

UNIVERSITI TEKNOLOGI MARA

**VITAMIN D STATUS AND DIET INTAKE
AMONG THE INFERTILE POPULATION**

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ABSTRACT

Background: Infertility is a global health issue affecting millions of individuals. Approximately 10-15% of Malaysians are diagnosed as infertile. Recent studies have highlighted the potential correlation between vitamin D status and dietary intake with the reproductive axis. **Objectives:** This study was conducted to evaluate the prevalence of vitamin D deficiency within the infertile population, assess the typical dietary intake among infertile populations, and investigate the relationship between serum vitamin D and diet intake in those experiencing infertility. **Method:** A cross-sectional study was conducted among 140 infertile individuals at HASA and Sophea Fertility Center, Bangi. This study was directed by a self-administered questionnaire involving socio-demographic data and FFQs. Serum 25(OH)D was obtained from each respondent. Data was analysed using Nutritionist Pro and SPSS version 27.0. Statistical analysis was employed to examine the relationship between variables, including descriptive statistics, chi-square test for categorical data, independent t-test for continuous data, and Mann-Whitney U-test for non-normally distributed data. **Result:** Respondents' mean serum vitamin D was 47.36 nmol/L, with a higher prevalence of vitamin D deficiency observed (n=87) in females (n=66,76.7%), adults aged group (26 to 35 years old) (n=66,75.9%), and those employed full-time (n=71,81.6%). The mean intake of CHO (281 ± 441 g) and sugar (79 ± 241.9 g) was higher in the Vitamin D deficiency group. Median intake of calories and macronutrients was higher in males (Energy: 1740kcal [1380-2805]; CHO: 232.96g [151.41-313.33]; Protein: 91.67g [59.66-141.48]; Fat: 63.99g [42.00-89.35]) compared to females (Energy: 1417kcal [1082-2030]; CHO: 173.74g [126.28-262.22]; Protein: 77.77g [61.57-110.12]; Fat: 43.79g [31.39-67.25]). A statistically significant ($p < 0.05$) weak negative correlation was observed between energy ($\rho = -.259$) and fat intake ($\rho = -.274$) in females and an inversed correlation was obtained in males (Energy: $\rho = .160$; Fat: $\rho = .141$). **Conclusion:** Overall, serum vitamin D deficiency was common among the infertile population, especially in females. A varying relationship between respondents' dietary intake with serum vitamin D levels was observed and the correlation was generally very weak to weak. Further research is needed to explore more on the importance of a balanced diet with vitamin D.

Keywords: Infertility, Dietary Intake, serum Vitamin D status, Infertile Populations.

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Every married couple may hope to become parents, as the presence of children is considered a compliment and a meaningful addition to their family. However, not all individuals or couples have this chance when they are experiencing fertility issues. Infertility has turned into a global health concern that may affect millions of people's reproductive systems, regardless of gender. The World Health Organization (2023) defines infertility as the inability to conceive children following regularly occurring, unprotected sexual activity for 12 months or more. The cause of infertility is not gender-specific; it can occur in both males and females. A study stated that males solely account for 20–30% of infertility cases and 50% of instances overall (Agarwal et al., 2015). Infertility is a multifactorial condition that can be a modifiable or non-modifiable factor. In the present time, couples might go for assisted reproductive technologies (ART) as their primary treatment choice. However, issues arise when dealing with financial, religious, emotional, and psychological challenges. Hence, many studies focus on understanding the potentially modifiable factors that contribute to infertility like vitamin D and diet.

There is increasing evidence that particular diet intake may play a vital role in reproductive performance (Gaskins & Chavarro, 2018). Individual dietary intake also represents the extent to which their diet contains vitamin D sources. Low vitamin D levels have also been recognized by multiple investigations to be related to infertility. Women with a lower serum vitamin D level are more likely to experience irregular or absent menstrual disorders, which is one of the contributing factors to infertility (Lagowska, 2018). However, vitamin D receptors (VDR) and their metabolizing enzymes are not exclusively found in the female reproductive tissue, as can also be identified in the male reproductive tissue, emphasizing that vitamin D may affect male fertility. Male sperm quality, especially sperm motility, may be impacted by low vitamin D status as well (Arab et al., 2019). However, limited research conducted within infertile populations to assess their vitamin D levels and dietary intake.