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Cultural Relevance of Virtual Reality Therapy in India

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Introduction

Virtual Reality Therapy (VRT) is a contemporary method of therapy that has found applications in mainstream clinical psychology as recently as in the past two decades. Virtual reality mimics real-world situations by using a three-dimensional computer-generated immersive and interactive environment, and VRT takes advantage of this simulated environment. In VRT, the therapist delivers sensory information to subjects controlled through a head-mounted display and specialised interface devices (Maples-Keller, Bunnell, Kim & Rothbaum, 2017). Additionally, this form of therapy engages in perceptual stimulation via visual, auditory, tactile, and olfactory cues to trigger emotional reactions in clients. VRT thus aids in further enhancing the usefulness of traditional therapeutic approaches by, for instance, enabling virtual replication of situations that might be otherwise unsafe to recreate (in cases of anxiety-related disorders or phobias). Virtual replication of situations helps create a more predictable and structured nature in the intervention setting and allows participants to react more naturally (Dey & Jeevajyoti, 2019).

A research study conducted by Falconer and colleagues (2019) gauged the effectiveness of VR talking therapy by administering an avatar-based program, ‘ProReal’, on two uncommunicative case subjects visiting the Child and Adolescent Mental Health Services (CAMHS) in the United Kingdom. The main aims were to test the effectiveness of this newly emerging digital technology on therapeutic engagement in reluctant subjects, treatment of common mental health problems, and observe the subjects’ impressions of the VRT software program. This approach adopted by

the researchers is novel since studies in this domain have typically explored the effectiveness of VR therapy as a simulation tool for treating anxiety disorders or phobias (North & North, 2016) and not as an interaction tool to build the therapist-client relationship in the context of talk therapy itself. However, this study, similar to other literature in this domain, is placed in the western context. Since western frameworks of functioning differ significantly from other social frameworks worldwide, this intervention's cultural applicability and relevance can be questioned. It may be imperative to consider the following customisations to ensure successful implementation of the VRT model.

Currently, in the Indian scenario, research exploring VRT remains scarce. Studies are primarily restricted to the medical and dentistry fields for pain reduction (Haleem, Javaid & Khan., 2020). Only a handful of studies analyse its applicability in patients with anxiety and phobic disorders (Srivastava, Das & Choudhury, 2014; Jadhav et al., 2020; Jashwanth et al., 2020). VRT can potentially transform the current Indian mental health discourse. The capability of VRT is evidenced by the extraordinary results seen by the telemedicine model in the country, which has grown to technologically connect numerous rural and remote hospitals with super-speciality hospitals (Chellaiyan, Nirupama & Taneja, 2019). The telemedicine model flourished during the COVID crisis, enabling widespread dissemination of psychological support and illness management. The model thus evidences the capability of the Indian population to productively engage with technological healthcare services, signalling an optimistic future for VRT. To garner an in-depth understanding of the potential applicability of VRT in a vastly diverse country like India, it is essential to discuss prevalent social frameworks and demographic profiles of the target cohorts that can determine the success of any new intervention model.

Sensitivity to the Indian Social Fabric and Value for the Youth Population

Culture and psychotherapy are deeply intertwined. It is understood that diversity in socio-cultural frameworks is coded "verbally, imagistically, proprioceptively, viscerally, and emotionally" resulting in different experiential structures and worldviews in people across societies (Koç & Kafa, 2019). These differences might give rise to varied standards of normalcy in functioning of the human mind and behaviour. This, in the mental health context, thus impacts the manifestation of psychopathology, reaction patterns and willingness to receive psychological help (Viswanath & Chaturvedi, 2012; Yalvac et al., 2015). Thus, the social fabric that governs the cognitive and behavioural processes of a population becomes imperative to consider when discussing the potential of a prospective intervention model.

In India, features of the social fabric that are relevant to the context of this paper include the low levels of mental health literacy (MHL), high stigma against mental illness and heavy reliance on non-professional sources of help (especially in rural areas). These social issues lead to discrimination, lack of access to resources and insufficient facilities, and communal cleansing. A

study conducted by the Live Love Laugh Foundation in 2018 across 8 cities in India over a span of 5 months, reported that 47% of cohorts indicated higher levels of judgement against people suffering from mental illness and 68% believed that those suffering from mental illness should not be trusted with any responsibility (WEF, 2018). Such low levels of mental health sensitivity and associations of mental illness with weakness, embarrassment, and lunacy culminating in social backlash, further make it difficult for people to seek mental health support (Padukone, Doraiswamy & Chandy, 2018).

