Holistic Methods of Diagnosis for Mental Health Conditions

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Background and Context

Prior to the late 20th century, many mental health conditions were diagnosed with vague criteria and were mainly based on the judgement of the clinical practitioner who was treating the patient. There were little to no objective criteria, and many factors (even individual factors) such as psychopathology were not taken into consideration. Plus, there was little to no empirical support for patient diagnoses (Appelbaum, 2017). To have some sort of a method to diagnose patients and create a framework, the American Psychiatric Association had created the DSM (ICD vs DSM - Key Differences and Similarities.) The assumption with this approach was that these experts could come to a consensus about the classification and definition of various conditions to be able to create this DSM. Even after the DSM-I and DSM, published in 1952 & 1968, the committee of clinicians and other American Psychiatric Association not able to come to a consensus on certain mental health disorders/conditions (Appelbaum, 2017). Then, the DSM-III was published, which started to focus on reliability of diagnoses, but there was still a lack of validity of results due to lack of rigorous scientific methods (Appelbaum, 2017). Finally, after the DSM-IV and DSM-5 were published, diagnoses were based not only on expert judgement, but also patient data (Appelbaum, 2017).

The committee that publishes the DSM-V realized from patient data that conditions present themselves in a spectrum for different patients (i.e., two patients with the same condition can be on different ends of a spectrum--one patient can present symptoms that are milder whereas another can present more severe symptoms) (Appelbaum, 2017). The use of a spectrum is especially important because there is something arbitrary about specifying a random cut-off for diagnosing conditions (Appelbaum, 2017).

The diagnostic process considers symptoms and criteria for an individual's behavior and/or emotions for each condition. However, it does not account for external factors and the complex subjective experiences of patients, and a narrow-minded view of mental health conditions can prove to be detrimental to various aspects of patients physical and even mental health.

Before I go into my paper, here is information on the diagnostic process. According to the National Alliance on Mental Illness (NAMI), a diagnosis obtained through a patient interview with a medical professional, where the patient will be discussing their symptoms and sometimes be screened for physical conditions (Understanding Your Diagnosis, n.d.).

THESIS

In this paper, I will be exploring the current diagnostic process (in the United States) along with the DSM and the external factors that these processes do not consider. When I mention external factors, I mean to discuss factors that are outside of a patient's symptoms, emotions, and behaviors. I will also be exploring potential solutions that incorporate external factors when diagnosing a patient. I will also be discussing the role of technology in diagnosis.

Problems with the American Diagnostic System and the DSM)

One major problem with the diagnostic process in general is the lack of clarity and specificity of diagnosing patient problems. This poses a problem as it shows experts that there is a significant knowledge gap in our understanding of the boundaries of mental health conditions (Timimi, 2014). Mental health disorders are different from physiological disorders because physiological disorders can be found empirically through differential diagnosis, physical symptoms, and physical tests (such as ECGs, CT Scans, CAT scans, antibody tests, etc.). The physiological aspect of mental health disorders is merely one part of an entire puzzle. While the DSM and

other diagnostic frameworks categorize mental health disorders, it is still extremely difficult to capture the various nuances that form a patient's experience of mental health (Timimi, 2014).

Thus, when a clinician claims that a patient feels "really depressed," or "really anxious" and diagnoses that patient with a particular disorder, this mainly consists of the experiences that the patient discussed with the clinician along with the "expert" opinion of one clinician (Timimi, 2014). This poses a problem as it can cause a serious "tunnel vision" or a narrow view of the patient's experiences (Timimi, 2014). For example, if a patient knows that they are depressed, there could be a serious risk of this diagnosis turning into a self-fulfilling prophecy where the patient starts to exhibit those characteristics even more (Timimi, 2014). Plus many conditions when diagnosed, are believed to be lifelong and incurable which then could result in a patient feeling as though they are hopeless, and that the patient cannot do anything about their problem (Timimi, 2014).

This can also result in patients who otherwise are below a threshold of diagnosis to receive a false diagnosis, misdiagnosis, or a patient who is above a certain threshold to not receive a diagnosis if that patient (or clinician) is understating the extent of his or her experiences.

