

Use of the Internet to obtain IVF information trends and patient opinions in Greece

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Abstract

The Internet is increasingly perceived to be a fast and anonymous information resource. Here we present data from a questionnaire posed to 297 patients attending an IVF unit in Athens detailing their use and perceptions of the Internet for health-related matters. Concurrently we monitored 178 emails derived from our IVF information website over a period of 30 months and report our findings. A large proportion of patients had Internet access (75%) and used the Internet to research information relating to health issues (69%), and specifically IVF (66%), with many expressing a wish to communicate with their physician as a consequence (86%). In contrast, relatively few emails directly requested IVF treatment (3%). Overall the majority of emails related to gen-

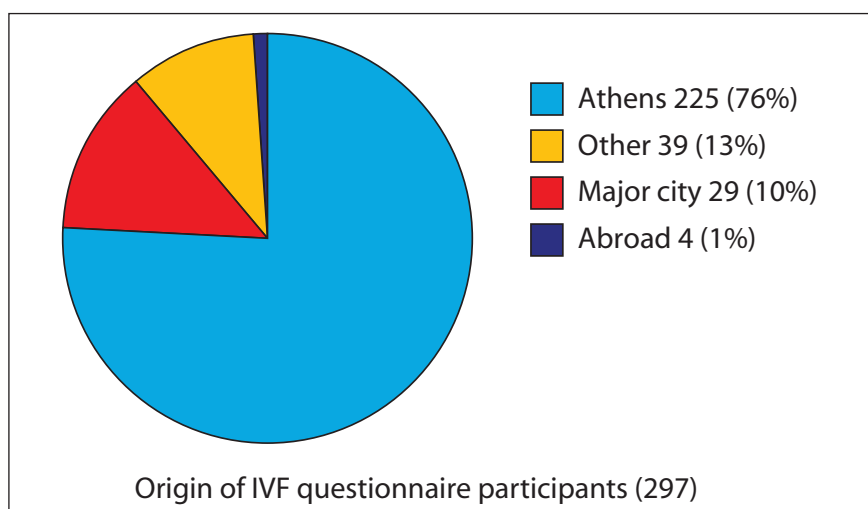
eral questions pertaining to IVF treatment (29%), donor oocytes (17%), or donor sperm (10%). A marked difference however was observed when comparing country of origin. A greater proportion of emails from overseas requested donor egg (39%), surrogacy (8%), or sex selection (5%) as compared to few or none from Greece. We conclude the Internet is both a valuable and established information resource for IVF in Greece, with many patients preferring to communicate online with their IVF healthcare provider directly. In summary the frequency and nature of email communications varied greatly depending upon the country of origin, and implications for medical tourism are discussed.

