

Factors Associated with Vitamin D Deficiency in Women: Lesson from Biobank in Qatar

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ABSTRACT

Background: Vitamin D deficiency was studied more often as a predictor to diseases. However, certain factors that could be associated with vitamin D deficiency were not explored among women, specifically in Qatar.

Objective: To explore potential risk factors of vitamin D deficiency among women aged 20 to 65, using a sample of records from women volunteers to Qatar Biobank.

Hypothesis: The study potential factors (age, BMI, education, income, milk consumption, occupation, pregnancy, physical activity and soft drinks) are associated with vitamin D deficiency.

Methodology: We assessed some potential risk factors to vitamin D deficiency using data from Qatar Biobank (n=1000). Women aged 20-65 years old were included in the study. Univariate and multiple logistic regression models were used to model the association between our study potential factors (age, BMI, education, income, milk consumption, occupation, number of children, physical activity, and soft drinks) and being vitamin D deficient. Analysis was conducted using Stata (IC) version 15.0.

Results: 654 women out of 1000 had vitamin D deficiency (serum level <20ng/mL), and 346 women that had normal level of vitamin D (serum level >20ng/mL). Vitamin D deficiency was significantly associated with women who drank soda 1-3 per month (p-value= 0.038) and 1-3 per week or more (p-value= 0.021). Also, women who were 41-50 years old (p-value= 0.006), 50 years and older (p-value= 0.000) and women who were students as their occupation (p-value= 0.003).

Conclusion: Vitamin D deficiency was common among women in Qatar, as found in the present study. Students, women who drank soda, and younger age (<50) had the highest vitamin D deficiency.

INTRODUCTION

Qatar is a country that is exposed to a high level of sunlight throughout the year. However, according to Qatar Biobank's annual report 2016/2017, about 86% of Qatar Biobank's population suffer from some level of vitamin D deficiency.¹ Therefore, the main aim of our study is to explore potential risk factors of vitamin D deficiency among women aged 20 to 65, using a sample from Qatar Biobank.

RESULTS

- A total of 654 women were vitamin D deficient out of our 1000 study participants. (Figure 1)
 - Normal (>20ng/mL)
 - Vitamin D deficient (<20ng/mL)