Is Mental Health Diagnosis Necessary or Should it be Thrown Out? - Timimi

Diagnostic thinking (at the individual and symptomatic level) has had a major impact on society (Timimi). According to Timimi (2014), the idea of diagnostic thinking (and the use of frameworks such as the DSM and the ICD) are western ideas. It has encouraged a significant portion of different countries' populations to seek help, which seems like it would lead to improving people well-being (Timimi, 2014). There are many campaigns that are led to raise awareness about improving people's mental health. These campaigns and efforts have been led in order to increase awareness and reduce the stigma (Timimi, 2014). The hypothesis was that seeking help for mental health conditions should improve people's mental health, and therefore an increase in overall societal well-being (Timimi, 2014). However, there isn't a lot of evidence to support the fact that the current diagnostic process (with the DSM and clinicians) has significantly improved mental health of patients (Timimi, 2014).

For example, the UK Royal College of Psychiatrists and General Practitioners launched a "Defeat Depression' campaign in the 1990s to raise awareness of depression and necessity for treatment of depression along with reducing the stigma behind depression, and training general practitioners to diagnose and treat patients with signs/symptoms and behaviors that indicate depression (Timimi, 2014). The campaign also aimed to increase accessibility to guidance from specialists on how to manage symptoms (Timimi, 2014). However, studies showed that this campaign actually increased the number of depression diagnoses, but it didn't show evidence of significant outcomes (Timimi, 2014). However, it led to an increase in the prescription of antidepressants. This is a major problem as it can result in various physiological problems (Timimi, 2014).

Timimi (2014) also believes that there is a lack of "scientific progress" when it comes to diagnosis, and states that the existence of so many co-morbidities shows our lack of knowledge in mental health along with the fact that "they [clinicians] they trying to turn something based on subjective opinion into something that appears empirical, but they are engaging with the process of reification (Timimi, 2014)."

Given the example from UK Royal College, I understand where Timimi is coming from. However, I don't agree with the fact that the diagnostic process should completely be abolished as there is still potential for improvement to make labels more inclusive.

While it is important to be able to understand the complexities of mental health, it is also important to understand that humans like to classify concepts. In fact the reason the DSM-III was developed in the first place was to define a condition and understand mental health

problems, and start giving names for them. Without diagnoses, it was hard for people to understand the and acknowledge idea of mental health. As Appelbaum (2017) mentioned, one of the biggest problems with the diagnostic process was that it was considered to be unreliable due to lack of scientific rigor in research practices (Appelbaum, 2017).

Without the language to diagnose conditions, patients can't receive support from organizations such as insurance companies. According to NAMI, a diagnosis is "an important tool for you and your [patient's] doctor," which doctors and therapists use to advise patients on treatment options (Understanding Your Diagnosis, n.d.). Additionally, mental health diagnoses are important because 1) patients can only receive insurance benefits for mental health if they have a diagnosis, and 2) only patients with mental health diagnoses can receive social security benefits relating to mental health (Understanding Your Diagnosis, n.d.). In the next section, Nelson et al. discusses the DSM workaround to account for external factors in diagnosis, and get patients treated.

<u>Undermining the DSM as a Diagnostic Framework and Using Dissonant Diagnosis to</u> Account for External Factors

Because the DSM, does not take external circumstances such as social and economic factors into account, many mental health practitioners (MHPs) also use dissonant diagnosis in order to better understand patients. MHPs are people who diagnose/treat mental health disorders. Examples of MHPs include psychologists, psychiatrists, counselors, clinicians, therapists, and clinical social workers (NAMI) The word dissonant is used as the MHPs are trying to work around the DSM to diagnose patients. Nelson defines diagnostic dissonance as "disharmony between their multifaceted approaches to adolescent health, biopsychiatry of the DSM and standardisation." (Nelson, 2019).

MHPs are trying to resist standardization to be able to consider the full complexity of diagnosing a patient. They are using a workaround called coding where they create different codes that are compliant to insurance authorization for treatment (Nelson, 2019). They can't simply take the external factors as insurance companies need a diagnosis from the DSM in order to treat patients (Nelson, 2019). MHPs therefore must prove that this disorder exists for patients (Nelson, 2019).

