University of Wisconsin
FAMILY MEDICINE

Vitamin D Testing and Prescribing Practices in DFM residency clinics

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Background

- Vitamin D has been linked to many medical conditions
- No evidence based guidelines on testing or supplementation are available
- Aim of this study was to describe a population of patients who had a vitamin D level drawn

Methods

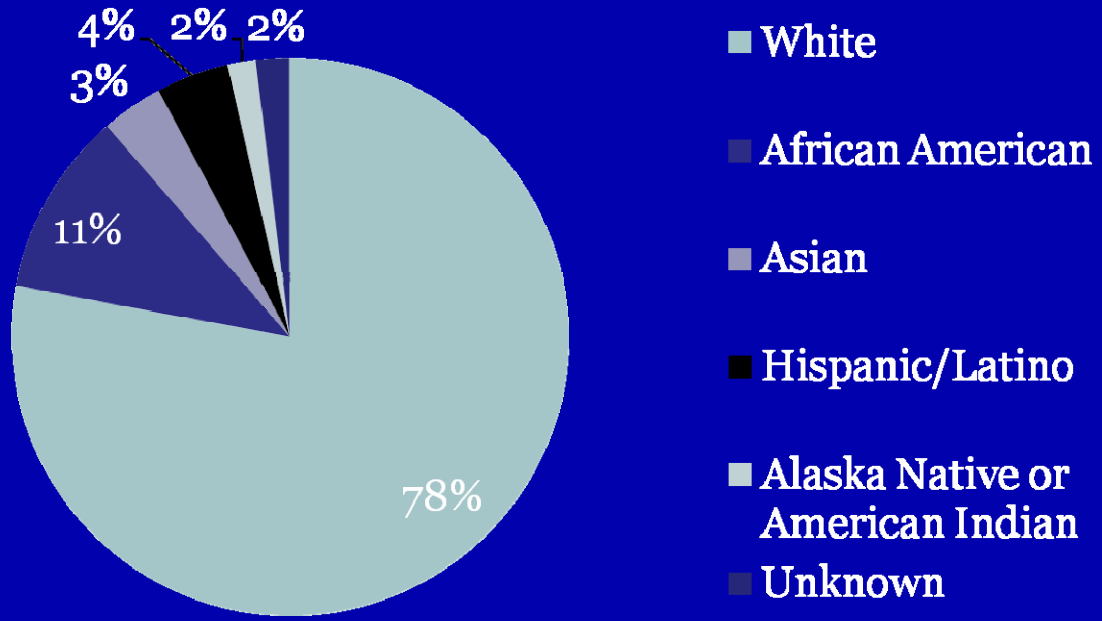
- Electronic chart review of 365 randomly selected patients who had a 25 OH vitamin D drawn between 1/09-1/10
- Exclusion Criteria:
  - Hypopituitarism
  - Previous test within 12 months prior to study
    - 57 charts excluded for a total of 308 charts included in study

Methods

- Extracted Demographics, Test Level, Treatment, and Follow up Information
- Data was compared to a population that had a clinic visit at one of the UW Family Medicine Clinics in the past 3 years

Results

- Patient Demographics:
  - Mean Age 52 years
  - 80.68% Female
  - Race:

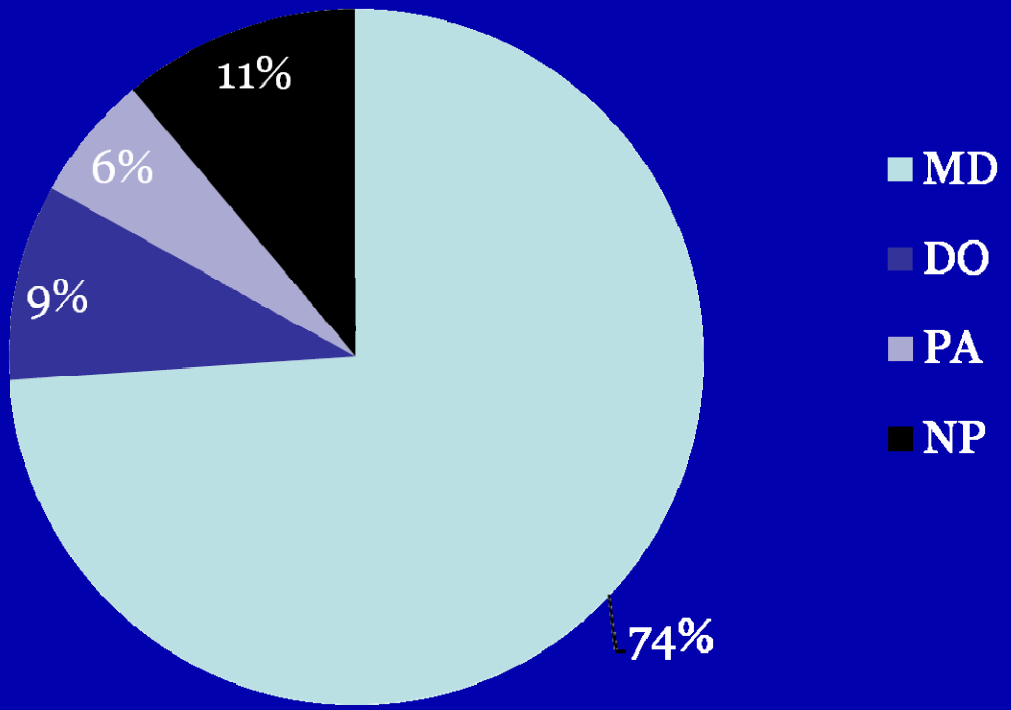


Results

- Study population vs clinic population:
  - Significantly older ($p < 0.001$)
  - Significantly more female ($p < 0.001$)
  - Have a slightly different racial distribution ($p = 0.049$)

Results: Clinician demographics

- Sex- 67.9% Female
- Degree:



Results: Value of test

Test Value	Number of Patients
<=20 ng/ml	107 (34.7%)
21-30 ng/ml	92 (29.8%)
31-50 ng/ml	87(28.2%)
>50 ng/ml	10 (3.2%)

< 20ng/ml = frank deficiency
20-29ng/ml = insufficiency
30-80ng/ml = normal

64.5% under 30 ng/ml

Results: Season of test

Test Range	Dec-Feb	Mar-May	June- Aug	Sep- Nov
<30 ng/ml	53	56	40	43
30-49 ng/ml	30	22	30	23
> 50 ng/ml	7	2	0	2

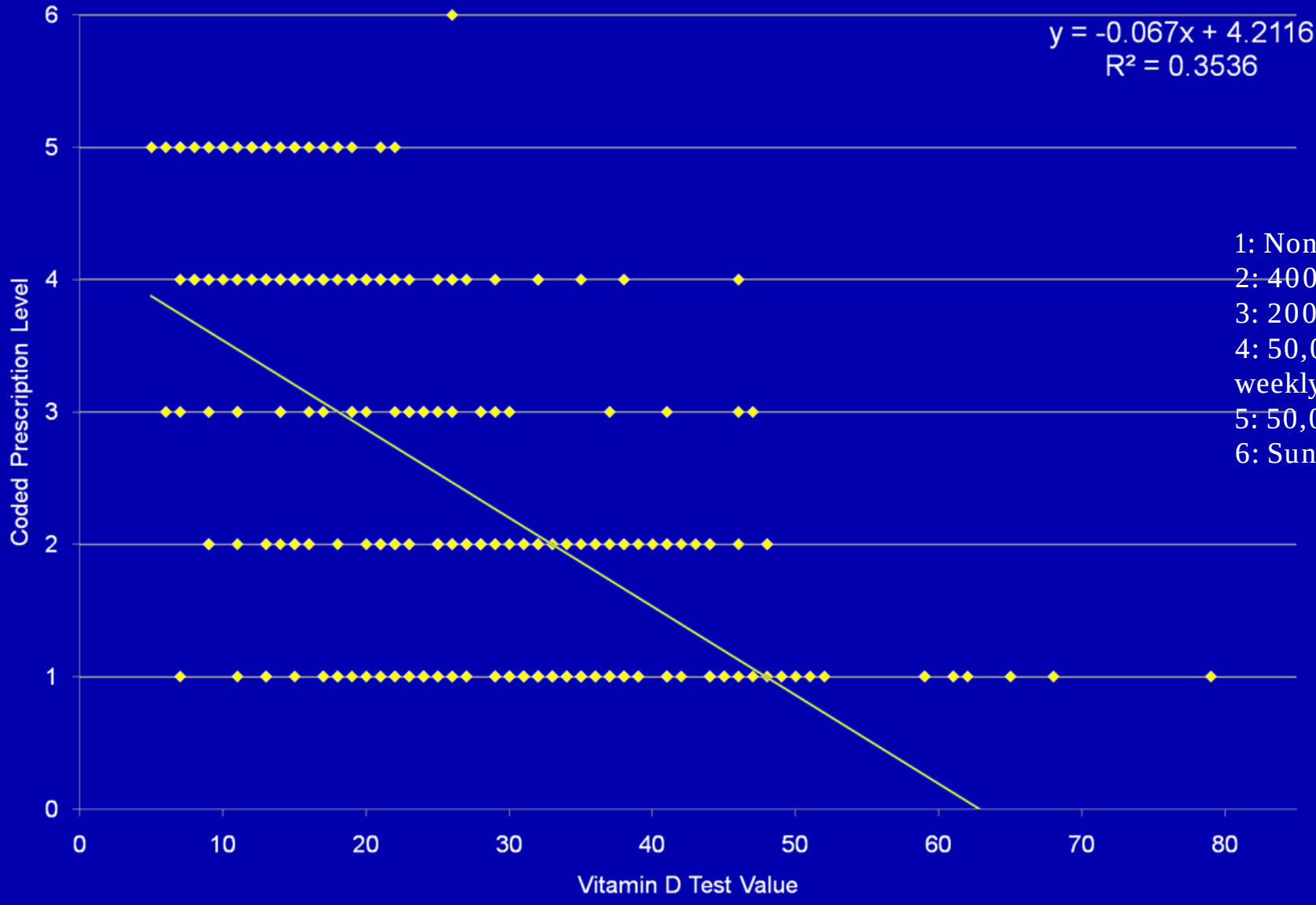
Using chi squared analysis we determined that there is not a statistically significant difference in Vitamin D levels based on the season in which the test is performed ($p=0.084$)

