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A conceptual framework for the ethical deployment of Artificial Intelligence in addressing mental health challenges: Guidelines for Social Workers

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Abstract. The deployment of Artificial Intelligence (AI) technologies has great potential to address mental health challenges-However there are great ethical challenges associated with AI. **Purpose of the study:** This study aims to develop conceptual ethical guidelines for Social Workers using AI in tackling mental health challenges. **Methodology**: The methodology employed in this paper is literature review-specifically an Integrative literature review of all sources related to the topic under investigation **Main findings**: The paper has found that the use of AI possesses the following ethical concerns: risk to privacy, loss of autonomy and biasness. The paper has further found that ethical guidelines for Social Workers using AI in addressing mental health challenges- should include protection laws, the use of approved AI technologies for which there are accountability standards, and training on the use of technology. **Applications of this study:** To this end, these guidelines will enable Social Workers to provide ethically sound AI-driven Social Work Services in dealing mental health challenges. **Novelty/Originality of this study:** Ethical concerns pertaining to the use of AI affect all helping professionals, therefore the ethical guidelines provided in this paper are expected to assist allied professionals navigate ethical paradoxes.

Keywords. ethics, artificial intelligence, mental health, social work, technologies

Introduction

AI is an omnipresent feature of the digital age.Similarly, Tambe and Rice (2018) have highlighted the ubiquity of AI as it applies to various facets of life such communication, business, health and leisure. AI is a branch of computer sciences aimed at enabling computer-driven systems to execute actions which require human capabilities such as decision making, problem solving, analysis and comprehension (Mason et al., 2018).In addition, The International Business Machines Corporation (2020) defines AI as a subgroup of computer science in which computers and machines are programmed to mimic and emulate human intelligence capabilities like problem solving and decision making. AI technologies, among others, include, but are not limited to, social media analytics, algorithms, chatbot, machine learning, deep learning, natural language processing and artificial neural networks.

AI has the potential to solve some of the world's most concerning social problems (Kim and Cha, 2019; Mckinsey Global Institute, 2018; Toesland, 2018). These social challenges

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include environmental disasters, gender-based violence, Human Immune Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) and food insecurity. In this paper, the capabilities of AI to solve some of the pertinent social problems are focused on mental health challenges. Mental illness is a health state that alters a person's mind, emotions, perceptions /and or behaviour, and it also affect one's physical health (World Health Organization [WHO], 2001; Marcus et al., 2012; Su et al., 2020). Mental health conditions, among others, include depression, schizophrenia, autism, bipolar and dementia.

Mental health challenges place enormous strain on health, social and economic systems globally. It has been reported by Delloite (2021) that between 2011 and 2030 the cumulative economic cost of linked to mental health challenges is expected to reach US$ 16.3 Trillion globally. The uncertainty regarding controlling the disastrous of COVID-19 is likely to exacerbate the economic impact associated with mental health challenges. Thereby AI has been identified as a solution to mental health challenges. Literature shows that AI applications can enhance service quality and efficiency in mental health services (Delloite, 2021; HealthITAnalytics, 2021). It is anticipated that this will strengthen health systems in less privileged countries where infrastructural and budgetary deficits stifle efficacy.

AI can provide early detection, expeditious decision making, and subsequent intervention (Blashki& Lock, 2019; Kalenderian& Nasrallah, 2019).However, Walz& Firth-butterfield (2019) aver that the potential benefits of AI in healthcare are counteracted by ethical concerns. Equally, WHO (2021) cautions that while AI provides great potential in addressing mental health challenges, there are ethical and human rights concerns. In pursuit of developing conceptual ethical guidelines for Social Workers deploying AI in addressing mental health challenges- this paper aims to review relevant literature.

The objective of the study

This study aims to develop conceptual ethical guidelines for Social Workers using AI in tackling mental health challenges.

Literature overview on the deployment of AI technologies in tackling mental health challenges.

AI can be used in multiple industries such as social services, transportation, environmental and health.This section highlights the deployment of AI technologies addressing mental health challenges. In addition, the role AI technologies such as predictive analysis and chatbot in tackling mental health challenges are discussed.

