The promise of Tele-Dementia: Today's science and tomorrow's trial

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Abstract

Telemedicine is the term used to describe the use of technology to provide medical care over a distance. Telephone, email, and real-time videoconferencing are the most frequently used telepsychiatry technology. Telemedicine has been used to provide simple and efficient healthcare solutions in the treatment of illness. Despite it is relatively new, mobile health (mHealth) has grown significantly in popularity as a means of assisting persons living with a chronic condition. The current study reviewed existing mobile health dementia applications from different perspectives. These applications could include a variety of strategies and resources to assist the community especially in caring for individuals with Alzheimer's disease.

Keywords: Telemedicine, Telepsychiatry, Afrabia, Dementia

Impact and Implications.
This paper reflects on the telepsychiatry especially mHealth applications used for dementia. The article focused mainly on evaluation of available teledementia apps and especially for Afrabia region with challenges and hopes to apply such technologies in management of dementia.

1- Introduction and Background

Dementia is a syndrome, that manifests itself as a collection of symptoms such as memory loss, difficulty solving problems, thinking or language issues, among others (Boller and Forbes, 1998). Such symptoms are associated with chronic illnesses that manifest themselves in later life (Larson et al., 2013). As defined by the National Institute on Aging (NIA), dementia syndrome impairs communication and performance in daily tasks, whereas Alzheimer's disease (AD) is a kind of dementia caused by damage to distinct regions of the brain that govern cognition and memory, as well as language (Di Marco et al., 2014, Ferri et al., 2006). In 2006, the Delphi consensus-based research (Ferri et al., 2006) estimated the incidence of dementia around the world; approximately 24 million cases of dementia were detected in 2001, with the number anticipated to double every two decades, resulting in approximately 42 million dementia cases in the year 2020 and approximately 81 million in the year 2040, respectively. Another estimate of the global prevalence of People with Dementia (PwD) is expected in 2013, according to the World Health Organization (Prince et al., 2013). According to this research, the probability of dementia cases will increase thrice, resulting in 115.4 million dementia patients by the year 2050, up from the year 2010 (i.e., 35.6 million). The proportion of people with dementia in developing nations is higher than in developed countries. In 2001, the projected percentage of people with dementia living in developing nations was 60.1 percent, and it is expected to rise to 71.2 percent by 2040. According to the statistical data collected by Kalaria et al. (2008) from developing nations, the prevalence of dementia in old individuals (age 65) is significant (about 5%), particularly in specific parts of the world such as Asia and Latin America. According to a research by Alzheimer's Disease International (ADI, 2006), 11 percent of the population in the Asia-Pacific region is over the age of 60.

By 2050, a fifth of the entire population in Asia and the Pacific will be 60 years or older, according to estimates. Between 2015 and 2050, the overall number of PwD in the Asia Pacific area is expected to rise from 23 million to 71 million. Therefore, the main objective of the current review is to discover and assess the use of telemedicine in dementia treatment, as well as to synthesize the need for creating teledementia apps to aid persons with dementia, including Alzheimer's disease (AD), and their cargivers.

2- Telepsychiatry

In 2000, Frueh and colleagues did a literature study to find publications on telepsychiatry including the practice of providing mental health and psychiatric treatments using videoconferencing technology. The review's findings identified both strengths and shortcomings in the field of telepsychiatry. For instance, the literature established telepsychiatry as a valid method of collecting interview data and established that patients and doctors were usually satisfied with telepsychiatry. However, two significant gaps in the literature were identified: a dearth of published reports on the use of telepsychiatry and a dearth of thorough empirical investigations on telepsychiatry applications, including their usefulness in terms of clinical outcomes. Interest in telepsychiatry has risen as technology advances in this area of service delivery. As a result, the body of knowledge on this subject has grown significantly since 2000.

