

Aaron ([00:07](#)):

Welcome to AJP Audio for July 2023. I'm Aaron van Dorn. This month on the podcast I spoke with Dr. Dylan J. Jester from the VA Palo Alto Medical Center in Palo Alto, California. Dr. Jester is an author on a study published in this month's issue of the American Journal of Psychiatry, looking at the impact of selected social determinants of health on the mental health outcomes of older, Black, white, and Latinx adults in the United States. Afterwards, we'll be joined by AJP editor-in-chief, Dr. Ned Kalin, to discuss what else is in the July issue of AJP and how it fits together? Dr. Jester, your study looked at the impact of selected social determinants health on the psychological health and wellbeing of older adults in the US, focusing on differences between Black, Hispanic and Latinx and white adults between the ages of 51 and 89. What did you find?

Dr. Jester ([00:48](#)):

Broadly speaking, we found that social determinants of health, for example, income, education, parents' education, work experience, insurance parity, things like this, they were associated with a large proportion of the disparities in psychological health and wellbeing between Black and white adults and Hispanic or Latinx and white adults in the health and a retirement study. And we defined psychological health and wellbeing as depressive symptomatology, global cognitive functioning, and self-rated health. So as it relates to the disparities that we found, we found on average, the Black older adults compared to white older adults were more depressed. They had lower cognitive performance and they had worse self-rated health. And for the Latinx and the white older adults, once again, the Latinx older adults on average were more depressed, had worse cognitive performance and poor self-rated health. So the point of our study was to take these disparities, these differences between the Black and the white older adults and the Latinx and the white older adults, take these disparities and distill them, understand what different portions of the factors that we looked at explained in those disparities.

([02:12](#)):

So for example, we looked at social determinants of health. That was our main factor there, but we also looked at physical health and other types of mental health, health behaviors and healthcare utilization. And broadly speaking, what we found is that when we looked at the Black and the white older adults, social determinants explained the largest proportion of the disparity for depressive symptomatology, for cognitive performance, and for self-rated health. For the Hispanic and Latinx compared to the white older adults, it was a little bit different. Demographics such as age and gender and physical health such as functional status. These explained a larger proportion than social determinants for depressive symptomatology, but social determinants explained the vast majority of the disparity for cognition and self-rated health. And so what we wanted to draw attention to was that these social factors and structural factors that affect every way in which we live are important. They're in fact potentially more important or as important as other types of physical health and mental health that is commonly assessed within a healthcare setting.

Aaron ([03:26](#)):

Which social determinants of health did you choose for your analysis and why did you choose to focus on those in particular?

Dr. Jester ([03:31](#)):

Well, we focused on quite a few social determinants. We had looked at education, parental education, number of years, worked, household income, marital status, veteran status, geographic location, nativity status, and insurance coverage. We looked at the social determinants in part, I would say due to the

availability of them in the dataset, but there are so many other social determinants that impact psychological health and wellbeing, such as homelessness, food insecurity, adverse childhood experiences and experiences of racism, including structural racism. But these were not available necessarily in the dataset, but certainly deserve to be looked at in the future.

Aaron (04:16):

The social determinants of health that you looked at reflected issues from the highest level over society and culture, ubiquitous things like structural racism and education to more individual level measures like veteran status and marital status. Is there a risk of some of these more basic measures, swapping more nuanced or individual criteria?

Dr. Jester (04:30):

This is a tough question, right? Because each scientist, each practitioner is biased toward their own training and interests. For example, a neurologist may care more about the impact of education and veteran status, but less about insurance parity or geographic residents. To me, the focus on social determinants, individual ones inherently misses part of the story here, although we must look at both societal and individual level determinants of health and their impact on mental health and other health outcomes, one must also seek to understand the complex synergistic or antagonistic interactions among different social determinants.

Aaron (05:17):

Your participants were drawn from the University of Michigan Health and Retirement Study, which you mentioned earlier. Why did you choose to look at that dataset and how did that choice impact your results?