They also use V-codes listed in the back of the DSM-IV as part of the 'Other Conditions That May Be a Focus of Clinical Attention' section (Nelson, 2019). V-codes include external factors such as academic problems, child neglect/abuse, sexual abuse, financial issues, identity problems, etc (Nelson, 2019). These V-codes are not recognized as a legitimate diagnosis, but many MHPs use them as these diagnoses actually take social context into account, and are closer to what a patient experiences (Nelson, 2019). Yet, the biggest reason why these codes cannot be used, and a "diagnosis" must be made is that a patient with a V-code cannot use insurance to be treated by a MHP, as someone with a diagnosis such as depression or anxiety can be (Nelson, 2019).

One way many MHPs work around this is by citing a diagnosis and specifying v-codes of a particular patient such that when patients go to therapy or get some other form of assistance, they will be able to get the necessary help, not just for the "diagnosis" but also learn about ways they can cope with their social circumstance, and improve their lives (Nelson, 2019).

I believe that the use of these V-codes is a step in the right direction in terms of considering factors for diagnosis. This would significantly help a patient discuss their problem with an MHP who can help them holistically. Plus, having these V-codes will also give the mental health practitioner a better picture of the patient's external circumstances. Based on their knowledge and expertise, these MHPs can determine whether the patient has a diagnosable condition or if patient is experiencing a circumstance that the patient needs to work through. This, in my opinion, is one step towards preventing false diagnoses, and having patients be treated for the wrong reason. Yet, in terms of the American diagnostic process, there is still a

long way to go since I would ideally like to not have false positive diagnoses of different conditions such as depression, anxiety, etc.

<u>Is there a better way to Diagnose Conditions? Or Should the idea of Diagnosis be Thrown Out?</u>

In the last paragraph, I discussed Nelson et al.'s research about V-codes, and had posted the statement about the systemic problem of the US's diagnostic system. Another framework used for diagnosis is the International Classification of Diseases (ICD) (ICD vs DSM – Key Differences and Similarities). It's commonly used outside the US and was initiated in Paris in 1900 (Tyrer, 2018). Sami Timimi "initiated an international campaign on the Critical Psychiatry Network UK to abolish the ICD and DSM Classifications" due to dissatisfaction with the differences in opinions of experts in psychiatry when it comes to diagnosis (Tyrer, 2018). However, that most psychiatrists still believe that ICD and DSM classifications "have some value" (Tyrer, 2018). In fact, Tyrer (2018) defines the elements of a good classification: cause of disease, ways to prevent the disease from occurring, symptoms/behaviors, and treatments and results of said treatment.

I am not in full agreement with idea of using only Tyrer's "good classification" to diagnose diseases. However, I agree with the following statement that Tyrer makes, which in fact, was one of my critiques of Timimi's idea of completely abolishing the diagnostic system.

"Without a classification system the necessary economical communication with colleagues to convey information becomes a lengthy description of clinical problems that is self-defeating. (Tyrer, 2018)."

I understand where Tyrer is coming from with this statement. In fact, that was one of my earlier critiques of Timimi's idea of abolishing the diagnostic process. Humans need some way to classify, name and organize information in order to understand new and existing information (e.g. genders, races, things, places, countries, etc.). Tyrer (2018) is looking at the diagnosis problem from a more practical angle as compared to Timimi (2014) with his radical view of "abolishing the western diagnostic system.

Given my learnings from all the sources I have used thus far, I want to figure out a way to incorporate patients' experiences within the diagnostic process instead of using only the US's current diagnostic process and the DSM as a framework.

International Classification of Diseases (ICD) as a Framework of Disease Diagnosis compared to the DSM

The DSM-III was considered a great classification tool due to its statistical reliability (i.e. the extent to which assessors agree with one another) (Tyrer, 2018). Due to its objective criteria, the DSM provides the opportunity for good statistical reliability and consistency in diagnosis (Tyrer, 2018).

To me, the statistical reliability of the DSM contradicts one of the argument of Timimi's campaign against the diagnostic process (i.e. that there's too much disagreement among experts in psychiatry about diagnosis). Yet, statistical reliability does not necessarily mean that true reliability.