However, an aspect of India's social makeup that is witnessing a paradigm shift and demands acknowledgement in the context of this discourse is the rate of growth of technological literacy in the population. These rates have recently seen an acceleration in light of the COVID-19 pandemic. In addition to the digitisation of business and education-related domains, positive responses to contactless healthcare as seen via the telehealth models implemented during the pandemic serve as exhibits for the expanding receptivity of the population to technology. Even though a digital divide remains stark in an enormous country like India, digital literacy statistics are promising. This is especially the case in urban India which stands at 61% digital literacy (Mothkoor & Mumtaaz, 2021). Even though these rates are much lower in rural areas, reports have shown populations of tier-two and tier-three cities to be warming up to digital healthcare facilities where, according to Neeraj Lal, COO of Apollo Hospitals, the reluctance to adopt technology has gone down drastically both from the patients as well as doctors' end (Pratima, 2022).

These pearls and perils of the Indian socio-cultural frameworks in context of the VRT model makes perspicuous the immense potential for success that VRT holds. In order to overcome the issues of low MHL and high stigma related to mental illness, and enabling a paradigm shift towards a more inclusive, community-oriented, and long-term approach to mental healthcare, robust implementation of Community Mental Health Models (CMHM) is crucial. Given the increasing technological literacy as well as the economically feasible nature of the VRT model (as discussed in detail in the forthcoming sections), VRT could prove to be a fruitful addition to the CMHM. Moreover, given the adaptable nature of the VRT software, it also brings the possibility of incorporating avatars and realities inclusive of local psychosocial support groups like religious groups, faith healers, and other bodies trusted by the community into intervention models. Via this, the receptivity and, consequently, the effectiveness of the psychopathological treatments could be enhanced. Additional initiatives working towards stigma reduction would further the mental wellbeing goal that these CMHMs are currently struggling to reach. These could include culture-sensitive awareness drives and linking the primary health-care system with tertiary care hospitals (like the existing telemedicine model or within the upcoming network of tele-mental health centres as announced in the Union Budget 2022-23).

An essential factor acknowledged by Falconer and colleagues in their study mentioned earlier in this commentary is the user's age and its impact on experience with the VR system (2019). Since their research is based in a centre for CAMHS, it reports the perceived ease of use by the young participants in their study, leaving the older population outside its scope. A few studies have showcased positive VRT results for the elderly in India. For instance, in 2016, Chitra and colleagues investigated the impact of VRT on the cognition of geriatric patients residing at selected old age homes in Chennai. The results reported a significant increase in the cognitive abilities of these patients post-VRT administration. However, social characteristics of geriatric cohorts, such as increased value placed on face-to-face interaction and real-world relations over virtual ones, might act as barriers to the successful implementation of VRT in this segment. With younger demographics, VRT has produced more efficacious results. This is evident in studies like those by Taneja and colleagues (2017), who reported reduced mental stress in 20 participants between 18 and 21 in Tamil Nadu who engaged in VRT. Another study by Sinha (2021) discussed how VRT can aid college students in effectively coping with academic/social challenges and addressing psychological distress resulting from new experiences of young adulthood. Moreover, studies like those by Javaid and colleagues (2020), Niharika and colleagues (2018), and Singh and Perry (2016) produced optimistic results for VR applications for young cohorts in domains of medical treatments and dentistry, further evidencing the uptake of VRT for interventions in the youth demographic.

In addition to positive treatment outcomes, the VRT intervention model is also likely to have high usability amongst the Indian youth. This is because the process of digitisation in India has led the youth to increasingly adapt to technology in a manner that has become crucial to their functioning in numerous personal and social domains (Sawshilya, 2020). Research has shown that the Indian youth demographic is extremely receptive to changing technological trends. A survey conducted by YouGov in 2020 reported that India has a high volume (49% of their sample) of 'early tech adopters' i.e., individuals who are open and eager to adopt new technology, belonging to the 18-34 age group, the youth demographic (IBI, 2020).

