8.4%). Additionally, questions were also asked about conventional (n = 10, 6.5%) and paramedical (n = 1, 0.6%) therapies. Further, users were wondering whether they should seek professional advice, e.g., from a doctor (n = 9, 5.4%) or a naturopath (n = 7, 4.2%). In 3 cases (1.8%) specialists from the Institute of Complementary Medicine at the USZ were involved.

For 26 users (16.9%), the reason for seeking advice was to find out whether there is a global therapy; 20 users (13.0%) consulted the online physicians in order to obtain a second opinion.

Allocation to the Fields of CAM

The majority of inquiries related to herbal medicine (72.7%); 18.2% of these related to the Tibetan-Swiss medicinal product (herbal mixture) Padma 28[®] and 9.7% to the chaste tree berry. 6 other questions (3.9%) pertained to St John's wort, arnica, mistletoe, and valerian, respectively. 11 inquiries (7.1%) related to homeopathy, 3 (2%) acupuncture, and 7 (4.5%) paramedicine. 8 of the received inquiries (5.2%) involved several fields of CAM and 13 (8.5%) were coded as cross-disciplinary (fig. 2). Questions about other CAM therapies, such as balneotherapy or anthroposophic medicine were not asked.

Content of the Physicians' Responses

In one third of the responses (35.4%), herbal products were explained in detail including information about the efficacy and possible adverse effects. In 101 cases (65.6%), we provided general information and medical advice. Particularly, we

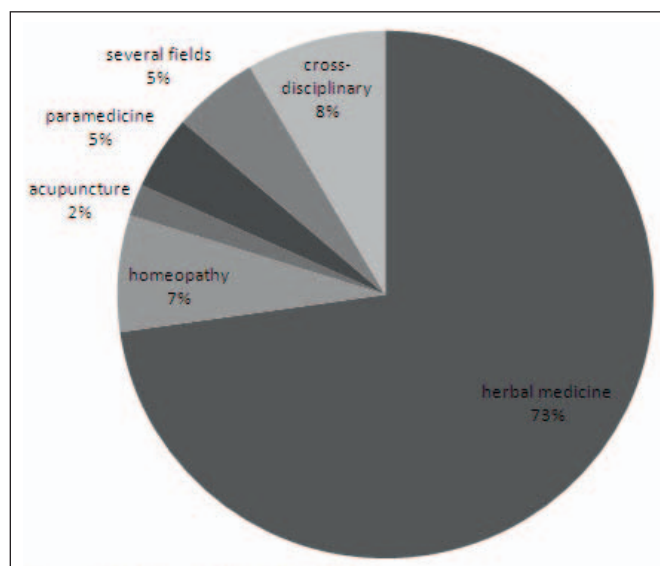


Fig. 2. Allocation to the fields of CAM.

recommended to investigate symptoms or to discuss a complementary medical treatment/concomitant treatment with the patient's doctor.

Discussion

Modern information and communication technologies, such as mobile phones and the Internet considerably alter the daily routine of humans. These innovations are also increasingly being utilized in the healthcare sector. For instance, eHealth or telemedicine comprises the documentation of data in an electronic patient file and provides health-related, professional information via Internet. This preliminary online assessment yields a special remote interaction between the doctor and the patient [13]. This trend is also evident in the growing interest in the USZ online consultation service which has increased steadily since the beginning and could also be observed in 1.3% of the enquiries representing the field of CAM. The descriptive evaluation of content and user characteristics in Internet-based online consultation service in the present study is innovative in literature. This retrospective study shows that effects, use, and dosing of specific herbal products were explicitly explained in one third of the responses. Therapies in the fields of gynecology, dermatology, psychiatry, and oncology were of special interest. The high number of questions about sexual and psychiatric conditions underlines that the online consultation service is favored in topics that are difficult to address face to face with a doctor [14, 15]. The inquiries of cancer patients reflect their search for therapies, such as mistletoe therapy [16, 17] that might have a positive impact on the course of their disease and reduce chemotherapy-induced adverse effects. Patients with chronic conditions inquire about CAM therapy options because their previous

treatment had failed and/or because they were afraid of the adverse effects or hoped to reduce the dose [18]. Some users contacted the online consultation service to obtain a second opinion from a competent reliable university institution. These findings are consistent with the results of a study conducted by Klinar et al. [19] in Croatia, demonstrating that email consultations are frequently used to obtain second opinion. Finally our results suggest that the field of herbal medicine is a favored topic of online requests in the context of the online consultation service of the USZ.

