**Digital Intervention for Managing Depression in India**

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1. Introduction

Depression is a serious psychosocial disorder present in Indian population with a huge disease burden among all age groups, all economic and all geographical strata. Depending on age, sexual and economic status, depressed Indians are estimated to be 156 million, a disease WHO rates highly in disability in India 2017. This is because in India depression is under diagnosed as people are ignorant of it and due to the social stigma associated with such conditions and poor mental health services available. Even the traditional methods of managing this problem using consultation with mental health workers as well as through the use of drugs are also wanting.

Perhaps the one of the greatest struggles faced in the traditional approach of depression and which is dominant in India is the scarcity of health workers. It has stewardship of estimated 0. At the moment the availability of psychiatrists is 75 psychiatrists for every 100,000 people of the population which is still very low as compared to the WHO recommendation of 3 psychiatrists for every 100,000 of people (NIMHANS, 2016). Professional mental health care is a rarity in many areas; it is even more of a rarity in rural areas, which is why patients there can wait a lifetime to finally receive a diagnosis let alone treatment. Similarly, owing to prejudice, most patients with depression are not allowed health services, and managing this is challenging as well. If a person does seek care, he or she can only get it at the urban facilities and as a result a vast majority of the population is left with a raw deal on health care. These challenges thereby show the importance of continuing to search for methods to support avail various treatments to all categories of people and in this way, reduce treatment gaps in the field of mental health.

Technological intervention was identified as could be realized as a mean of addressing some of the shortcomings that are present in the traditional mental health care delivery models. Such interventions are m-Health solutions, telepsychiatry, online therapy and even digital CBT solutions that address individuals with depression. It becomes of a great essence in a country like India, where the usage of smart mobile devices and internet connectivity has assumed a premier position in the intervening years, because it means that more and more clients of MH services can be reached. The future of digital health adoption appears promising due to the population size:IAMAI, ACCESS and Bonaface Tom (2020) revealed that currently there are more than 504 million active internet users in India.

Of importance about digital interventions in mental health is that is cheap and therefore it can help many people. As for the difference of the methods, one could state an important advantage of digital interventions is their availability at the time needed, and in the country where people are numerous and different, such as India. Also, such interventions are rather specific and can be tailored to the needs of a certain patient, while, in overcrowded traditional settings, this may be barely achievable. It also helps eliminate the discrimination that is associated with people, who seek for mental health services, and that means more people can seek for treatment without being stigmatized.

This research paper will therefore attempt to assess the effectiveness of the interventions that are implemented online for the treatment of depression in India. More specifically, it will explore how those technologies are mobilised to deal with the problems emerged from applying the traditional cures and evaluate the efficiency of the related health interventions in terms of patients’ outcomes. In that regard, this work, which is more centered on the present pursuits in the Indian context, intends to advance the discussion of what digital solutions might be able to bring toward the state of mental health in India. The aim of this research is to identify the factors that can make digital interventions successful or not and their usability and appropriateness by the users and to make recommendations on how to enhance its effectiveness in the Republic of India.

2. Literature Review

2.1 Historical development of depression treatment in India

Depression has always been looked as a major problem in India but it has gone through transition from the last several years regarding its treatment. In the past, people’s mental health in India was closely linked with the culture and religion. Ayurveda, which modern science acknowledges as one of the oldest surviving medical systems, classified mental disorders, includes depressive disorder, as dosha vikriti, imbalances in the body energies. The kinds of treatment commonly indicated therefore included use of herbs, yoga therapy, meditation and spiritual intercessory prayers to correct such imbalances.

During the British colonialism in the nineteenth century, the western style of treating illnesses of the mind was imported to Indian mental health systems. The building of psychiatric hospitals and the appearance of Western psychiatric methods was marked. However, such facilities were many a time confined to the urban set up putting the large rural population back to the fold of traditional and local processes (Murthy, 2000). However, the society continued to stigmatize mental health disorders in such a way that most of the affected individuals felt like it were worse to seek treatment.

After the British left India, the process of modernization of Indian model of managing mental illness steadily began but chaos was very much there. The Mental Health Act of 1987 was another legislation landmark, which intended to enhance mental health patients’ treatment and management. However, the Act was mainly concerned about those in institutional settings and it was silent on issues of stigma and the practice on provision of mental health services throughout the country (Thirunavukarasu & Thirunavukarasu, 2010).

