

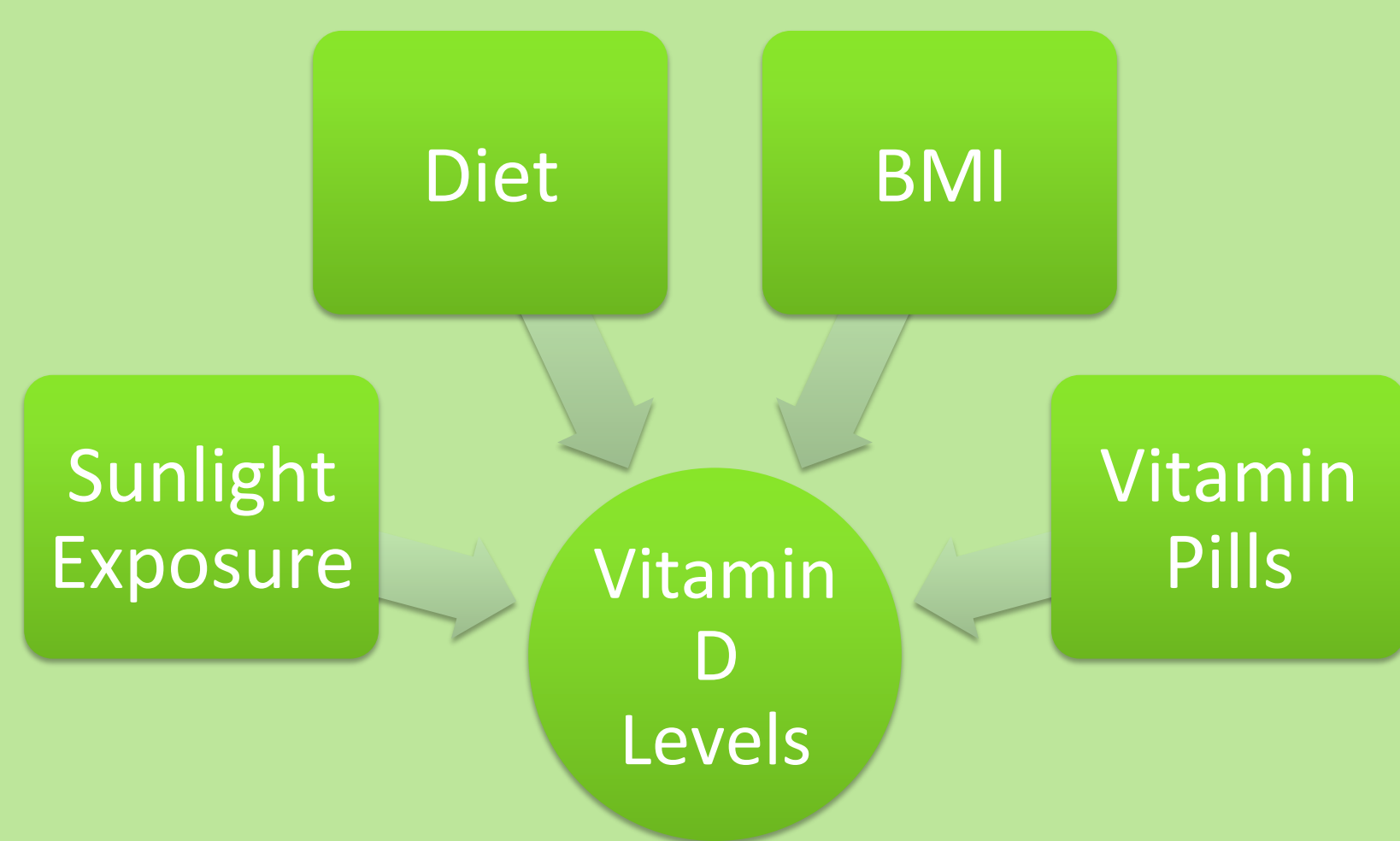
# Using Skin Phototype to Assess Risk of Vitamin D Insufficiency in Young Women of Color

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## Introduction

Vitamin D sufficiency supports cardiovascular health and lower cancer risk. Rates of vitamin D insufficiency vary by racial/ethnic group, in part because skin pigment limits sunlight penetration. However race/ethnicity is an unreliable marker of vitamin D deficiency, given individual differences in skin pigment, or phototype, and other characteristics. Clarifying associations between skin phototype and vitamin D levels will permit researchers to identify other important root causes of these racial/ethnic disparities. This study seeks to investigate whether there is a link between vitamin D insufficiency and skin phototype.

