Patently underrepresented: Why humankind needs more female inventors

New research in *Science* finds that patents filed by female inventors are more likely to focus on women's health, but that relatively few women are filing patents. The paper points to untapped opportunities for innovation.

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- **U.S. biomedical patents with all-female inventor teams are 35% more likely to focus on women's health than all-male teams, new research finds.**
- **In 1976, just 6% of biomedical patents came from women-led teams while the figure grew to 16% in 2010. There is evidence that this 10 percentage**

point increase has resulted in significantly more innovations in women's health in recent years.

- **This new research marks an important step towards showing *how* labor-market inequality can lead to product-market inequality.**

Why are women's diseases, women's anatomy or women's needs more generally overlooked by inventors? New research points to gender imbalance in R&D having repercussions for who is benefitting from inventions.

Analyzing more than 430,000 U.S. biomedical patents filed between 1976 and 2010, Rembrand Koning of HBS, Sampsa Samila of IESE and John-Paul Ferguson of McGill University find significant evidence that *who* is doing the inventing affects *what* is being invented, and they point to the missed opportunities that this pattern reveals. Their paper "Who do we invent for? Patents by women focus more on women's health, but few women get to invent" has been published in the journal *Science*.

Anecdotal evidence abounds of advances by female inventors. For example, the entrepreneur Surbhi Sarna has drawn from her own ovarian cancer scare to invent a better cancer-detection tool. Another, Dr. Patricia Bath, has invented a more precise treatment for cataracts, which affect women more often than men. This new research backs these up with systematic data analysis, finding that all-female teams of inventors are 35% more likely to focus on women's health than all-male teams are. Interestingly, male inventors are less likely to focus their patented innovations on either men's or women's health issues when compared with their female counterparts.

While inventor teams with some women also follow a sex-focus pattern, the pattern is "strongest for all-female invention teams, holds over decades, and is present even within narrow areas of invention," as the co-authors summarize. This latter point "suggests that the female inventor-invention link is both the result of women working in more female-focused research areas [e.g., gynecology] and female inventors identifying opportunities to invent for women regardless of the area in which they work [e.g., ocular surgery procedures]."

Today only about 13% of U.S. patent inventors are women. Yet this study found marked progress over the years: in 1976, just 6.3% of biomedical patents came from women-led teams while the figure grew to 16.2% in 2010. There is evidence that this 10 percentage point increase has resulted in significantly more innovations affecting women's health.

There's also evidence that women, who currently make up about 35% of STEM scientists,

aren't more plentiful in the ranks of patented inventors for a few reasons -- including gender bias in the labor market and in decisions regarding which R&D opportunities are deemed worth pursuing by managers.

"Effectively, the results are showing that labor market inequality could lead to product market inequality," Samila explains. "In other words, discrimination in the labor market is not just an issue for the individuals affected, but it affects the entire society due to the absence of the contributions of those who were discriminated against."

The good news is that lowering barriers to disadvantaged groups should help boost innovation and economic growth. "There may still be many untapped market opportunities to invent for women, opportunities that could in turn improve women's health," the co-authors state.

So, who will make the next discovery to make pregnancies safer or improve heart attack detection in female patients? Giving women full access to the pursuit of innovation can benefit humankind as a whole. We shouldn't have to wait for the next Curie.

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