Dr. Jester (05:25):

Well, the HRS, the Health and Retirement Study, has been around for decades. It's one of the most comprehensive epidemiological studies of aging in the entire world, and I chose this data set for its comprehensiveness in the measures and health statuses, but also because of its large sample of older adults who identify as Black, Hispanic or Latinx. One thing that should be noted though when we look at racial and ethnic differences and disparities in the HRS, is that there is some level of sampling bias. For example, Black adults were purposefully sampled from the southern portion of the United States and Hispanic or Latinx older adults were purposefully sampled from the western portion of the United States and are predominantly Mexican American. Also, 61% of our Hispanic or Latinx sample identified as immigrants migrants [inaudible 00:06:19] individuals who were born outside of the United States, not necessarily within the United States. And these individuals may differ for a variety of reasons, which is why nativity status was included in our study.

Aaron (06:30):

What could policymakers take from your work as they attempt to address issues that span the entirety of culture? I mentioned earlier that structural racism is something that is ubiquitous and large thing to get your hands on, but if we're looking at social determinants of health, how can policymakers use your work to further goals in improving that?

Dr. Jester (06:46):

It's a great question. I would suggest to start small. Public health policies that address social determinants of health have rarely if ever been accepted by society and other politicians outright. For instance, if you look at seatbelt laws, they were first proposed in a couple of different states. Then others became interested in how seatbelt laws could protect individuals driving? And after a while, every single state in jurisdiction took this up, just like smoking on airplanes as an example, or restrictions related to the COVID-19 pandemic. If you start small and you show meaningful changes, you're far more likely to get other states and jurisdictions on board. Making society a more equitable place is a marathon for us in public health, not a sprint.

Aaron ([07:35](#)):

What were the limitations of your study?

Dr. Jester ([07:37](#)):

Importantly, this paper was not longitudinal. We cannot claim causation. What we can say though is that social determinants were associated with the size of the disparity and specific determinants like education, income. Income and number of years worked, had sizable effects. I'll also note that as I mentioned previously, there's some level of sampling bias here when we're talking about individuals who identify as Black, Hispanic or Latinx. These findings are also affected by temporal sequences in the world by which education and educational policies change, for example. And so if we were to redo this analysis, let's say in 10, 20 or 30 years, the findings may be different. So we should understand that this is a snapshot of how social determinants are affecting psychological health and wellbeing, but it's far from conclusive.

Aaron ([08:35](#)):

What's next for your research?

Dr. Jester ([08:36](#)):

Well, I'll make a plug for one of my follow-up papers. It's going to be seeing the light of day very soon within this next week, and it's titled Impact of Educational Attainment on Time to Cognitive Decline Among Marginalized Older Adults. This study found that higher educational attainment appeared to protect adults from cognitive decline, and this is something that we know pretty well in the literature, but what we also found is that higher educated white adults received a greater benefit than higher educated Black or higher educated Latinx adults. So there's a number of potential explanations for these findings. One may be that Black and Hispanic or Latinx older adults received poor quality of education when they were children than did the white older adults due to legal segregation and Jim Crow era laws. And while Black and Latinx children have improved considerably in their educational achievement and occupational outcomes in recent years, disparities have not been eradicated from society. They continue to exist. So to my point earlier, this study shows that policies have deep meaningful impacts and that these impacts persist for decades and potentially across generations.

Aaron ([10:01](#)):

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

Dr. Jester ([10:03](#)):

Well, thank you so much, Aaron.

Aaron ([10:06](#)):

Up next, Dr. Ned Kalin. Dr. Kalin, welcome back to AJP Audio for July 2023.

Dr. Ned Kalin ([10:11](#)):

Thank you. It's a pleasure to be here.

Aaron ([10:12](#)):

Earlier in this episode, I spoke with Dr. Jillian Jester about social determinants of health and disparities in mental health between Black, white, Hispanic and Latin individuals in the US. What can you tell us about it?

Dr. Ned Kalin ([10:21](#)):

This is an important paper, Aaron, and a very important topic for our journal. It also dovetails with an overview by Alegria and all related to the social determinants of health as it relates to mental illness. This particular paper by Jester and colleagues identifies critical factors that are associated with mental health disparities in Black and Hispanic Latinx individuals. And in this particular study, over 11,000 individuals were assessed or sampled, and basically the question that was asked are, what are the differences between Black, Hispanic, Latinx and white individuals from the standpoint of scores of depression, their own measures of cognition and other measures of self-rated health? The question here really was to what extent do the social determinants of health? And in this case specifically, things that were looked at were education years, parents' education, number of years of worked, where individuals lived in the US, household income, health insurance, and so on.