The general advantage for users of an online consultation service is that they can take as much time as needed to formulate their email inquiry. The home environment makes it possible to quietly focus on the formulation of the question. The written availability of the subsequent response enables the user to read it carefully at any time, as many times as needed, to archive it, and to present it to his physician [20]. The independence of time and location is another positive aspect: emails can be sent to the online consultation service around the clock from any location in the world. The online consultant has to consider different levels of health literacy of the inquirers and therefore can provide individually-oriented health information [21]. This is confirmed by the high level of user satisfaction of the USZ online consultation service. With a standardized form containing 3 questions, inquirers are asked to give a feedback on the online consultation in order to follow our guidelines of service quality management. Three quarters of the users rated the problem solving and fulfillment of expectation 'good' and 'very good'; over 90% valued the comprehensibility of the answer with 'good' and 'very good' [7]. The good rating is based on the sound practical and scientific foundation of the consulting physicians and their support by the Institute of Complementary Medicine. This guarantees that the users get high-quality and evidence-based medical advice. In the future, it is expected that citizens and patients will likely use an even greater number of quality-approved databases and online consultation services to obtain information in the field of CAM.

References

- 1 Sood S, Mbarika V, Jugoo S, Dookhy R, Doarn CR, Prakash N, Merrell RC: What is telemedicine? A collection of 104 peer-reviewed perspectives and theoretical underpinnings. *Telemed J E Health* 2007; 13:573–590.
- 2 Miller EA: Telemedicine and doctor-patient communication: an analytical survey of the literature. *J Telemed Telecare* 2001;7:1–17.
- 3 Taylor K: Paternalism, participation and partnership – the evolution of patient centeredness in the consultation. *Patient Educ Couns* 2009;74:150–155.
- 4 Kummervold PE, Chronaki CE, Lausen B, Prokosh HU, Rasmussen J, Santana S, Staniszewski A, Wangberg SC: Ehealth trends in europe 2005–2007: a population-based survey. *J Med Internet Res* 2008;10:e42.
- 5 Yougov Deutschland AG: Zum Thema Gesundheit fragen Sie Ihren Arzt oder das Internet. *www.presseportal.de/pm/69450/1500348/zum-thema-gesundheit-fragen-sie-ihren-arzt-oder-das-internet* (accessed on 09.01.2014).
- 6 Brockes MC, Neuhaus Bühler RP, Schulz E, Neumann CL, Schmidt-Weitmann S: Online medical consulting service at the university hospital zurich before and after introduction of a service fee (article in German). *Dtsch Med Wochenschr* 2010;135: 231–235.
- 7 Brockes C, Schmidt-Weitmann S, Buser J, Gerke W, Hermann F, Baumann D: Virtuelle Patientenberatung im Universitätsspital Zürich. *e-beratungsjournal* 2008;4:7. *www.e-beratungsjournal.net/ausgabe_0208/brockes.pdf* (accessed on 09.01.2014).
- 8 Schmid M, Wang J: Der Patient der Zukunft: Das Arzt-Patienten-Verhältnis im Umbruch. *SÄZ* 2003; 84:2133–2135.
- 9 Wolf U, Maxion-Bergemann S, Bornhoft G, Matthiessen PF, Wolf M: Use of complementary medicine in switzerland. *Forsch Komplementmed* 2006; 13(suppl2):4–6.
- 10 Pflanzliche Arzneimittel der Komplementärmedizin in der SL (Spezialistätenliste): *www.smgp.ch/smgp/homeindex/arzneimittel.html* (accessed on 09.01.2014).
- 11 Künzle J: Das grosse Kräuterheilmittelbuch. Mannheim, Patmos, 2006.
- 12 Vogel A: Der kleine Doktor: Hilfreiche Ratschläge für die Gesundheit, ed 71. Teufen, A. Vogel, 2004.
- 13 Umefjord G, Petersson G, Hamberg K: Reasons for consulting a doctor on the internet: web survey of users of an ask the doctor service. *J Med Internet Res* 2003;5:e26.

