Aaron van Dorn (00:00):

Welcome to AJP Audio for November 2023. I'm Aaron Van Dorn. Today on the podcast I spoke with Dr. Winston Chung, the director of psychiatry at Kaiser Permanente Northern California. Dr. Chung and colleagues investigated disparities in the diagnosis of psychotic disorders among racial and ethnic groups in a large cohort.

(00:22):

Afterwards, AJP editor-in-chief Dr. Ned Kalin, will join us to discuss the rest of the November issue of the American Journal of Psychiatry, which focuses on many aspects of psychotic disorders.

(00:30):

Dr. Chung, previous research has demonstrated that there are racial and ethnic disparities in psychiatric diagnosis, especially regarding psychosis. Your study aimed to look at the rates of psychotic disorder diagnosis among different racial and ethnic groups in the United States. What did you find?

Dr. Winston Chung (00:43):

Some of our findings included Black participants generally having the highest rates of incident psychotic disorder diagnosis throughout the 10-year study period, and Asian participants generally having the lowest rates of incident psychotic disorder diagnosis throughout the 10-year study period.

(01:03):

We also found that patients with psychotic disorder diagnoses had higher odds of receiving other psychiatric diagnoses such as bipolar disorder, drug use disorder, and depressive disorder, just to name a few. And psychotic disorders were associated with negative outcomes such as higher odds of suicide, premature death, stroke, and lower odds of healthcare utilization.

Aaron van Dorn (01:35):

What can you tell us about the makeup of your dataset, which used health records from the Kaiser Permanente Northern California?

Dr. Winston Chung (01:40):

Our dataset consisted of members who received care at Kaiser Permanente Northern California, anytime between January 1st, 2009 and December 31st, 2019.

(01:55):

Kaiser Permanente Northern California is a large integrated healthcare delivery system that provides comprehensive medical care to more than 4 million individuals all over northern and central California. The population of Kaiser Permanente Northern California is generally representative of the overall regional population, although there may be an underrepresentation of income distribution extremes.

(02:28):

So, for example, there might be fewer extremely wealthy people that are members and there might be fewer extremely poor people that might be members.

Aaron van Dorn (02:40):

Your interpretation of your findings suggests that structural racism and socioeconomic issues might contribute to some of the disparities in the psychosis diagnosis. You mentioned earlier that your dataset

was perhaps unrepresentative of lower socioeconomic individuals who are disproportionately represented in psychosis diagnosis. How did you and your team account for that population?

Dr. Winston Chung (02:58):

Well, if we're missing those cases within the lowest socioeconomic strata, then it's hard to say how our results should be interpreted based on that. One might think, however, that strata that we can't assume until we actually study it for sure, might more likely include populations that have been victims of institutional racism or trauma or negative experiences such as that. And if that would be the case, then one might actually expect, if those populations were included, that the effect could be even more pronounced. In other words, there might be even more Black participants that were included in the study if we did get that population, but again, we'd have to know for sure which races and ethnicities would be represented in that lower socioeconomic strata.

Aaron van Dorn (04:05):

Your analysis differentiates between rates of effective and non-effective psychosis or roughly major depressive disorder and bipolar disorders and schizophrenia and schizophrenia related disorders. What differences did you find between the two categories, both between themselves and how they differentiated among the different populations?

Dr. Winston Chung (04:20):

Well, overall, there were more cases of non-effective psychosis. So, for example, schizophrenia or schizophreniform disorders compared to affective psychosis, which would be something like bipolar disorder with psychosis or major depression with psychosis.

(04:40):

We found the incidence of non-effective psychotic disorders decreased slightly over the study period, but no linear trend in incidence of affective psychosis over the time period was observed. We found that compared to white participants, both Black and American Indian or Alaskan native participants had a higher risk of non-effective psychosis diagnosis, and Hispanics and Asians had lower risk, and compared with white members, the risk of affective psychosis diagnosis was higher among Black members and lower among Asian or other members.

(05:20):

Other is a category that included multiple races or races that do not fit well in any other category and instances where race and ethnicity were not reported. We did find that the higher risk among Black participants compared with white participants was less pronounced for the affective psychosis such as mood disorder or bipolar disorder with psychosis compared to the non-effective psychosis.

Aaron van Dorn (05:46):

What were the limitations of your study?

Dr. Winston Chung (05:48):

Some limitations included the broad racial and ethnic groups we used. Using these broad groups could sometimes mask important and real differences between smaller groups. We didn't have direct measures of disorder onset. So, in other words, we weren't actually there when the disorder began and we relied on administrative records and those do not always constitute validated cases.

(06:18):

Our sample was derived from a single healthcare system in a specific US state, and because of that, the findings may not generalize to other regions or populations and we lacked information that could have enriched the study such as measures of acculturation, immigrate status, and experiences of discrimination.

Aaron van Dorn (06:43):

Your study looked at treatment and diagnosis incidents in a large population, but you were unable to analyze core issues of why treatment or non-treatment incidents might differ in these populations. For example, in what other studies have documented is underdiagnosis of mood disorders among Black patients. How did your team interpret this?