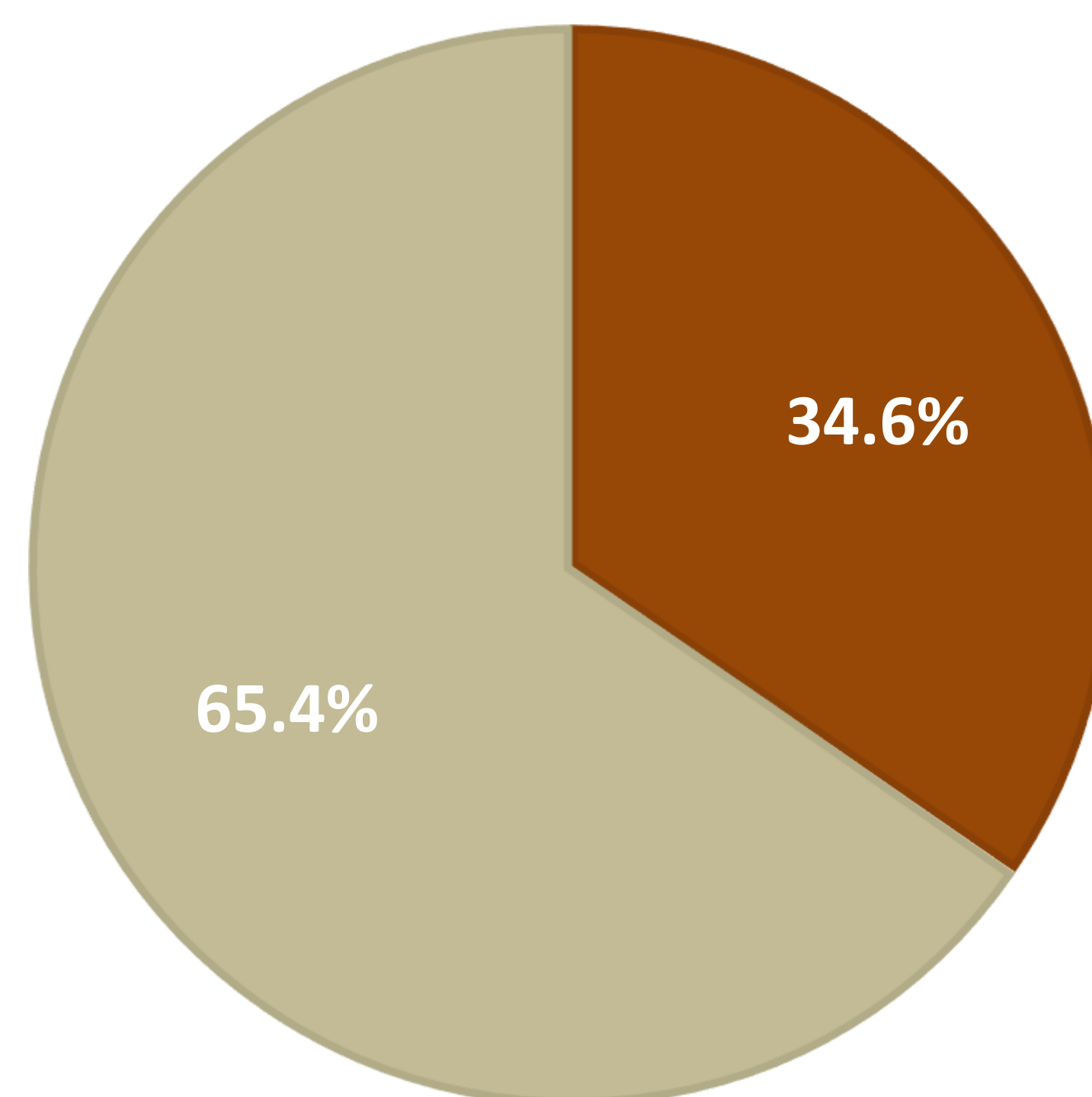


Figure 1: Vitamin D deficiency among study population

- A total of 255 women who were 30 years old or younger had vitamin D deficiency, and 63 of women who were 50 or older were vitamin D deficient. (Figure 2)
- Risk factors with p-value less than 0.25 in the univariate model : age, education, physical activity, soft drinks, milk consumption, occupation, number of children and income were included in the multivariable logistic regression model.
- In the multivariable logistic regression model vitamin D deficiency was significantly associated with soda, age groups (41-50) and 50 and older, and those who were students as for occupation (p-value < 0.05).

