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Social maternal risk factors associated with adverse pregnancy outcomes among women with HIV in the multi-country IMPAACT PROMISE Trial

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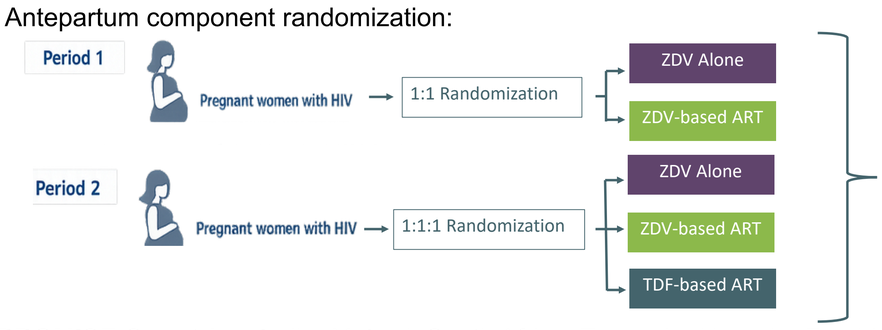
BACKGROUND

- Pregnant women with HIV are at heightened risk for adverse pregnancy outcomes (APOs), yet few data exist on the social maternal factors associated with higher risk of APOs.
- We **evaluated** the association between **social maternal factors** and **APOs** among women randomized in the antepartum component of the IMPAACT PROMISE (Promoting Maternal and Infant Survival Everywhere) 1077BF/FF Trial.

PROMISE STUDY

Antepartum component randomization:



PROMISE Countries: India, Malawi, South Africa, Tanzania, Uganda, Zambia, Zimbabwe

HIV status disclosure to household members, higher maternal education, and no history of alcohol use were associated with *lower risk* of certain adverse pregnancy outcomes among pregnant women with HIV

METHODS

- Examined **associations** between social maternal factors (Table 1) and APOs (Table 2) using **Poisson regression models** adjusted for maternal baseline covariates (randomization arm, age, CD4 cell count, viral load, and fetal gestational age).
- Point estimates for the adjusted **Risk Ratio (aRR)** and 95% confidence intervals (CIs) are presented.

RESULTS

- Of 3,537 women enrolled in the AP Component, APO data were available for 3,446 women.
- **HIV status disclosure** to any household member was associated with **lower risk in congenital anomalies** (aRR=0.47; 95% CI: 0.35, 0.62), as was disclosure to husband/partner (aRR=0.41; 95% CI: 0.29, 0.57).
- Compared to non-completion of primary school, **completion of secondary school** was associated with **lower risk of congenital anomalies** (aRR=0.62; 95% CI: 0.42, 0.94) and **preterm birth** (aRR=0.69; 95% CI: 0.51, 0.92).
- Women who had **previous pregnancies** (gravida of 2, 3, or ≥4) had a **decreased risk for low birth weight and composite APOs** compared with women in their first pregnancy.
- Any history of **prior alcohol use** was associated with increased risk of **pregnancy loss, congenital anomalies,** and **composite APOs**, but decreased risk of preterm delivery and low birth weight.
- There were no consistent patterns in risk of APOs for major source of income, pooled household income, food insecurities, general health, or history of pregnancy complications.