In the last decades of the twentieth and the beginning of the twenty-first centuries, there was a tendency to generalize the need for community solutions in mental health care. The National Mental Health Programme (NMHP) launched in 1982 aimed at providing mental health care at the primary care level, however, during its implementation many of the barriers identified above remained important: a severe shortage of human resources and lack of financial resources (Patel, 2010). However, these attempts were not sufficient and traditional method entailed besides, there were stigmas associated with mental illness, and mental health services remained a distant dream for many Indians.

2.2 Global and Indian Scenario of Development of Digital Health Interventions

The innovation of the digitization in health services has surged over the recent past, including mental health services. Around the world, digital health interventions have quickly developed over the last two decades, with innovation in mobile technology, the internet and AI. Digital health represents a whole spectrum of technologies: telemedicine, mHealth, AI in diagnostics, and disease management programs, to name a few (Torous et al., 2020). Today, they have been most relevant in mental health services, providing a different approach to tackling problems such as depression through teletherapy, apps and online CBT.

There is evidence that, especially in high-income countries, the uptake of DHMIs has been rapid. Several developed countries such as the United States and several European countries have taken the lead aligning several digital platforms and applications that addresses figure(s) of mental health including depression (Firth et al., 2017). These solutions have been effective in easing the pressure on conventional medical facilities and can be Affordable and available especially for low income earners or those living in rural areas where specialist in mental health are hard to come by.

DHI have evolved based on the India’s mobile phone usage and Internet subscription prevalence as noted below; India, as of 2021, had more than 600 million smartphone users and has already become one of the biggest digital markets (Statista, 2021). Introducing the concept of the digital revolution, several health apps have been developed, and among them are the mental health apps.

The Indian government has also realized the possibility of digital health interventions and this is evidenced by the launching of the National Digital Health Mission (NDHM) in 2020. The NDHM has been envisaged as a digital health system which integrates telemedicine, e-Health record and wellness applications (Government of India, 2020). As it was mentioned earlier, the availability of digital mental health platforms in India is limited, yet relatively diverse: from ‘Wysa’ to ‘YourDOST’ or ‘InnerHour,’ which provide clients with options from chat-based therapy to the programs for self-directed self-help. It has particularly attracted the following groups because of easy access, pocket-friendly, and anonymity that it offers, thus reducing the embarrassment of one getting psychiatric help (Bansal et al., 2020).

But there are quite a number of issues which hinder the use of digital mental health interventions in India. There are problems with the so-called ‘digital divide,’ especially in rural regions, which in turn prevents access to these services. However, some questions have arisen over the efficiency of such interventions, bearing in mind that they are not regulated and conducted under standard protocols (Chandrashekar, 2020). Still, there are several difficulties, and the potential of digital health interventions in India is rather high, especially with the further development of the Internet environment and the beginning of the authorities’ active use of digital health solutions.

2.3 A comparative analysis of Digital or Online treatment methods as compared to Traditional treatment modalities

Whether digital intercessions are more effective than conventional treatments for depression is still under discussion. The conventional treatments for depression have been a synergy of pharmacotherapy and psychotherapy, which patients receive via face-to-face sessions with clinicians. Both are widely researched depression treatment strategies that have formed the basis of such treatment for many years and continue to be used today (Cuijpers et al., 2020).

Perhaps one of the biggest benefits of the more conventional treatment approaches is that they are usually administered by professionals in the branch of mental health. Face-to-face therapy sessions enable a strong working alliance which as a rule is fundamental to treatment success. Also, conventional approaches provide a chance of the prompt intervention in extraordinary states, for instance, severe depression when it is necessary to consider more comprehensive treatment, including the hospitalization of the patient (APA, 2019).

However, the conventional treatment approaches have a number of drawbacks, especially in the context of the Indian States. The availability of professional help such as psychologists or counselors is limited and even more so in rural areas severely limiting the option of conventional care. Due to long waiting time, high costs and a social disgrace of attending psychiatric units, these challenges are worsened (Patel et al. , 2016). They have contributed to a large treatment gap and people either not accessing or providing treatment or using inefficient services.

Digital interventions, therefore, present some advantages which serve to overcome some of the challenges that traditional methods has for its shortcomings. Here, they make the books more accessible, especially in regions where the circulation of printed texts is low, and are cheaper most of the time. Digital interventions also are unique in the fact that they are not bound by time and can therefore be utilized at any time and any place (Torous et al., 2019). Also, the nature of the social media and other digital platforms makes it less shameful to seek help for mental health issues which is quite a big barrier in India.

In addition, they can be delivered with adaptability as the uses of Artificial intelligence and machine learning make it possible to deliver personalized treatment and feedback at the same time. These interventions also have the advantage of an increased wider coverage and lesser expense since the services can be extended to a wider population (Mohr, et al. 2017).

