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Virtual reality clinic: a case study

The growing role of VR in healthcare

How has VR developed and what potential does it have for future healthcare?

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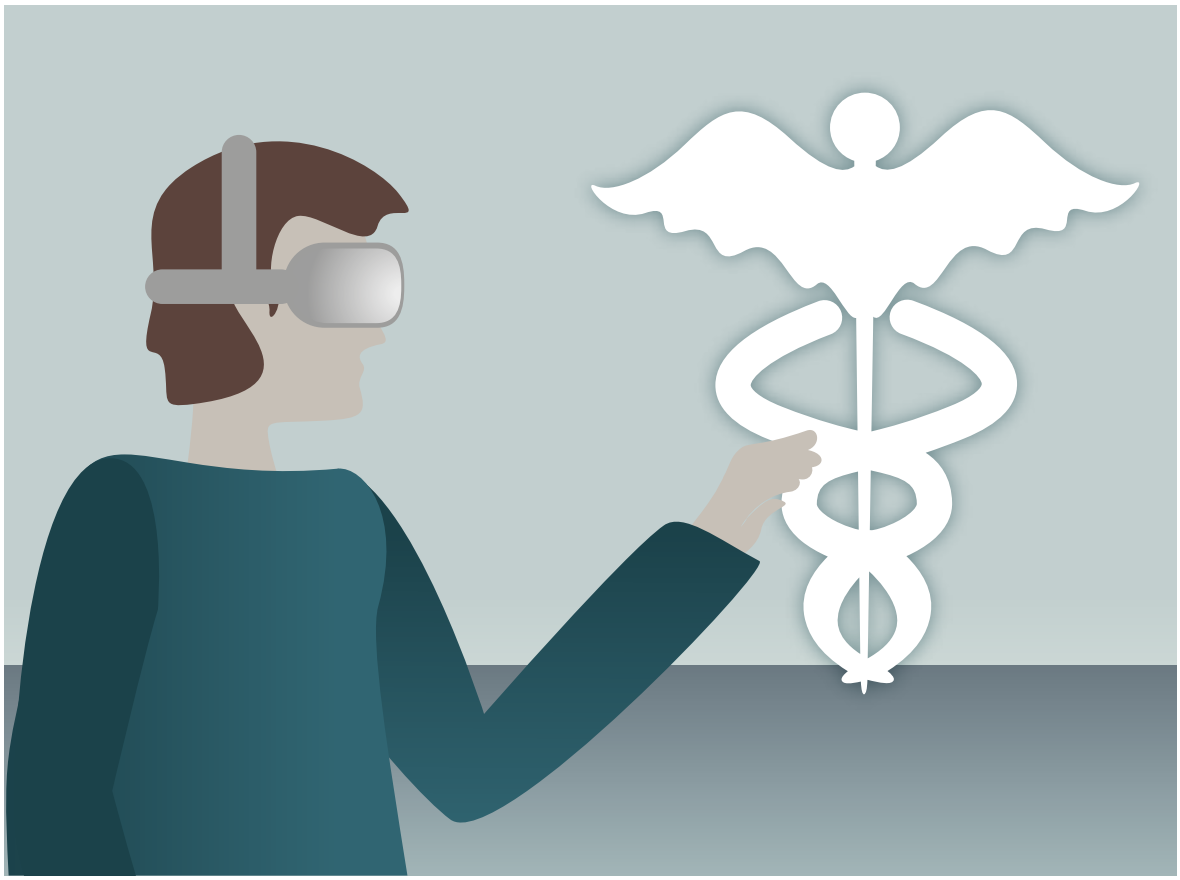

In the 1990s, there were no resources dedicated to virtual reality (VR) and behavioural healthcare – no journals, no clinics, no conferences, no training programmes, and only few advanced technologies. Today, we find ourselves in the midst of a new exciting and challenging era of technology-enhanced behavioural healthcare.

Some of us have been involved since the beginning, when what we were envisioning was years ahead of its time. Now, as we embark on our third decade of VR and behavioural health, it is important to recognise how far we have come: from helmet-style head-mounted displays that cost thousands of dollars to a VR headset that clips on your cellphone for less than $200; from FTP, Usenet, and something called the World Wide Web to Facebook, Twitter, and Instagram.

It's also worth noting that the field has become much more cohesive, with its accomplishments now including a Medline journal, a magazine, an international conference, an international association, VR clinics, and American Psychological Association accredited clinician continuing education and training programmes.

Treatment in a VR clinic

Our centre opened its first VR clinic in southern California in the mid-1990s, initially focused on the treatment of specific phobias (flying, driving, public speaking, etc.), post-traumatic stress (PTSD) due to motor vehicle accidents and panic disorder and agoraphobia. Prior to opening the clinic, our approach to treating patients with anxiety disorders had been either imaginal exposure (in combination with biofeedback and cognitive behavioural therapy techniques) or in vivo (real life) exposure.

The ability to perform the exposure session in the virtual setting, allowing a combination of senses to be stimulated (visual, auditory, tactile), while still allowing for the monitoring of the patient's physiology, permitted therapy to progress more quickly, and in most cases more successfully. In addition, the patient was able to "push the envelope" in a protected setting, since suspension of disbelief (the individual felt "present" or "immersed" – e.g., like they were on an airplane, taking a flight; instead of still sitting with the therapist in an office) was elicited. This necessary therapeutic component provided an innocuous setting, whereby emotions could be accessed and processed to move towards altering cognitions and physiologically desensitising to previous anxiety-provoking stimuli.