Numerous articles examined the processes involved in initiating and maintaining a telepsychiatry program. For instance, Darkins (2001) defined the criteria for developing a financially successful telemental health service based on clinical need, practitioner acceptability, technical dependability, and revenue generation. Not many programs, however, follow Darkins' lead. A research that evaluated telepsychiatry programs from an organizational standpoint discovered a

dearth of strategic business strategies for the provision of telepsychiatry services in 16 of the world's most active program (Whitten et al., 2000). Additionally, organizational, and human aspects appear to be critical in sustaining such systems (Aas, 2001; 2002). For instance, several studies have discovered that a lack of organizational collaboration might result in the failure of telepsychiatric programs, despite patient reports of improvement (Whitten et al., 2002). Additionally, several studies have discovered that telepsychiatric connections can enhance collaboration and support for telepsychiatric services across and inside companies (Whitten et al., 2002; Asa, 2001; 2002). Recent research has emphasized both the advantages and disadvantages of using telepsychiatry for clinical evaluations. For example, in studies utilizing videoconferencing systems to conduct child psychiatry assessments (Elford et al., 2000) or psychiatric assessments of depression and cognitive status in elderly medically ill veterans (Menon et al., 2001), telepsychiatry was found to be an adequate substitute for in-person assessments and had no adverse effect on diagnosis. However, the literature indicated that further research may be necessary to evaluate the reliability of telepsychiatry for certain groups, such as studies using standardized structured interviews, skilled interviewers, and interrater reliability (Alessi, 2000).

Notably, the prospective, empirical research demonstrates that patients and caregivers are happy with this method of service delivery. Additionally, Monnier and colleagues (2003) found that there is early evidence that some illnesses, such as depression, can be efficiently treated with this technique. Additional data shows that telepsychiatry can assist a variety of groups. While this research looks promising, they are frequently hampered by a lack of methodological rigor. Overall, there is a dearth of research in this field that includes reliable baseline data collected prior to program implementation, clinical outcome evaluation, randomized experimental design with appropriate control groups, cost analyses,

and determination of telepsychiatry's effectiveness and efficacy for specific patient populations. The cost-effectiveness question remains unresolved. Recent criticism emphasizes the scarcity of critical data currently accessible and cites a plethora of variables that must be addressed if cost-effectiveness studies are to give good results (Werner, 2001; Hailey, 2002). Several of these variables include the cost of equipment, transmission lines, and other infrastructure per usage, as well as the cost of technical employees; paperwork requirements, such as extra patient permission; space; and hiring and training staff. Additionally, while evaluating cost-effectiveness, wider societal problems such as the significance of social contact must be addressed (Werner, 2001). Although legal, regulatory, and ethical requirements for telepsychiatry are still in their infancy, considerable progress have been made in creating standards and criteria for treatment providers and technicians. However, as technology advancements continue, adjustments to norms and regulations must occur. It remains to be seen how successfully telepsychiatry will adapt to this shifting goal.

Telepsychiatry's potential is especially relevant in nations with a scarcity of experts and in where distances and the quality of infrastructure impede physician and patient travel. Numerous French-speaking African countries, particularly big and sparsely populated states like Mali (twice the size of France, 11 million residents) and Mauritania (twice the size of France, 3 million inhabitants), are confronted with similar issues. Before large-scale initiatives are started, it is necessary to analyze the use and dangers of these new communication and cooperation channels. However, there is little published literature on the use of low-bandwidth, Internet-based telemedicine applications, despite the fact that poor nations have made considerable investments in these technologies (Geissbuhler et al., 2003).

3. Dementia management challenges

Dementia is a complicated disease characterized by significant cognitive loss that becomes permanent, and that, furthermore, severely impedes day-to-day functioning (Albert et al., 2011). For individuals over 65, the worldwide prevalence of dementia is 6.2%. (8.8 percent women, 3.1 percent men). Current age-adjusted estimates of the prevalence of dementia in 65-year-old in Europe are around five percent (Tognoni et al., 2005; Lobo et al., 2000), in the United States is between 5 and 6 percent (Rocca et al., 2011; Plassman et al., 2008), and in Latin American and Asian countries, one to three percent (Das et al., 2006), whereas it is consistently lower in India and sub-Saharan Africa, with estimates ranging from one to three percent (Mavrodaris et al., 2013).