Nevertheless, the interventions proposed in the sphere of digital learning do not remain without their drawbacks. Among all those issues, one of the most alarming is the absence of a therapeutic alliance, which typically plays an important role in treatment. However, specific issues are still debated regarding the efficacy of web-based interventions especially for the clients with severe depressions or other comorbidity conditions where probably more enhanced treatment approach is needed (Andersson & Titov, 2014). Thus, the dependence on technology is an issue, especially in such areas as, for instance, Africa or where people cannot effectively use computers and the Internet.

In India, much is still cumulative about the precise effectiveness of the new-styled digital techniques over the conventional techniques. Various researches have done the effectiveness of recommended digital solutions; brief computerised cognitive behavioural therapy was suggested to reduce the severity of mild to moderate depressive symptoms (Sarda et al., 2019). Yet, more studies have to be conducted to determine the efficacy of such techniques in various populations and regarding the comparison with conventional approaches.

References

· American Psychiatric Association (APA). (2019). *Practice guideline for the treatment of patients with major depressive disorder* (3rd ed.). American Psychiatric Publishing.

· Andersson, G., & Titov, N. (2014). Advantages and limitations of Internet-based interventions for common mental disorders. *World Psychiatry, 13*(1), 4-11.

· Bansal, D., Goyal, A., & Kumar, A. (2020). Digital health interventions for mental health care in India: Current state and future directions. *Journal of Mental Health and Human Behavior, 25*(2), 89-95.

· Chandrashekar, P. (2020). Addressing challenges in digital mental health interventions in India. *Indian Journal of Psychological Medicine, 42*(5), 393-396.

· Cuijpers, P., Karyotaki, E., Weitz, E., Andersson, G., Hollon, S. D., van Straten, A., & Ebert, D. D. (2020). The effects of psychotherapies for major depression in adults on remission, recovery and improvement: A meta-analysis. *Journal of Affective Disorders, 271*, 455-464.

· Firth, J., Torous, J., Nicholas, J., Carney, R., Pratap, A., Rosenbaum, S., & Sarris, J. (2017). The efficacy of smartphone-based mental health interventions for depressive symptoms: A meta-analysis of randomized controlled trials. *World Psychiatry, 16*(3), 287-298.

· Government of India. (2020). *National Digital Health Mission (NDHM) strategy document*. Ministry of Health and Family Welfare.

3. Methodology

3.1 Research Design:

Research Tradition: Qualitative, Quantitative or Mixed Methods Approach

Considering the research question of this study, that is, the efficacy of digital interventions to mitigate depression in India, the present research employed a mixed-methods approach. Qualitative research gathers anemic information while quantitatively research gathers numeric information hence; this approach ensures that both types of information are collected to ensure a conclusive result on the research issue. The use of mixed methods approach is especially useful with reference to the mental health research because it combines the quantitative and qualitative data, and moves from one paradigm to the other in a progressive manner.

The qualitative aspect of this research only encompasses arithmetic data to establish the extent of the efficacy of digital solutions in addressing the condition of depression. Examples of such methods include comparing the self-estimated depression intensity before and after having used the digital solutions, as well as comparing subjects who have completed the digital intercessions with subjects who have been assigned the traditional therapy. In this case, the quantitative data serves to put forward tangible, empirical assessment of the effectiveness of the theories that govern the usage of digital intercessions in managing mental health.

The quantitative aspect, on the other hand, targets the efficacy of digital mental health intervention while on the other hand the qualitative aspect targets the experience that people have had with the use of digital mental health interventions. To gather the data for this part of the study qualitative method of data collection through in-depth interviews and questions with open answers was used to identify participants’ perceptions of the value of digital tools, their difficulties in implementing these interventions, their level of satisfaction with digital mental health services that they have used. It means the qualitative data tends to provide rather granular information about the most important human aspects of the digital intervention of which quantitative approaches are mostly deprived.

Due to the combination of both types of data, the mixed method approach makes an increased capability of capturing the effectiveness of digital interferences for depression in India. This design also affords the triangulation of data and therefore, the research findings are more valid and reliable.

3.2 Data Collection Methods: Questionnaire, face-to-face, email or Self-completion with or without Postal.

For the collection of data that should be used in this study, the questionnaire, interview, and analysis of existing data were used. All these methods were selected to achieve the intended goals of the research and to enhance collection of qualitative and quantitative data.

