Prevalence of Gynecologic Health Outcomes Among Black and Latina Hair Hairdressers: A Pilot Study

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BACKGROUND

- Hairdressers are disproportionately exposed to many endocrine disrupting compounds (EDCs), including phthalates, recognized or suspected to adversely impact gynecologic health.

- While the etiology of gynecologic health outcomes is largely unknown, they are estrogen-dependent so exposure to EDCs may play a role.

- Despite growing concerns about EDC exposures in hairdressers and CDC national biomonitoring data demonstrating that women of color experience elevated exposures to EDCs from beauty product use, studies investigating the prevalence of adverse gynecologic health outcomes among hairdressers of color remain sparse.

OBJECTIVE

To characterize prevalence of gynecologic outcomes among female hairdressers of color and assess their association with exposure to select EDCs.

METHODS

Community Engagement:
- During the Fall 2016, we established a community partnership with Centro de Apoyo Familiar (CAF), a non-profit organization with an established community network of >400 faith-based organizations, and hair salon owners, and stylists.

- We held listening sessions/focus groups to better understand health concerns and needs among hair salon owners/stylists working in Black and Dominican salons.

- We conducted focus groups with CAF, salon owners, and stylists to inform study instruments and design.

Study Population:
- Between December 2018 and May 2019, we enrolled 40 female workers, ages 21-58 years: 23 Black and Latina hairdressers and 17 office workers of similar racial/ethnic distribution from Maryland/Washington DC metro area.

Data Collection and Exposure Assessment:
- We captured data on demographics, workplace behaviors, and health history (e.g., reproductive/women's health, mental health, etc.) via bilingual interviewer-administered questionnaires.

- We collected post-shift urine samples to measure 9 phthalate biomarkers for all participants.

- Urine samples were analyzed by CDC.

Data Analysis:
- We calculated summary statistics for participant demographic characteristics, target outcomes, and for urinary biomarker concentrations.

- We assessed differences in biomarker concentrations between worker groups based on self-reported gynecologic conditions.

RESULTS

Table 1. Participant characteristics (n=40).

Characteristic	Hairdressers			Office Workers (n=17)
	All Hairdressers (n=23)	Black Salons (n=11)	Dominican Salons (n=12)	
	N (%)			
Race/Ethnicity [a]				
Hispanic/Latina	11 (47.8)	1 (9.1)	10 (83.3)	7 (41.2)
Non-Hispanic Black	11 (47.8)	10 (90.9)	1 (8.3)	7 (41.2)
Other	1 (4.4)	0 (0.0)	1 (8.3)	3 (17.6)
Education				
Less than High School	4 (17.4)	0 (0.00)	4 (33.3)	0 (0.0)
High School or GED	6 (26.1)	4 (36.4)	2 (16.7)	1 (5.9)
Trade School	8 (34.8)	4 (36.4)	4 (33.3)	1 (5.9)
College/Other	5 (21.7)	3 (27.3)	2 (16.7)	15 (88.3)
Income				
≤ $30,000	10 (52.6)	5 (45.5)	5 (62.5)	3 (17.7)
$30,001-$50,000	4 (21.1)	2 (18.2)	2 (25.0)	3 (17.7)
$50,001-$75,000	2 (10.5)	1 (9.1)	1 (12.5)	4 (23.5)
> $75,000	3 (15.8)	3 (27.3)	0 (0.0)	7 (41.2)
Current smoker				
No	19 (82.6)	7 (63.6)	12 (100.0)	16 (94.1)
Yes	4 (17.4)	4 (36.4)	0 (0.0)	1 (5.9)
Characteristic	Mean (SD)			
Age (years)	40.2 (10.6)	37.3 (10.2)	42.8 (10.6)	33.6 (7.9)
Years working in hair salons	15.1 (9.5)	14.9 (9.4)	15.3 (10.1)	n/a
Hours worked per week	44.3 (18.7)	46.2 (23.7)	42.6 (13.4)	40.4 (10.4)
Clients per week	26.2 (12.1)	19.2 (8.9)	32.7 (11.4)	n/a
Personal use in past 24-48 hrs				
Cosmetics	3.4 (3.1)	2.7 (2.0)	4.1 (3.8)	2.5 (2.1)
Hair products	2.1 (1.5)	1.8 (1.4)	2.4 (1.7)	1.5 (1.1)
Personal care products[b]	10.5 (4.7)	10.3 (3.4)	10.8 (5.8)	10.6 (2.0)

a Other race category includes White, American Indian or Alaska Native, Asian, and Other.
b Personal care products included a total of 31 non-cosmetic and non-hair products.