Starting with Roberts and Caird (1976), who suggested a dementia rating scale by establishing a link with the Crichton Geriatric behavioural rating scale (Robinson, 1961), the history of dementia begins to unfold. They identified four primary kinds of dementia patients to be investigated further. The clinical dementia rating (CDR) scale, developed by Hughes and colleagues (Hughes et al., 1982), is a worldwide numerical scale that may be used to assess dementia. Using the CDR system, six different cognitive and practical activities of the person were tested: personal care, memory, orientation, judgement and problem-solving, home, hobbies, and community affairs. The system then assigned a dementia rating from the normal range (0) to the severe range (10) of the person's cognitive and practical activities (3). Other research (Braak and Braak, 1997; Forstl and Kurz, 1999; Karlsson et al., 1989) go into further depth on the cognitive impairment phases and symptoms of dementia, including Alzheimer's disease, and how they differ from one another.

All studies found a substantial association between older age and dementia and

cognitive impairment, and comparable associations have been documented internationally (Borenstein et al., 2006). Worldwide, age-specific projections of dementia have been more consistent, with an exponential increase in dementia with age expected. According to prevalence surveys, dementia doubles about every five years beyond the age of 65 (Jorm et al., 1987). The prevalence rates for the five-year age groups of 65 to 85 years and above were found to be 1.4, 2.8, 5.6, 11.1, and 23.6, respectively, when studies from Europe, North America, Australasia, and Japan were combined (Jorm et al., 1987). A pooling of data from European research revealed comparable findings (Hofman et al., 1991).

3. Afrabia teledementia: Challenges and Hopes

Ali A Mazrui initially used the word Afrabia in 1992. In the new world order, Arabism and Africanity were united with Islam in a fusion that spanned the Sahara Desert and the Red Sea. He went so far as to say that the Red Sea has no right to separate Africa from Arabia. Islamization and Arabization of North Africa took place during the same period as Arabization, which attempted to counteract the geographical barriers created by the formation of the Red Sea thousands of years earlier. He explained that one way to stop the establishment of global apartheid was to seek reconciliation between Arabs and Africans, and both the white and pan-European movements joining forces to advance global solidarity. Thus, Afrabia incorporates both Arab League nations and African Union countries. The two overlapping territories of Africa and the Arab world are cross-culturally connected by the historical and geographic influences. While nations throughout the globe face similar obstacles and aspirations when it comes to telemedicine and medical technologies, there are noticeable differences across countries.

Dementia is a neurological illness that affects memory and behaviour, with an

overall effect on cognitive and functional capabilities (McKhann et al., 2011; Peres et al., 2008). Additionally, it has a detrimental effect on the caretakers of those with dementia (Brodaty and Donkin, 2009; Schulz and Martire, 2004). The neuropsychometric evaluation approach, which has been effective in the developing nations, can be used to identify dementia (Chaves et al., 1999). While Alzheimer's disease is the most common cause of dementia, it is not the only one. Vascular dementia, Lewy body dementia, and frontotemporal dementia are other common causes (Whitehouse, 2003). While dementia doesn't just impact the quality of life of those affected, it also has a huge impact on their economic welfare. The low-income country cost per person is $ 868, whereas the lower- to middle-income country cost is $ 3,109 (such as Egypt)(WHO, 2015). There were 57.7% of dementia patients whose primary country of residence was low- or middle-income. Dementia rates are growing across the world, especially in the developing countries, making dementia a significant public health problem for these countries (Kalaria et al., 2008; Shaji, 2009).

As with other nations across the world, the Middle East has seen several significant developments that have had a direct impact on the population's health. Simpson (2014) highlights one significant change: noncommunicable illnesses have surpassed infectious diseases as the region's primary health issue. Noncommunicable illnesses now account for 47% of the overall burden of disease, with a projected increase to 60% by 2020 (Albugami et al., 2018). Currently, only a small quantity of data on Alzheimer's disease and dementia is accessible from Middle Eastern nations. Furthermore, no conclusive evidence has been established regarding the incidence of AD as a result of the ageing population rise. The WHO's dementia research indicated an alarming increase in dementia prevalence across the Middle Eastern area, with prevalence expected to grow by 125 percent by 2050 (WHO, 2013).