Results: Supplementation Recommendations

Recommendation	Number of Patients
None/ Dose Unknown	109 (35.4%)
400-1200 IU daily	76 (24.7%)
2000-5000 IU daily	32 (10.9%)
50, oo0 IU monthly-weekly	59 (19.2%)
50,000 IU more than weekly	31 (10.9%)

Over 35 different recommendations

Results: Test values vs. supplementation recs



1: None/Dose Unknown
2: 400-1200 IU daily
3: 2000-5000 IU daily
4: 50,000 IU monthly-weekly
5: 50,000 IU > monthly
6: Sun exposure

$p < 0.001$

Results: Follow up testing

- 101 pts had a follow up test (90 were deficient at 1st value)
  - 37 (36.3%) patients had a level <30
    - 33 were deficient at the first test
  - 51 (50%) patients had a level of 30-50
  - 12 (11%) patients had a level of 50-80
  - 1 (0.9%) patient had a level >80

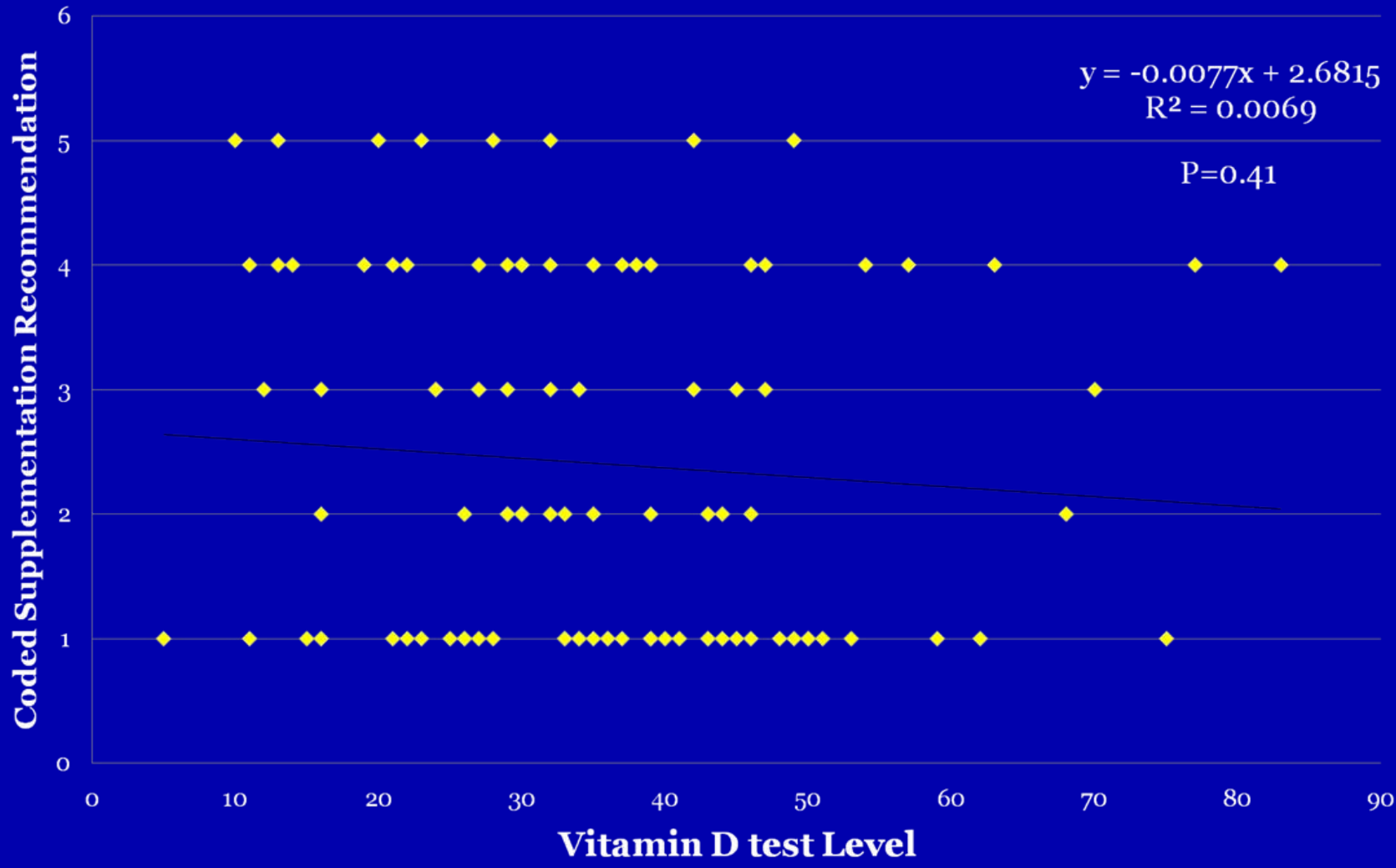
Results

- 1st Follow up test Recommended Supplementation:

Supplement	Number of Patients Recommended
None/Dose Unknown	40 (39.6%)
400- 12oo IU daily	15 (14.9%)
2000-5000 IU daily	15 (14.9%)
50,000 IU monthly- weekly	22 (21.8%)
50,000 IU more than once weekly	8 (7.9%)

12 (11.8%) of patients were told to continue the dose recommended following initial testing

Results: follow up testing vs. vit D level



1: None/Dose Unknown
2: 400-1200 IU daily
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Results: prevalence of medical conditions vs. general clinic population

- Osteoporosis ($p < 0.001$)
- Hypertension ($p < 0.001$)
- Hypothyroidism ($p < 0.001$)
- Diabetes Mellitus Type 2 ($p < 0.001$)

Results: Vit D test value vs. medical dx

	Overall	Subjects with Osteoporosis	Subjects with Hypothyroidism	Subjects with Hypertension	Subjects with DM2
Test Value < 30	192	15	22	61	33
Test Value 30-50	105	15	10	33	10
Test Value >50	11	0	2	3	1
Total	308	30	34	102	44
