

Microplastics as a Top 10 Predictor of Chronic Disease: Who Said It and Is It True?

Who Made This Statement

The statement that "microplastics ranked in the top 10 predictors of chronic disease" was made by **Sai Rahul Ponnana**, a research data scientist at Case Western Reserve School of Medicine in Cleveland, Ohio ^{[1] [2] [3]}. Ponnana made this observation based on his research study that was presented at the American College of Cardiology's Annual Scientific Session (ACC.25) in March 2025 ^{[2] [3]}.

In his exact words, Ponnana stated: "When we included 154 different socioeconomic and environmental features in our analysis, we didn't expect microplastics to rank in the top 10 for predicting chronic noncommunicable disease prevalence" ^{[2] [3] [4]}.

The Research Behind the Statement

Study Design and Methodology

Ponnana's research examined the relationship between microplastic concentrations and chronic disease prevalence across 555 U.S. census tracts along coastlines and lakeshores between 2015 and 2019 ^{[1] [2] [5]}. The study analyzed data from the National Centers for Environmental Information, classifying microplastic concentrations in seafloor sediments from low (0 to 200 particles per square meter) to very high (over 40,000 particles per square meter) ^{[2] [5]}.

The researchers used machine learning models to assess the predictive power of 154 different socioeconomic and environmental factors, including microplastics concentration, median household income, employment rates, and particulate matter air pollution ^{[2] [6] [4]}.

Key Findings

The study revealed several significant correlations between microplastic concentrations and chronic diseases ^{[1] [2] [6]}:

- **Hypertension:** Positive correlation ($r = 0.24$) with microplastic concentrations
- **Diabetes:** Strong positive correlation ($r = 0.3$) with microplastic concentrations
- **Stroke:** Positive correlation ($r = 0.26$) with microplastic concentrations
- **Cancer:** Negative association ($r = -0.16$) with microplastic concentrations

Most importantly, microplastic concentration emerged as one of the top 10 predictors of chronic noncommunicable disease prevalence when compared against 154 other social and environmental factors ^{[1] [2] [3]}.

Is the Statement True?

Supporting Evidence

Yes, the statement appears to be true based on the available research evidence. Multiple independent sources confirm that Ponnana's study found microplastics ranking among the top 10 predictors when analyzing 154 different factors ^{[1] [2] [3] [5] [4]}.

The findings showed a dose-response relationship, where higher concentrations of microplastic pollution were associated with higher prevalence of chronic diseases ^{[2] [4]}. In terms of stroke risk specifically, microplastics concentration was comparable to established risk factors such as minority race and lack of health insurance ^{[2] [3]}.

Additional Corroborating Research

The claim gains credibility from complementary research presented at the same conference by different research teams ^{[7] [8]}:

- **Eesha Nachnani's study** found microplastics in 100% of analyzed blood samples and in 58%-100% of arterial plaques ^[7]
- Patients with microplastics in their plaques showed strong correlations with increased risk of heart attack, stroke, and death ^[7]

Broader Scientific Context

The finding aligns with a growing body of evidence linking microplastics to cardiovascular health risks ^{[9] [10] [11]}:

- A landmark study published in The New England Journal of Medicine found that patients with microplastics in carotid artery plaques had a 4.5 times higher risk of heart attack, stroke, or death compared to those without microplastics ^{[10] [11]}
- Research published in the European Heart Journal identified microplastics as potential novel cardiovascular disease risk factors ^[9]
- Studies have detected microplastics in multiple human organs and tissues, including the brain, heart, placenta, and bloodstream ^{[12] [13]}

Important Limitations

While the statement is factually accurate based on Ponnana's research, several important caveats should be noted ^{[2] [4] [14]}:

1. **Correlation vs. Causation:** The study demonstrates association but cannot establish that microplastics directly cause chronic diseases
2. **Observational Design:** More research is needed to determine causal relationships
3. **Geographic Limitations:** The study focused on coastal and lakeside communities, which may not be representative of all populations

4. **Emerging Field:** Research on microplastics and human health is still in its early stages

Conclusion

The statement that "microplastics ranked in the top 10 predictors of chronic disease" is **true and accurately attributed to Sai Rahul Ponnana** from his 2025 research study ^{[1] [2] [3]}. His findings represent significant initial evidence linking environmental microplastic pollution to chronic disease prevalence, though the researchers emphasize that more studies are needed to establish definitive causal relationships ^{[2] [4]}.

As Ponnana noted in his conclusions: "The environment plays a very important role in our health, especially cardiovascular health. As a result, taking care of our environment means taking care of ourselves" ^{[6] [4] [8]}.

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1. <https://adanews.ada.org/huddles/illuminating-relationship-between-microplastics-cardiovascular-diseases/>
2. <https://www.acc.org/About-ACC/Press-Releases/2025/03/25/10/19/New-Evidence-Links-Microplastics-with-Chronic-Disease>
3. <https://www.sciencedaily.com/releases/2025/03/250325120139.htm>
4. <https://www.powershealth.org/about-us/newsroom/health-library/2025/04/01/microplastics-linked-to-high-blood-pressure-diabetes-stroke>
5. <https://conexiant.com/cardiology/articles/microplastics-linked-to-cardiovascular-disease/>
6. <https://www.gastroenterologyadvisor.com/news/microplastic-exposure-tied-to-chronic-disease-prevalence/>
7. <https://www.acc.org/Latest-in-Cardiology/Articles/2025/03/25/14/24/Microplastics-Possibly-Associated-With-Chronic-NCDs-acc-2025>
8. <https://www.labmanager.com/new-evidence-links-microplastics-with-chronic-disease-33793>
9. <https://academic.oup.com/eurheartj/article/45/38/4099/7750375>
10. <https://www.health.harvard.edu/heart-health/microplastics-in-arteries-linked-to-heart-disease-risk>
11. <https://pubmed.ncbi.nlm.nih.gov/38446676/>
12. <https://news.stanford.edu/stories/2025/01/what-s-the-deal-with-microplastics-the-material-that-never-goes-away>
13. <https://www.nature.com/articles/s41591-024-02968-x>
14. <https://www.jacc.org/doi/10.1016/j.jacadv.2024.101510>