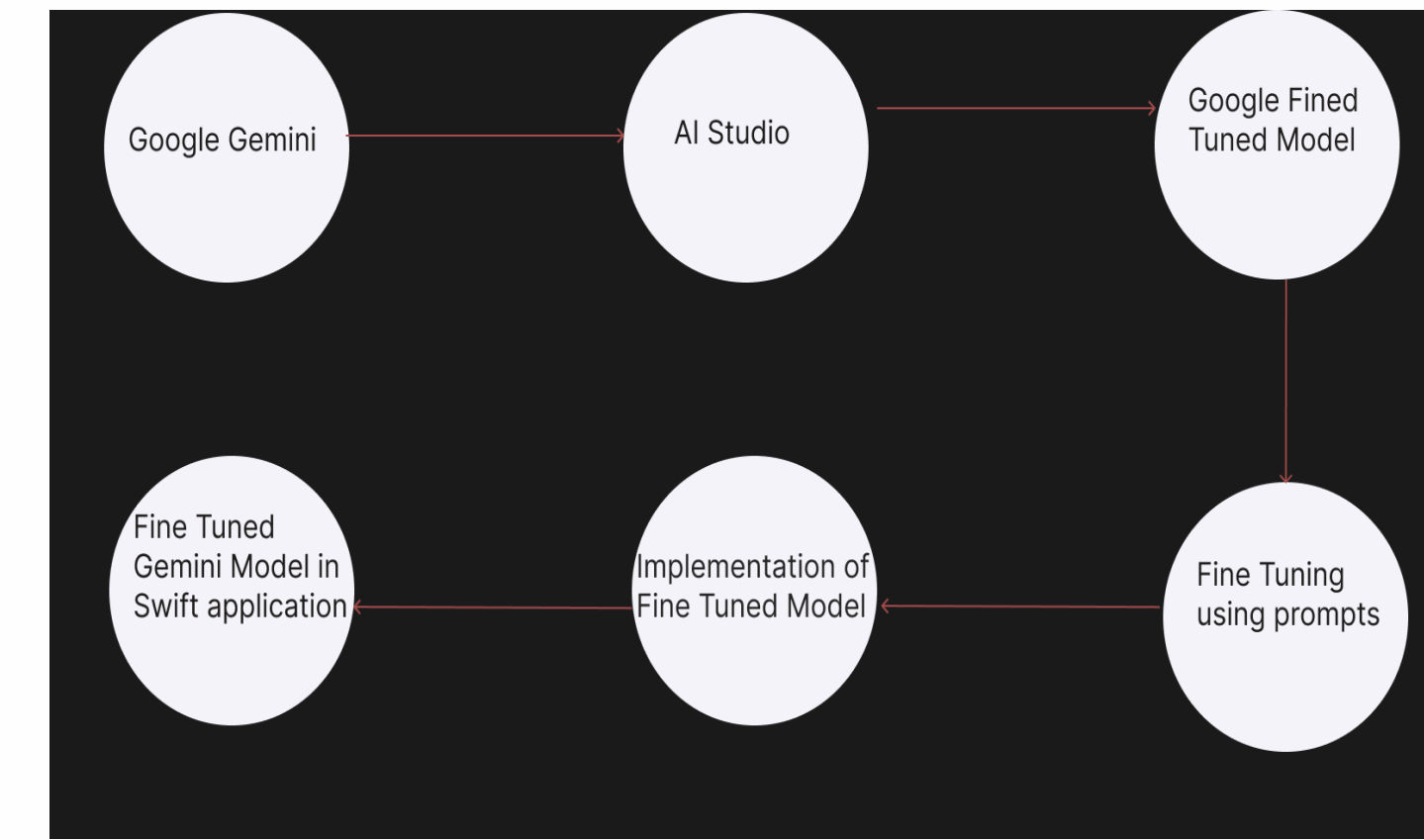
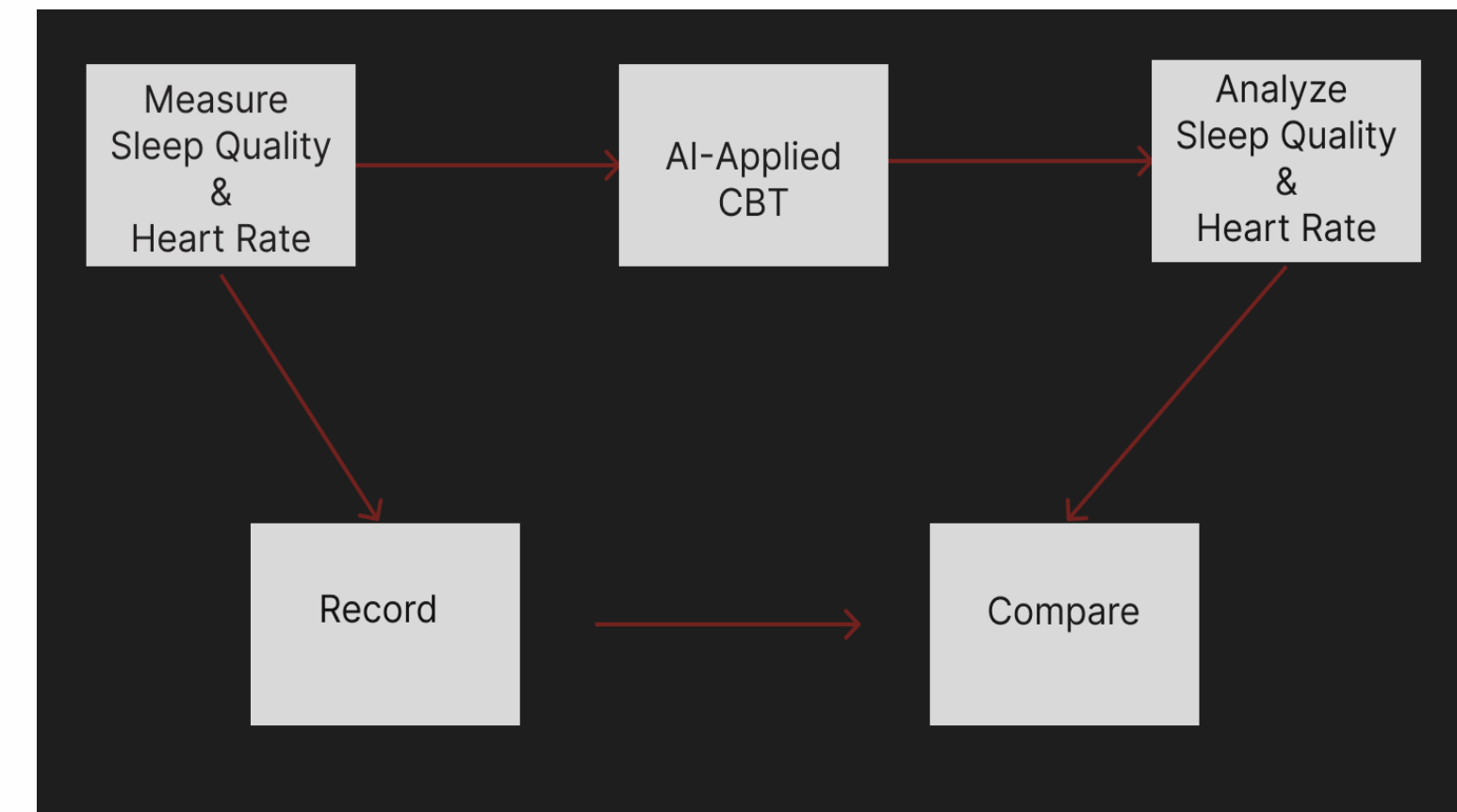