Moreover, age has also proven to play an imperative role in generating usability in terms of learnability of the VRT software. For instance, research by Flujas-Contreras and colleagues (2020) as well as Paulus and colleagues (2019) that tested the learnability of VRT amongst adolescents and undergraduate students in the US and Indonesia respectively and reported that these participants were confident and found the VRT mechanisms easy to use. On the other hand, studies like that by (Fowler et al., 2019) whose sample consisted of veterans with a mean age of 49 years reported learnability to be less, with their sample requiring more time than prescribed to get familiar with the VRT mechanisms. Similarly, studies that explored age-related differences in performance and user experience regarding VRT, reported older cohorts to exhibit inferior performances and evaluate user experience more poorly than the younger cohorts (Plechatá et al., 2019). Thus, there exists an enormous market for VRT amongst youth populations, especially in

India, a country that houses one-fifth of the world's youth population (Ministry of External Affairs, 2021).

Closely interconnected with the social and age-related demographics of a population are the cultural underpinnings that drive the formation of their social realities.

Synchrony with the Cultural Characteristics of the Indian Populace

The research by Falconer and colleagues describes the success of VRT with participants who were reluctant to verbalise their emotions to their therapists (2019). This behavioural tendency is prevalent in collectivist cultures (like India), where opinions of others and perceptions of oneself often guide behaviour and cognition. People thus prefer not to share their distress with others by trying to keep it to themselves ("Mental health: Culture, race, and ethnicity: A supplement to mental health: A report of the surgeon general", 2001). In the same vein, Falconer and colleagues (2019) touch upon how usage of ProReal proved to be successful for males who initially thought that "talking about feelings would make them harder to control". This finding transfers seamlessly to the Indian context, where strict patriarchal notions of masculinity dictate that men bestrong and assume invulnerability, a barrier to help-seeking (Sharma, 2021). By alleviating this need to verbally share concerns with a mental healthcare professional (MHP) face to face, VRT would generate cultural value by helping reluctant clients overcome this roadblock and thus allow for the development of resourceful therapeutic relationships.

Economic Efficiency: Affordability, Accessibility, and Widespread Administration

In addition to socio-cultural facilitators, the economic soundness of an intervention model has to be ensured, especially in a country as large and voluminously populated as India. The increased affordability of VR hardware (Dey & Jeevajyoti, 2019) via the availability of inexpensive but effective cardboard headsets like Google Cardboard (starting from INR 800) and its other imitations (starting from INR 299) would make community distribution and applicability of this therapy method viable even at the grass-root level. The advent of 5G and high-speed data communications would further motivate the growth and adoption of VR models while also facilitating incremental accessibility. Through heightened treatment accessibility, VRT would reduce the estimated economic burden of approximately USD 1.03 trillion between 2012-2030 to be borne by the country due to mental health ailments (World Health Organization, 2019). Furthermore, it would enable alleviating the shortage of MHPs in the country. According to WHO data released in 2017, a meagre 0.15 MHPs remain available for every hundred thousand individuals (as cited in Singh, 2020). Integration of VRT in the recently announced tele-mental health model to be launched and run by the National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru, with technological support by the International Institute of Information Technology-Bangalore (IIITB) would facilitate virtual administration and

increased accessibility of VRT even to remote parts of the country where access to mental healthcare remains obscure. This could lighten the enormous burden of these costs.

Despite the promise that VRT shows in numerous domains, there are challenges to its successful implementation in the Indian mental healthcare sector.

Challenges and Possible Solutions

As described earlier, VRT as an intervention model might prove culturally sound, in alignment with the Indian social fabric, and economically efficient in terms of its hardware requirements. However, the model may still have to combat possible hindrances in the Indian landscape such as (i) the socio-cultural perceptions of the population regarding VR being restricted predominantly to domains of gaming and entertainment, (ii) the relatively high economic costs of procuring and customising the VRT software, and (iii) an insufficiency of training opportunities for Indian MHPs.

Lack of Socio-Cultural Associations of VR with Mental Healthcare

In their research paper, Falconer and colleagues (2019) claim the attitudes and perceptions regarding VRT as held by clinicians are pivotal for the success of this technology. However, they fail to consider the everyday socio-cultural perception of the population regarding VR, which would determine openness to it in the clinical setting, thus influencing its therapeutic triumph. In India, even though gradual adoption of VR is observed in domains like education, healthcare, e-commerce, and real estate, most of the population continues to associate it with gaming and entertainment. This is evidenced by Indian software companies, driven by demand patterns, which work almost exclusively on developing VR software for gaming purposes (Parthasarathy, 2016). This divorce of cognitive connections between VR and healthcare, especially mental healthcare, significantly deters easy adoption and warrants extensive awareness initiatives on a national level.