According to El-Metwally et al., (2019), dementia and its subtypes are widespread in Arab nations. However, the Arab world suffers from a dearth of population-based research. There were fewer research examining the prevalence and risk factors for dementia and Alzheimer's disease in the majority of Arab nations, with notably restricted figures for recent years. Age was one of the most often mentioned risk factors. Cognitive decline, Alzheimer's disease, and dementia were all found to be strongly related with increasing age. Apart from age, another significant risk factor was education, with illiterate individuals having a greater chance of dementia than educated individuals. Additionally, females had a greater chance of getting dementia, Alzheimer's disease, and cognitive decline than males. In Arab nations, patients' health problems such as hypertension, cardiovascular disease, diabetes, and depression were also found as risk factors for dementia. Additionally, this analysis identified a few additional variables that were found to reduce the risk of getting dementia, including regular coffee use and smoking (El-Metwally et al., 2019).

There is a dearth of epidemiological data about dementia rates in Egypt. Due to the large percentage of young in the population, dementia is not seen as a health issue. Additionally, widespread assumption that dementia is just a part of natural ageing fails to properly recognize its significance (Sahaji, 2009; WHO, 2012). Demographic shift does, however, raise the spectra of dementia as a future problem to be considered. Over one million people in Egypt were at least 65 years old in 2013 (Loza and Fawzi, 2014). In a study done by the World Health Organization, an estimated 13.3% of the population (that is, people ages 13 to 50) will be afflicted with dementia by the year 2050 (Awad and Zohary, 2005). Compared to other nations in the North Africa and Middle East area, the prevalence of dementia in Egypt is significantly lower. The prevalence rate in Wadi Ara was found to be 20.46 percent among individuals who are 65 and over (Bowirrat et al., 2001).

Researchers have come across a variety of reasons for the variation in methodological difficulties, genetic variables, socioeconomic features of the population, or the death rate among old (Benamer, 2014; Loy et al., 2014). A critical gap exists with relation to the number of people with dementia. A greater body of research with a larger number of participants in different areas is still required. Another critical task is studying genetic risk factors for dementia, how gender influences dementia prevalence, and rural-urban differences in prevalence in the Egyptian population (Elshahidi et al., 2017).

In Upper Egypt (Assiut), the age-adjusted prevalence of dementia was 5.9 percent in those aged 65 years and older (Farrag et al., 1998). However, two more Egyptian investigations conducted in Al-Quseir city and Al Kharga district (El Tallawy et al., 2012;2014) found a frequency of 2.01 and 2.26 percent, respectively, in persons aged 50 years. The crude prevalence rate (CPR) estimate for all dementias was 21% among Arabs living in Wadi Ara, a town south of Haifa in Israel (Bowirrat, 2002), which is the highest prevalence rate in the world. Globally, the most consistent risk factor for dementia is increasing age. Additionally, while illiteracy or poor educational attainment has been shown as a strong risk factor for dementia (Borenstein et al., 2006), intellectually challenging, socially engaging, or physical activities may help reduce the incidence of dementia (Fratiglioni et al., 2004). Hypertension (Skoog et al., 1996), dyslipidemia (Tan et al., 2003), type 2 diabetes (Biessels et al., 2006), subclinical atherosclerosis (Horman et al., 1997), and arrhythmias (Ott et al., 1997) all increase the risk of cognitive decline and dementia. With the growing senior population in Egypt and the detrimental effect of impaired cognitive function on quality of life, it is important to have an accurate and efficient method for early detection of mild cognitive impairment (MCI), Alzheimer's disease (AD), and Non-Alzheimer's dementia.