TABLE 1. Baseline Characteristics

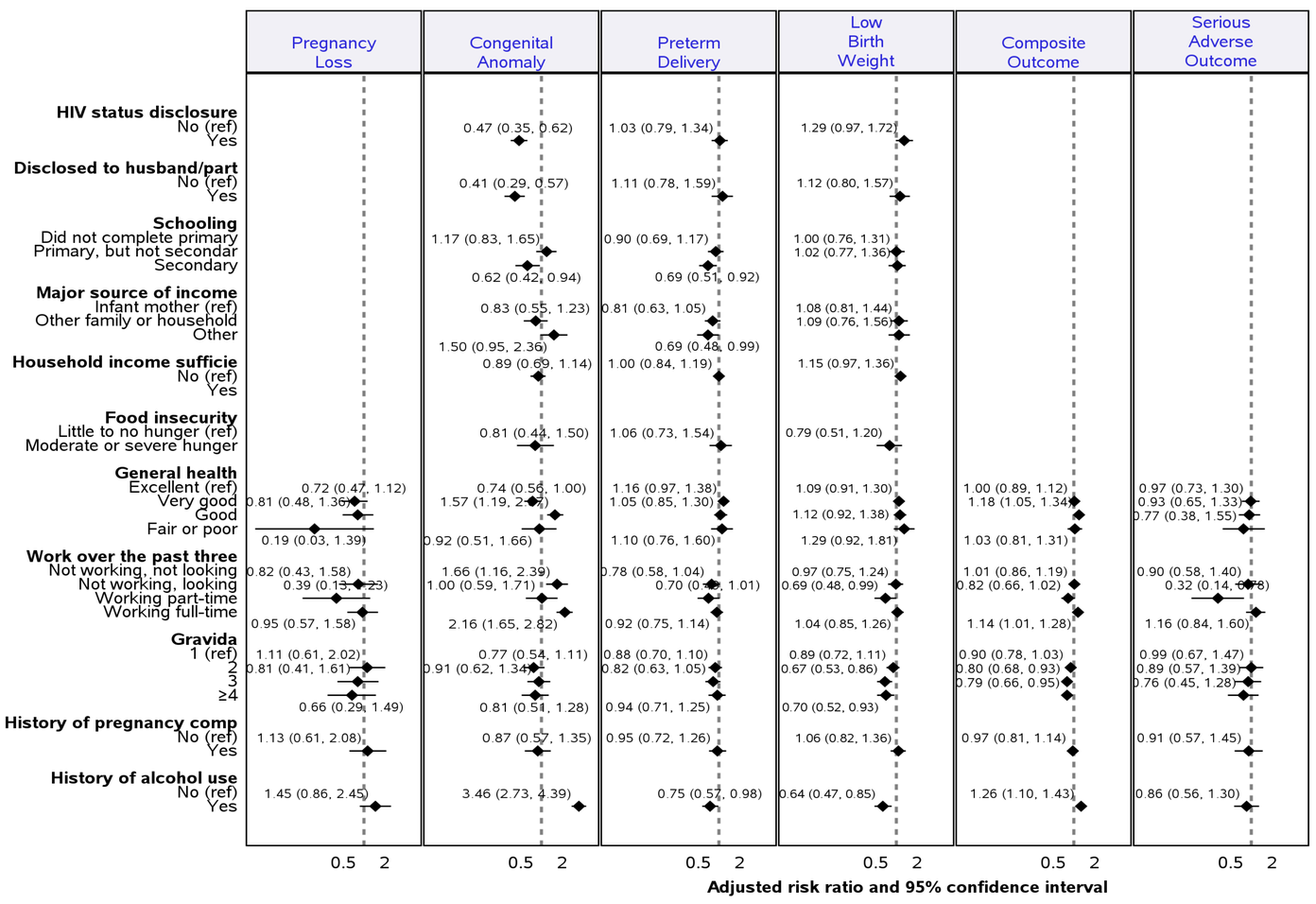
Characteristic	Total (N=3537)
Demographic and Clinical Factors	
Age (years) Median (Q1, Q3)	26.5 (23, 30)
WHO Clinical Stage I	3433 (97%)
HIV RNA Viral Load <100,000 copies/mL	701/3531 (93%)
Fetal Gestational Age At Entry	25.6 (21.0, 30.3)
Social Maternal Factors	
HIV Status Disclosure	2694/3047 (88%)
Years Attended School	10 (7, 12)
Sufficient Household Income	1426/2928 (49%)
Little to No Household Hunger	3012/3160 (95%)
Gravida	3 (2, 3)
History of Pregnancy Loss	587/2938 (20%)
History of Alcohol Use	415/3534 (12%)

TABLE 2. Adverse Pregnancy Outcomes

Adverse Pregnancy Outcome	Total (N=3537)
Pregnancy loss[1]	100 (3%)
Congenital anomaly[2]	268 (8%)
Major congenital anomaly[2]	14 (<0.5%)
Preterm delivery (<37 weeks)[2]	557 (17%)
Very preterm delivery (<34 weeks)[2]	103 (3%)
Low birth weight (<2500 g)[3]	558 (17%)
Very low birth weight (<1500 g)[3]	40 (1%)
Composite outcome[4]	1127 (33%)
Serious adverse outcome[5]	219 (7%)

[1]Among known pregnancy outcomes (n = 3446)
[2]Among live births (n = 3354); congenital anomalies were based on visual ascertainment during newborn physical exam.
[3]Among live births, with known weight at birth (n = 3228)
[4]Composite outcome includes preterm delivery, low birth weight, stillbirth, spontaneous abortions, and congenital anomaly
[5]Serious adverse outcome includes very preterm delivery, very low birth weight, spontaneous abortion, stillbirth, and major congenital anomaly

FIGURE 1. Forest Plot of Adjusted Risk Ratios of Adverse Pregnancy Outcomes by Risk Factor



Footnote: As HIV status disclosure, socioeconomic factors (including, schooling, work, family income), and food insecurity questionnaires were collected 6 weeks postpartum (i.e., after the outcome measures occurred), results should be interpreted with caution.

CONCLUSIONS

- **HIV status disclosure, higher maternal education, and no history of alcohol use** were associated with **lower risk of certain APOs** among pregnant women with HIV.
- Disclosure could serve as a marker of psychosocial stress and/or social support, which could help identify subsets of women with HIV who might benefit from additional psychosocial support during pregnancy.

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