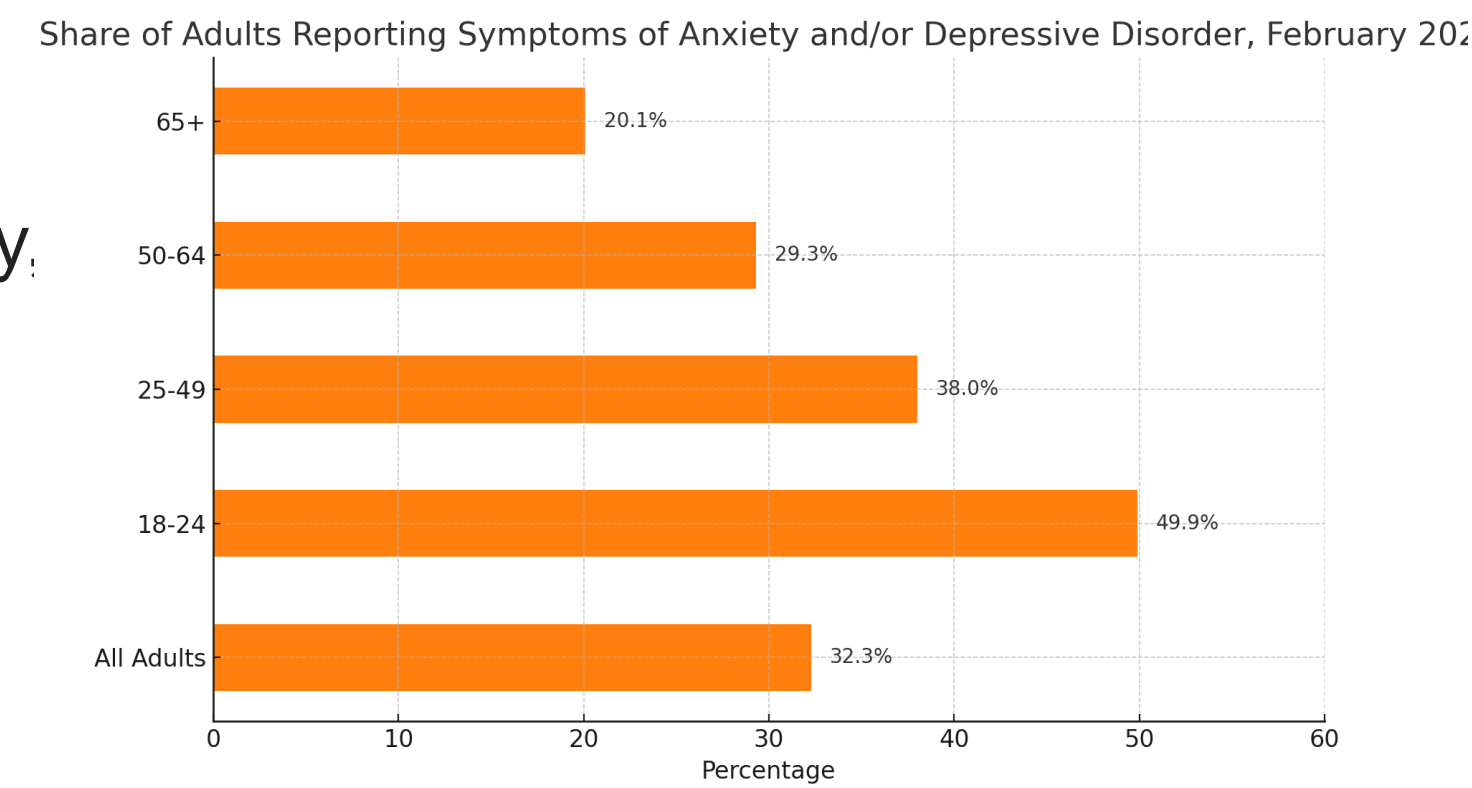


