Vaccines Don't Cause Autism: The Evidence, Explained

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Autism is a developmental disability that affects how people think and experience the world. Autism is a normal part of human diversity. Some autistic people may need a lot of support, while others will need little to none. A fraudulent study published in 1998 (and later retracted) has made some parents and caregivers think there is a link between vaccines and the development of autism. However, many peer-reviewed studies evaluating thousands of children have found no scientific evidence of a connection. What we do know is that autism is influenced by a complex mix of genetic and environmental factors that begin before birth.

What's behind the vaccine-autism myth?

The myth linking vaccines to autism began in 1998 with a fraudulent study that claimed the MMR vaccine caused autism. The study was later retracted, and its author lost his medical license. Despite widespread media coverage, no other research has supported this claim. In fact, many studies conducted since have found the opposite: vaccines don't cause autism. After nearly 30 years, there's still no evidence that vaccines cause autism.

What does the research tell us?

Scientific consensus is formed from a large body of evidence from multiple studies that all point to a similar conclusion. A single study alone does not warrant consensus. Consensus on the issue of vaccines and autism comes from over 20 major studies with diverse methodologies that involved millions of children worldwide. This large body of evidence conclusively shows no correlation between vaccines and autism. The following information breaks down some different types of scientific studies conducted and summarizes their findings. Let's take a look!

Systemic Reviews and Meta-Analyses

A systemic review summarizes existing research. Strict criteria are determined prior to the review to eliminate bias and to ensure the study can be replicated. Systemic reviews may also utilize what are known as meta-analyses. Meta analyses combine data from multiple studies to come to a conclusion. There is a standardized checklist that is used in conducting meta analyses, which determines the quality of individual studies. Poor quality studies are given less weight than high quality studies in determining a final conclusion.

Multiple systemic reviews and meta-analyses consisting of hundreds of studies in millions of children have been conducted. None of them found a link between vaccines (including MMR) and autism.

Ecological Studies

Ecological studies observe a group of people within a specific population. They examine risks like environmental exposures, lifestyle, or genetic traits to identify population level risks for health conditions and what may cause them.

Many ecological studies have been conducted. None point to a correlation between MMR vaccines and autism.

Case-Control Studies

In case-control studies, researchers identify a group of people with the health condition they are studying and another group who do not have the condition (called a "control group"). Scientists examine both groups to identify differences between them to help determine causes of the condition.

Six case-control studies conducted between 2004 and 2014 included thousands of children with and without autism found no association between MMR vaccines and autism.

Cohort Studies

In a cohort study, a group of people are followed over a period of time. Participants have something in common, like their age or a specific disease or diagnosis. Throughout the study, researchers collect information on factors like diet and lifestyle. This allows them to identify patterns that can determine things like risk factors for disease. Cohort studies are useful to help experts make recommendations to others.

More than half a dozen cohort studies have been conducted on more than 3 million children. None of them point to any evidence that links MMR vaccines to autism. Additional cohort studies which looked at influenza and pertussis vaccinations were also conducted. These studies also show no increased risk of developing autism.

Two other types of studies worth mentioning:

Randomized Control Trials (RCTs)

RCTs test the efficacy of treatments or interventions. Participants are randomly assigned to one of two groups: the group receiving the treatment and the group that does not receive the treatment (control group). Sometimes the control group receives a placebo treatment. RCTs can be blind studies where participants don't know if they are given the treatment or placebo. This helps eliminate bias.

Scientists do not conduct RCTs to test vaccines. It is unethical because vaccines would be withheld from participants in the control group, potentially leaving them vulnerable to disease and possibly even death.

Case Series

Case series research groups people with a similar condition. Case series lack a control group. They are frequently used to help determine a hypothesis or to propose possible associations to study further. The lack of a control group makes it difficult to rule out bias.

Case series are often misused to suggest false associations. This was the case in the fraudulent study about MMR vaccines and autism from 1998.

The bottom line? Vaccines are safe.

The science on vaccines and autism is clear. So are the lifesaving benefits of vaccines like MMR. Parents and caregivers can be confident in the decision to vaccinate their children, protecting them from serious diseases.

This information has been adapted from the article, "A Comprehensive Review of the MMR Vaccine Studies: Many Years and Millions of People Reveal NO Link to Autism" published in Unbiased Science, March 19, 2025.