Keywords: Internet, IVF, in vitro fertilization, opinion, medical tourism

Introduction

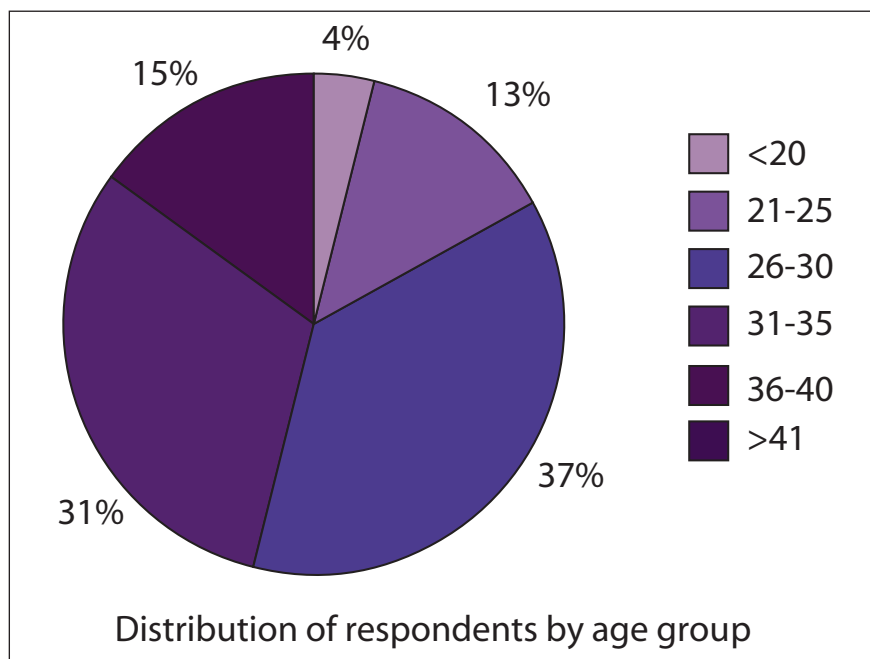
The Internet is broadly perceived to be a fast, easy and anonymous information resource. As such IVF websites presently serve as both a local and global medium for the provision of information relating to IVF healthcare, and also as a means for the advertisement of fertility healthcare services. Through Email or contact forms patients may readily contact IVF specialists without prior appointment. However, Greece is widely regarded as having the lowest broadband Internet use and access in Europe. Almost three-quarters (73%) of all Greeks have never used the Internet, the highest percentage in the EU according to figures released by Eurostat, the official statistical agency of the EU (1).

A previous study by Haagen and colleagues (2) revealed that patients are broadly interested in using the **Internet for applications** relating to fertility care.



Their findings suggested that healthcare providers should actively participate in the development and implementation of more sophisticated Internet-based tools

to assist patients in learning about and selecting appropriate healthcare provision. The current study investigates Internet use and demand in Greece.



Greece is unusual amongst European states in that it has developed a predominately private health care system. Within the Greek system, patients first contact a gynecologist, and are then referred to an IVF centre. As there are presently over 50 IVF units active within Greece(3), and many resident specialists have a personal website, this paper investigates the relevance of the Internet to Assisted Reproductive Technology (ART) patients by means of an anonymous questionnaire and by categorizing emails received over a 30 month period. The prospects and implications for medical tourism and ART healthcare in Greece are discussed.

Methods

Patients attending an IVF clinic in Athens, Greece between 1st October and 31st December 2006 were asked to complete an Internet-related questionnaire. The anonymous questionnaire contained 15 multiple choice questions relating to personal details, opinions and their actual and prospective use of the internet.

In addition the number and type of emails received from the clinic's own multi-lingual IVF Information website www.kosmogonia.gr over a 30 month period (1st July, 2003 - December, 2006) were catalogued by topic for statistical analysis. Emails were segregated into the categories of male factor, donor oocytes, donor

sperm, surrogacy, PGD/PGS, sex selection, pregnancy, general gynaecology, ART questions, journalistic inquiries, job applications or training, legal matters, and emails requesting appointments. Emails were further subdivided according to whether they originated from within Greece or overseas, and were again sub-classified according to whether they were received from males (m), females (f), or from a third source (c), where the email either derived from a couple, a company, or was

of unknown origin. Statistical significance was determined using unpaired Student's t-test.

Results

Of the 352 questionnaires handed out, 297 were returned fully completed (84%) and were used for the purposes of this study. The participation rate by sex was 36% (109) for males and 64% for females (188). The majority of participants derived from Athens (225/297, 76%) as shown in figure 1.

The majority of patients in our survey were aged between 31 and 35 (109/297, 37%), and 81% of respondents were aged between 26 and 40 (see figure 2).

The majority of respondents had Internet access (223/297, 75%) which was accordingly sub-classified into home access only, work office access only, or both (figure 3).

The main concern voiced over the use of the Internet was a perceived threat to personal privacy (33%, 99/297), principally from those who did not have Internet access at the time (59%, 44/74) rather from those who did (25%, 55/223). Of those patients who had no Internet access, only 11% of men stated that they would obtain Internet access in the future as opposed to 56% of women. The reasons for their not having Internet access were not investigated further.