# How Can Artificial Intelligence and Physical Metrics Improve Mental Health Care?

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**Research question:** This research looks at how Artificial Intelligence (AI) can be used in mental health care. It studies how physical signs, like changes in heart rate and sleep quality, can help spot mental health issues such as anxiety. It also explores how AI can support mental health treatments. The findings will help improve AI tools for better mental health support.



**Problem Statement:** Anxiety has been an emerging problem/crisis in the 21<sup>st</sup> century. Some studies suggest that over 32.3 percent of all adults have anxiety and the percentage is much higher when it comes to the 18-24 demographic which is a major concern for any growing economy. According to CNBC, mental health spendings reached a whopping amount of 225 billion dollars in 2019 which gets to show us how unaffordable mental health services really are and via this research we are focusing on developing an AI solution which is affordable as well as effective to use in order to tackle anxiety.

**Observation:** From the literature review we observed that the practice of CBT reduces the number of times a person feels anxious and also reduces the number of incidents he/she has to face which helps the individual in coping up with the day to day life. Also we had an opportunity to work with the AI studio of Google Gemini and analyze how AI's response can be tuned to solve the mental health issues specifically to solve anxiety disorder via using CBT techniques.

**AI Role in tackling the issue:** The emerging growth of AI opens up infinite possibilities for advancing and assisting humanity in ways worth pursuing. One such way could be integrating AI in the Mental Health space in order to make this efficient and affordable to all.

**Solution/method:** We plan to streamline AI so that it can analyze the condition of someone who is facing mental health issues specifically targeted towards the one's who are having anxiety issues. We will start by tracking the patient's heart rate variability and sleep cycles via wearable devices to assist the patient, as those two physical metrics play a major role in determining the condition of an individual's mental health. After recognizing the state of the patient, they will undergo Cognitive Behavioral Therapy(CBT.) CBT is a popular practice of reconstructing past traumatic experiences by altering the brain's way of thinking about those events in a less stressful manner. We implemented this solution in a swift based application where we integrated Google's Gemini AI which is fine tuned to help the users in solving their anxiety issues. The user has to enter some metrics like their heart rate, hours of sleep in a day ,age and the frequency of their anxiety issues. This data then be analyzed by AI to better understand the user's current state and help them in solving their issues.

**Conclusion:** Via our literature reviews we have concluded that measuring sleep cycles and heart rate, providing them to AI to analyze and help the individual with the help of CBT can be way viable option to tackle a problem like Anxiety. We also observed the AI responses to the dummy data, the AI was accurate with the response it gave with respect to the CBT methods which were Fine Tuned into the AI data base. We want to further advance this research by evaluating the same AI model by testing it with real users.