Dr. Winston Chung (06:58):

Yeah, this is another limitation of the study. A study of treated incidents cannot address whether disparities in diagnosis reflect real differences in the risk of psychotic disorders or if it might be due to non-causal factors such as misdiagnosis or differential treatment access and utilization, or a combination of both.

(07:23):

We did try to adjust for neighborhood deprivation index and healthcare utilization in our analysis, but missing non-treatment incident cases could still affect results.

Aaron van Dorn (07:35):

While your study obviously calls for further research, is there something that policymakers can take from it at this moment?

Dr. Winston Chung (07:40):

I think it could be worth being mindful of some of the results from studies like this or other studies that are examining trends in psychiatric problems or medical problems if they are disproportionately affecting certain groups, in that maybe they can think about how policy could mitigate these disproportionate effects if it might be possible for policy to do so. We don't know for sure, but I guess just being aware that these trends exist and being mindful might allow for someone to try and think about it in a policy if it's possible for a policy to make a difference.

Aaron van Dorn (08:30):

What's next for your research?

Dr. Winston Chung (08:31):

I'm hoping to continue to try and examine and understand meaningful differences and similarities between and within cultures and groups, but maybe in the future focusing on trends in behaviors as opposed to diagnoses.

Aaron van Dorn (08:49):

Dr. Chung, thank you for taking the time to speak with us today.

Dr. Winston Chung (08:51):

Thank you for having me and it was a pleasure.

Aaron van Dorn (08:53):

Up next, Dr. Ned Kalin.

(08:55):

Dr. Kalin, welcome back to AJP Audio for November 2023.

Ned Kalin (08:58):

Thank you, Aaron.

Aaron van Dorn (08:59):

This issue of AJP takes a close look at issues surrounding psychosis. To start with, earlier in this episode I spoke with Dr. Dr. Winston Chung about inequalities in the incidents of psychotic disorder diagnosis between different racial and ethnic groups in the US from a large cohort in California.

(09:12):

What can you tell us about the article?

Ned Kalin (09:14):

So, this article is one of a couple of articles in this issue that focuses on psychotic disorders. And this is an interesting paper because it uses a large database from the Kaiser Permanente clinic from data collector from 2009 to 2019 to look at whether or not there are racial and ethnic disparities in the diagnosis of psychotic disorders.

(09:36):

This is data that is from over almost 6 million individuals that were treated in their system. Again, as I mentioned, the primary motivation of the study was to assess potential differences among individuals of color and also those that identified as other minorities in this case Blacks, American Indian individuals, Alaskan native, native Hawaiian individuals or Pacific Islander individuals, and also Latin, Latino, or Hispanic individuals.

(10:06):

What the investigators found that was when compared to white individuals, Black individuals had roughly a greater than twofold greater risk in the incidence of having a diagnosis of a non-affective psychosis and American Indian or Alaska native individuals also had an increased risk that was 1.85 times higher than white individuals.

(10:27):

And then when looking at psychosis that were related to affective disorders, similar findings emerged in which Black individuals had about a 1.76 times increased risk compared to white participants.

(10:41):

What this study brings out in general is that there are these racial and ethnic disparities in the diagnosis of psychotic disorders in this particular population. It's important to keep in mind that this doesn't really tell us why that's the case. This study, it just documents these differences likely due to factors related to structural racism and other contributors, but it's not exactly clear why these differences are there.

(11:07):

Is it related to differences in diagnosis in relation to biases with different ethnic and races, or is it related to actual differences and risk? And, again, that remains to be determined.

Aaron van Dorn (11:21):

Next, we have an article from Rødevand and colleagues, looking at the shared genetic underpinnings of schizophrenia and cardiovascular disease.

Ned Kalin (11:27):

This is a really interesting paper. It really gets at what we know that is there is a higher incidence of cardiovascular disease that occurs in individuals that have schizophrenia. We're not sure why that's the case. Could be due to the medications that are used to dietary factors, a whole bunch of other things. But this study really gets at the genetics of all that by doing a GWA study to look at single nucleotide polymorphisms that are associated with schizophrenia as well as those that are shared with cardiovascular risk factors.

(12:02):

In this particular case, the cardiovascular risk factors that were looked at were BMI Type two diabetes, lipid values, blood pressure, and smoking habits. The GWAS data for schizophrenia was collected from the Psychiatric Genetics Consortium and really was a ... It's important to keep in mind that this is a cohort of individuals of European descent and the cardiovascular factors were obtained from a separate set of participants.

(12:31):

And basically what the findings showed was that there's considerable overlap in some of the single nucleotide polymorphisms that are associated with schizophrenia as overlapping with those that are associated with some of the cardiovascular risk phenotypes. And in fact, it was estimated in the study that the overlaps ranged a lot, but as high as 90% of the SNPs were overlapping. For example, with regular smoking, 83% with BMI and a much smaller percentage with coronary artery disease and low density lipoproteins, around five and 3% respectively.