Of the respondents to the question-

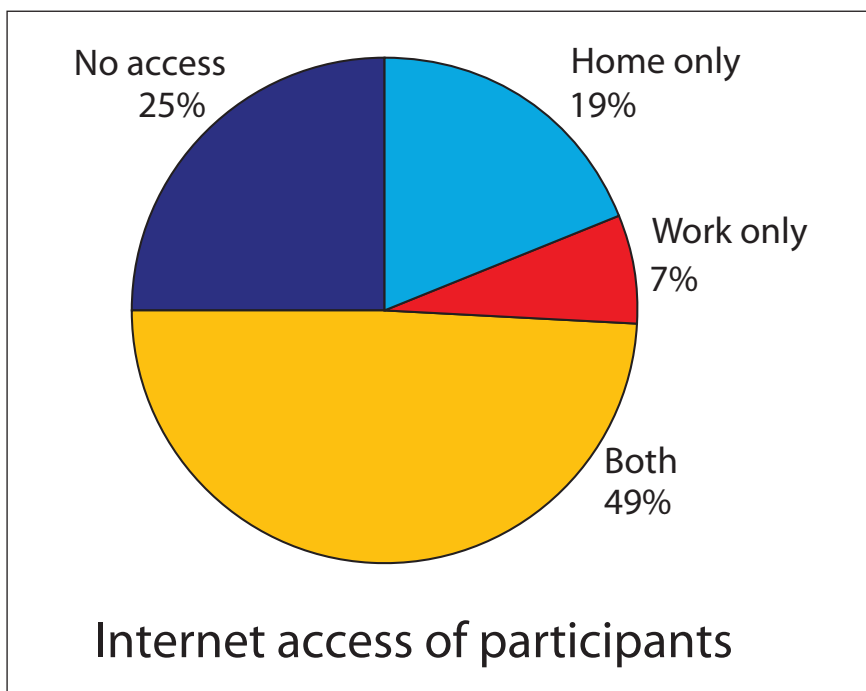


Table 1. Distribution of Emails by sex, purpose and origin

Greece				Abroad			Total
	Male	Female	C	Male	Female	C	
Male infertility	6	4	0	0	0	0	10
Donor oocytes	0	0	0	9	12	10	31
Donor sperm	1	6	0	0	2	1	10
Surrogacy	1	0	0	4	0	2	7
PGD	1	1	0	2*	0	3*	7
Sex selection	0	0	0	0	1	3	4
Pregnancy	2	5	0	0	0	0	7
Gynecology	0	12	0	0	1	0	13
Rendez-vous	0	3	1	0	0	1	5
IVF questions	5	28	8	3	7	1	52
Journalists			1			8	9
Jobs/training	1	9	0	2	1	0	13
Legal	3	1	0	1**	2**	3**	10

Legend for Table 1. Distribution of Emails by sex, purpose and origin

C - signed by both partners or from company or an unknown source.