Predictive analysis

Social media has become an integral part of people's lives for various reasons-such as communicating, marketing and studying. Yazdavar et al. (2020) avow that social media platforms have enabled millions of users to share their stories, thoughts, emotions, and their struggles with mental health challenges. They further state the analysis of social media posts can provide a quantifiable degree of suicide ideation. In consonance, Gujral et a.(2020) aver that algorithms provide helping professionals, Social Workers in this instance, with key understanding of populations at risk mental health challenges, particularly those who are suicidal through processing and analysing complex medical data.

In their study of retrospective tweets, De Choudhury et al. (2013) identify depression on the basis of language, emotions, style, and network and user engagement. They built a classifier system to predict the possibility of depression from analysing posts and profiles of users. Similarly, The Computational Linguistic and Clinical Psychology shared task

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administered self-reporting data on twitter pertaining to Post Traumatic Stress Disorder and depression (Jamil et al., 2017; Coppersmithet al., 2015), which were collected in accordance to the procedure pioneered by Coppersmith et al. (2014).Nearly, 3000 recent posts were gather using twitter API. A system developed by Resnik et al. (2015) had a precision of 0.80 in identifying of mental illnesses.

Another example of predictive analysis method is the Google data analytics, which far accurate predictions of suicide than traditional self-reporting methods Ma- Kellams et al. (2017). Even though these predictive models are experiential, and applied at a smaller scale, Jamil et al (2017) argue that it obtains reliable results as far as identifying mental illness using twitter. To this end, these predictive methods can provide an indispensable tool for Social Workers, who are faced with high caseloads, in pursuit of addressing mental health challenges-which adversely affect the quality of life.

Chatbot

Chatbots are used to provide psychosocial support to clients with mental health challenges. Chatbot is an AI application which ignites conversations with users over the internet using texts or voice-through natural language process system which enables it to understand language used (Adamopoulou & Moussiades, 2020; Khanna et al., 2015). For example, the Apple Iphone's Siri application recognise and responds to users questions about mental health by providing relevant information. Kennedy & Fonseka (2018) credit chatbots for providing tailor-made therapy to clients with mental challenges depending on their psychosocial needs. Vaidyam et al. (2019) aver that chatbot do not only provide access to mental health treatment, but they have proved more effective to people who have discomfort and reluctance to engage with a therapist. Correspondingly, Lucas et al. (2017) are of the view that the anonymity aspect of chatbot enable people share more sensitive information than it would be the case if they speaking to a therapist.

In trying to provide mental health services to students in the midst of the COVID-19, the University of Pretoria deploys chatbot (SCU-B). COVID-19 has exacerbated academic stress for students, thus the University of Pretoria's Student Counselling Unit aims to expand primary mental healthcare services using SCU-B to students (Mathibela, 2021). SCU-B is offered in a hybrid model with traditional one-on-one counselling. Equally, the chatbot has augmented the response rate of the Counselling Unit catering for the university student populace. This can enable Social Workers to continue engaging with clients remotely. In addition, the ubiquity of AI technologies can enable people to access essential information pertaining to mental health challenges.

Methodology

This paper has adopted an integrative literature review as a research methodology. An integrative review is aimed at providing comprehensive understanding of a specific phenomenon by summarising previous literature (Broome, 1993).Equally, Torraco (2005) states that integrative literature review is aimed at evaluating, critiquing and synthesising literature on a phenomenon in order to propose new frameworks and perspectives. In addition, Snyder (2019) avers that the purpose integrative reviews is to critically review the knowledge pertaining to a particular phenomenon-with the intention of developing a new theoretical foundation as the phenomenon under review develops over time. In the context of the paper, the integrative review method has enabled the author to evaluate literature on the use, ethical concerns deploying AI in tackling mental health challenges-with the aim of developing a conceptual ethical framework for using AI.

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The authors lament the fact that while there is sparse literature on the potential use of AI tackling mental health challenges, and ethical challenges associated with using AI, there are no clear ethical guidelines for Social Workers pertaining to the use AI in their interventions. Thus, an integrative review enabled the authors to integrate existing literature on AI with aim of developing a conceptual ethical for Social Worker intending to use AI.