Most of the Afrabia countries are sharing same challenges and hopes regarding

using the telepsychiatry service for example: At the infrastructure level, three types of issues are identified: a) the instability of basic infrastructure, most notably the electric power supply; b) the limitation of international bandwidth, which is frequently abused, most notably by out-of-country e-mail accounts; and c) the lack of reliable connectivity outside of large cities. These issues are improving as a result of the general growth of the national infrastructure, however deregulation activities in the ICT industry and the deployment of mobile telephony will initially benefit the most profitable markets, which are not the ones in most need of telemedicine instruments. For example, the emphasis on mobile phone likely constrains expenditures in the wired infrastructure required for Internet access. Similarly, while wireless metropolitan area networks provide immediate connection, they should be gradually phased out in favor of a more sustainable, wired, optical fiber-based communication infrastructure. Email and other basic communication technologies are efficient and may be utilized successfully. It is critical to create local capacity for implementing and utilizing these technologies, not only to enhance the technical competence and reliability of telemedicine applications, but also to restrict the usage of international bandwidth for local data transfer. Due to a lack of dependable local e-mail services, the majority of physicians in Mali continue to utilize US-based e-mail accounts for local interactions (Geissbuhler et al., 2003).

Collaboration amongst stakeholders in telemedicine applications within Afrabia countries is necessary to ensure the dependability, security, safety, and timeliness of sharing sensitive information, especially when communication is asynchronous. Collaborative work environments assisted by computers have been established. These novel modes of collaboration across distances, institutions, and occasionally national borders also pose legal, ethical, and economic concerns, which are outside the focus of this article. Another potential issue is the "induced digital divide." The

centrifugal growth of communication infrastructure implies that the rural places most in need of telemedicine technologies will be supplied last. As is the case in the majority of industrialized nations, physicians are hesitant to practice in distant locations, and the opportunity to connect with colleagues and participate in continuing medical education courses can be key motivators. Apart from the accessibility issue, this also has an effect on the content of telepsychiatry tools, which are generally first focused on tertiary care concerns. It is critical, therefore, to ensure that the health system's peripheral needs are met. A simple method to do this is to link the peripheral to the telepsychiatry network early on. Satellite-based Internet access technologies are sufficiently inexpensive to contemplate establishing distant access points prior to the availability of terrestrial infrastructure. Finally, there is a requirement for the development of local content management capabilities. Local medical content is critical for the adoption and dissemination of health information, as well as for effective collaborations within a network of partners. It permits the translation of global medical knowledge to local circumstances, as well as the incorporation of indigenous wisdom. Medical content management requires a range of skills: technical expertise in the creation and management of online content, medical librarian expertise in the organization and validation of appropriate content, and specialized knowledge in assessing the quality and trustworthiness of published information, including adherence to applicable codes of conduct (Ganapathy, 2002; Graham et al., 2003).

4. Mobile apps for dementia: where we are?

Finances and other resources are required to provide better healthcare for dementia patients, as well as improved treatment for them (Wimo et al., 2010). The expense of therapy grows in direct proportion to the degree of dementia, resulting in a burden for the patient's family (Wimo et al., 2010). As technological support is

currently being used in many healthcare solutions (Abbas et al., 2019; Rehman et al., 2018; Saba et al., 2018; Ullah et al., 2019), it is possible that it will be a cost-effective aid in the management of the symptoms and consequences of dementia. The use of smartphones, portable workstations, and tablets has increased dramatically in recent years, resulting in mobile applications being an increasingly popular intervention for persons with health-care requirements (Singh et al., 2016; Klimova et al., 2017; Yousef et al., 2018; Bettiga et al., 2019).

Dementia has a direct impact on the individual who is suffering from this chronic illness, and it also has an impact on the quality of life of family members and caregivers. In the care of dementia patients, the caregivers play an essential role in their wellbeing. It has also been observed (Wimo et al., 2013) that the proportion of people with disabilities living in their homes is higher than the proportion of people with disabilities in healthcare centers and hospitals, which may be due to an increase in dementia patients or a lack of institutional healthcare solutions (Wang et al., 2018). Those who live alone require specialized monitoring and care (Pigadas et al., 2011), which has a detrimental influence on the social, physical, and psychological health of those who provide care for them (Ali and Bokharey, 2016). This problem can be resolved by implementing the proper support system, such as assistive technology for caregivers, to aid them in critical situations, as described above. Technology is already being used in a variety of healthcare solutions (Agnihothri et al., 2018; Zhong et al., 2018), however identifying the most suitable assistive technology in the treatment of dementia patients can be challenging (Cash, 2003).

