Improving Estimates of Prenatal Alcohol Use in Brazzaville, Congo

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Background

Birth Rate: 36 per 1000 (30th Highest)
Population Reference Bureau, 2011

Premature Birth Rate: 167 per 1000 (2nd Highest)
March of Dimes, 2012

Infant Mortality: 74.2 per 1000 (17th Highest)
CIA, 2012

Prenatal Alcohol Use: 23.3% of Pregnancies
Williams et al, 2013

Prenatal Smoking: 5.5% of women
Williams et al, 2013

Standard Definition of "1 Drink": 12 fluid oz. 5% ABV beer (U.S.); No known standard in Brazzaville, Congo.

Methods

Population: 1283 urban dwelling pregnant women, 18 years of age and older, screened at 10 clinics in Brazzaville, Congo. Study participants were approached during regular prenatal care visits.

Data Collection: Trained local screeners utilized the 1-Question Screen, a validated, in-office method to identify self-reported prenatal alcohol use. Participants were asked to describe "1 drink" as a part of this study.

Estimation Formulas:

Estimated Total Drinks = (Reported Drinks per Day x Drinking Days per Week) x Gestational Weeks

Estimated Total Binges (If Reported Drinks per Day >3)= Drinking Days per Week x Gestational Weeks

Adjustment Formulas:

Adjusted Number of Drinks per Day= Reported Drinks per Day x 1.831592

Adjusted Estimated Total Drinks= (Adjusted Number of Drinks per Day X Drinking Days per Week) x Gestational Weeks

Adjusted Estimated Total Binges (If Adjusted Number of Drinks per day >3) = Drinking Days per Week x Gestational Weeks

Definitions

Binge Episode: 3 or more drinks at a time (May et al, 2004)
No Risk Pregnancy: No reported alcohol use or quit before pregnancy
At Risk Pregnancy: Quit using alcohol upon pregnancy recognition
High Risk Pregnancy: Continued using alcohol after pregnancy recognition

Goals

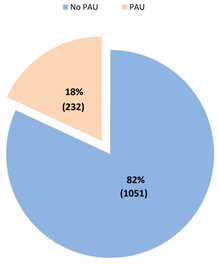
1) Provide an additional estimate of PAU in this population.
2) Provide an estimate of adjusted number of alcoholic drinks consumed by pregnant women in Brazzaville, Congo.
3) Provide an estimate binge episodes in pregnancy by pregnant women in Brazzaville, Congo.

Results

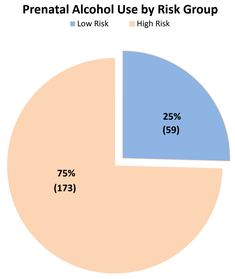
Demographics

Variable	No Risk (n=1051) Mean (sd)	At-Risk (n=59) Mean (sd)	High Risk (n=173) Mean (sd)	Total Population (n=1283) Mean (sd)
Age	25.63 (4.77)	25.33 (4.85)	25.81 (4.76)	26.64 (4.77)
Week in Preg	26.21 (5.68)	26.20 (6.22)	25.58 (5.49)	26.13 (5.68)
Weight (kg)	58.39 (5.34)	57.37 (5.37)	58.29 (5.41)	58.33 (5.35)

Prenatal Alcohol Use in Population



Prenatal Alcohol Use by Risk Group



Comparison of "1 Drink"

1 Standard Drink:
12 oz. beer

1 Drink reported by participants:
65 cL beer

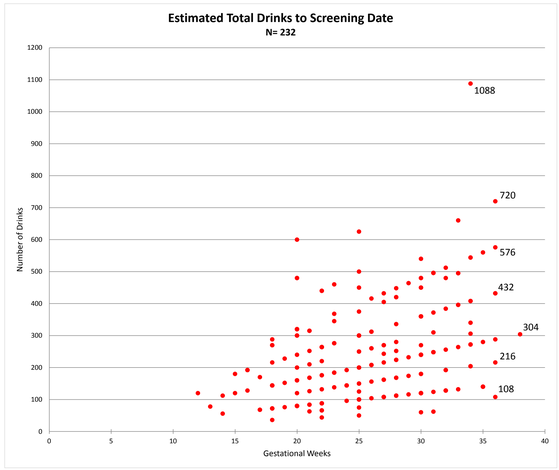
100% of women reporting PAU considered a 65cL beer to be "1 Drink."

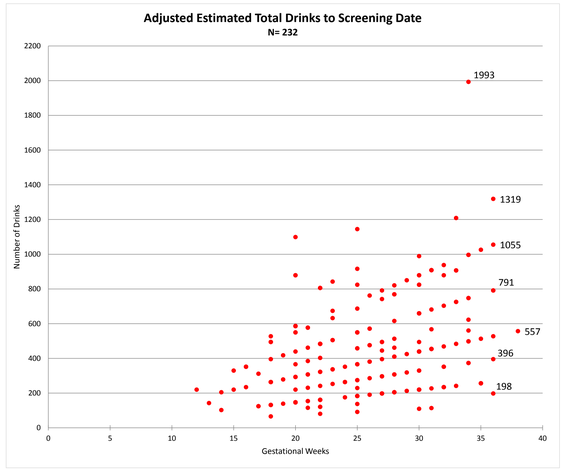
The reported "1 Drink" has 9.97 more ounces than a standard 12 ounce beer.

Beer commonly consumed by participants ranges from 5% to 12% alcohol by volume.

A 65 cL beer is 1.8315 times larger than a Standard Drink of beer.