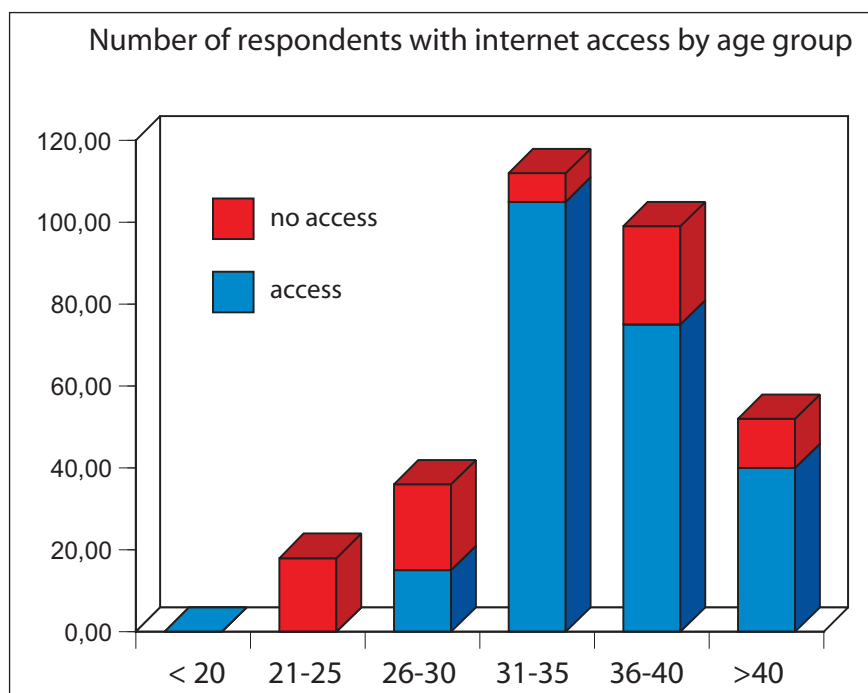
* all relating to PGD for B-thalassaemia

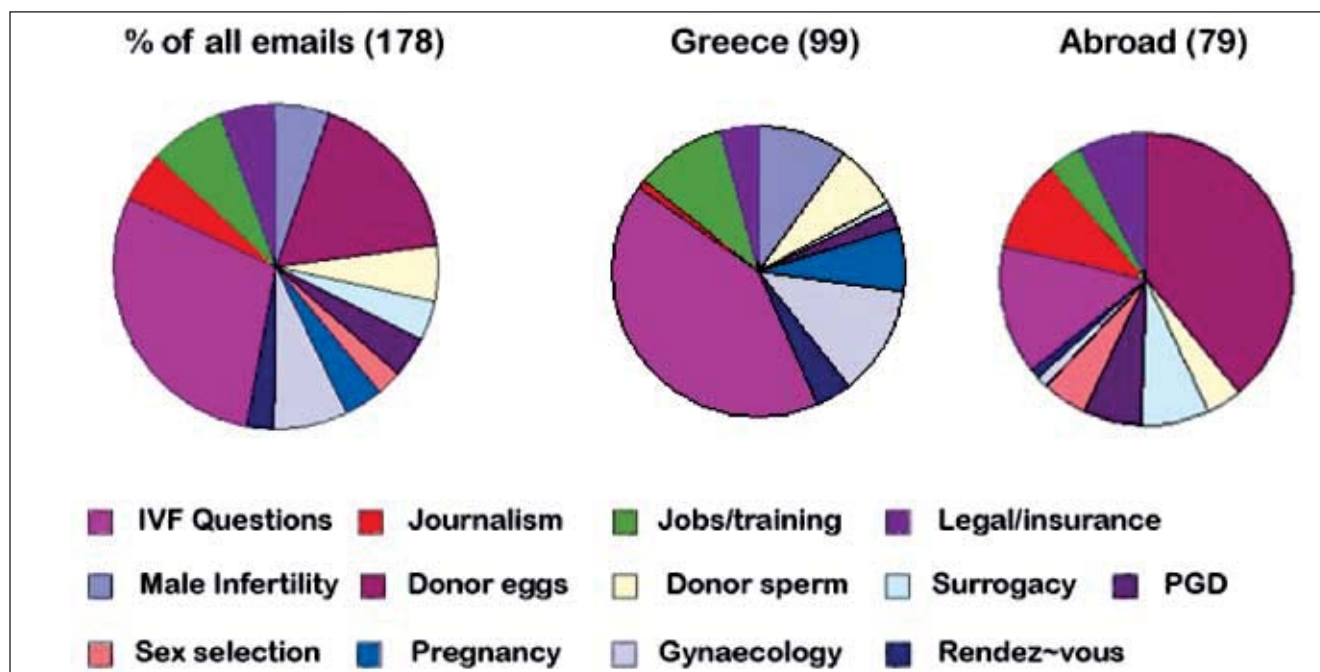
** all relating to donor oocytes.

naire, no fewer than 83 men and 140 women had Internet access. A substantial majority of patients over 31 had Internet access, with the highest percentage of use recorded for the age range 31-35 where 97% (106/109) had access (Figure 4).