## What Factors Influence Vitamin D Levels?



## Melanin's Role in Skin

### High Melanin

Skin contains "natural sunscreen"

Melanin absorbs UV light, leading to lower vitamin D production

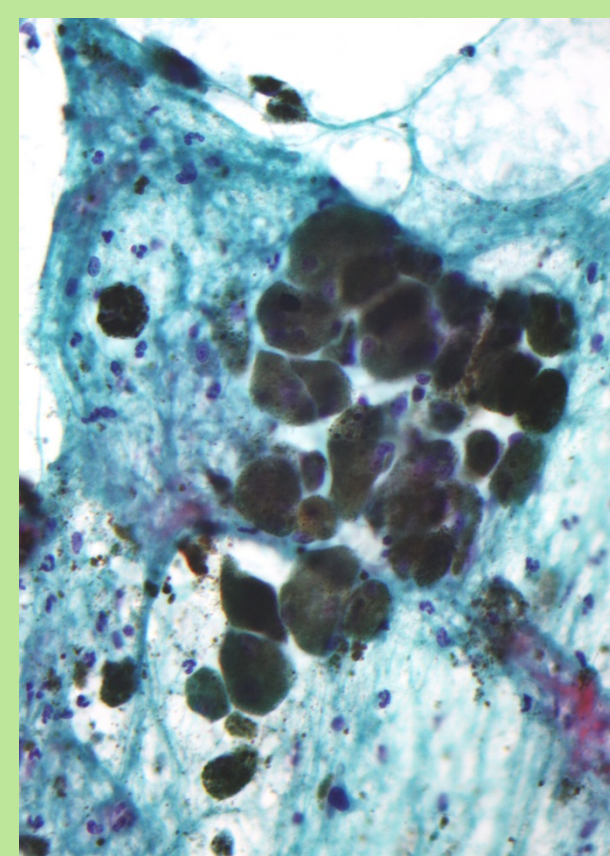
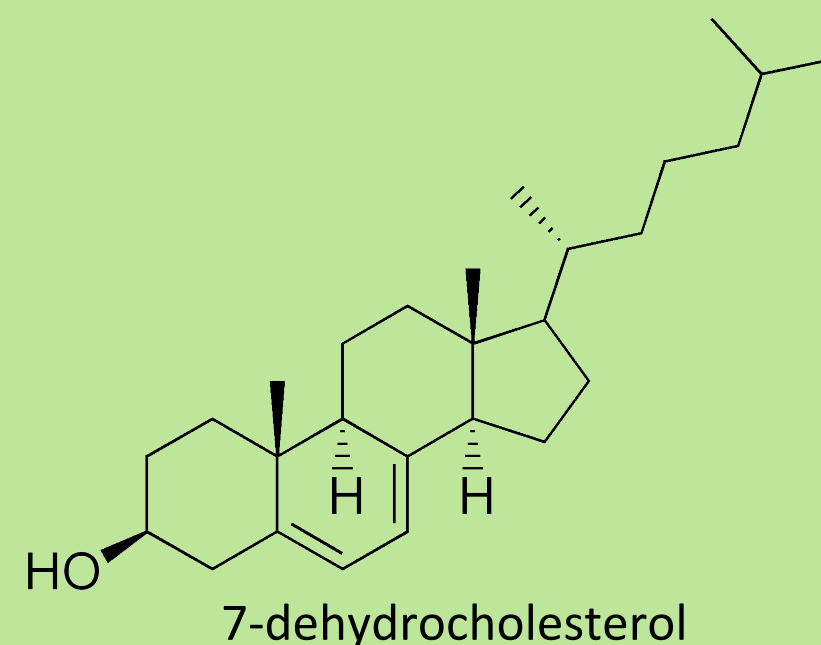
Melanin protects skin from harmful UV radiation that causes skin cancer

### Low Melanin

Sunburning and tanning occur more frequently

7-dehydrocholesterol is able to produce vitamin D with less competition

Skin cancer occurs at higher rates in individuals with lighter skin



A micrograph of melanin pigment in skin

## Methods



- Participants**
  - Females, ages 18-25 (college students)
  - Self-identified as a woman of color
  - Some medical/medication exclusions
- Questionnaires**
  - Skin phototype, based on sunburning and tanning
  - Diet, vitamin D supplement use, time outside & other behaviors
  - Demographics
- Biological Samples**
  - Participants collect their own blood spots
  - Spots will be assayed for vitamin D level
- Participant Characteristics (to date), n = 52**
  - African-American: 12%
  - Asian-American: 27%
  - Latino/Hispanic: 25%
  - Native American: 6%
  - White: 23%
  - Pacific Islander: 2%
  - Arab: 4%
  - Other: 2%