The ICD, on the other hand, does not have clear diagnostic criteria, and allows more room for clinical judgement when diagnosing and classifying disorders (Tyrer, 2018). The ICD is meant purely for diagnosis, whereas the DSM was meant both for diagnosis along with research (Appelbaum, 2017). I believe that the difference in purposes for both frameworks might explain

the difference in the method of classification. The purpose of developing the DSM (which was developed in 1952), as opposed to the ICD being developed in 1900, was to make it more empirically reliable (Appelbaum, 2017; Tyrer, 2018).

Here are the key differences between the ICD and DSM as specified by Tyrer (2018). ICD is used internationally (worldwide) including in low- and middle-income countries, and it's mainly designed to be used clinically, and there is a plan to reduce the number of diagnoses with more iterations (Tyrer, 2018). The ICD provides guidance, but it does not provide specific criteria like the DSM provides (Tyrer, 2018). The DSM, on the other hand, is mainly used in the US and focused on high-income countries (Tyrer, 2018). The DSM, however, plans on increasing the number of diagnoses with more iterations (Tyrer, 2018).

More empirically reliable cannot mean more accurate because mental health is a unique field that involves a human's subjective experience, external factors, and their symptoms, as opposed to just their symptoms and behavior. Also, relying mainly on clinician judgement seemed to be a negative thing; in fact, that is one of the reasons that the DSM-III was developed for external validity (Appelbaum, 2017; Tyrer, 2018). However, both Tyrer (2018) and I would argue that relying on mainly a clinician, MHP, or medical professional's judgement wouldn't be so bad (Tyrer, 2018). In fact, good classification also includes, expert clinical judgement, and the ICD allows for that (Tyrer, 2018).

I would go one step further and say that clinician judgement is better for diagnosis than objective criteria due to the subjective nature of human experience. Plus, this person has the credentials and expertise to diagnose a patient, which means that they can be trusted to diagnose and treat patients (Tyrer, 2018). The clinician or practitioner can listen to the patient, and learn more about their experiences (both internal and external factors), and then make a judgement call on whether the patient should be diagnosed, and what disease(s) the patient should be diagnosed with.

Use of technology for diagnosis

Nowadays, with the use of smartphones, VR, AI, and machine learning, the process of diagnosing and treating behavioral health/mental health conditions has also become digitized. However, it is moving at a slower pace as compared to (Luxton et al, 2011, Hirschtritt & Insel, 2018). Even with the DSM, given its various problems, it is still difficult to come to a consensus on different symptoms and signs of different conditions (Hirschtritt & Insel, 2018). Digitizing mental health would significantly increase access to resources (Hirschtritt & Insel, 2018). To digitize mental health, specific parameters and criteria will need to be used. To me, the biggest question this raises is "Will the process of diagnosis be grossly oversimplified?"

To mitigate that process, as stated by Flore (2020), we have to first realize that technology is not simply "add-on" or an extra component. Given the age of technology, we are moving toward a digital age. Technology will be used by people to enhance health regardless of whether they are diagnosed (Flore, 2020). Specifically, for diagnosis, mental health practitioners could use this technology to not only ask about symptoms and assess behavior, but also ask about economic and social circumstances when questioning patients about diagnosis (Flore, 2020 and Luxton et al., 2011).

Discussion and Conclusion

The current model of diagnosis which only uses an individual's behavior, feelings, symptoms, and a clinician/mental health practitioner's diagnosis is deeply flawed due to the narrow scope of the diagnosis and an oversimplification of people's understanding of mental health. Plus, the patient may not be able to get their mental illness or disability treated correctly as the "symptoms" could also be a result of external circumstances. Having a holistic view of a patient's mental health could not only treat the symptoms of a patient's condition, but also the

root cause of their problem. Another element to this paper is the digitization of mental health diagnosis, which can significantly improve the process of diagnosis by increasing the need to collect data on patients' circumstances as well as their conditions.