Most patients who used the Internet had employed the facility for an IVF or health-related search, or for general interest, although most did not use it for e-commerce or social networking (figure 5).

Most patients (81%) were unaware as to whether their IVF health care provider had a website, although this was through ignorance rather than disinterest as most patients (86%) welcomed the option of contacting their physician by email, and 62% reported that they would choose to book an appointment electronically. All 223 respondents claimed that they would not select an IVF physician based upon the content and presentation of their website.





Another growing Internet usage is online networking and conferencing. Of all respondents 61% reported that they would like to participate in an Internet conference, whilst no men and only 16% of women had used Internet chat rooms to find out more about IVF.

Analysis of Email traffic

178 Emails were received from the www.kosmogonia.gr website, 99 of which originated from Greece and 79 from abroad (figure 6). From an analysis of the emails, it was determined that 41 (23%) were from men, 95 (53%) from women, whilst 42 (24%) of correspondents were of unknown gender.

Emails were received from a spectrum of interested parties on a broad range of topics (table 1), although the largest subset of enquiries related to IVF procedure (29%) or donor oocytes (17%). A similar pattern of data was observed in Emails arising from Greece, although there were significantly fewer enquiries relating to donor oocytes (0% vs 17%, $P<0.001$), surrogacy (1% vs 4%, $P<0.05$), sex selection (0% vs 4%, $P<0.05$), Pre-implantation Genetic Diagnosis (PGD; 2% vs 4%, $P=0.05$), and proportionately more which related to IVF enquiries (42% vs 29%, $P<0.01$) and pregnancy (7% vs 4%, $P<0.05$). Amongst the overseas correspondence, a greater proportion related to donor oocytes (39% vs 0%, $P<0.001$), surrogacy (8% vs 0%, $P<0.01$), PGD (6% vs 2%, $P<0.05$) or sex selection

(5% vs 0%, $P<0.05$) relative to those originating from Greece. In contrast, fewer enquiries from abroad related to IVF (14% vs 42%, $P<0.01$), pregnancy (0% vs 7%, $P<0.01$) or issues relating to male infertility (0% vs 10%, $P<0.01$). (Figure 7).

Conclusions

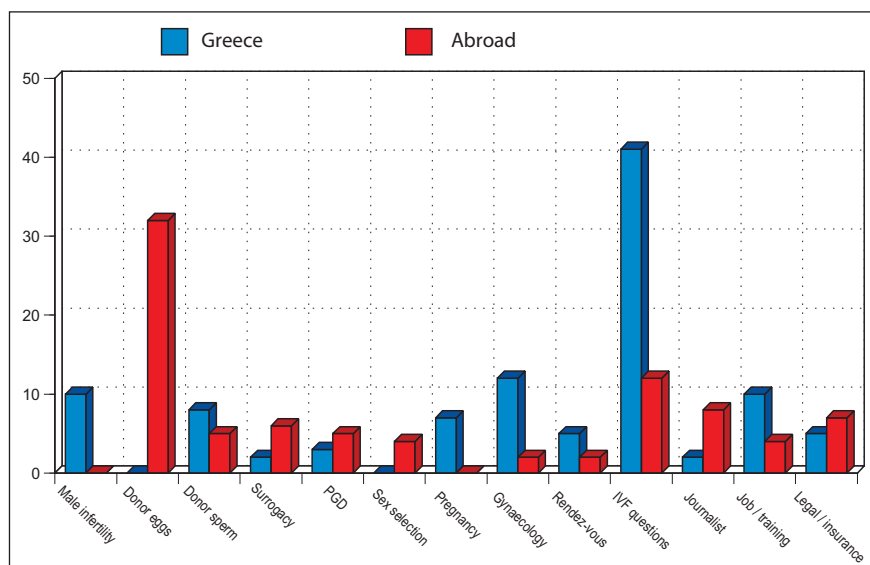
The questionnaire comprised a large sample size of IVF consumers with a good completion rate (297/352, 84%). The survey found that a large proportion of those who were undergoing IVF treatment had Internet access (75%, 223/297), with 40% (30/74) of those who didn't intending to gain access at some time in the future. Over half of all patients currently undergoing IVF treatment (65%) had access to the Internet both at home and at work (145/223). Whilst this appears contrary to the findings of Eurostat, our data may have been skewed by the relative affluence of Athens IVF treatment group.

