Men, The Truly Weaker Sex

By Chuck Dinerstein, MD, MBA — March 11, 2020

Women's differences from men are often seen in the ultimate health outcome: aging and death. While women on average live longer, is it because they choose healthier lifestyles? Or do their genes give them an advantage? Let's explore.

Women have two X chromosomes (homogametic sex), while men have an X and a Y (heterogametic sex). The “unguarded X hypothesis” suggests that as our chromosomes age, men don’t have a backup plan when their X begins to falter, having a Y leaves that X unprotected. Alternatively, there is the “toxic Y hypothesis,” where the Y acts as a bit of a rogue adversely altering gene expressions and mutations. A group of researchers considered the life-span across all the species where two genes created homogametic or heterogametic genders. Their data set included 229 species, 99 families, 38 orders and eight classes [1]

Across a wide range of species including us mammals, insects, reptiles, and ray-finned fish (fish whose fins are supported by a bony infrastructure), the homogametic gender on average lives 17.6% longer. As it turns out, in birds, moths, and butterflies, the male is homogametic (noted as ZZ), and the female is heterogametic (ZW). Again, the homogametic gender lives longer. So it seems that the unguarded X hypothesis contains some truth.
The second finding by the researchers suggests a limit to the effect of an unguarded X.

“…that when males are heterogametic sex they die 20.9% earlier than their female counterparts, but when females are the heterogametic sex, they die only 7.1% earlier than their male counterparts.”

Why might that be? The researchers suggest that those lonely Ys, and for the birds, their W genes are “more degraded” than those lusty Xs and Zs. Or that estrogen is protective of telomere length, or that the “higher mortality in males [is a] …side effects of sexual selection” – wooing and mating takes a lot out of us. In any case, an unguarded X fails to explain everything.

While we are tossing candidate theories into the ring, might I suggest that the 13.8% higher mortality for heterogametic males than heterogametic females has to do with estrogen, testosterone, and their effect on lifestyle? Men are less risk-averse; they take more chances, and perhaps that is fueled, in part by the testosterone milieu that bathes their brains. Women, and yes, I recognize the generalization, maybe a little more risk-sensitive. Women are less likely to smoke than men, less likely to be overweight (although they are more likely to be obese), men tend to drive faster and are involved in many more high-speed car accidents.

Once again, it is not a question of nature or nurture, but how much do genetics and lifestyle contribute and interact in our life-span. It seems that in reality, at least for us mammals, men are the weaker sex.

[1] A refresher, the classifications are, Domain, Kingdom, Phyla, Class, Order, Family, Genus, Species

Source: The sex with the reduced sex chromosome dies earlier: a comparison across the tree of life

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