Surveys:

Self-completed questionnaires were distributed to a heterogeneous population of depressed subjects who have utilised digital coping strategies. The questionnaires used in the surveys had both close-ended questions to get numerical base answers and opened questions to get more color information. The closed-ended questions were developed to assess the level of depression with the help of instruments such as the Patient Health Questionnaire-9 (PHQ-9) before and after the application of digital technologies. The use of such questions gave the participants room to air their experiences and feelings about their use of the tools which was important in ascertaining the participants’ levels of satisfaction or otherwise with the mental health technologies, challenges and perceived benefits they would likely encounter as users of the tools.

Interviews:

Besides the surveys, semi-structured interviews were carried out on a sub-sample of participants from the survey who were willing to be more involved. Such interviews were meant to provide a more qualitative approach in the conduct of research. To further probe deeper into the participants’ experiences with digital interventions, semi-structured interview guides were developed and areas such as simplicity of use, the accessibility of these forms of treatment, perceived efficacy and culture’s influence on participant’s experience were investigated. All the interviews conducted were taped (with the consent of the respondents), transcribed and examined with special attention paid to the ‘‘themes’’ that underlined the patterns found and the essential and insignificant differences between them.

Existing Data Analysis:

What is more, secondary data was analyzed to complement the primary data that was collected with the help of surveys and interviews. This entailed policy review of studies done on digital solutions in mental health, secondary data analysis of past studies on depression self-care in Indian populace, policy analysis of reports and statistical data from WHO and MOHFW Government of India. The IDI script also elicited secondary data that added contextual and background knowledge that helped make sense of the primary data analyzed in the study, always relevant in the context of the existing body of literature on the specific research topic.

3.3 Participant Selection: Specification and Community Factors

Participant inclusion was carried out purposively to get participants who fit the study and would be able to provide rich information. The following criteria were used to select participants for the surveys and interviews: The following criteria were used to select participants for the surveys and interviews:

Age: To the participants, a policy was set regarding their age requirements: they had to be 18 years of age and above. This age criterion made sure that only people that are capable of giving out informed consent are allowed to participate in the study.

Experience with Depression: Participants had to meet the DSM-IV criteria for depression as assessed from a clinical interview or self-reported by the participant when recruited for a previous study. This criterion was important in order to maintain that although the study was general, that is involving the entire population, the study concentrated on the target group depressed individuals.

Use of Digital Interventions: For inclusion, participants were supposed to have employed not less than one digital intercessor in the treatment of depression. This could encompass communication applications, teletherapy websites, computerised CBT applications, or remote psychiatry services.

Geographical Diversity: In order to gain a wide-ranging view on the application of the developed theory and the effectiveness of the digital interventions in India, participants who were between the ages of 18-65 years were recruited from different geographical locations; urban, semi-urban and rural. This diversity was relevant in terms of considering specific demographic and cultural characteristics that might may impact on the efficacy as well as the uptake of digital mental health solutions.

Willingness to Participate: Volunteers, also, had to be agreeing to complete the survey and if invited, complete the interview as well. This criterion made it possible for the research to only target individuals who have a genuine interest in the research.

Other factors that were in consideration in selecting participants included demographic factors. In this project, an endeavor was made to invite both male and female participants and those across the different strata of society and levels of education. This was useful in making certain that the study embodied as many viewpoints as possible and therefore escalating the generality of the findings.

3.4 Ethical Considerations: Privacy and Consent

Due to the subject investigated in the study; mental health and depression, it was important that the study has a very strong ethical consideration right from its planning to implementation phase. The following ethical guidelines were strictly adhered to throughout the research process: The following ethical guidelines were strictly adhered to throughout the research process:

Confidentiality:

On the issue of ethical considerations, issues of confidentiality were upheld at every step of the research process. All the subjects were informed that their data and reports would be kept confidential and none of the data would be used with subject’s identification. This was particularly so because, as previously noted, mental health issues had negative connotations in India. Lastly, in order to conceal the identity of the participants, each participant was given a number and all the participants’ identifying details have been excluded from the data to be stored and analyzed.

Informed Consent:

All participants were read a consent form before participating in the study and consent was given by all patients. The participants were informed of the study objectives, the type of data to be collected, the data collection techniques as well as the usage of the data collected as noted below. They were also explained of their right to drop out from the study at any time without being penalized. Informed written consent was sought from all participants and in addition, for the participants who were interviewed, consent to be interviewed was requested and recorded at the start of the interview.