ART patients were more likely to use the Internet than those within the general Greek population, and further analysis revealed that the vast majority of ART patients over the age of 30 had access to the Internet. The majority of patients (67%) were indigenous to Athens where the IVF unit that conducted the study is located (200/297), and no correlation between Internet access and location was made due to the relatively small sample size of those originating from outside the capital. However, by necessity all four patients

who came from overseas (1.3% of the total patient sample) had originally communicated via the Internet before attending the clinic.

The majority of Internet users had employed the Internet to search for ART information (66%) or general health matters (68%) prior to attending the IVF clinic, and in general they reported finding the information to be both useful and reliable (80%). Surprisingly some 80% of patients were unaware as to whether their chosen fertility specialist possessed a website, suggesting that referrals to IVF clinics are currently not based upon information derived from the Internet. Unsurprisingly no patients (0/297) said that they would select an IVF clinic based solely upon the contents or presentation of their website. Although the choice of ART specialist or IVF unit is apparently not based upon website provision or content, this does not however mean that patients would not like to use the Internet to learn more about their specialist.

Communication was, in ideation at least, a high priority among patients who had used the Internet prior to attending the clinic. The perceived threat of the Internet to personal security and confidentiality was voiced by a third of all participants in the survey, with those who did not use the Internet more likely to raise concerns than those accustomed to its use (59% vs 25%). Whilst most patients believed that the Internet presented only a minimal threat



to their privacy, most patients clearly favoured the Internet as a means of communicating directly with their physician. Almost all (86%) expressed a preference to directly question their specialist via email, whilst the majority (62%) preferred to have the option of being able to book an appointment online. Although only 10% of internet users, all of whom were women, had ever visited a chat room, two-thirds of those who had, reported using the chat room to discuss IVF-related issues. All users of chat room facilities agreed that they had obtained useful information from the Internet, and most patients (60%) welcomed the idea of active participation within an Internet conference (136/223).

Although there was a clearly stated preference for direct electronic communication via website (e.g. email, form etc), especially enquiries relating to medical advice, the steady stream of emails from the www.kosmogonia.gr website did not directly translate into patients either attending or contacting the affiliated clinic. Although patients were largely in favour of direct email communication with their IVF clinic, only a relatively small proportion of Greeks had communicated via email. On average only 33 emails per annum were received from Greek citizens, with almost the same number (26) received from overseas during the same period.

It appears that Greek citizens are more likely to discuss basic health matters relating to IVF, gynaecology, pregnancy and general ART with their healthcare provider than foreigners. This may be due to a reticence to seek such information from overseas clinics,

or due to an already adequate provision of such information and services within their native country and tongue.