p- value		0.185	0.787	0.922	0.102

Discussion- Limitations

- Observational study, limited information.
- Study demographics differ from clinic population (older, more female, fewer minorities)
- Did not compare to clinic population who did not have a 25 OH vit D test

Discussion

- 68% of ordering providers were women. Consistent with literature.[3]
- 65.5% of those tested had insufficient Vitamin D level
  - NHANES (2001-2004)- 77%[2]
- No significant difference found in the season of the test
  - Contrary to what other studies have shown[1,6]

Discussion

- Supplementation recommendations vary widely. No evidence-based guidelines.
- Recommendation levels correlate with serum levels at first testing, but not at follow up testing
  - Possibility of continuing dose affecting recommendation

References

1. Davies PS, et al. “Vitamin D: seasonal and regional differences in preschool children in Great Britain.” Eur J Clin Nutr. 53 (1999): 195-8.

2. Ginde, Adit, Mark C Liu, and Carlos A. Camargo. “Demographic Differences and Trends of Vitamin D Insufficiency in the US Population.” Arch Intern Med. 169 (2009): 626-632.

3. Lurie N, et al. “Preventive care for women: does the sex of the physician matter?” N Engl J Med. 329 (1993) : 478-482.

4. Office of Dietary Supplements. “Dietary Supplement Fact Sheet: Vitamin D.” http://ods.od.nih.gov/factsheets/vitamind.asp

5. Souberbielle J-C, et al. “Vitamin D and musculoskeletal health, cardiovascular disease, autoimmunity and cancer: Recommendations for clinical practice.” Autoimmun Rev. (2010), doi:10.1016/jautrev.2010.06.09

6. Woitge HW, et al. “Circaannual rhythms and interactions of vitamin D metabolites, parathyroid hormone, and biochemical markers of skeletal homeostasis: a perspective study.” J Bone Miner Res. 15 (2000): 2443-50.