Low Economic Feasibility of the VR Software

While the hardware is now affordable, the economic cost of developing the software could emerge as a concern. Since propagating a standardised VR software across diverse population groups would be fruitless, the software would need to be specialised and developed in collaboration with clinicians to ensure psychological reliability, cultural soundness of avatars and realities, and inclusivity of the numerous subcultures and ethnicities within India. This might bring the economic stability of initial procurement costs into question. However, since the VRT model is proposed to be incorporated into the tele-and community- mental health models, getting the government to incentivise software companies to produce efficient and inclusive VR

software could effectively mitigate this challenge. Past budget trends reflect the inadequacy in attention given to mental health. For instance, the Union budget 2021-22 allotted 0.84% of the total amount proposed to the Ministry of Health and Family Welfare for mental healthcare. Of this, most was directed towards centrally controlled institutions in the country rather than developing mental healthcare systems at the block and public healthcare level (Nigam, 2021). Even though still centralised, positive changes in trends are visible to some extent via the augmented attention placed on mental health for the year 2022-23 onwards. A 12.5% increase from last year's allotment, INR 670 crore have been allocated for mental healthcare initiatives in addition to the launch of the previously mentioned National Tele Mental Health programme to create a digital healthcare ecosystem and augment the quality of mental health counselling and care services (Bhowmick & Rege, 2022). This could successfully provide for the initial financial burden of software procurement that VRT poses. This leads to the last concern that VRT might face in India. Falconer and colleagues (2019) point out that effectiveness and expertise in administering this therapy require ongoing training and support for the MHPs.

Inadequacy in the Training of Indian Mental Healthcare Professionals

Based on the plan of incorporating VRT into the healthcare model at the grassroots level, it becomes crucial to address the inadequacy in the training of the MHPs in traditional therapy and mental healthcare practices (Hofmann-Broussard, Armstrong, Boschen & Somasundaram, 2017). Therefore, developing expertise through frequent training for a technology-based intervention model that is relatively new seems far-fetched, might face reluctance and therefore emerges as an essential pitfall to account for (Dey & Jeevajyoti, 2019). As a possible solution to this challenge, incorporating VRT training in the curriculum of clinical and counselling psychology degree programs, in addition to current methods that rely on manuals and stand-alone training tools, can be considered. This would amplify awareness and enable widespread training and application of VRT both independently and in amalgamation with other intervention models.

Conclusion: A Promising Contender with Optimistic Prospects

Assessing the cultural applicability of an intervention method is imperative and a significant determinant of its success, especially in India, whose cultural framework differs significantly from Western contexts where these therapies originate. Incorporation of VRT in Indian mental healthcare holds the potential to transform the field. VRT can be customised according to the socio-cultural needs of the population and prove economical with inexpensive versions of VR systems becoming widely available. In addition to better growth prospects owing to the introduction of high-speed data communication channels, VRT's contributions in the form of reduced burden of mental health costs and aid in overcoming the scarcity of MHPs (via incorporation in the telemedicine model) also add to the optimism associated with its future. While the tool could be socio-culturally sound, hindrances might emerge in the technicalities of

its successful implementation. This includes possible concerns regarding the cost of the specialised software, the current centralisation of mental healthcare, and insufficient allocation of funds leading to inadequate training of community healthcare workers. Increased attention by the government on the healthcare demands of the country and strict enforcement of CMHMs, including VRT at the primary healthcare level via the upcoming tele-mental health models, would thus enable India to take long strides towards holistic mental wellbeing.

VRT can also contribute to the journey towards holistic mental wellbeing in the coming years via its incorporation in the curricula of degree programs to ensure standardised and widespread training. Additionally, a plethora of software applications to make VRT more accessible and affordable might be the trend in the future. While this is gradually emerging as a reality in the west, the future of VRT in India might also see a disability-inclusive intervention model which would enable those with audio-visual disabilities to extract psychological benefits from it. This might be particularly relevant in India, where around 60 million individuals suffer from visual and auditory impairment (Banerjee, 2017; "62 million in India visually impaired", 2019) which not only places them at the intersection of numerous social stigmas but also exposes them to the possibility of higher psychological distress (Demmin & Silverstein, 2020). This is precisely what an inclusive VRT model could help combat in the coming years. VRT is a promising contender in the Indian clinical discourse that should be researched systematically to increase its viability and applicability.

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