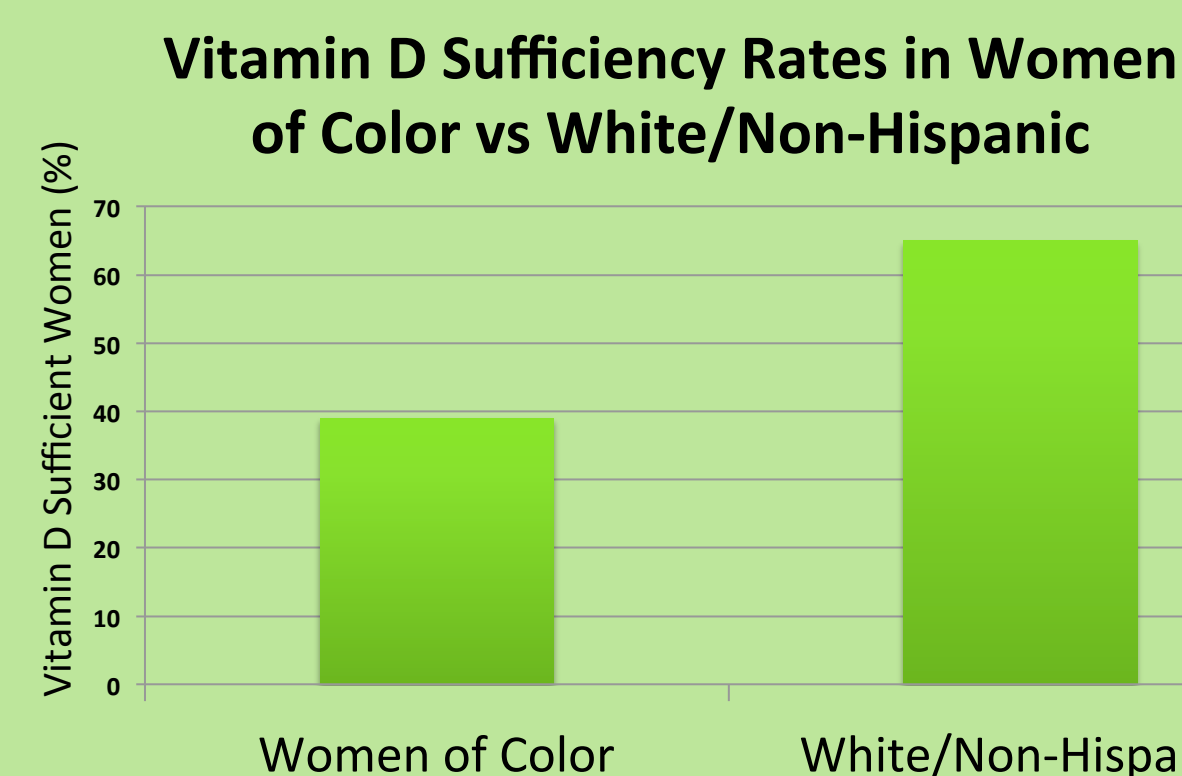
## Who's at Risk?

- What is Vitamin D Insufficiency?

Sufficiency	Vitamin D Levels
Sufficient	$\geq 30 \mu\text{g/mL}$
Insufficient	$< 30$ and $\geq 20 \mu\text{g/mL}$
Deficient	$< 20 \mu\text{g/mL}$