- **Literature search**

The literature in this paper consisted of journal and corporate articles (mainly based on research outcomes) on the use and ethical concerns of AI in addressing mental health challenges. These articles were found through electronic searches using Google and Google Scholar as search engines. This is consistent with assertions by authors like Randolph (2009) and Whittemore and Knafl (2005), who aver that electronic database searches constitute up to 50% of articles in literature review. In this paper, authors are adamant that most literature studies conducted in the digital age are likely to rely on electronic database searches due to convenience, and accessibility. In addition, the authors ensured that websites from which the articles were drawn are credible i.e. academic sites, peer-reviewed journals, and organisation involved in the AI and mental health industries.

A deliberate decision not to restrict the search of this review to discipline-specific literature was taken due to interdisciplinary nature of the review-therefore the search were wide and comprehensive-but focusing on the credibility of sources of literature. This decision finds credence from Whittemore (2007), who postulates that the rationale of comprehensive searches is to guard against the biasness of review findings. The searches included keywords like Ethics in AI, the use of AI in mental health. This enabled the authors to only focus on relevant literature than consuming time and energy on irrelevant literature.

Inclusion and exclusion criteria

Inclusion and exclusion criteria help the reviewers to separate the literature which is relevant from the one is irrelevant to the study. It is anticipated that large volumes of data will emerge during the review process, thus Melillo (2020) avows that the application of inclusion and exclusion criteria reduces voluminous literature into manageable amounts because the focus of the review will be on relevant literature. In addition, Evan (2007) is of the view that inclusion and exclusion criteria mitigates against the risk of biasness, and enables the reader to make a judgement regarding the validity of the review.

Inclusion: Articles were included in this because they covered the use of AI counselling environment, and highlighted ethical concerns for using AI. In addition, articles that addressed mental health were included.

Exclusion: Articles were excluded because they did cover the use of AI in counselling, and the associated ethical concerns. Moreover, articles were also excluded because they not cover mental health.

- **Data analysis**

The data (literature) were analysed thematically. According to Patton (2002), qualitative data analysis involves converting raw evidence, examining import from trifles and creating a framework for communicating what the data discloses. Thematic data analysis is the most preferred technique in qualitative study because of its flexibility, and adaptability to cater for

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needs of a variety of studies (Bryman, 2016; Nowell et al., 2017).Equally, thematic analysis has enabled the authors to analyse findings (themes generated) from previous literature, and to conceptualise ethical guidelines for Social Workers using AI in tackling mental health challenges.

Findings and discussions

The findings of this paper are discussed under the following themes: Ethical concerns of utilising AI and conceptual ethical framework for the use of AI in mental health.

Ethical concerns of utilising AI

Ethical concerns of utilising AI are presented and discussed under the following sub-themes: Loss of personal autonomy, privacy and biasness.

Loss of Personal Autonomy

AI technologies are essential in managing complex tasks and activities. However, they may diminish the autonomy and decision making capabilities of users (Walz & Firth-butterfield, 2019). Similarly, AI technologies have become increasingly autonomous, and threatens to supersede human intelligence capabilities, thus they may strip human of their decision making capabilities (WHO, 2021; Office of the High Commissioner for Human Rights, 2020).Walz & Firth-butterfield (2019) warn that the excessive use of AI can lead to dependency, which may result on the reliance of AI to perform simple tasks such as watering the pants. This can have adverse effect of humanity as human intelligence has been one of the features distinguishing human from the other organisms. In mental healthcare, Social Workers are faced with complex decisions to make on the appropriate intervention strategy. While AI can demystify decision making complexities, it threatens the autonomy of the practitioner and client. In Social Work, the practitioners work collaboratively with the clients in pursuit of finding solutions.

Social Work clients' have the right to self-determination which is premised on the idea that clients are experts as far their lives are concerned (Scalfano, 2013; Keigher, 2000). Consequently, the use AI undermines the clients' ability to make decisions regarding the type of intervention aimed at solving their mental health challenges. The reliance on technology to make decisions can cause digital dementia, which according to psychologists is a consequent of deterioration cognitive capabilities (Spitzer & Demenz, 2012 as cited in WHO, 2021).In light of the above concerns on the effect of AI on autonomy, the authors argue that the use of AI is set to create great ethical dilemmas for Social Workers. In addition, the ethical dilemmas can affect the uptake of AI in Social Work, particularly in mental healthcare.