To assist dementia patients with improved healthcare facilities and treatment, financial and other resources are required (Wimo et al., 2013). The expense of therapy grows in direct proportion to the degree of dementia, making it difficult for the patient's family (Wimo et al., 2019). Assistive technology may be a

cost-effective means of controlling the symptoms and consequences of dementia, since it is already used in a variety of healthcare solutions (Abbas et al., 2019; Rehman et al., 2018; Saba et al., 2018; Ullah et al., 2019). The increased use of smartphones, portable workstations, and tablets has resulted in mobile applications being an emerging intervention for persons with health care requirements (Singh et al., 2016; Klimova, 2017; Yousef et al., 2018; Bettiga et al., 2019). mHealth is an acronym for mobile health, which refers to the practice of medicine and public health with the use of a mobile device. Approximately over 35,000 mHealth apps are accessible on Google Play (Healthcare app, 2019) and over 45,000 mHealth apps are available on the Apple App Store (Healthcare apps, 2019), with the bulk of these programs being free (Xu and Liu, 2015). Mobile applications can assist individuals with a variety of cognitive impairments with their daily activities (Klimova, 2017). Numerous studies (Astell et al.,2016; Tyack and Camic, 2017; Hitch et al., 2017; Kanwal et al., 2020) demonstrated that dementia patients can readily utilize smart gadgets since these devices have touch screen technology that facilitates engagement.

Due to its assistance for mental healthcare services, mHealth-based assistive technology is gaining traction (Price et al., 2014). The mHealth facility for dementia care is divided into two broad categories: 1. Mobile applications to assist persons with dementia syndrome with activities of daily living. 2. Mobile applications for caregivers and care providers to enhance their quality of life and assist them in dementia care. Additionally, the availability of mHealth apps has increased significantly during the previous few years. However, in comparison to the huge number of mHealth applications accessible more broadly, there are currently relatively few apps that cater specifically to dementia-related healthcare requirements. Additionally, the screening method for commercially accessible dementia mHealth applications found this natural imbalance. The inconsistent

behavior might be a result of the dementia community being excluded from the application's design process. Second, the dementia community's primary worry while utilizing mHealth applications is security and privacy. Here are a few of the most pressing issues (Ranchordas and Kaplan, 2016): The ability to gather a wide range of information over long periods of time and from several locations is one of the most important features of smartphones, tablets, and wearables. 2. Involvement of numerous users: mHealth involves several users throughout the course of a person's health care experience. Health professionals, family members, carers, and other individuals might be among those who make use of the service. mHealth applications make it possible to exchange data with many users. 3. Storage issues: Many mHealth applications provide services that are based on cloud computing. Patients' private health information is being disclosed to cloud service providers because of the external storage of mobile devices (Kanwal et al., 2020).

5. Conclusions and Perspectives

The demand for low-cost healthcare solutions, the ability for people with disabilities to exercise their own independence and, most importantly, the ability for people with disabilities to give informed consent at times, could arguably outweigh the concerns about privacy and security that have been expressed. Furthermore, Rosenfeld et al. (2017) indicated that increasing consumer confidence in dementia healthcare applications will be aided by strengthening safety and privacy measures in the future. It has been suggested that smartphone technology has the potential to make behavioral health care more efficient and interactive for patients; however, healthcare professionals should consider the risks associated with using this technology, as well as their clinical judgement, when determining when and for which of their patient’s technology-based services are

required (Luxton et al., 2011; Zhang et al., 2015). Furthermore, Topo (2009) presented a thorough evaluation of the technological assistance available to dementia patients and their carers. According to the findings of this review, technology may be utilized successfully to help persons in various stages of dementia, as well as their family members or carers; nevertheless, it is necessary to do ongoing reliability assessments of apps.