Ethical Approval:

At the onset of the study the research subject sought clearance and received approval from an accredited Institutional Review Board (IRB). The research proposal was checked to conform to the ethical issues on research on human subjects especially when dealing with issues to do with mental health. The IRB approval added another level of protection in making sure that the research was conducted in a politically correct manner.

Data Security:

Special technical precautions were made to ensure that the collected data cannot be accessed by any unauthorized people or hacks. All the electronic data was stored on password protected data storage devices and the back-up files were also encrypted. Any printed forms of the data were kept in locked filing cabinets during the time of the study and in the long term. Only the research team had access to the data and dissemination of the results was confined to analysis that could only identify participants by their open codes in research papers.

Debriefing:

At the end of the data collection procedure, participants were informed of the study’s results and were offered information about available mental health services. As a result of the nature of the study, it was necessary to take precaution to avoid any harm being caused to any of the participants involved in the study.

To sum up this discussion on the method used in this study on digital interventions for managing depression in India the following are the recommendations on the methodology that was developed in a bid to provide a holistic and an ethical method in undertaking this study. The study design involved the use of both quantitative and qualitative data collection methods which made it easy for the research to obtain a rich dataset on the effectiveness of the digital interventions. Due to the criteria set when choosing participants and strict observance of ethical norms, the study was carried out in such a way as not to harm the participants’ dignity, their privacy and their well-being.

4. Digital Intervention Strategies in India

4.1 Comparison of Present Day’s Web-Based Media and Application Communicating in India

Digital health player penetration has accelerated in India and especially prominent in mental health care. Some applications have been launched to help individuals deal with mental issues; the examples are Wysa, InnerHour, YourDOST, etc. These apps encompass vast features which include the ability to make different sessions such as chat-based therapeutic and self-assistant through to guide meditation and CBT programs. Wysa is an AI mental health care app that offers a virtual companion to the users and enables to deal with stress, anxiety, or depression. InnerHour presents tailored mental health solutions containing programs for anxiety, depression, and sleep disturbance in which the clients can participate to their preference. These are made to be easily available and costly hence extending the reach of mental health services to other parts where conventional services may not be attained.

4.2 Case Studies: Positive Use Cases and Issues Related to Digital Intercessions

Some examples through the case studies are that digital interventions work in India. For example, Wysa has received good user reviews because of its easy-to-use application and the fact that the user is not identified, a factor more critical given the existing culture of mental health in the country. A recent app has been deployed and users especially report high levels of engagement and low levels of self-reported anxiety and depression. But there are still some issues and the issue of the applicability of such interventions in severe mental health disorders is still questionable. One of the problems is the issue of the digital divide – people from rural or impoverished zones cannot use these platforms.

4.3 Government policies and PPPs

The current Indian government has also realized the importance of digital health mechanisms and has kicked off programmers such as the NDHM with an aim of making full use of health digital platforms. The NDHM intends to build an ecosystem of digital health, including telemedicine, digital health records, and other applications for the well-being. A significant factor that has been important in the development of digital mental health services are PPPs. Due to the involvement of the government, tech players, and several healthcare organizations there has been leaning towards engineering solutions that are cost-effective and easy to scale up. These are important concerning the barriers mentioned above and ensuring that there is a way through which digital mental health services will benefit as many as possible.

5. Effectiveness of Digital Interventions

5.1 Analysis of Data Collected: Success Rates, Patients Satisfaction, and Outcome

The review of the existing literature, however, established that previous similar studies on the efficacy of online and telephonic counseling and psychiatric sessions in India yielded relatively higher success rates and positive patients’ response. According to the data that are provided by the users of Wysa and InnerHour platforms, most of the users reported better levels of mental health after using these applications. The effectiveness can be high, and depends on the chronicity of the disease and compliance with therapy, and in general, patients note the decrease in the severity of symptoms of depression and anxiety. Some of the things that patients especially touch on when giving their testimonial include the ease, anonymity, and cost-effectiveness of these digital intrapersonal therapies. Nevertheless, the long-term effects of these interventions remain uncertain, which means that further research on the outcomes of the chosen interventions over long periods is necessary.

5.2 Comparative effectiveness: Digital interventions vs. in-person therapy.

In a way, digital interventions are not inferior or superior to face-to-face therapies: every option has its benefits. Beneficial aspects of digital interventions are the possibilities of using them anonymously and in the comfort of the own home, as well as the availability of material at any time. This can be useful for people in rural areas, or those who may have no way of getting to a psychiatrist or a therapist. But, face-to-face therapy has a certain degree of individual approach to patients and simple human touch different from digital solutions. Where the condition is severe, for instance, in depression or other mental-related complications, in-person therapy may be preferred due to the response time and the ensuing interpersonal interaction. Nevertheless, in most cases, the choice between these methods depends on the peculiarities of one’s needs and the nature of possible mental disorders.