Privacy

The right to privacy is universally embraced as it is aimed at protecting people from victimisation and criminality. AI involves the gathering and analysis of complex data such as bank statements, medical, home affairs and employment data. One of the greatest risks posed by AI is that sensitive and confidential data can be accessed by unauthorised persons for nefarious and criminal reasons (Bartneck et al., 2021 ; Rodriques, 2020).According to Bird et al. (2020), one of the ways in which AI is affects privacy is through intelligent Personal Assistants (IPA) like Apple's Siri, Amazon's echo and Google's Home. These applications collect data without the knowledge of users because they are always running in the background. The violation of privacy provisions may constitute a criminal offence since the right to privacy is one of the fundamental human rights globally.

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In Mental Healthcare, clients' information has to be safeguarded against unauthorised persons. In addition, mental healthcare clients are vulnerable, and it is responsibility of Social Workers to protect them against potential exploitation that may arise as a result of data bridges. Similarly, Social Workers have an ethical responsibility to keep clients information confidential, thus the use of AI might compromise that. Moreover, data about counselling pertaining mental health challenges could be accessed for purpose sharing it publicly in order to embarrass, and tarnish the reputation of the client. It is anticipated that these security concerns could discourage Social Workers, their agencies and their clients from utilising AI.

Biasness

AI is a creation of humanity, it can be expected that it is not devoid of biasness. Systematic biasness can occur when the data used to train AI applications is flawed and bias due to the values and views held by the developer (Bird et al., 2020). Bias in AI may reinforce and exacerbate existing prejudices and discrimination at the expense of previously marginalised and disenfranchised groups in society (Stern, 2019). This can happen as a result of the use of historically biases and flawed data, which is unrepresentative-thus the analysis and predictions on such data can produce unfair, unjust and inaccurate findings (Silberg & Manyika, 2019; Kaushal et al., 2020; Wall & Schellmann, 2021).The flawed approach will most likely adversely affect the efficacy of AI applications.

For example, an investigative journalism agency, Propublic (2016) found that machine learning systems used in the US to measure the probability of ex-offenders to re-offend- were likely to prejudicially flag Black ex-offenders as a group at risk of re-offending, while White ex-offenders were classified as a low risk group. It appears that the machine learning systems were trained within a context which still embraces historical biasness and discrimination against Black people. In the context of mental health, AI-driven predictive model aimed at identifying likelihood of people from experiencing mental health challenges-may unfairly flag Black people as a population at risk due to biasness and prejudices against them.

Equally, mental healthcare clients are faced with a plethora challenges such as prejudice, stigma, discrimination and isolation, therefore AI-induced biasness will exacerbate their plight. To this end, Social Work is a profession entrenched in social justice, thus the biasness of AI applications can pose a huge social justice dilemma for Social Workers deploying AI in mental healthcare.

Conceptual ethical framework for the use of AI in mental health

The conceptual ethical guidelines for Social Workers using AI in tackling mental health challenges are discussed under the following sub-themes: data protection laws, regulatory approach, accountability pertaining to the use of AI and training of Social Workers in the use of technology.

Data protection laws

The proliferation in the use of technology has necessitated a new cohort of data protection laws. In the digital age, medical, financial and other types of personal are susceptible to data breaches that can adverse effects. Data protection laws are based rights based approach which includes principles of regulating data-process activities aimed at protecting the rights of the individual, and imposes a responsibility to those in possession personal date (WHO, 2021)-penalties and remedies are also include in the laws. The uptake of data protection laws globally such as the South Africa's Protection of Personal Information ACT, California Consumer

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Privacy Act and the European Union's General Data Protection Regulation can attributed to the appreciation of the risk technology possess to the protection of personal data (THALES, 2021).

With regards to Social Workers deploying AI in mental healthcare, data laws are set to strengthen the ethical principle of confidentiality, which aimed at protecting personal data of clients. In addition, Social Workers are expected to take deliberate action aimed at ascertaining whether the AI technology of their choice embraces the respective data laws in their jurisdiction. In South Africa, the promulgation of the Protection of Personal Information ACT 2020, imposes a responsibility on data controllers to seek consent from the owner of the data before sharing it with a third party (WHO, 2021). This ACT also obligates Social Workers to ensure that their intervention tools like technology adhere to the provisions of the Act.

