Inequities in Vitamin D Deficiency Among African Americans in Massachusetts

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Goals

➢ Background information

➢ Affected populations in MA

➢ Contributing factors

➢ Future public health interventions
What is Health Disparity?
What Are Vitamins Essential For?

- Vitamin C - Neurotransmitters
- Vitamin A - Eyes
- Vitamin E - Skin
- Vitamin D - Estrogen balance, mineral absorption, bone density, etc.
Vitamin D Characteristics & Sources

25(OH)D

Stored in:

Fat
Vitamin D Levels in African Americans vs General Population

GrassrootsHealth Nutrient Research Institute

Harris et al.

82%
42%
(Healthmatch)
Skin pigmentation due to levels of melanin reduces the ability to synthesize vitamin D from the sun.
Effects of Vitamin D Deficiency on African American Children

- 40% of African American children are Vitamin D deficient vs 20% of White and 12% of Hispanic children in MA

- Maternal Vitamin D deficiency causes disordered skeletal homeostasis, congenital rickets and fractures in newborns.

African American children are more at risk of being vitamin D deficient due to inability to attain supplements.

## Effects of Vitamin D Deficiency on African American Children

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Amount (IU-International Units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1 years old (infants)</td>
<td>1,000 to 1,500</td>
</tr>
<tr>
<td>1 - 8 years old (children)</td>
<td>2,500 to 3,000</td>
</tr>
<tr>
<td>9 years and older (adolescents and adults)</td>
<td>4,000</td>
</tr>
</tbody>
</table>

"Vitamin D." The Nutrition Source, 7 Mar. 2023
Vitamin D Deficiency in African American Adults & Elderly

70%

15-20 times higher prevalence

~900 IU to 4000 IU Required to be Healthy
Effect of Vitamin D Deficiency in African Americans Compared to Other Demographics:

Ames et al. (Nutrients, 2021)
Contributing Factor #1: Access to Education & Technology

Households with Internet Access
2017-2021

- Light Gray - <84%
- Purple - 84-94%
- Dark Purple - >95%

(PolicyMap)
Consequence: Health Illiteracy

Health illiteracy = inability to
1) find,
2) understand,
3) use information to
make health decisions

58% of African Americans were health illiterate (vs 38%)
Contributing Factor #2: Access to Health Insurance:

Population density of African Americans in 2020

White: <5.9%
Purple: 6-21%
Dark Purple: >22%

Estimated percent of all people without health insurance, between 2017-2021

(PolicyMap)
Contributing Factor #3: Income Level

Poverty Rate 2017-2021
- White - <5%
- Purple - 6-20%
- Dark Purple >21%

Local Median Family Income as a share of Area Median Family Income between 2016-2020
- White - <30%
- Purple - 31-140%
- Dark Purple - >141%
How Can We Address This?

Vitamin D Supplements if you’re not receiving adequate nutrition
Which is superior: D2 or D3?

Walmart: $7.94
CVS: $13.79

AVG is ~$9.00 - $15.00
Most parts of Boston, MA = 13.9–17.2
Median Black Income $66,792 (vs $81,744)

Median Black Income $60,232 (vs $89,026)
Number of Pharmacies per 100,000:

Most parts of Boston, MA = 13.9–17.2 Pharmacies per 100,000 people

Most parts of MA = 10.6–13.8 Pharmacies per 100,000 people

(PolicyMap, 2019)
Future Public Health Interventions:

[Logos of WIC, Boys & Girls Clubs of America, SNAP, and Community Health Center]


Works Cited (Continued)


Cartoon/figure citations:
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https://countthekicks.org/
Thank you!

Questions?