Fig 1. Prevalence of gynecologic outcomes in hairdressers (n=23) and office workers (n=17).
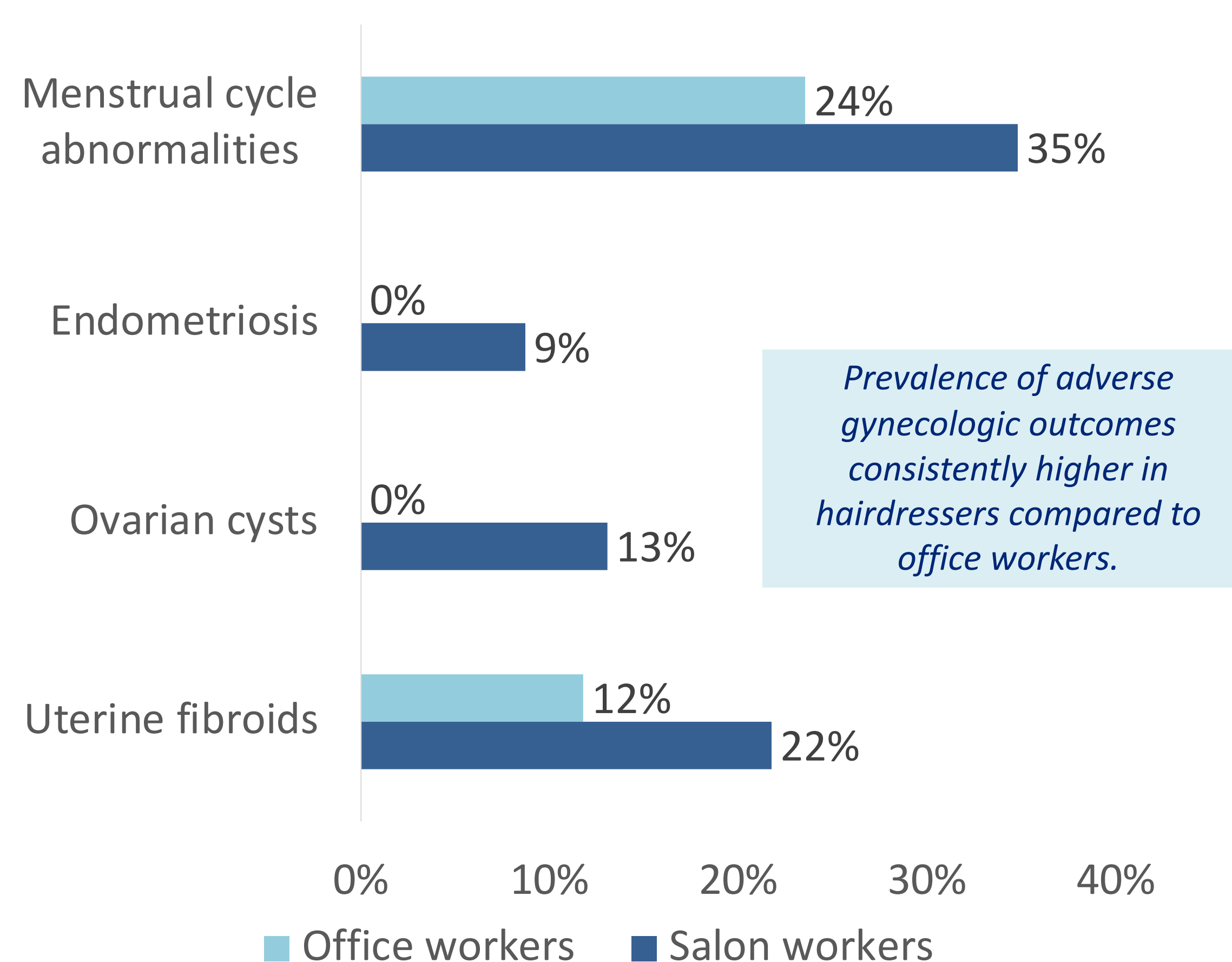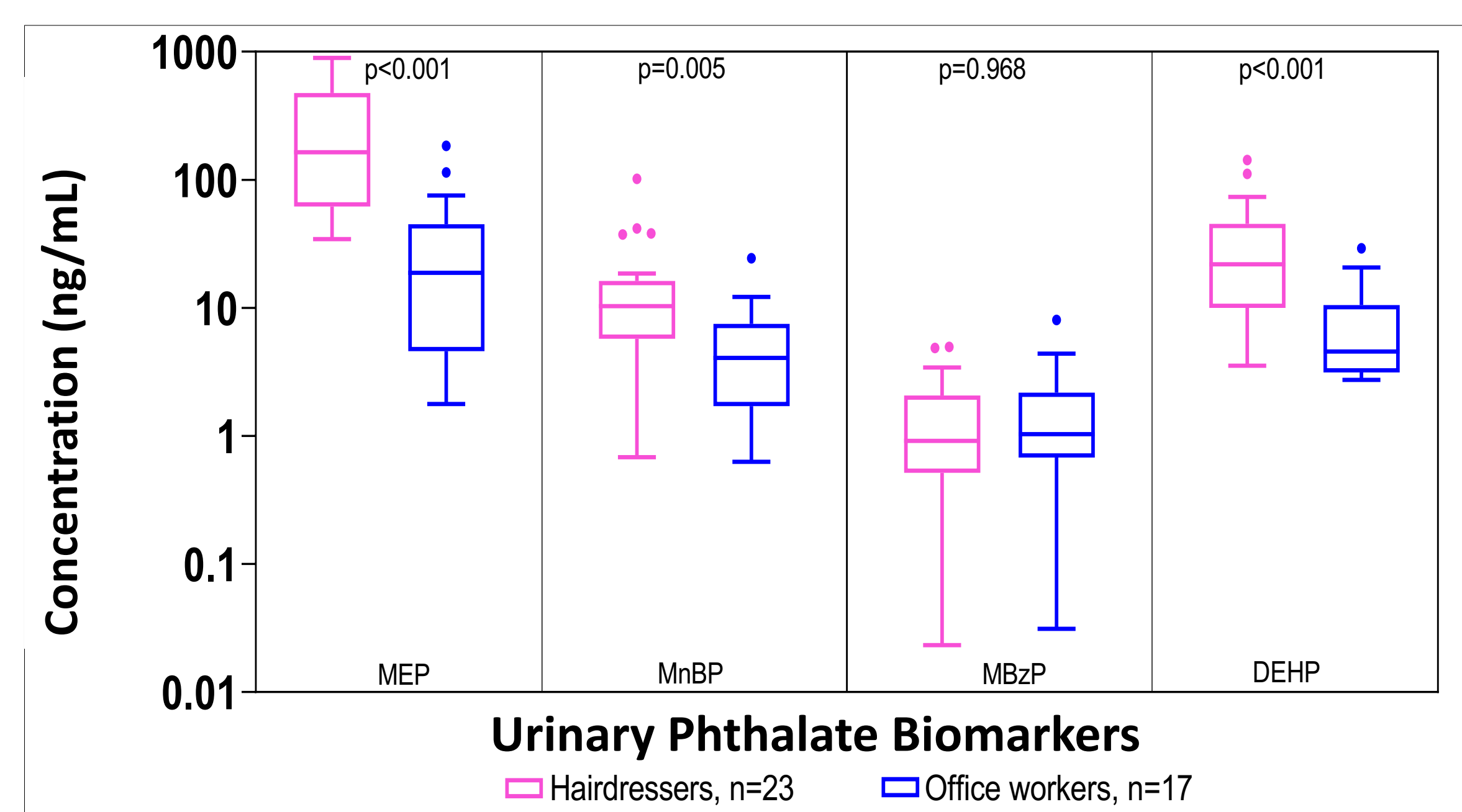