Regulatory approach

The regulation of the use of AI ethically and safely is more appropriate now than ever. It has been reported by WHO (2021), that large regulatory authorities such as Food and Drug Administration are already undertaking processes to provide guidelines and regulations pertaining to the safe and ethical use of AI, there are concerns that less capacitated regulatory authorities may not have the requisite expertise to approve use of such technologies. It is concerning that the safety of people regarding the use of AI might be jeopardised socio-political-economic factors, and this likely to affect developing regions in the world. It has been suggested by Academy of Medical Royal Colleges (2019), that the regulation of AI should embrace risk groups such people with mental health challenges, children, elderly and women. This is an important consideration because the rationale of regulations of health products is to protect people from unsafe, inhumane and unethical health products.

For example, Social Workers have responsibility to protect, and promote rights of marginalised group, thus their use of AI in mental healthcare should be in line with regulatory provisions. Vayena et al. (2018) suggest that regulators need to include biasness as criteria for approval of the use of AI in healthcare. This will ensure that AI applications which are approved are devoid of biasness, among other drawbacks. In context of Social Workers, it is recommended that Social Work Statutory Councils should study the approval criteria of AI order to ascertain that the respective application was assessed on factors such biasness, data privacy, human rights and inclusivity. In addition, Social workers should keep themselves abreast as far their respective Health regulatory agency's list of approved AI technologies for use in mental healthcare.

Accountability

The regulation of the use of AI paves a way for accountability. It has been reported by Delloite (2021), that lack of regulation into use of technology in mental healthcare places the well-being of consumers, clients in this instance. On the contrary, Bird et al. (2020) proposes that for AI to be trusted there be someone accountable for the potential harm caused by the technology. The designer, manufacturer or/ seller of AI applications should assume responsibility for the product. The authors are adamant that accountability will be enabled by regulation of the use of AI in addressing mental health challenges by a regulatory body of health products such South African Health Products Regulatory Authority and Food and Drug Administration.

Moreover, Social Work Statutory Councils are also obligated to play an active role in ensuring that the AI applications utilised met the necessary accountability standards. To this end, Social Workers should only, to the extent possible, deploy AI approved by health

regulators in their respective place of practice. In addition, they should also check the accountability structure of the AI application earmarked for intervention.

Training of Social Workers in using technology

The training of Social Workers does not sufficiently encompass technology training yet practitioners are using technologies in their intervention. This poses a great competency challenges for Social Workers plying their trade in digital-immersed environments. A research by the Social Care Institute for Excellence (SCIE) and British Association of Social Workers (BASW) found that most Social Workers feel that their training does not equip them with digital capabilities (SCIE, 2019). In substantiating the fact that Social Workers have deficient digital skills, the authors, who are a former Social Work student and a Social Work Educator at one of the Universities in South Africa respectively, lament that Social Work training has not adapted fully to the demands of the digital age, thus this may render Social Workers ineffective.

In trying to ameliorate the digital deficiencies of Social Workers, the University of London has introduced a training programme in e-social workers aimed at equipping Social Workers with digital skills. In addition, the South African Council for Social Services Professions (2020) compels Social Workers using technologies (identified as e-social workers) in their intervention to accumulate five (5) continuous development points in the field of e-social work and technology. Councils for Higher Education globally should include digital training as a prerequisite of Social Work education. Furthermore, Goldingay and Boddy (2017) aver that Social Work curriculum should also include the ethical use of technologies in Social Work intervention in order to enable Social Workers to be competent, competitive and ethical in their use of technology-supported services.

Conclusion

This paper sought to develop ethical guidelines for Social Workers using AI in mental health challenges. An integrative literature review was employed as a methodology. The paper provided an overview of the use of Ai in tackling mental health challenges. The paper further found that the ethical use of AI mental healthcare should, among other, include data protection laws, the use of approved AI applications, and for which there are accountability standards, and include training of Social Workers in using technology.

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