([11:26](#)):

Whether those factors were important in determining differences between Black and Hispanic Latinx compared to white individuals in relation to these measures of depression, cognition and self-rated health. And not surprisingly and consistent with literature, the study basically showed that the Black and Hispanic Latinx individuals had higher levels of depression and other measures were changed as well, such as cognition and health compared to white individuals. That is to say that those measures were not as positive or as good.

([12:00](#)):

But what's really important about this study is that the researchers, by looking at all these other factors, determine that a large component of these differences in the depression and cognition and self-rated health measures were related to or due to probably disparities in the social determinants of health. Another way of saying that is that the apparent differences between these groups really is not related to race per se, but is related to the disparities or disadvantages that individuals have that are associated with being Black and Hispanic or Latinx in the United States. So very important study, nice editorial by Dr. Javier Escobar and William Vega from Florida International University, and also Dr. Carlos Jaramillo, from the University of Antioquia.

Aaron ([12:50](#)):

Next we have a paper from Dienel and colleagues looking at neuron or alterations in schizophrenia.

Dr. Ned Kalin ([12:55](#)):

So this also is an important paper and at a different part of the range or spectrum from the standpoint of the type of research that's performed in our field. The first study that I told you was at a social

demographic level, and now this study is at a microscopic molecular level. This study basically pursues work that has been done previously related to alterations in the prefrontal cortex, individuals with schizophrenia, and in particular, the brain region that's been most implicated or frequently implicated is the dorsal lateral prefrontal cortex. The part of the brain that has to do with executive function, involved with learning memory processes and planning.

[\(13:35\)](#):

And we've known for years that there are alterations in this part of the brain in relation to having schizophrenia or other psychotic disorders. The question becomes what causes those alterations? And now with the molecular tools that we have, we know that there are specific brain cells or neurons in this brain region that are altered in some ways and may be related to the symptoms of schizophrenia, especially the neurocognitive symptoms related to that are profound that are associated with schizophrenia and very involved with mediating some of the deficits and disabilities that schizophrenic subjects have in relation to cognition.

[\(14:12\)](#):

So this particular study, what was looked at were what are called inner neurons. These are GABAergic inhibitory neurons that play a role in modulating microcircuits in their prefrontal cortex specifically in many ways, by modulating the function of excitatory neurons or glutamate neurons. There are two subtypes of GABA neurons that were looked at. One was identified by measuring the calcium binding protein parvalbumin, the other one by measuring a peptide somatostatin. And it's known that these different subsets of interneurons have somewhat different functions and have different locations in the brain. There are many other types of interneurons as well. I'll mention the bottom line is what they found was is that the individuals with schizophrenia that were studied in this case, and that is the brains that were collected from them at postmortem, had alterations in these neurons, but the alterations were related to a decrease in the apparent production of these molecules, parvalbumin and soma somatostatin, and not a decrease in the number of brain cells or neurons per se.

[\(15:16\)](#):

Prior to this, it was unclear whether or not the deficits in these molecules was related to a reduction in the overall number of inhibitory neurons that were just not, and we wouldn't see as much of these proteins or whether or not the neurons seem to be somewhat intact, but were functioning in a different way, which appears to be the case. Now, this sounds like it's very detailed and maybe hard to understand from the standpoint it's relevance to clinical situations, but what's really important to keep in mind about this is this now points us to ideas about treatment suggesting that these neurons could be targeted and that they're functional. Next steps will over time, will engage different types of studies to attempt to modulate the function of these neuronal subtypes in animal models, which has already been done and perhaps even translating to this humans at some point in the distant future.

Aaron [\(16:08\)](#):

Switching gears again from Jacob and colleagues, we have a longitudinal study tracking individuals with small vessel disease and their risk for dementia.

Dr. Ned Kalin [\(16:15\)](#):

We've known them for years again, that there are generally two broad categories of dementia. One is a neurodegenerative type of dementia commonly, for example, Alzheimer's disease. Another type of dementia is related to vascular disease. People that have atherosclerotic vascular disease will

sometimes develop dementias that are related to hardening of the arteries and decreased blood flow in the brain. What's not clear is how people get there?