Till date, mobile health applications have mostly been employed in the areas of cognitive training and monitoring; screening; socializing; memory; and tracking Cognitive training, recollection treatment, and socializing therapy may all be accomplished by including people with disabilities in activities of daily life that target memory, linguistic abilities, problem-solving, attention, scheduling, and communication. Education and assistance for dementia carers in difficult situations are provided via mobile health apps that are based on caregiver standards. Similarly, in literature and commercial apps, the carers' assistance in tracking and monitoring health, safety, and activities is apparent. The purpose of dementia applications is to assist caregivers in better understanding dementia patients, especially those suffering from Alzheimer's disease, and in providing them with improved living conditions.

The current review concluded that mHealth assistive technology that includes basic, interactive, and simple-to-use features is superior at delivering healthcare services to individuals with dementia and caregiver assistance. Although this is certainly a valuable use of our resources, there is still more work to be done to uncover and appraise the usability and clinical efficacy of other assistive technologies, such as sensor-based, smart TV, or smart home, in dementia healthcare. It is advised to engage people with intellectual disabilities, direct and indirect carers, and mHealth application developers in the design process so that the increase in mHealth dementia and Alzheimer's disease application availability

may be seen. However, the wealth of knowledge available via mobile applications regarding dementia and Alzheimer's disease healthcare is suitable for every caregiver at different times.

Telepsychiatry technologies are critical for improving the quality and efficiency of health systems in poor nations, since they provide new channels of communication and cooperation and the dematerialization of numerous procedures that are typically hampered by inadequate physical infrastructures. They also introduce some dangers, most notably the interchange of incorrect or insufficient information and the possible exacerbation of the local digital divide between urban and rural regions. These risks must be considered when developing teledementia tools, particularly mobile app projects, and are likely to be mitigated through the development of South-South or South-North African communication channels, the use of satellite-based technologies to include remote areas in the process, and the development of a culture and skills for managing local medical content.

To deploy and utilize teledementia applications on the Afrabia continent, the following steps should be taken: 1)The establishment of telepsychiatry infrastructure at teaching medical facilities, as well as their connectivity to national and international computer networks, in order to facilitate multilateral medical knowledge exchanges with a strong South-South emphasis, 2)The use of asynchronous, collaborative platforms that facilitate the formation of virtual communities and the management of workflow in order to obtain expert advice or second opinions in a manner that is consistent with local care processes, 3)The establishment of internet connection points in remote regions using satellite technology, enabling not just telepsychiatry applications but also other instruments for facilitating integrated, multi-sectoral development, particularly in education, culture, and the local economy, and 4)The creation and maintenance of medical

material that is regionally and culturally appropriate, in order to best meet local requirements that are rarely met by medical resources available on the internet. New tools are being created, including regionalized search engines, open-source methods, and ethical standards of behavior that have been adapted. We have a substantial amount of future research on balancing the demands of Afrabia countries regarding teledementia apps. In closing ***"Let us add life to years, not just years to life".***

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REVIEWERS COMMENTS

Ref.: Ms. No. IPP-2021-0341
The promise of Tele-Dementia: Today's science and tomorrow's trial

Kia ora Dr. Mohamed,

Thank you for sending your paper to *International Perspectives in Psychology: Research, Practice, Consultation*. As you can see from the below, we have now had the paper reviewed by peers with expertise in the domain. Thank you very much for your patience as this process has taken much longer than it should.

Unfortunately, these peer reviewers are not particularly supportive of publication of your paper in *International Perspectives in Psychology: Research, Practice, Consultation*. Looking at the appraisals themselves, the reviewers have constructively identified some outstanding issues with the paper and research as it stands. The main concern was that the information currently provided does not make a sufficient contribution to new knowledge. Taking this into consideration, and on balance, I am afraid that we cannot accept your paper for publication in *International Perspectives in Psychology: Research, Practice, Consultation*, nor can we invite a revision.

