

Mental Disorders Predict Physical Disease and Vice Versa

Liam Davenport | December 14, 2016

There is a complex interrelationship between mental disorders and physical diseases such that, in some cases, mental disorders predict the later onset of physical disease and vice versa, new research shows.

In findings that could eventually lead to transdiagnostic therapies, investigators at the University of Basel in Switzerland discovered that, for example, having an affective disorder more than triples the risk for later arthritis and digestive diseases.

The investigators also found that having epilepsy and/or seizures increased the risk for later eating disorders by more than sixfold, and that heart disease predicted the onset of anxiety disorders.

The research is important not only with respect to better scientific understanding of the associations but also because the findings "underline the importance of moving our field forward to better integrate the treatment of mental disorders and physical illness," study investigator Gunther Meinlschmidt, PhD, told *Medscape Medical News*.

"There have been some efforts in this direction, but we need to push these further and bring in the policy makers to think even harder about what we can do and how to bring together these two still unfortunately rather separate worlds."

The study was [published online](#) November 21 in *PLOS ONE*.

To examine temporal associations between mental disorders and physical diseases, the researchers studied weighted data from the US National Comorbidity Survey Replication Adolescent Supplement that were collected between 2001 and 2004 on 6483 individuals aged 13 to 18 years.

The presence of lifetime mental disorder was determined using the fully structured World Health Organization Composite International Diagnostic interview, complemented by a self-administered questionnaire that was completed by the participants' parents or guardians.

The majority of the participants (51.24%) were male, aged 13 to 16 years (77.8%), and white (65.55%). With respect to parental education, 58.35% of the parents had received some college education or had graduated from college. The poverty index ratio was >6 in 33.51%.

Adjusted discrete-time proportional hazard models revealed that the onset of mental disorders predicted the onset of physical disorders in several instances. For example, any affective disorder preceded the onset of arthritis and diseases of the digestive system and significantly increased the risks for those disorders, at hazard ratios of 3.36 and 3.39, respectively ($P < .05$ for both).

In addition, any anxiety disorder preceded the onset of skin disease and increased the risk at a hazard ratio of 1.53 ($P < .05$). It was notable that any substance use disorder preceded the onset of seasonal allergy, but in this case the risk was lowered by a significant hazard ratio of 0.33 ($P < .05$).

There were numerous other temporal associations in which mental disorders predicted the onset of subsequent physical diseases, although the relationships were not significant.

Two-Way Relationship

Physical diseases also predicted the onset of subsequent mental disorders. Epilepsy/seizures increased the later risk for any eating disorder at a hazard ratio of 6.27 ($P < .05$). Heart disease increased the risk for later anxiety disorder and any mental disorder by hazard ratios of 1.89 and 1.39, respectively ($P < .05$).

Again, there were many nonsignificant associations between physical diseases and later mental disorders.

In terms of future research, Dr Meinlschmidt pointed out that the challenge when conducting this kind of analysis is that "even if you have a quite common mental disorder which will have perhaps a point prevalence of 5% and a common physical disease also with a point prevalence of 5%, you would expect far less than 1% of subjects concomitantly having both conditions; so to have substantial numbers of comorbid people, you really need large datasets."

He noted that they were reporting on the association between epilepsy and eating disorders, "both of which are quite rare, so if you really want to understand such a pattern in more detail — for example, to elucidate which kind of epilepsy plays a role — you should either have huge samples of patients or have to try recruiting patients specifically comorbid with these conditions; and then you can dig deeper."

Dr Meinlschmidt said that a "crucial question" is whether the links between mental disorders and physical diseases are causal. "One step forward with this publication, we think, is that we show a temporal association," he said.

"We know a temporal association is not a proof of causality, but it's something that raises your confidence towards causality. But to have really, really strong confidence in the evidence for causality associations, you need to understand what's going on when we modify one or the other condition.

"Of course, you can't make people sick, but you can assess people who just underwent treatment. If you look at the changes over time in terms of comorbidity in people who were successfully treated either for the mental or the physical condition, this will give you an even stronger confidence in terms of causality," said Dr Meinlschmidt.

The final piece of the puzzle will be to determine the mechanisms underlying the relationships between mental disorders and physical diseases, with the eventual goal being to combine therapies for both mental and physical disorders to create transdiagnostic treatments.

Dr Meinlschmidt explained that this would mean moving away from specific treatments for individual conditions toward therapies that can be applied to multiple disorders. "We would like to see if we can broaden this approach and try to establish treatments that capture the mental as well as the physical illnesses," he said.

"Triple Hit"

Commenting on the findings for *Medscape Medical News*, Greg Fricchione, MD, professor of psychiatry at Harvard Medical School and associate chief for psychiatry and medicine at Massachusetts General Hospital, Boston, described the study as "well done."

"The authors recognized the limitations, that it's retrospective and cross-sectional and, perhaps most importantly, it's built off of self-report from adolescence, and so there are all sorts of potential biases that float around, but it's an interesting topic area to address...and it hopefully will spur researchers to think creatively," he said.

Dr Fricchione said that the associations revealed by the study "fit with what we're understanding more and more about the common root for pretty much all medical and psychiatric noncommunicable diseases.

"By that I mean that we're thinking more and more these days about the fact that we human beings are susceptible to what some researchers call a 'triple hit.' So, we all have certain genetic vulnerabilities that can cause us to be vulnerable not only to medical illnesses but also to psychiatric illnesses, because they all kind of start in the same place.

"The second hit is if you're unfortunate enough to have lack of nurture and lack of care during periods of vulnerable brain development when you're a kid. So, child abuse, child neglect is going to change the way your brain works, and it's going to make you more vulnerable to these noncommunicable diseases.

"Then the third hit can happen any time of life, and this is all built on your stress response systems."

He said that in some people, these vulnerabilities can make it hard to "turn off" acute stress, which then becomes chronic stress, resulting in higher output of the sympathetic nervous system, the hypothalamic-pituitary-adrenal axis, and the inflammatory system.

Dr Fricchione added: "Even just plain old psychosocial stress, we now know, can cause an inflammatory response in your brain and in the rest of your body.

"So when people have psychosocial stress or chronic stress, or they've been abused or traumatized, or they have posttraumatic stress, then the chances are that they are experiencing a chronic inflammatory response, and that takes its toll on your organs and tissues over time."

Dr Fricchione agreed that transdiagnostic treatments could eventually emerge. "This is far in the future, but you could see a day when that could become reality," he said.

"That would mean recognizing that the root causes for all of these chronic, noncommunicable diseases, which are the main health challenges in the 21st century, lie in this relationship between the brain and the rest of the body when you are in the throws of chronic stress and distress," he added.

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