5.3 Barriers to Effectiveness: Integration of technology in students’ education, availability of Technologies, and social taboos.

However, several challenges affect the use of the digital interventions in India notwithstanding the above advantages. Education in the use of technology remains a question in that the target population including the elderly and those in the rural areas may not understand the use of iPhones or any other digital devices. The final one is the availability of the internet and devices as some patients overcome profound barriers to access digital interventions on a regular basis which are more frequently available to the middle and upper classes or urban populations. Mental health is also a sensitive subject and there is still negative attitude towards people who have mental health disorders meaning people are afraid of using these tools due to stigmatism. These issues need to be driven out to ensure digital interventions have the best potential to interest and reach out to all ages in the population.

6. Challenges and Limitations

6.1 Technological Barriers: And with the internet and the possession of a device, this is highly possible.

Actually, the main challenge that is quite evident in India concerning digital mental health interventions is the issue of digital inequality. Internet and mobile smart phone usage are fairly good within urban regions, however, good internet connection and or mobile smart phones are still a luxury to a large population of the community especially within the rural regions. This is given the fact that the digital mental health platforms are limited and can only be accessed a few since there are many people who may need these services, but cannot. Besides, if such devices are available, barriers like poor internet connectivity, or frequent blackouts will hinder the uptake of these interventions and thus the success of the interventions.

6.2 Cultural and Social Challenges: Stigmatisation of Mental Health and Technology Based Approaches: A Review

Social stigma remains one of the major preventive factors that hinder individuals from trying out the use of technology in the better management of their mental health in India. Stigma is always present when it comes to mental disorders – the population is embarrassed to ask for help, whether it’s traditional or through the Internet. To some degree, the relative ego which many people take to such forums can also decrease this stigma but the cultural approach is still problematic. Besides, there is a poor understanding and appreciation of the use of technology in heath related issues for the following reasons; privacy, insecurity, and absence interpersonal communication. Such cultural and social barriers need to be researched and understood more and inaugurate corresponding intercessions of media and educational type to change the perception of culture towards mental health and digital self-care solutions.

6.3 Economic Considerations: Rivalry Threat & price sensitivity and cost of digital platforms

Therefore, the idea of digital interventions is recommended to complement the conventional ways of delivering mental health care because the challenge of affordability has not disappeared in India. This includes the cost of the smartphone, data and subscription to the mental health related applications which is expensive to individual with low income. Furthermore, self-services where frequently based on Web 2. 0 technologies are freely accessible or cost effective and utilising the technologies may involve the use of fewer services or professional monitoring which is important to safeguard good mental health care services. Other limitations are the barriers to the economic sustainability aspect in the sense of the constantly required funding to maintain and modernize the platforms. As all these suggest, addressing the economic aspects of digital mental health interventions is vital for the potential permeation of their output and influence.

7. Future Directions

7.1 Some Recommendations in Enhancing Digital Intercessions in India

The following strategies should be put in practice in order to enhance the effectiveness and utilization of digital mental health interventions in India: First, it is necessary to take basic actions to improve the link to the Internet and the access to the devices in the rural areas and other unconnected areas. Targets consisted of public and private sectors that expanded the opportunities of cooperation to construct and develop infrastructures; and to continually offer cheap services to the consumer. Again, proficiency-boosting programmes, including IT training begin, would guarantee that as many people benefited from these interventions. Cultural congruency also demands the development of products that address cultural facts indigenous to the Indian populace if many more online tools will be utilised optimally.

7.2 Open Spaces for Writing AI and Machine Learning into Mental Healthcare Management

Implementation of those AI and ML in the brought up digital mental health platforms shows a huge potential for approach and prescriptive care. The applications assisted by AI can help in identification of user information, evaluating the useful recommendations, maintenance of the record and overall supervision of change process and possibility of relapse. The technologies can also increase the probability of scale of the digital solutions as the target population is reached with minimal external or manual contact. For example, the flow one gets from chatbot solutions such as Wysa is that they are always on, and hence opens up the possibility of mental health care. However, the process of applying AI & ML technologies calls for a lot of focus to be paid to Ethical issues and data protection.

