

Title

Maternal Vitamin D Deficiency during the COVID-19 Pandemic in Japan

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Background and Objectives

Maternal **vitamin D deficiency (VDD)** may cause low vitamin D status in infants. However, the characteristics of maternal vitamin D deficiency under the COVID-19 pandemic is unknown.

We aimed to investigate the characteristics of maternal VDD evaluated by questionnaire survey during the COVID-19 pandemic for Japanese pregnant women.

Methods

- From December 2021 to April 2022, an online questionnaire survey was conducted.
- The 421 Japanese pregnant women aged 20 years or over were enrolled.
- Recruited using posters and leaflets at the government's maternal and child department or social media.
- The questionnaire included dietary habits and lifestyles before (by March 2020) and during the COVID-19 pandemic, healthy eating literacy (HEL), and the VDD questionnaire (VDDQ-J*).
- The VDDQ-J score of 31 or higher and not taking vitamin D supplements were defined as VDD.
- Unpaired t-test, chi-square test, and logistic regression analysis with backward stepwise selection method were performed.

* Kuwabara A et al. *J Bone Miner Metab* 2019

Results

Figure 1. All participant characteristics

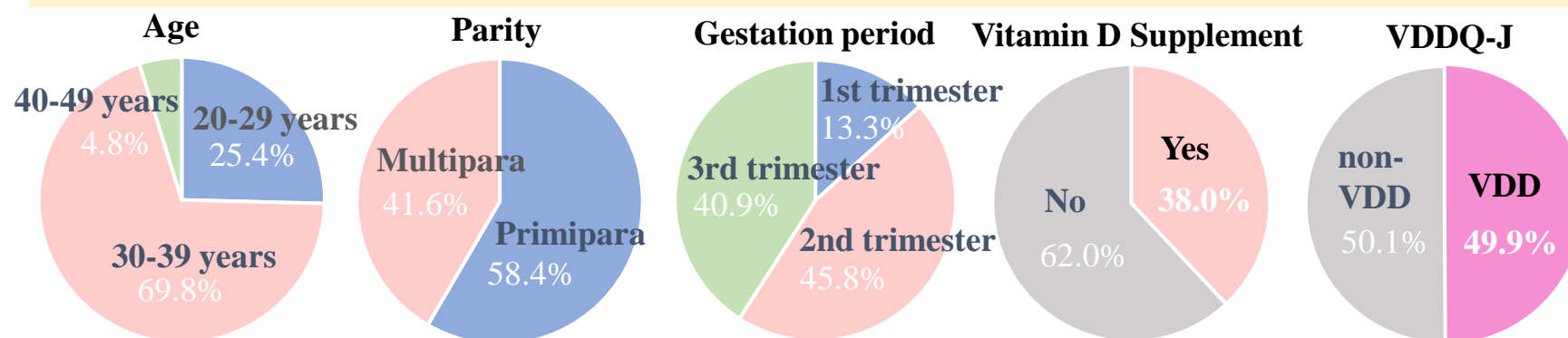


Table 1. Comparison of characteristics

	non-VDD (n=211)	VDD (n=210)	P-value
Age (years)	32.8±4.0	31.6±4.2	0.001
Pre-pregnancy BMI (kg/m ²)	20.4±2.7	20.0±2.4	0.105
HEL	3.5±0.7	3.3±0.7	0.001

Conclusions

The Prevalence of VDD was **49.9%**, and the characteristics of VDD in Japanese pregnant women are **younger age, lower HEL, and lower food expenditure** during the COVID-19 pandemic. More observational or intervention studies are needed to clarify the risk factors for VDD among pregnant women whose dietary habits and lifestyle has changed during the pandemic.

Figure 2. Food expenditure before the COVID-19 pandemic

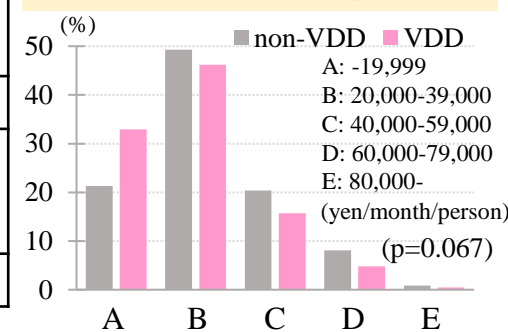


Table 2. Maternal VDD and related factors

Variables	Odds ratio	95% CI
Age	0.94	0.89 – 0.98
HEL	0.67	0.51 – 0.89
Food expenditure	0.75	0.59 – 0.94

Independent variables: age, pre-pregnancy BMI, HEL, food expenditure before the COVID-19 pandemic

Keywords

Pregnant women, Vitamin D deficiency, Healthy eating literacy

Conflict of Interest

This study was funded by Bayer Yakuhin, Ltd.

Further Collaborators

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