In 2008 the module 'Clinical Telemedicine and eHealth' was developed and included in the curriculum of the medical studies at the University of Zurich. The medical consultants teach their experience in online consultation to medical students. The possibility to practice Internet-based consultations on an e-learning platform is provided in workshops [22].

The asynchronous, one-dimensional communication, which is restricted to the written language, definitely has its limitations and the emotional and nonverbal exchange is missing. However, misconceptions are also possible in direct patient-doctor interaction [23]. There are several reports in literature [24–26] that telemedicine is a valuable tool to support conventional medicine and in particular managed care models. The growing interest of patients in CAM therapies and the increasing patient autonomy will require further strategies of integrative care approaches [27]. A limitation of our study might be the keyword-based selection of enquiries due to the lack of CAM-based diagnosis classification systems. Thus, more investigation is needed to evaluate the online information-seeking behavior in health and the role of medical online consultation services in the complex and wide field of CAM.

Conclusion

The email-based online consultation service was used as a medical information source to get more professional consultation in the field of CAM. Future scientific evaluation should investigate if online consultation services which are embedded in an environment of highly qualified health professionals may contribute to a better health literacy and patient empowerment.

Disclosure Statement

The authors declare that there is no conflict of interests concerning this paper.

- 14 Neuhaus Buehler RP: Einhaltung ethischer Rahmenbedingungen gesundheitsbezogener Online-Beratungen für Kinder und Jugendliche in der Schweiz. *e-beratungsjournal* 2010;6:3. www.e-beratungsjournal.net/ausgabe_0110/neuhaus.pdf (accessed on 09.01.2014).
- 15 Horgan A, Sweeney J: Young students' use of the internet for mental health information and support. *J Psychiatr Ment Health Nurs* 2010;17:117–123.
- 16 Ernst E: Complementary and alternative medicine (CAM) and cancer: the kind face of complementary medicine. *Int J Surg* 2009;7:499–500.
- 17 Melzer J, Iten F, Hostanska K, Saller R: Efficacy and safety of mistletoe preparations (*viscum album*) for patients with cancer diseases. A systematic review. *Forsch Komplementmed* 2009;16:217–226.
- 18 Eysenbach G, Diepgen TL: Patients looking for information on the internet and seeking teleadvice: motivation, expectations, and misconceptions as expressed in e-mails sent to physicians. *Arch Dermatol* 1999;135:151–156.
- 19 Klinar I, Balazin A, Basic M, Plantas I, Biskupic K: Increased demand for e-mail health consultation service: analysis of a web survey. *Coll Antropol* 2010;34:481–485.
- 20 Döring N: Sozialpsychologie im Internet. Die Bedeutung des Internet für Kommunikationsprozesse, Identität, soziale Beziehungen und Gruppen, ed 2. Göttingen, Hogrefe, 2003.
- 21 Brockes C, Frei A, Schmidt-Weitmann S, Zimmerli L, Battegay E, Neumann CL, Schulz EG: Medical online consultation regarding hypertension. *Journal für Hypertonie – Austrian Journal of Hypertension* 2013;17:7–10.
- 22 Brockes C, Wirth F, Schmidt-Weitmann S, Battegay E, Gerke W: Implementierung des Moduls «Klinische Telemedizin/E-Health» in das Medizinstudium der Universität Zürich. *GMS Zeitschrift für Medizinische Ausbildung* 2010;27:Doc14.
- 23 Car J, Sheikh A: Email consultations in health care: 1 – scope and effectiveness. *BMJ* 2004;329:435–438.
- 24 Middeke M, Kohler F, Schweizer T, Dudenhausen JW: Telemetric monitoring of blood pressure and body weight during pregnancy (article in German). *Dtsch Med Wochenschr* 2007;132:437–441.
- 25 Wurm EM, Hofmann-Wellenhof R, Wurm R, Soyer HP: Telemedicine and teledermatology: past, present and future. *J Dtsch Dermatol Ges* 2008;6:106–112.
- 26 Schulz EG, Battegay E, Neumann L, Schmidt-Weitmann S, Brockes C: How to follow-up on the recommendations of the ESH/ESC guidelines for different kinds of blood pressure measurement methods. *Praxis (Bern 1994)* 2009;98:527–533.
- 27 Taw MB, Nguyen CT, Wang MB: Complementary and integrative treatments: rhinosinusitis. *Otolaryngol Clin North Am* 2013;46:345–366.