> "AS INTEREST CONTINUES TO GROW IN THE USE OF VIRTUAL REALITY (VR) THERAPY FOR PATIENT CARE, THE NEED TO TRAIN CLINICIANS IN THIS NEW APPROACH IS BECOMING MORE IMPORTANT"

Key to effective therapy

Since the first one-room clinic in San Diego, VRMC has expanded its offerings in the USA, Europe, and most recently into Asia, but has always remained grounded in its guiding principle: VR is only a tool to assist the therapist in providing more effective treatment to the patient.

One of the key components that continues to bring success during therapy is when the therapist, programmer, and end user (patient or trainee) work together to build an environment containing the correct cues for eliciting the arousal or the correct scenario needed to learn a skill set. The triad is essential. The therapist does not wish to learn programming skill sets or to spend more time with the computer – at the expense of the patient. The computer is a tool and should not take away from the therapeutic alliance between patient and therapist. Working to meet this goal, successful programmers will create a few keystrokes that the therapist can easily master while remaining focused on the patient.

The VR, together with physiology, should also serve as a backdrop to guide the therapy session. It is, as we discovered in our first randomised controlled clinical trial in the 1990s, that adding the physiology allows for more effective treatment short-term as well as for long-term sustainability of treatment results (three year follow-ups showed no recidivism in this group).

Top 10 developments as we move into third decade of VR

1. VR-enhanced therapy can treat a wider range of conditions including phobias and anxiety disorders, acute and chronic pain.
2. VR can be used as an assessment tool for Alzheimer's and PTSD.
3. The use of VR is now evidence based.
4. VR can now be used at home as well as clinical settings through mHealth implementation.
5. The use of VR is now patient driven rather than therapist driven with smartphone apps a means of engagement.
6. Patients are now empowered to treat themselves but for realisation of full potential, apps must be well-designed, efficacious through evidence-based research and must meet established evaluation and recommendation criteria.
7. The cost of VR wearables has dropped significantly while becoming more widely available.
8. The use of objective measures is becoming ubiquitous.
9. With the growth of mental health parity, growth is now possible - although the resource of big data needs clear protocols for device data and more funding.
10. All of us are riding the wave of technology development as the healthcare sector uses tools created in other domains.

We provide a careful and systematic approach for exposure, teaching the patient a set of skills which they can then practise in the VR setting. We are always accessible if patients should need a refresher course or a booster session, but in most cases, patients have reported that they are able to transfer the skills they have learned to deal with other areas of their lives. This kind of empowerment is exciting and achievable for most of our patients.

Training for clinicians

As interest continues to grow in the use of VR therapy for patient care, the need to train clinicians in this new approach becomes more important. There are three components for success: a broad knowledge and familiarity with CBT, comfort with computer-based and technology-supplemented practice, and knowledge of basic human physiological responses to stress and relaxation.

> “TECHNOLOGY DOES NOT TAKE THE PLACE OF GOOD CLINICAL SKILLS OR CLINICAL JUDGMENT BUT ACTS AS AN ADJUNCT”

Technology does not take the place of good clinical skills or clinical judgment. In our case, it serves mostly as an adjunct to cognitive behavioural therapy techniques or to stress inoculation training techniques, depending on whether we are training personnel to perform in stressful situations (first responders, medical personnel, police officers, military personnel, students, etc.) or teaching patients to overcome anxiety in previously anxiety-provoking scenarios.

VRMC's affiliated 501c3 nonprofit, the Interactive Media Institute, has been certified by the American Psychological Association to provide continuing education and training for psychologists and other mental health professionals wishing to learn this new skill to add to their clinical offerings.

We are also working on several new models of care delivery that look at the continuum of patient abilities, range of experience, and individual coping mechanisms. Continued individualisation of the therapy session while preserving the key components of the CBT foundation is key to creating an effective model that will survive the evolution of medical care.

Data protection and other challenges

It is clear that the appropriate use of advanced technology can greatly improve mental healthcare delivery and clinical outcomes. Previous barriers continue to be eliminated as cost, simplicity, and ease of use dramatically increase the availability of these tools. Overall, our approach has been patient centric, and as such we have consistently achieved successful results with both analytic and therapeutic outcomes.

There are additional challenges however. The evolution of the current healthcare system will demand strict adherence to patient privacy, security of medical records, and adherence to ethical policies, cognizance of new Federal regulations, and synergy with new requirements of payers. While this new universe of requirements may appear daunting to those who wish to add technology tools to their individual or group practice, we and others are making free resources available to all who seek enquiry, support, and guidance. Please visit www.vrphobia.eu, vrphobia.com or www.interactivemediainstitute.com to begin the quest for knowledge. ■

KEY POINTS

- ✓ In a matter of decades, VR has become central to technology-enhanced behavioural healthcare
- ✓ The cost of VR has dropped significantly as technology has developed resulting in increased potential implementation within healthcare
- ✓ VR is a tool to assist in providing more effective treatment to the patient
- ✓ Successful VR training depends on a knowledge of CBT, comfort with computer-based and technology-supplemented practice, and understanding of human physiological responses to stress and relaxation
- ✓ Advanced healthcare technology results in improved mental healthcare delivery
- ✓ Challenges include patient privacy, medical records security, and adherence to ethical and policy-making criteria