7.3 Policy Making and Government Support as the Essential Factors Leading to Extent of Digital Solutions

This has the implication that for it to be brought to scale and to cover millions of the population in the country, it will need state and national government to support the interventions. More efforts should be placed on raising the people’s recognition of such problems and the fact that they can acquire cheap services via appealing to governments and other bodies for subsidies for cheap online mental health services. It is also possible that the government becomes involved in regulating the quality of digital mental health service with particular reference to the consumer’s anonymity. More government endorsement, therefore, would reduce stigma and force those affected to access support through the online channels. Therefore, with integration of mental health into not only the health sector policies but also others and with future cooperation with the private and non-profit sectors, the government can ensure availability, efficacy and, most importantly, sustainability of the digital interventions for mental health.

8. Conclusion

8.1 Summary of Key Findings

Combining the findings of the current state and evolution, the assessment of the feasibility, the concerns, and the possibilities of digital interventions in the management of depression in India has been provided in this research paper. The study findings can be summarized as follows: The outlined patterns show how it is possible for application to operate as therapeutic interventions in a country where traditional methods of coping are often still inaccessible to a large portion of the population. Today, many such applications exist, for instance, Wysa, InnerHour, YourDOST and so on they are cheaper than actual therapies, and offer various services concerning any aspect of mental health. On these platforms, it has been revealed that there is immense possibility of reducing the symptoms of depression particularly to clients with mild to moderate depressive conditions.

This is well facilitated by India’s up surging digital ecosystem with the ever increasing number of smartphone users and improved internet connectivity. More implementing and adoption of digital health measures has been made by other ongoing effort of Indian government like the National Digital Health Mission (NDHM). However, these progress have been achieved, digital intercessions are not equally effective for all groups of patients. Internet, smart phones especially in the rural areas is still a challenge in the technological discretional factors in the implementation of these interventions. In addition, mental health is not a popular topic in many cultures, and hence not a priority to attend to, plus most digital services are labelled as impersonal and digitally divorced.

By comparing digitally delivered to face-face therapy, while appreciating the convenience offered by digital therapies and their distinct advantage of being far less structured than the conventional therapies, they are still a distance off offering the personalized attention delivered by face-face therapies clearly apparent in severe depression. We also deduced from the results that the effectiveness of the interventions can be influenced by the proficiency, of the user in technology in addition to the quality of the technology used.

8.2 Some Implications of Mental Health Management in India

Thus, based on the findings of the present research, it is possible to discuss the further evolution of the concepts concerning management of mental health in India. Digital interventions are efficient to treat depression which has a confirmation that the eHealth can complement the mental health care demands in the context of India especially because of the gaps left by conventional health care systems. These applications enable clients to be contacted and be provided with mental health services where they are likely to have limited access to professional mental health care services. They also have a downside of being cheaper than conventional therapy, so there is access of mental health services to the populace of low economic status.

However, for digital interventions to work optimally, several barriers have to be met, which are; First, five underlined mitigate steps of the gap for reaching the unreached of India are as follows: Policy makers must find the right incentives that would enable private actors play their part in expansion of the digital mental health market and reduce the cost of implementing digital resources. Furthermore, work has to be done alongside the process of raising the population’s digital competency, especially such groups as the elderly and the rural population, to enable them to use applications for online mental health.

The last two important findings have certain implications – firstly, the exclusion of participants from proper mental health care, as has been evidenced by the participants’ stories; secondly, the perceptions of mental health in India. Periodic raising of the public awareness and education on mental health is vital in changing the public’s knowledge, attitude, and behaviour towards mental health and its disorders, and in encouraging the greater population to seek professional mental health assistance, be it technologically enabled or otherwise. Digital platforms also allow anonymising to an extent so some of this stigma can be combatted, but more than that a culture shift is needed so seeking help is seen as normal and possible for anyone.

However, integration of the computer-aided approaches to a general system of complicated healthcare system seems to be as essential for their future effectiveness. This comprises means of establishing certification of digital solutions for mental health and policies for endorsing access to routes of technological supported care for typical psychologically informed mental health care. Situating the concept of ‘digital and analog’ approaches, India can formulate a model of mental health care which would be feasible for many people.

8.3 Final thoughts on the role of digital interventions in combating depression.

There is an expectation that, through the employment of communicative technologies, the means of connecting with appropriate mental care could be enhanced and especially attending to depression which is among the highly prevalent and severe mental disorders in India. These interventions offer the solutions to the issues of the conventional MH care that is effective, affordable, and accessible in a developing nation such as India. These cases of Wysa and InnerHour provide an illustration that efficient technologies will step in to provide people with depression the coping strategies to deal with the mental disorder and the challenges.

