The catch 22 of gender differences in research funding

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The Research Investments in Global Health study (ResIn)

What is it
- ‘Research on research’
- Two separate collection of research awards - infection and cancer
- Each award is individually categorised to allow analyses of funding trends across specific areas and over time
- For example - how much is spent on research for HIV, tuberculosis and malaria? Does pneumonia appear to be underfunded compared to its burden of disease?
- Within these datasets, we have the name of the principal investigator (PI)…
Total research investment (US$ millions) for malaria sourced per country for 1997–2013
Head et al, Lancet Global Health, 2017

Sizing Up Pneumonia Research (investments across the G20 between 2000 and 2015)
Brown and Head, 2018
Differences in research funding by gender of principal investigator

Case study 1 – infectious diseases
Case study 2 - cancer
Case study 1 – UK infectious disease research

**Dataset**
- Public or philanthropic awards to a UK institution 1997-2010 for infectious disease research
- Included 6052 awards covering £2.3 billion of research investment

**Publication**
Head MG, Fitchett JR, Cooke MK, et al
Differences in research funding for women scientists: a systematic comparison of UK investments in global infectious disease research during 1997–2010
Case study 1 – UK infectious disease research

Headline figures

6052 awards
4357 (72%) awarded to men and 1695 (28%) awarded to women

By total funding, £1.8 billion (79%) awarded to men, £0.5 billion (22%) to women.

Median award size – (1.4 fold difference, P<0.001)
Men - £179 389
Women - £125 556

Mean award size (1.4 fold difference)
Men - £409 910
Women - £288 011
Median investment over time awarded to male and female PIs
Proportion of investment over time awarded to male and female PIs
Total investment by research pipeline awarded to male and female PIs
Case study 2 – UK oncology research

**Dataset**
- Public or philanthropic awards to a UK institution 2000-2013 for cancer-related research
- Included 4186 awards, sum total £2.33 billion of research investment

**Publication**
Zhou CD, Head MG, Marshall DC, et al.
A systematic analysis of UK cancer research funding by gender of primary investigator
*BMJ Open* 2018;8:e018625. doi: 10.1136/bmjopen-2017-018625
Case study 2 – UK oncology research

**Headline figures**

4186 awards
2890 (69%) awarded to men, 1296 (31%) awarded to women
By total funding, £1.8 billion (78%) awarded to men and £0.5 billion (22%) to women.

*Median award size – (1.3 fold difference, P<0.001)*
Men - £252 647  
Women - £198 485

*Mean award size (1.6 fold difference)*
Men - £630 324  
Women - £394 730
Sum total of annual UK cancer research funding by gender
Proportion of annual UK cancer research funding by gender
## Differences in investment levels for selected cancer types

<table>
<thead>
<tr>
<th>Type of cancer</th>
<th>Fold difference in sum investment</th>
<th>Fold difference in median award size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men’s health</td>
<td>14.1</td>
<td>2.1</td>
</tr>
<tr>
<td>Women’s health</td>
<td>1.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>9.9</td>
<td>2.9</td>
</tr>
<tr>
<td>Breast cancer</td>
<td>1.6</td>
<td>1.4</td>
</tr>
</tbody>
</table>
Conclusions and discussion

We do NOT assess for gender bias

Describe ‘clear and consistent’ differences in award distributions, and quantify changes (or not) over time with large cross-disciplinary datasets

Provides empirical evidence to underpin and inform discussions, and support other quantitative and qualitative data

Differences explained in part by a) numbers of those who apply, and b) senior researchers will apply for bigger awards, and they are overwhelmingly male...

However, differences in mean and median award size awarded to male and female researchers add further context and are still concerning

Also of concern is the consistent ‘gender gap’ over time (the 80/20 split)
So thus the catch 22

There are not enough female professors (and equivalent senior posts)

Thus women do not tend to apply for the big grants

However, if female scientists are not able to reach senior positions in large enough numbers, this obvious gap in funding distributions will continue

Your catch 22...
Further reading and what’s next

The Conversation article (2017)

https://figshare.com/articles/_/5463502

Ongoing work to categorise around 80 000 awards related to infectious disease research across the G20 nations, 2000-2017. (Expect publication in 2019)
Acknowledgements – numerous co-authors, collaborators, funders who provided data

For more about these papers and the ResIn study http://researchinvestments.org/publications/

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