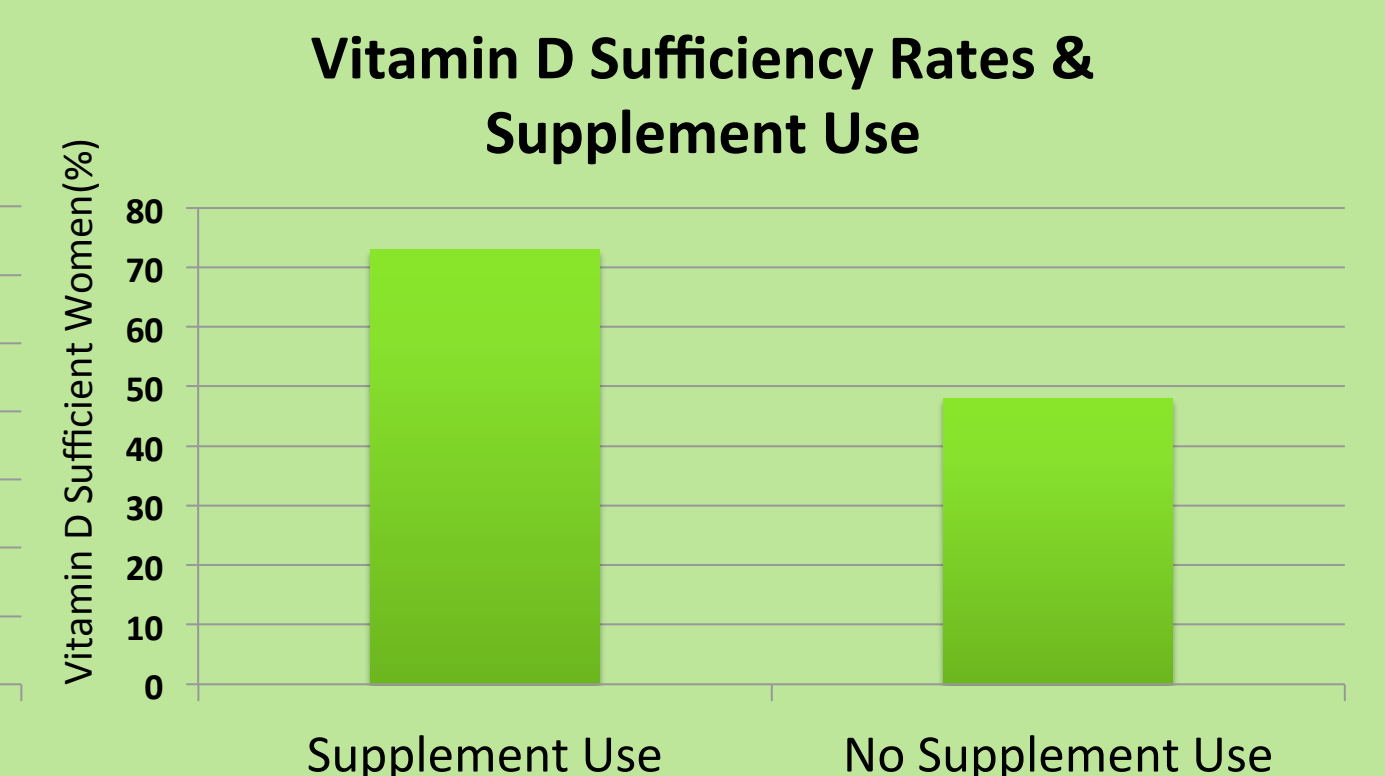
## Vitamin D in Women of Color

- Our prior research showed a notable difference between women of color & white/non-Hispanic women



## Taking Supplements?

- Our prior work shows vitamin D supplement use has a significant effect on sufficiency in women



## Skin Phototype Data

- Participants were asked questions about their skin's response to sun exposure
- The responses below will be used to estimate skin melanin content
- Hypotheses will be tested by correlating skin phototype with vitamin D levels

## Sunburning Self-Report

Response	Percent of Participants
I Easily Sunburn With Red or Pink Skin 24 Hours After Being in the Sun	5%
I Sometimes Sunburn or Get Skin Irritation From Being in the Sun	20%
I Rarely Sunburn or Get Skin Irritation From Being in the Sun	42.5%
I Never Sunburn or Get Skin Irritation From Being in the Sun	32.5%

## Tanning Self-Report

Response	Percent of Participants
I Never Tan	2.5%
I Minimally Tan or My Sun-Exposed Skin Becomes Minimally Darker	20%
I Easily Tan or My Sun-Exposed Skin Easily Becomes Darker	47.5%
I Always Tan or My Sun-Exposed Skin Always Becomes Darker	30%

## Implications

The results of this study will help determine whether individuals can accurately assess their risk for vitamin D insufficiency through practical methods. Most people don't have access to uncommon instruments, such as the spectrophotometer, to evaluate melanin content. The responses to questions about tanning and sunburning can substitute as accessible measures for skin phototype. Individuals who are classified as "at-risk" can then recognize the need for vitamin D supplements, diet changes and other behaviors to attain sufficiency.

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