

Baldness/Severe COVID Study Coughs Up a Big Hairball



By Josh Bloom — June 9, 2020

Are bald men more likely to get severe COVID-19? There are more than 30,000 news stories about this, almost all of which without question, accept the findings of a flawed epidemiological study from Spain. Is this a valid conclusion? Let's ask a biostatistician.



You Know Who You Are.

A former coworker from Wyeth, let's just call him Dr. L., is not blessed with much luck (or much hair) on a good day. As such, he is rather concerned about contracting COVID, and reading my constant blather about the virus isn't helping. Dr. L. just sent me this email after he read a [Forbes article](#) [1]:

Oh for god's sake...

Bald Men At Higher Risk Of Severe Coronavirus Symptoms

Hormones that cause male pattern baldness could increase risk of severe Covid-19.

To shut him up prevent him from being unnecessarily concerned I took a quick look at the [research letter behind the article](#)

[2], figuring that it wouldn't take long to debunk this one. At ACSH we are perpetually drowning in "questionable" epidemiological studies, so it's not that hard to spot the common flaws found in most of them. This one was no exception.

The good news is that while the lack of hair may make your head look like a casaba melon, there is no evidence here that it will have an impact on the severity of your COVID.



Worry-free, thanks to ACSH

We are also fortunate to have the supremely awesome ($p < 0.0001$) Dr. Stan Young, an expert biostatistician, as a member of our Scientific Advisory Board. Stan is patient and helpful, even with nitwits such as myself, who may have only a basic understanding of statistics. He is also not afraid to speak his mind:

"Claims from epidemiology studies fail to replicate over 90% of the time so garbage in, garbage out."

Dr. Stan Young, private communication, 12/23/19

We'll hear more from Stan later, but first, an amusing observation about one of the graphs in the paper. Figure 1 shows the characteristics of the 122 men who were admitted to three hospitals in Madrid for COVID. Of the 122, 96 were bald. Take note of the ages in the three groups of men and the degree of hair loss. Something ain't right.

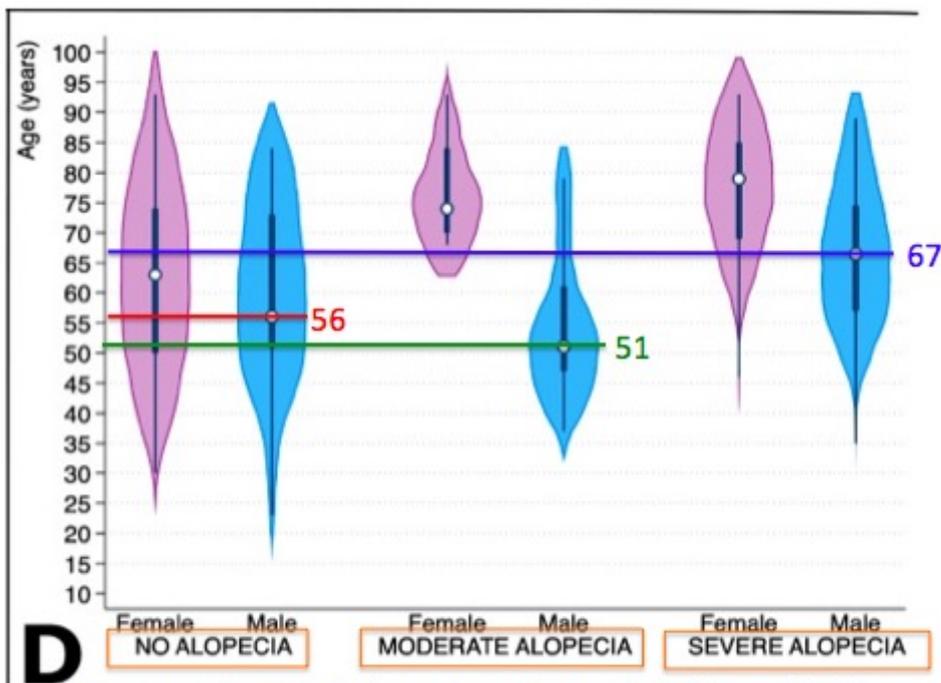


Figure 1. Epidemiological characteristics of 175 individuals hospitalized due to severe COVID-19 from March 23, 2020 to April 12, 2020.

Let's take Figure 1 *literally*. Doing so we can draw some pretty insane conclusions about aging and baldness. Here are the three groups of men (I've intentionally omitted the women).

1. Men who were not bald - Median age was 56 (red)
2. Men who were moderately bald - Median age was 51 (green)
3. Men who were completely bald - Median age was 67 (blue)

Conclusion: Taken at face value these data show that men who were moderately bald at age 51 proceeded to grow all of their hair back by age 56. Then all of it fell out again between ages 56-67. This is, by any measure, a biologically implausible situation.

Let's look at it in graphical form:



Figure 2. The atypical chronology of hair growth and loss based on Figure 1.

Now, let's see what Dr. Young has to say.

- "Carefully look at the black vertical lines in each bubble. Look at male bubbles. You will note that the line is thicker near the average value. It can be taken as "the true mean values are within the range of the thick line." Using that thinking *the ages of the men in the three groups are sort of the same*

."

- "We do know that the virus loves to kill the old. No mystery there. What we *do not know* from this short note, is how many other characteristics they looked at. Testosterone goes down with age. The immune system declines. Vitamin D declines. The list is quite long. There are lots of age-related variables."
- "Even if the correlation is sound, there are so many other age-related variables, *this paper does not narrow down anything.*"
- "We also don't know how many other age-related variables they looked at but did not mention. This is an example of *multiple testing* and *multiple modeling mistakes*, and *p-hacking*, all combined to focus on this one variable."

"It comes across as a stupid paper, riding the coattails of the hysteria."

In other words, it's like so many other "questionable" epidemiological studies; authors can pick and choose which variables to include and which to leave out in order to make the conclusion fit the headline.

In the absence of reliable data that provides a real association between baldness and COVID severity, there is no need to lose sleep over this. Or your hair.

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Links

[1] <https://www.forbes.com/sites/marlamilling/2020/06/06/bald-men-at-higher-risk-of-severe-coronavirus-symptoms/#654f533529e4>

[2] <https://www.jaad.org/action/showPdf?pii=S0190-9622%2820%2930948-8>