Low dose aspirin increases live birth rate differentially along socioeconomic status

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Background & Hypothesis

- Low socioeconomic status (SES) is associated with adverse pregnancy outcomes such as preterm birth[1] and low birth weight[2]
- Low SES women may also have greater difficulty achieving pregnancy[3] although mechanisms for this phenomenon are not known
- Low-dose aspirin (LDA) has been shown to increase pregnancy and live birth rates in women with elevated inflammatory markers
- Low SES is associated with chronic, low-level inflammation and inflammatory markers[4]:

Hypothesis: Low-dose aspirin (LDA) may increase live birth and pregnancy rates in low SES women

The EAGeR Study Design

- Multisite, U.S., block-randomized, double-blind, placebo-controlled trial
- 1228 women, 18-40 years old, 1-2 prior pregnancy losses
- Enrolled preconception; followed up to 6 menstrual cycles or 36 weeks' gestation (if pregnancy achieved)
- LDA (81mg) or placebo for up to 6 menstrual cycles attempting pregnancy, until 36 weeks' gestation (if pregnancy achieved)
- Intention-to-treat risk ratio, 95% CI among women with complete outcome data
- Analysis was stratified by socioeconomic measures of income and a combined grouping of education and income:
  - **Income:**
    - **low (<$40,000)**
    - **mid ($40,000-$100,000)**
    - **high (>$100,000)**
  - **Education-Income:**
    - **low-low (≤Associates' degree & <$75,000)**
    - **low-high (≤Associates' degree & ≥ $75,000)**
    - **high-low (≥Bachelor's degree & <$75,000)**
    - **high-high (≥Bachelor's degree & & ≥ $75,000)**

Results:

Table 1. Risk Ratios (95% CI) for LDA vs placebo stratified by Income

	Clinical Pregnancy	Live Birth
Low Income	1.04 (0.89,1.21)	1.03 (0.84,1.25)
Mid Income	1.1 (0.95,1.28)	1.02 (0.84,1.24)
High Income	1.14 (1,1.3)	1.23 (1.03,1.45)

- In the high income group, **LDA increased clinical pregnancy rate by 14%** and **increased live birth rate by 23%** compared to placebo

Table 2. Risk Ratios (95% CI) for LDA vs placebo stratified by Education & Income

	Clinical Pregnancy	Live Birth
Low-Low	1.22 (1.02,1.46)	1.23 (0.99,1.54)
Low-High	0.98 (0.82,1.17)	1.09 (0.87,1.36)
High-Low	0.94 (0.78,1.13)	0.89 (0.7,1.13)
High-High	1.23 (1.06,1.42)	1.17 (0.97,1.41)

- Women in the mixed SES groups (low-high and high-low) achieved clinical pregnancy rates of 64-72% whereas the low-low and high-high SES groups had significantly increased pregnancy rate in the LDA groups (low-low groups had 56% to 68% & high-high had 63% to 77%)

Conclusion

- In contrast to our hypothesis, high SES women consistently benefited from LDA as demonstrated by increased pregnancy and live birth rates compared to placebo.
- Low SES women had a less consistent effect
- In mid-income and SES groups with discordant levels of income and education (ie, low-high, high-low), there was no significant benefit of LDA.
- Given that both the high SES and low SES groups demonstrated some benefit from preconception LDA, more mechanisms such as underlying health risk factors and medication compliance, may also be contributing to these effects

References

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