Examining the Trajectories and Implications of Endogenous Androgens in Midlife Women

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SCAN ME

Background

Changes in endogenous androgens during reproductive aging and their impact on later health outcomes are not well understood.

Some research posits that supplemental testosterone might alleviate menopause symptoms (e.g., reduced libido, and loss of muscle mass and bone density).

Objective

To identify and characterize subgroup trajectories of total testosterone (T), free testosterone (FT) testosterone-estradiol ratio (T/E2), sex hormone-binding globulin (SHBG), and dehydroepiandrosterone sulfate (DHEA-S).
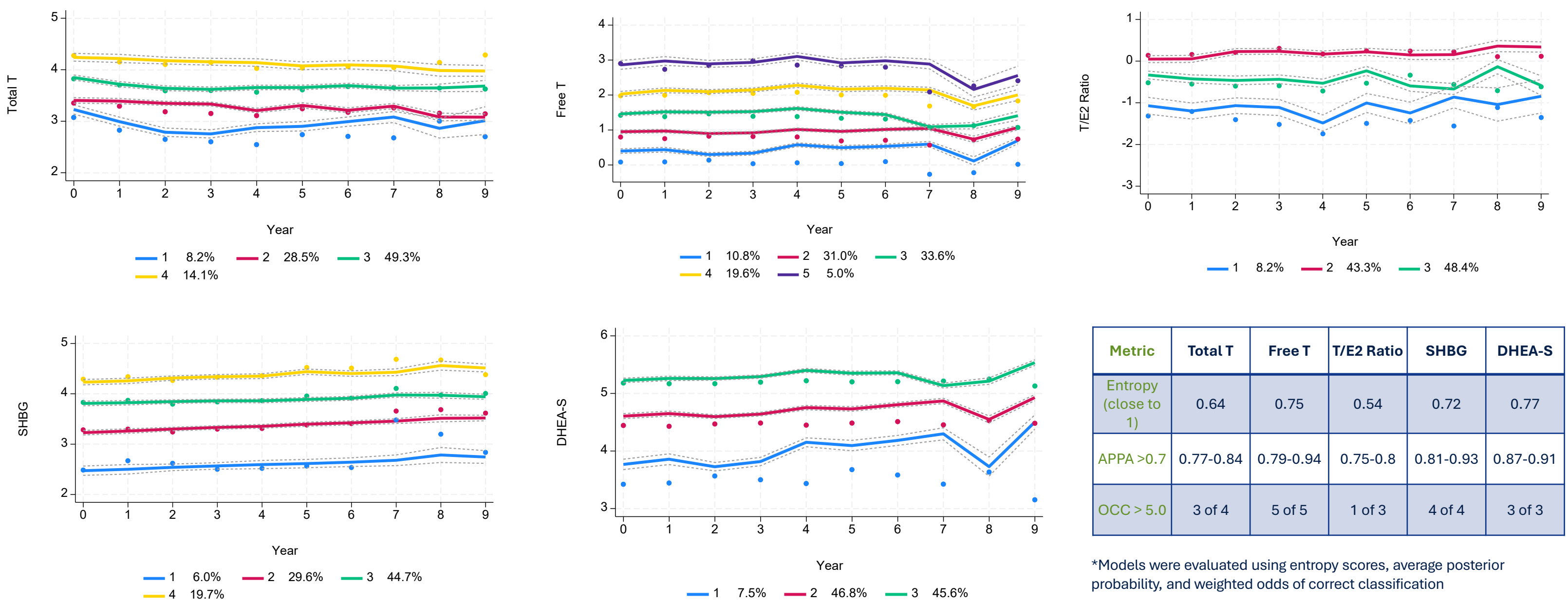
Methods

Participants

Sample is comprised of participants from the Study of Women Across the Nation (SWAN) multiethnic cohort.

This is a cohort of midlife women who were enrolled from 1996 to 1997 across seven research sites in the United States.

Sample Characteristics

N = 2,057	Mean (SD)	N (%)
Age (41-52)	45.97 (2.65)	-
BMI (14.99-74)	27.98 (7.46)	-
Smoking Status (Y)		306 (15.1)
Black		615 (29.9)
Chinese		202 (9.8)
Japanese		222 (10.8)
Caucasian		1,017 (49.5)
Less than HS		73 (3.6)
High School		333 (16.3)
Some College		663 (32.4)
College Degree		461 (22.5)
Post Grad		515 (25.2)

Androgen Trajectories from Baseline to Year 9 Follow-up

Metric	Total T	Free T	T/E2 Ratio	SHBG	DHEA-S
Entropy (close to 1)	0.64	0.75	0.54	0.72	0.77
APPA >0.7	0.77-0.84	0.79-0.94	0.75-0.8	0.81-0.93	0.87-0.91
OCC > 5.0	3 of 4	5 of 5	1 of 3	4 of 4	3 of 3

*Models were evaluated using entropy scores, average posterior probability, and weighted odds of correct classification

*Graphs are results from group-based trajectory models specified with a censored normal distribution and log-transformed hormones. Models are adjusted for both time stable and time-varying covariates. Time stable covariates were: baseline BMI, years of education, physical fitness, and smoking status. Time-varying covariates were: age at visit, day of menstrual cycle, and SHBG level (T/E2 ratio model only).

Results

Hormone	Num Groups, Line Fit (p-value)
Total T	4 Groups, cubic (0.0014) linear (0.0201) cubic (0.0000) linear (0.0089)
Free T	5 Groups, linear (0.0000) linear (0.0013) cubic (0.5160) cubic (0.6828) quadratic (0.0000)
T/E2	3 Groups, quadratic (0.0020) linear (0.5571) cubic (0.0021)
SHBG	4 Groups, linear (0.0421) linear (0.0000) linear (0.0019) linear (0.0001)
DHEA-S	3 Groups, linear (0.0000) linear (0.0000) linear (0.0000)

Discussion

Subgroups of hormone trajectories can be identified during the time most women transition to menopause.

While largely parallel and linear, trajectories show groups vary by overall levels with variation increasing over time.

Contact

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