- Menstrual cycle abnormalities: Office workers 24%, Salon workers 35%
- Endometriosis: Office workers 0%, Salon workers 9%
- Ovarian cysts: Office workers 0%, Salon workers 13%
- Uterine fibroids: Office workers 12%, Salon workers 22%

Prevalence of adverse gynecologic outcomes consistently higher in hairdressers compared to office workers.

■ Office workers ■ Salon workers

Fig 2. Select phthalate biomarker concentrations in hairdressers and office workers.

Urinary Phthalate Biomarkers
■ Hairdressers, n=23 ■ Office workers, n=17
MEP p<0.001; MnBP p=0.005; MBzP p=0.968; DEHP p<0.001
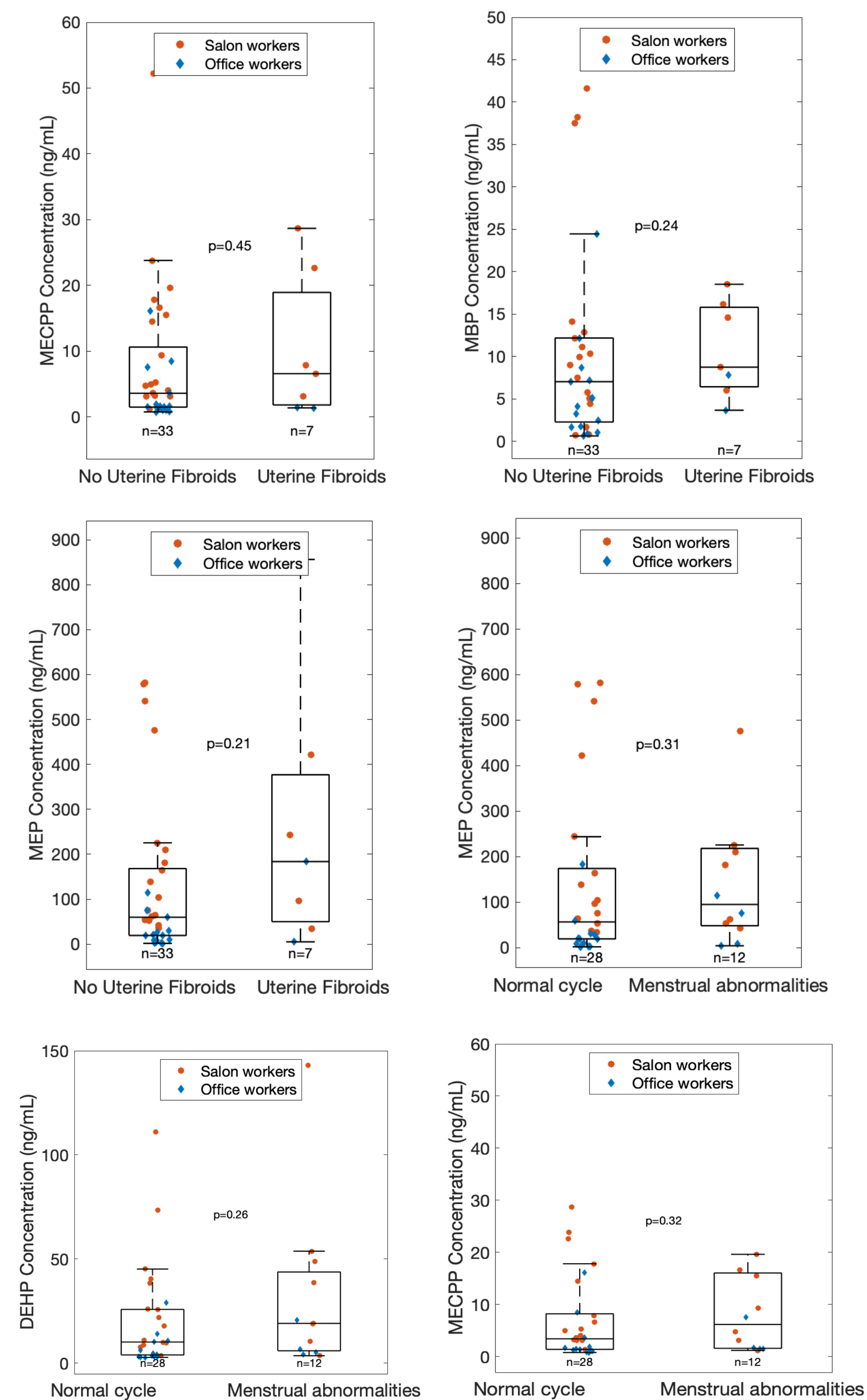
Phthalates were frequently detected (DF>90%) in the urine of participants and biomarker concentrations were higher in hairdressers vs. office workers.

For example, median MEP concentrations were 41 times higher than those detected in and associated with premature ovarian failure among women of reproductive age.

RESULTS

Fig 3. Hairdressers with select adverse gynecological outcomes were exposed to higher concentrations of select phthalate biomarkers.

CONCLUSIONS

- Gynecologic outcomes were more common in hairdressers compared to office workers.

- Hairdressers are exposed to higher concentrations of select phthalates compared to office workers.

- Consistent pattern of higher phthalate levels among women with uterine fibroids and menstrual abnormalities compared to those without.

- Larger studies are needed to fully characterize the extent of EDC exposures among hairdressers, develop exposure mitigation efforts, and improve worker health and safety in salons.

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