Chapter 2
Exploring the Potential of Over-the-Web Psychiatry

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Abstract Over the past years, the scientific community has witnessed a tremendous growth of applications in healthcare telematics. The adoption rate of web-based practices was not the same for all medical specialties. Some such as cardiology were fast adopters mainly due to the 'electric' nature of the standard diagnostic tools (electro-cardiographer) but others such as psychiatry are still lagging from adopting new methodologies. Now that ubiquitous broadband Internet access is here to stay, the time has come to explore the potential of mental care services that could be offered over the web.

Keywords: Healthcare telematics · Tele-Psychiatry · Video-Conferencing · electronic health records

2.1 History

From the early introduction of voice telephony, patients in distress and frustration used to call their physicians urgently seeking for consultation. These phone calls did not follow any clinical protocol and though efficient in terms of crisis management they did not qualify as a treatment method. Later on, suicides and crises intervention hotlines staffed with trained volunteers provided a more organized form of telephone counselling.

It was back in 1959 when the first tele-psychiatry system was set in operation in Nebraska, USA. Two-way closed circuit microwave television was used to transmit the demonstration of neurologic patients from the State Mental Hospital to Nebraska Psychiatric Institute 112 miles away in Omaha as part of the education of first-year medical students [1].

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Although tele-psychiatry has a long history, its practical consequences in every day mental healthcare practice have been limited. Development, construction and operation and maintenance costs have been prohibitively high. The majority of 'on-line time' was spent either on medical education as well as on administration purposes.

2.2 Identifying the Beneficiaries of Tele-psychiatry

Tele-medicine is defined as the delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communications technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interest of advancing the health of individuals and their communities [2]. If this definition were explicitly adapted for psychiatry, it abides by the WHO definition on health that it is a state of complete physical, *mental* and *social well-being* and not merely the absence of disease or infirmity [3].

Obvious applications for preserving population's health status include psychiatric care for people living in remote and isolated areas. The uneven distribution of medical practitioners between rural and urban areas is well documented even for the well-developed countries. Tele-psychiatry makes it possible to provide universal access to the same quality level mental healthcare services regardless of the limitations imposed by geographic locations.

However, it is not only the inhabitants of rural areas who are underprivileged regarding the accessibility to these particular services. Certain populations amongst them, the elderly and people with disabilities, find it really hard to cope with public transportation due to general poor health, specific mental condition, e.g. agoraphobia, and deprivation from financial affluence in order to finally visit the appropriate healthcare institution and the specialized psychiatrist. Many are the cases when the mentally ill even lack the required family support and they are left either alone or in the care of the community with the fear of social stigmatization being the rationale behind the abandonment.

Tele-psychiatry could enable patients to be examined, assessed and receive the benefits of specialized psychiatric services in their preferred surroundings and acting complementary to the primary care physician, thus ensuring the continuity of care.

NHS or any form of private care today cannot afford to staff every single hospital or nursing home with specialized psychiatrists. When primary care physicians undergo the critical task of dealing with treatment-resistant patients, they would either deliver suboptimal care or refer the patient to very expensive tertiary hospital care away from his/her family and preferred surroundings, jeopardizing their overall stability and well-being.

It is not only the patients who benefit from the new tools such as remote consultations. The physicians could now have an incentive to remain in rural areas as

geographic distance from the sources of knowledge (e.g. prestigious health care institutions) is not synonymous to professional isolation.

2.3 Contemporary Means of Tele-psychiatry

Psychiatry is not a specialty that requires touch during examination of the patient. Sessions are mostly in the form of interviews where interviewer and interviewee have agreed to meet in a predefined location such as a nursing home, hospital, private clinic or even at the patient's home, and physical contact is limited to a mere handshaking at the beginning or the end of the session.

Even duration is not predefined. The sessions could last for as long as the involved parties consider it helpful or efficient. Number of involved people is not standardized either. Group therapies have gained momentum especially when participants form a group sharing experiences and seeking guidance for dealing with issues ranging from substance abuse to mourning and providing care to the chronically ill.

Broadband Internet has made video-conferencing through standard tools such as Windows Live Messenger (MSN), Skype, etc. available to all. Even if the patient cannot configure his or her environment to enable such a facility, social services could cater for such a need at a 'care at home' level. Practically, what video-conferencing offers is a simulation of the consultation session between the psychiatrist and the patient, rendering location insignificant provided that broadband Internet access is established in the concerned region. Multi-party sessions could also be supported simulating group therapeutic consultations.

One of the numerous advantages of tele-psychiatry is that it allows for immediate recordings that could be stored in relevant fields of the patient's electronic health record and reviewed later on by the same physician or sent to another colleague for second opinion and further evaluation. Medical research depends heavily on easy-to-process digitalized data, and these recordings combined with coded history and diagnostics constitute a very promising combination for breakthrough results not only in the field of psychiatry but also in the adjacent field of neurology and its subspecialties, neurobiology and neurophysiology.