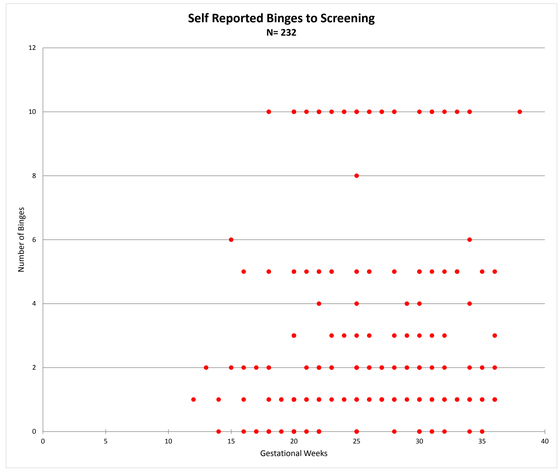
Estimated Number of Total Drinks*

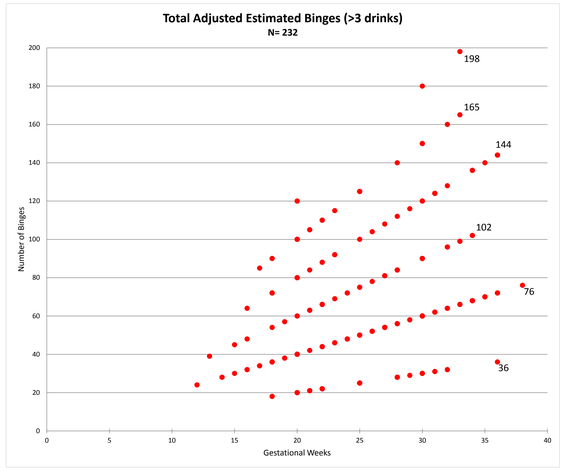




*Conservative estimate based on 5.0% ABV. Commonly consumed beer in Congo ranges up to 12% ABV.

Estimated Number of Total Binge Episodes





Comparison of Risk Groups

Reported alcohol use statistics by risk group

Variable	At Risk (n=59) Mean (sd)	High Risk (n=173) Mean (sd)	Total PAE (n=232) Mean (sd)
Drinking Days/Week	2.61 (1.35)	2.71 (1.25)	2.68 (1.27)
Drinks per Drinking Day	3.69 (1.11)	3.54 (1.22)	3.58 (1.19)
Number of Binges (self reported)	3.644 (3.88)	2.85 (3.02)	3.05 (3.27)
Most Drinks at once	5.86 (2.07)*	6.64 (2.19)*	6.44 (2.18)
Ave. Drinks per week	9.71 (6.14)	9.37 (4.94)	9.41 (5.26)

* T-test significant at .05

Adjusted alcohol use statistics by risk group

Variable	At Risk (n=59) Mean (sd)	High Risk (n=173) Mean (sd)	Total PAE (n=232) Mean (sd)
Drinking Days/Week	2.61 (1.35)	2.71 (1.25)	2.68 (1.27)
Drinks per Drinking Day	6.76 (2.04)	6.5 (2.23)	6.56 (2.19)
Adjusted Number of Binges (3 drinks)	68.62 (37.85)	68.91 (34.86)	68.8 (35.56)
Number of Binges (4 drinks)	57.03 (46.46)	51.33 (43.46)	52.78 (44.21)
Most Drinks at once	10.74 (3.79)*	12.16 (4.02)*	11.8 (4.01)
Ave. Drinks per week	17.78 (11.26)	17.17 (9.05)	17.32 (9.64)

* T-test significant at .05

Discussion

1. Prenatal Alcohol Use in this study was 18 percent. Previous studies of this population found PAU to be 23 percent. An appropriate estimate of Prenatal Alcohol Use in Brazzaville would be 20 percent. This is an elevated level of PAU for a population and indicates intervention is needed.

2. These results can influence future studies of Prenatal Alcohol Use. The adjustment formulas take into account the difference between researchers' standard definition of "1 drink" and the population's common definition of "1 drink." By using an adjustment formula, we were able to more accurately describe PAU in Brazzaville. Similar studies have used proper definitions of "1 drink" for their study population, yet this doesn't seem to be the case for all studies (Namagembe et al, 2010, Tandu-Umba et al, 2011, Medhin et al, 2010, Chaibva et al, 2011). Obtaining the common definition of "1 drink" for a population will allow researchers to more accurately describe alcohol consumption in that population.

3. Binge episodes are important to understand. While dosage is not well understood in the causal pathway for Fetal Alcohol Spectrum Disorders, it is known that binge episodes result in greater time exposure to alcohol for the fetus, especially if binge episodes are consecutive. All women in this population are known to binge; metabolism and cumulative time exposure should be studied to further understand fetal exposures.

4. Our current adjustment formula is a conservative estimate as it relies on the standard "1 drink" definition for beer at 5% ABV. In 12 ounces of 5% ABV beer, there are 14 grams of pure alcohol. The common definition of "1 drink" (65 cL) contains at least 25 grams of pure alcohol (5% ABV), and could be as high as 61 grams of pure alcohol (12% ABV). Research is necessary to better understand the cumulative effect of consuming high amounts of pure alcohol.

5. Life stressors and their relation to PAU were not studied in this population. Taking into account the economic and health situation in the Republic of the Congo, one could expect to see elevated levels of life stressors across the population. How differing levels of stress relate to alcohol use among pregnant women in Brazzaville is yet to be seen.

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