[\(16:42\)](#):

And it's also been known that what's called small vessel disease, cerebral vascular disease seems to accompany individuals that have dementia. So in this particular study, which was interesting, because it was done from a relatively large cohort of individuals from the Netherlands that were actually seen in a neurology outpatient clinic. MRI scans were obtained in these individuals. They had evidence of small vessel disease in the brain, but they did not have any evidence of dementia. And then these individuals were followed for 14 years to see what the outcomes were with the idea of being that this might be a way to build tools to predict who might get dementia and also what type of dementia if you have this predisposing factor in this case that was studied small vessel cerebrovascular disease.

[\(17:32\)](#):

So there are 503 individuals that were studied, and of those individuals, 108 of those individuals developed dementia. And of those individuals, 35% developed Alzheimer's disease, 32% developed vascular dementias, and 24% had a mixed form of dementia of the two types. What's interesting and maybe not surprising, is that the degree of small vessel disease in the brain at initial evaluation and also the change or the progression of that disease over time basically predicted the individuals that were more likely to have cerebral vascular types of dementia. Whereas other markers, for example, decreases in hippocampal volume and less white matter hyperintensities and less effective white matter tracts were associated with development of Alzheimer's disease. So the bottom line here is that this is a really important longitudinal study that applies to patients in the outpatient world demonstrating that we can make some predictions about what will happen over a long period of time in relation to initial MRI scans that look at structure in the brain, specifically looking at markers of cerebral small vessel disease.

Aaron [\(18:43\)](#):

And finally, we have a priority data letter from Joshi and colleagues looking at the sensitivity of schizophrenia biomarkers to medication burden.

Dr. Ned Kalin [\(18:50\)](#):

So this also is interesting and is clinically applicable. We previously published in the journal a paper by the same group demonstrating that the cumulative or the total amount of anticholinergic types of effects that an individual has from the different medications they take is related to cognitive alterations in schizophrenic patients. Now, this is important, because many of the medications that we use to treat schizophrenia and other psychiatric problems have anticholinergic effects. The conclusion from this earlier paper was is that we need to be really careful and also mindful of the total anticholinergic burden, if you will, that a patient is receiving, especially when they already have an illness that may be affecting their cognition like schizophrenia. And also suggested that some of the cognitive deficits in schizophrenia in part could be attributed to anticholinergic actions of the drugs that individuals are taking. This study builds on that and basically now uses that same population to look at whether or not the anticholinergic burden that an individual has also affects the neurophysiological substrate in the brain that is related to cognition.

[\(20:02\)](#):

And again, importantly, but not surprisingly, what these investigators found was that that the anticholinergic burden score that each individual had was related to a reduction in two different

neurophysiological biomarkers that are related, which have to do with auditory evoke potentials or auditory related potential. Now, these are measuring brain waves specifically in response to an auditory stimulus that is unexpected, and by so doing, we can then determine what are called a mismatch negativity signature of that. And also the P3A response, and again, I won't go into the details, but suffice it to say that these are neuro neurophysiological markers of brain activity in relation to background noise when a stimulus occurs, that's unexpected.

(20:50):

These have been linked to alterations in cognitive function in schizophrenic individuals, and what we find here in this study is that the amount of anticholinergic burden just as it impacts cognition, also impacts these neurophysiological markers or signals in a way that is detrimental or negative and is in a way that is also associated with schizophrenia. Again, building the case that the medications that we use sometimes actually can enhance some of the types of symptoms that individuals have, both at a noticeable cognitive level as well as when we look deeper into the brain. In this case with EEG measures, suggesting overall that it's really important for clinicians to be aware of individuals anticholinergic burden and to think about that in relation to some of the alterations and cognition that they see in the patients that they treat.

Aaron (21:40):

Well, Dr. Kalin, thank you once again for joining us.

Dr. Ned Kalin (21:42):

It's my pleasure. Thank you, Aaron.

Aaron (21:44):

That's all for a AJP Audio for this month, but be sure to check out our other podcasts suffered by the APA, including psychiatric services from Pages to Practice, Psychiatry Unbound, and others @psychiatryonline.org/podcasts or wherever you get podcasts. The views and opinions expressed in this podcast are those of the individual speakers only and do not necessarily represent the views of the American Psychiatric Association. The content of this podcast is provided for general information purposes only and does not offer medical or any other type of professional advice. If you're having a medical emergency, please contact your local emergency response number.