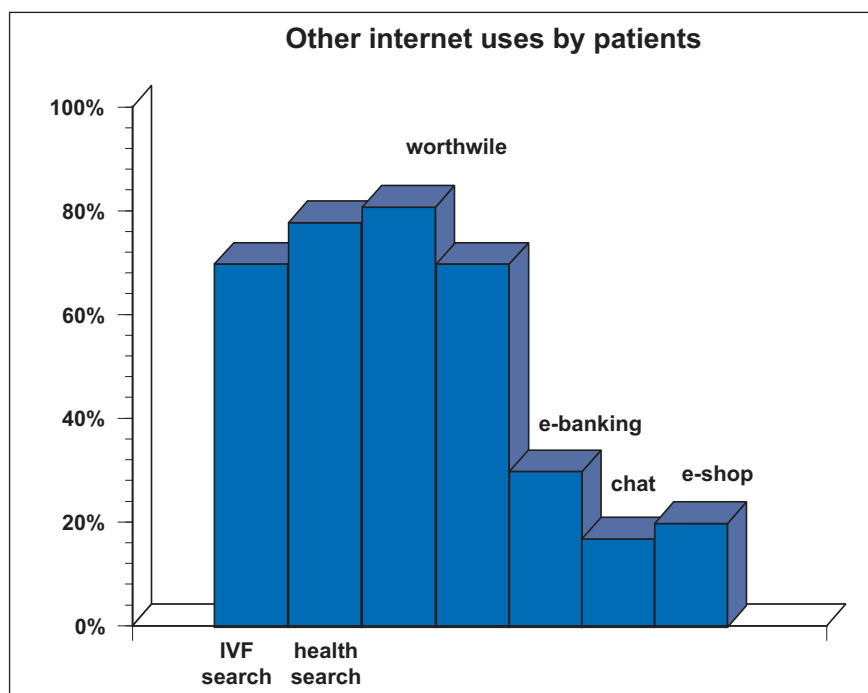
Most Emails originating from outside Greece related to requests for donor oocytes or for surrogacy. This may be due to the absence of affordability or availability of these resources within their respective countries of origin. Domestically, IVF and related issues have religious and ethical implications within the Greek culture which may motivate Greeks to seek such information directly from their fertility care provider. Questions regarding PGD emphasized B-thalassaemia, due in part to its high incidence within the

Greek population and also due to the recognized experience of Greek specialists (4).

The primary aim of an IVF website is to explain and advertise ART services, and accordingly health care providers must carefully consider which Internet implementation strategies best inform, direct, retain and convert Internet traffic into services. Answering medical emails from visitors is both time consuming and fraught with legal implications, as responses are seldom brief and because it is usually impossible to answer individual cases without a detailed knowledge of their medical history. Further, very few email enquiries from IVF websites directly translate into appointments at the affiliated clinic (only 3% of patients requested a consultation via email), and so clinicians must consider the cost of their time relative to the benefit of maintaining an interactive web presence. The most frequent email topics deriving from overseas related to requests for either donor sperm or oocytes, and all legal questions concerned the use and provision of donor oocytes. Clearly much medical web site use appears to be media driven, and medical web sites are still primarily employed as information resources rather than as commercial guides to medical services.

The development of the Internet has strongly influenced the growing trend towards medical tourism.

Many countries have infertility treat-



ment programs which are either severely restricted in their availability, or else are prohibitively expensive (5,6). Overseas journalists most frequently requested information concerning the use of donor oocytes, thereby reinforcing the growing trend towards IVF medical tourism as many individuals would only become aware of such options via the media. The Internet remains a powerful and growing information resource for those patients who wish to seek fertility treatment overseas in accordance with earlier findings (7). Via the Internet, questions relating to the cost and provision of services can be

quickly resolved without the need for expensive consultation.

From our analysis we conclude that the Internet is indeed a valued and established information resource for IVF in Greece. Over the past four years a large increase in Internet use to obtain health-related information has occurred according to a comparison with a pilot survey conducted in 2002 (Palmer, unpublished data). As regards future trends, it appears that most prospective IVF patients will have Internet access, and most of these individuals would welcome the availability of an Internet-

based conferencing facility to discuss ART or IVF-related issues with other individuals and to share their experiences.

Competing interests: The authors declare that they have no competing interests.

Authors Contribution: ZS, PG and TT conceived of the study. WR, ZS and PP designed the clinical protocol. IG and PP MC drafted the manuscript and all authors contributed to its revision.

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