An important study by Steffens et al. [4] has demonstrated the added value of the video recordings taken while demented subjects were participating in research interviews. The overall gestalt of the patient in the environment is a very important contributor to diagnostic assessment, which is the basis for an adequate cum effective treatment of the subject's disorder.

Privacy and confidentiality are better addressed in the closed confines of the digital world. There are numerous techniques these days to prohibit eavesdropping on video-conferencing, and data storage from heterogeneous sources is safer than ever through the use of cryptography and smart cards throughout the healthcare network of professionals, thus allowing access to data for only the authorized practitioners.

2.4 Pilot Assessment: The Key to Global Acceptance

Many mental care practitioners insist that tele-psychiatry is just another gimmick. They appear to be reluctant to use a technology considered unproven. Despite its long history, clinical studies establishing accuracy, reliability, ease of use and clinical utility are not that many though their number is fast increasing [5].

A recent study that took place in Greece evaluated the tele-psychiatric process used for assessing and preparing patients who could potentially leave the institution and transferred to boarding homes as part of the national deinstitutionalization program. The study used video-conferencing as the tool to connect University of Athens Psychiatric Clinic and Tripoli's (city of central Peloponnese) Psychiatric hospital [6].

The results of the study were very encouraging. The project has been evaluated through the use of questionnaires given to patients and mental health professionals to fill in. ADSL connection was used and the bandwidth exceeded a lot the sufficient bandwidth for examining and making decisions concerning most mental disorders according to the Telepsychiatry Project of the Consolidated Department of Psychiatry of Harvard medical School (128 kb/s) [7].

The majority of the patients have accepted the new method of examination without problems and the level of satisfaction from the method appears to be high. The health practitioners' acceptance is at the same level and they also claim to have found the video-conference system very easy to use and efficient in their everyday routine.

2.5 Tele-psychiatry: The Experience of the Pilot in Chania, Crete

The Mental Health Center of Chania, Crete in Greece, decided to proceed in the implementation of a tele-psychiatry system, enabling the provision of consultation services in three remote areas. To this end, three rural health units located in the villages of Vamos, Kasteli and Kantanos in the prefectural area of Chania were connected to the Mental Health Center of Chania via a web-based platform in order to conduct on-line sessions with patients, keep electronic psychiatric records for each patient based on international protocols and disease classifications, and monitor patients following hospitalization in mental institutions.

The implementation scenario concerned the conduction of individual sessions over the web between the patient located in the remote rural health unit, who was accompanied by an authorized local social worker, and the psychiatrist expert located in the Psychiatric Clinic of Chania.

The main objective of the pilot implementation was the improvement of the quality of life of patients with mental disorders, following treatment and hospitalization, in order to enable social inclusion and efficient monitoring following hospitalization discharge.

The feasibility study conducted at the end of the pilot period showcased that the implementation of the tele-psychiatry system was cost-effective in the long-term in comparison to the mobile mental health unit that previously served the population at the rural areas under consideration. For example, 154,875 patients can be served via the tele-psychiatry system during a month, whereas on average only 11,932 are being served by the mobile health unit personnel.

Preliminary data also indicate that tele-psychiatry constitutes a sustainable business model in the long run.

2.6 Conclusions

Currently, video-conferencing offered at ADSL connection speed is the main enabler of tele-psychiatry. This technique used in conjunction with a patient's electronic health record can successfully simulate and substitute the in vivo consultation and deliver to the mentally ill the same quality of service regardless of their location.

The burden of dealing with treatment-resisting patients will be lifted from the shoulders of primary health care practitioners since they can afford to electronically refer the patients to a specialized psychiatrist.

The trauma of moving the patients away from their families and familiar surroundings can be avoided and their recovery can take place in an environment in which they feel safe and well adjusted.

References

1. Elizabeth Liebson, MD, Assistant Professor of Psychiatry at Tufts New England Medical Centre in Boston, MA, USA, Telepsychiatry: 35 years' experience by http://www.medscape.com/viewarticle/431064_1.
2. International Society for Telemedicine and eHealth – NGO in Official relation with WHO, Glossary of Telemedical Terms http://www.isft.net/cms/index.php?q_-_z (WHO 1998).
3. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19–22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.
4. Steffens DC, Welsh KA, Burke JR, et al. Diagnosis of Alzheimer's disease in epidemiologic studies by staged review of clinical data. Neuropsychiatry Neuropsychol Behav Neurol 2002;9:107–113.
5. Zarate CA, Weinstock L, Cukor P, et al. Applicability of telemedicine for assessing patients with schizophrenia: Acceptance and reliability. J Clin Psychiatry 1997;58:22–25.
6. Zacharopoulou C, Konstantakopoulos G, Tsirika N,Vavourakis P, Lymperaki G, Tempeli A, Valma V, Panagoutsos P, Katsadoros K. Evaluation of a tele-psychiatry pilot project http://www.klimaka.org.gr/newsite/downloads/telepsychiatry.pdf.
7. Baer L, Elford R, Cucor P. Telepsychiatry at forty: what have we learned. Harv Rev Psychiatry 1997;5:7–17.