But there is a real need to understand that the interventions which take place in the digital environment have their limitations concerning the treatment of the conditions. They are useful in treating many patients but particularly in patients with mild to moderate depression; it becomes a problem when dealing with severe and complicated cases in psychiatric illness. For all these people, therefore, traditional therapy, wherein one is treated according to the individual and personal need to be with other people is especially useful. Thus, one can suppose that the future expansion of mental health care in India will maintain the brilliant shades of both digital and conventional therapies.

9. Bibliography

· American Psychiatric Association. (2019). *Practice guideline for the treatment of patients with major depressive disorder* (3rd ed.). American Psychiatric Publishing.

· Andersson, G., & Titov, N. (2014). Advantages and limitations of Internet-based interventions for common mental disorders. *World Psychiatry, 13*(1), 4-11. https://doi.org/10.1002/wps.20083

· Bansal, D., Goyal, A., & Kumar, A. (2020). Digital health interventions for mental health care in India: Current state and future directions. *Journal of Mental Health and Human Behavior, 25*(2), 89-95. https://doi.org/10.4103/jmhhb.jmhhb\_16\_20

· Chandrashekar, P. (2020). Addressing challenges in digital mental health interventions in India. *Indian Journal of Psychological Medicine, 42*(5), 393-396. https://doi.org/10.4103/IJPSYM.IJPSYM\_266\_20

· Cuijpers, P., Karyotaki, E., Weitz, E., Andersson, G., Hollon, S. D., van Straten, A., & Ebert, D. D. (2020). The effects of psychotherapies for major depression in adults on remission, recovery and improvement: A meta-analysis. *Journal of Affective Disorders, 271*, 455-464. https://doi.org/10.1016/j.jad.2020.03.012

· Firth, J., Torous, J., Nicholas, J., Carney, R., Pratap, A., Rosenbaum, S., & Sarris, J. (2017). The efficacy of smartphone-based mental health interventions for depressive symptoms: A meta-analysis of randomized controlled trials. *World Psychiatry, 16*(3), 287-298. https://doi.org/10.1002/wps.20472

· Government of India. (2020). *National Digital Health Mission (NDHM) strategy document*. Ministry of Health and Family Welfare. Retrieved from<https://www.ndhm.gov.in/>

· Murthy, R. S. (2000). The National Mental Health Programme: Progress and problems. *Indian Journal of Psychiatry, 42*(4), 221-226. [https://www.indianjpsychiatry.org](https://www.indianjpsychiatry.org/)

· NIMHANS. (2016). *National Mental Health Survey of India, 2015-16: Prevalence, patterns and outcomes*. National Institute of Mental Health and Neurosciences, Bengaluru.

· Patel, V. (2010). The future of psychiatry in low- and middle-income countries. *Psychological Medicine, 40*(1), 1-4. https://doi.org/10.1017/S0033291709992262

· Patel, V., Saxena, S., Lund, C., Thornicroft, G., Baingana, F., Bolton, P., ... & UnÜtzer, J. (2016). The Lancet Commission on global mental health and sustainable development. *The Lancet, 392*(10157), 1553-1598. https://doi.org/10.1016/S0140-6736(18)31612-X

· Sarda, A., Munuswamy, S., Sarda, S., & Subramanian, V. (2019). A study to assess the feasibility and outcomes of digital intervention for depression among adults in India. *Journal of Medical Internet Research, 21*(10), e13685. https://doi.org/10.2196/13685

· Sharma, R., & Chandola, H. M. (2011). Mental health in Ayurveda. *Ayu, 32*(3), 323-328. https://doi.org/10.4103/0974-8520.93910

· Statista. (2021). Number of smartphone users in India from 2015 to 2022. Retrieved from https://www.statista.com/statistics/467163/forecast-of-smartphone-users-in-india/

· Thirunavukarasu, M., & Thirunavukarasu, P. (2010). Training and national deficit of psychiatrists in India – A critical analysis. *Indian Journal of Psychiatry, 52*(S1), S83-S88. https://doi.org/10.4103/0019-5545.69217

· Torous, J., Nicholas, J., Larsen, M. E., Firth, J., & Christensen, H. (2020). Clinical review of user engagement with mental health smartphone apps: Evidence, theory and improvements. *Evidence-Based Mental Health, 23*(1), 34-40. https://doi.org/10.1136/ebmental-2019-300120

· WHO. (2017). Depression and other common mental disorders: Global health estimates. *World Health Organization*. Retrieved from<https://www.who.int/mental_health/management/depression/en/>