Timimi's earlier argument of abolishing the diagnostic system is a reactionary measure to the lack of scientific rigor. However, despite the arguments of Appelbaum and Timimi, anecdotal evidence (patient-MHP interviews) can also be counted as evidence. I believe that scientific rigor (the way it is applied to fields such as engineering and biology) does not apply in mental health. While scientific rigor is not necessary, some type of classification that can be used to appreciate the complexities of mental health experience would be ideal.

To get a more holistic diagnostic process in the US, insurance companies, government organizations, and other organizations that help patients fund treatment for mental health conditions need to understand that mental health is complex. It is not just an amalgamation of symptoms and behaviors, but a complex aspect of human life and human health that involves many different pieces.

Tyrer (2018) states his conflict of interest due to his support of the ICD-11 development. Even with this conflict of interest, the ICD framework matches my ideas in terms of diagnosing patients since it takes external factors and patient symptoms and experiences into account. Additionally, the ICD is more accessible to populations of different socioeconomic statuses as compared to the DSM, which can help treat more people with mental illnesses. However, while the US is moving towards the ICD, the transition is slow due the ICD's increased complexities, which can significantly make things more difficult in terms of creating codes to bill patients and insurance companies for mental health diagnosis and treatment (EHRIntelligence, 2016).

Given that we are in a time where technology for mental health is getting more advanced, it would also behoove society if we used more advanced frameworks for designing technology relating to mental health diagnosis (and treatment). For now, I am thinking about of the DSM with V-codes as a temporary solution, but the I feel that the ICD could be implemented as a long-term systemic solution after revising codes. The increasing complexity of this framework could also be embedded into the technology created for diagnosis and cures.

REFERENCES

Appelbaum, P. S. (2017). Moving toward the future in the diagnosis of mental disorders.

Psychological Science in the Public Interest, 18(2), 67-71.

doi:10.1177/1529100617727267

EHRIntelligence. (2016, October 18). What makes the transition to ICD-10 in the us so complex? Retrieved May 10, 2021, from https://ehrintelligence.com/news/what-makes-the-transition-to-icd-10-in-the-us-so-complex

Flore, J. (2020). Ingestible sensors, data, and pharmaceuticals: Subjectivity in the era of digital

mental health. New Media & Society, 146144482093102.

doi:10.1177/1461444820931024

- ICD vs DSM Key Differences and Similarities. *Flatworld Solutions* Available at:

 https://www.flatworldsolutions.com/healthcare/articles/icd-vs-dsm-key-differences-and-similarities.php. (Accessed: 10th May 2021)
- Insel, T. R. (2018). Digital technologies in Psychiatry: Present and future. FOCUS, 16(3), 251-258. Doi:10.1176/appi.focus.20180001
- Luxton, D. D., McCann, R. A., Bush, N. E., Mishkind, M. C., & Doi: 10.1037/a0024485
 Luxton, D. D., McCann, R. A., Bush, N. E., Mishkind, M. C., & Doi: Reger, G. M. (2011).
 Mhealth for mental health: Integrating smartphone technology in behavioral healthcare.
 Professional Psychology: Research and Practice, 42(6), 505-512.
- Nelson, A. D. (2019). Diagnostic dissonance and negotiations of biomedicalisation: Mental health practitioners' resistance to thedsmtechnology and diagnostic standardisation. Sociology of Health & Diagnostic Standardisation.
- Timimi, S. (2014). No more psychiatric labels: Why formal psychiatric diagnostic systems should be abolished. International Journal of Clinical and Health Psychology, 14(3), 208-215.

 Doi:10.1016/j.ijchp.2014.03.004
- Types of Mental Health Professionals. NAMI (2020). Available at:

 https://www.nami.org/About-Mental-Illness/Treatments/Types-of-Mental-HealthProfessionals.(Accessed: 9th May 2021)
- Tyrer, P. (2018). A comparison of DSM and ICD classifications of mental disorder. *Advances in Psychiatric Treatment*, 20(4), 280–285. https://doi.org/10.1192/apt.bp.113.011296
- Understanding Your Diagnosis. *NAMI* Available at: https://www.nami.org/Your-Journey/Individuals-with-Mental-Illness/Understanding-Your-Diagnosis#:~:text=A%20medical%20professional%20determines%20a,tests%20or%20other%20biometric%20data. (Accessed: 9th May 2021)