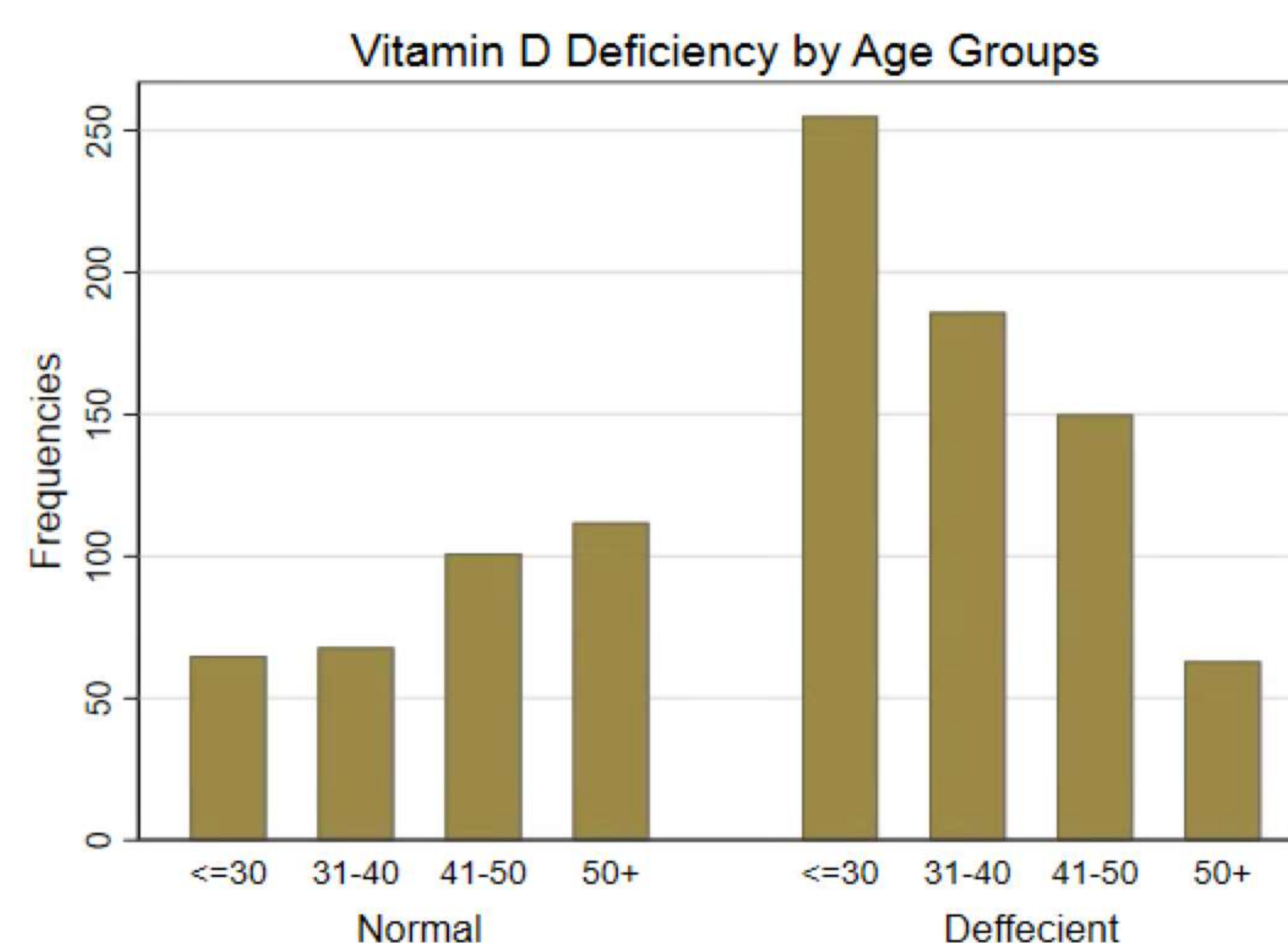


Figure 2: Vitamin D deficiency by age groups

CONCLUSION

To sum up, this study provided the first insights of the potential associated risk factors to vitamin D deficiency among adult women in Qatar. Vitamin D deficiency was common among women in Qatar, as found in the present study. Students, women who drank soda, and younger age (<50) had the highest vitamin D deficiency. This study's findings will contribute and help to raise awareness among women in Qatar about some potential risk factors of this deficiency, and it can be used to raise awareness to housewives, girls in schools, and employed women in order to improve women's lifestyle and health. It will also help public health professionals in implementing health policies and programs to reduce people's exposure to these factors. However, more studies are needed to be done to assess the causative factors.

REFERENCES

- Qatar Biobank. (2017). Annual Report 2016/2017. Retrieved from <https://www.qatarbiobank.org.qa/app/media/1730>

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METHODOLOGY

- Descriptive univariate analysis was used to assess the association between vitamin D deficiency (serum level <20ng/mL) and the potential risk factors.
- Potential risk factors which had a p-value less than 0.25 in the Chi-squared test were included in the multivariable model.
- Variables with a p-value less than 0.05 were considered having significant effect on vitamin D deficiency in the multivariable logistic regression model after controlling for other factors. Data analysis was performed using Stata (IC) version 15.0.