We do realize that this news will be a disappointment. However, I also hope that the reviews will prove useful in refining your work for future reference. We do hope that this particular outcome will not discourage you from considering *International Perspectives in Psychology: Research, Practice, Consultation*for future submissions of your work.

Thank you again for giving us an opportunity to read some of your work, and for considering *International Perspectives in Psychology: Research, Practice, Consultation*. Please allow me to close by wishing you all the very best in your continuing research endeavor.

Yours sincerely,

Ines Meyer
Associate Editor
International Perspectives in Psychology: Research, Practice, Consultation

Reviewers' comments:

Reviewer #1: The Abstract for this manuscript described its content as "The current study reviewed existing mobile health dementia applications from different perspectives. These applications could include a variety of strategies and resources to assist the community especially in caring for individuals with Alzheimer's disease." That is an interesting topic, and that type of focus would have been very useful in helping practitioners learn about and recommend telemedicine applications to dementia patients and their caregivers.

Unfortunately, very few pages of the manuscript were devoted to a discussion of mobile applications for dementia, and no specific applications were identified or described.

Instead, the manuscript focused on a variety of topics that had some connection to telemedicine for dementia. The first ten pages of the manuscript discussed the prevalence of, and risk factors for, dementia, generally, and for Alzheimer's Disease, particularly. This information could have easily been summarized in one or two paragraphs. In several instances, main findings were repeated. This was very apparent when an entire paragraph was repeated (page 12, lines 39-59; page 13, 38- 60).

The authors concentrated on the prevalence of dementia in Afrabia, although the rationale for doing so was not very clear, except for noting that technology infrastructure was lacking in the region. Much of the prevalence research that was cited in the manuscript had been conducted in Egypt, so the idea that the manuscript was concentrating on the broader area of Afrabia (an infrequently used designation for Africa plus the Mideast Arab nations), while intriguing, was never fully developed.

The manuscript, while well-intentioned, lacked good organization, and it was difficult to follow the writing. For example, multiple different topics would be addressed in one paragraph. As a result, I was never clear on the main points of the article. In the last section, the authors listed what they believed should be the main steps that should be taken to deploy and utilize telemedicine applications for dementia in Afrabia. Being specific about the steps was very good. However, none of the steps seemed specific to telemedicine for dementia, and not enough background information had been provided to enable one to understand how to take the step.

The manuscript would be much stronger if the authors determined, and more fully developed, the main points they want to make in terms of telemedicine for dementia, and how that technology is affected by it being delivered in the region of Afrabia (or subregion). Reviewing specific telemedicine approaches and applications that work well (technologically, culturally, educationally, etc.) in that region would assist practitioners in treating dementia patients and their caregivers, and it would be a contribution to the literature.

Reviewer #2: 1. Improve on the organization of ideas, as flow of ideas is not smooth. Redundancy of points is quite obvious. For example, starting line 44 on page 7 until line 19 page 8 the points presented on these 2 pages have appeared in the prior section.

2. Section 3: Afrabia tele-dementia: Challenges & Hopes. The core points for this section only start on page 10 line 45. Prior to that consists of points that may be organised better and incorporate in the other sections. A better way to organise this section such as having a few sub-headings is recommended. Sources of reference for the challenges and hopes discussed starting from line 45 page 10-12 are lacking. Thus the basis of making those points are questionable.

3. Section 4: Mobile apps for dementia. I would expect a review on a few mobile apps that are currently used as aids and following that a sound conclusion is made pertaining to the use of mobile app to aid dementia patients. I found this missing. Instead a conclusion on just an example of mobile apps i.e. mHealth is provided starting from page 13 line 58. The conclusion on mHealth is again provided in the Conclusion. I am not very sure on what basis such conclusion is made.

Overall comment: The title of the manuscript is "Tele-dementia" and what the term refers to has been clearly stated in the abstract. However, the content of the manuscript does not seem to focus on what has been described in the Abstract. One of the keywords stated is Afrabia, but nothing on this in the Abstract.