(13:09):

But what this shows is that the same genetic variation that is associated with schizophrenia seems to be shared across cardiovascular risk phenotypes or risk factors. More specifically what was found is that the SNPs that were shared between schizophrenia and regular cigarette smoking had effects in the same direction, whereas those that were shared with BMI tend to have effects in the opposite direction.

(13:37):

So, in sum, these findings suggest that the genes underlying schizophrenia increase the risk for smoking behavior, whereas they may actually decrease the risk for having an increased BMI. And that's somewhat surprising because we know that increased BMI, for example, goes with schizophrenia, but in this case, it's suggesting that the shared genes are actually working in opposite directions.

Aaron van Dorn (13:59):

Following that, we have a paper from Cao and colleagues, looking at a connectome-based neural signature to predict treatment response to antipsychotics during first episode psychosis.

Ned Kalin (14:07):

This is a paper that uses multiple functional brain imaging scans or paradigms to try to bring that data together to make predictions about the magnitude of response of individuals that were treated in a double-blind trial for their first psychotic episode.

(14:28):

Now, it's a relatively small sample size, but what's important to note is, in the small discovery sample that was used, the effects were then invalidated in another sample. So, basically what was done here more specifically was that, as I mentioned, four different imaging paradigms were used and this data then was put together in what was called cross-paradigm connectivity analysis. The idea was that by combining these different FMRI paradigms within a subject, that one could get a better sense of the trait-like brain activity in that individual.

(15:02):

So the activity that was measured was theoretically not specific to any one paradigm but was shared or something that was a signature across these different paradigms and gets more at the trait-like brain activity. And in the 49 patients that were studied, basically the investigators were able to use machine learning to fairly accurately predict the magnitude of response in this clinical trial in which individuals were either receiving aripiprazole for 12 weeks of risperidone for 12 weeks.

(15:35):

And basically the findings that emerged were that lower levels of connectivity between the cerebellum and different cortical nodes and higher levels of connectivity between some of the cortical areas that is between themselves were the elements that were most predictive of treatment response.

(15:53):

So what this is getting at is the idea that we can now begin to think about how we can use functional brain imaging to make predictions about treatment response, and more specifically, in this case, in relation to individuals that are being treated for their first psychotic episode.

Aaron van Dorn (16:09):

Finally, we have a priority data letter from Smucny colleagues looking at the efficacy of using machine learning techniques to predict conversion to psychosis, titled, "Are We There Yet?" Are we?

Ned Kalin (16:18):

I think the question still remains, are we there yet? But this data is beginning to suggest that we're getting close. I'll also highlight that there's an editorial by Dr. Tyrone Cannon from Yale University that addresses this question of really, are we there yet? And he comes up with the conclusion that we're not quite there yet, but again, we're moving in that direction.

(16:40):

What this current study does is it builds on data from a previous study, and this is called the NAPAL study. It's the North American Prodromal Longitudinal Study, which is designed to look at individuals at risk and to try to better understand the factors that are related to the conversion from risk to develop schizophrenia for a psychotic episode or developing schizophrenia.

(17:03):

And actually, Tyrone Cannon was the author of an earlier paper using the second cohort in this study, which was considered the Naples two cohort, and by looking at that, developed actually a psychosis conversion calculator that was validated and found to be pretty accurate.

(17:21):

So this current study is using new data from the third cohort, the Naples three study. This was comprised of 710 high-risk individuals and 96 control individuals that were followed for two years from the standpoint of seeing whether they would develop psychosis. And in addition to some of the clinical and demographic measures that were used in Cannon's calculation for psychosis conversion, they also added in other factors including levels of the stress hormone cortisol, because higher levels of cortisol have been shown to be associated with schizophrenia at times, and also is another independent marker of one's physiological reactivity to stress.

(18:01):

And what the findings revealed was that over the two years of follow up, about 62 individuals converted to psychosis, and it turned out by using machine learning with a variety of different approaches, which I won't go into, one of the machine learning methods was found to perform very well with 90% accuracy, which is quite high.

(18:22):

And so these data really suggests that by taking these different measures, building on earlier work that came up with a formula or a calculator to predict whether or not someone at risk was going to convert to psychosis and adding in the measure of cortisol, and then using various machine learning methods, that we can get fairly accurate about making predictions related to who's going to convert to psychosis.

(18:49):

Now, I want to qualify this by saying this is a relatively small sample that was performed, when it comes down to it, from the standpoint of only 62 individuals actually converting from risk to psychosis. But having said that, it's still one of the larger studies that has been done and looks quite promising.

Aaron van Dorn (19:07):

Well, Dr. Kalin, thank you once again for taking the time to speak with us today.

Ned Kalin (19:10):

You're welcome. Thank you, Aaron.

Aaron van Dorn (19:11):

That's all for this month's AJP Audio, but be sure to check out the other podcast published by the APA.

(19:16):

This month on Psychiatric Services From Pages to Practice, Dr. Henry Chung joins Dr. Dixon and Dr. Bears to discuss the differences between the collaborative care model and the co-location model and the impact on Medicaid cost and utilization for the treatment of patients with depression. That and much more can be found at psychiatryonline.org/podcasts or wherever you get podcasts.

(19:34):

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