

**Deanship of Graduate Studies
Al-Quds University**



**Risk Factors Associated with Vitamin D Insufficiency
among adolescents in Gaza Strip**

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among Adolescents in Gaza Strip**

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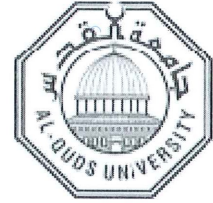
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Thesis Approval

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Jerusalem – Palestine

1440 / 2019

Dedication

To my mother who supported me at all times during my life, she is the best source of motivation and inspiration.

To my brothers and sisters “Shireen, Shadi, Dalia, Ghada, Mahmoud and Saif”

To my manager “Dr. Hossam El-Helou” and my colleagues who encouraged me all the time

To my friends

I dedicate this research for all of them...

Thank you all for your endless support

Samar Ali Abd El-Rahman

Declaration

I certify that this thesis submitted for the degree of Master, is the result of my own research, except where otherwise acknowledged, and this study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed:

Samar Ali Abd El-Rahman

.../.../....

Acknowledgment

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Finally, my appreciation is presented to all who provide me an advice, support, information, or encouragement in order to complete my master study.

With respect

Samar Abd El-Rahman

Abstract

In the past few years it was noticed that vitamin D level has got a growing interest as it is known to have an important role in the overall human body health and protect from many diseases such as osteomalacia, osteoporosis, cancer and cardiovascular diseases. Most of determinants of vitamin D deficiency are modifiable and can be prevented by lifestyle improvement.

The aim of study was to identify the possible risk factors for vitamin D insufficiency among adolescents in Gaza Strip to prevent adverse health outcomes and diseases and to suggest methods for prevention and management of vitamin D insufficiency. Mixed approach was used where a cross-sectional study based on collected data by Ard El-Insan in which 150 adolescents of ages between 12-17 years were selected to be tested for vitamin D levels, those 150 students were included in this study and their characteristics including: socio-demographic characteristics, nutritional habits, BMI, and micronutrients levels. In addition to five focus groups discussions (FGDs) were made to investigate other determinants such as sunlight exposure, type of dressing, physical activity and diet.

The prevalence of vitamin D insufficiency was 43.3% among study sample and adolescent females were at more risk for having insufficient vitamin D level as 54% of females and 11% of males who participated in the study had insufficient vitamin D level. Only 14% of adolescents who consumes large amounts of milk had low vitamin D level but 51% of adolescents consuming low amounts of milk had low vitamin D level. Also, 31.5% of anemic adolescent males and 80% of anemic adolescent females had low vitamin D levels. FGDs revealed that adolescents do not have enough information about vitamin D, its importance for health, consequences of vitamin D deficiency and methods of prevention.

Finally, the study concluded that vitamin D deficiency is undiagnosed and is an epidemic problem among adolescents in the Gaza Strip. The study resulted in some modifiable risk factors for vitamin D insufficiency that can be prevented such as: poor diet intake of vitamin D that can be modified by increasing the consumption of types of foods containing vitamin D (milk, egg and fatty fish), being anemic, indoor activities, low skin exposure to sunlight, covering the whole body during sunlight exposure and weak knowledge about vitamin D. Therefore, it may be beneficial to increase health awareness among children and to encourage them to eat healthy diet, play outdoor activities in order to be exposed to sunlight. Moreover, it is important to educate parents about healthy diet and importance of sunlight exposure for children for short periods of time (15-30 minutes) at least two or three times per week without sun protection that will provide them with their vitamin D requirement. Supplementation with 400 IU of vitamin D for infants and children daily is recommended.

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List of Abbreviation

25-OHD	Total Hydroxyl Vitamin D
AI	Adequate Intake
BMI	Body Mass Index
CDC	Center for Disease Control
CVD	Cardiovascular Disease
DM	Diabetes Mellitus
DRI	Daily Reference Intake
FGDs	Focus Groups Discussions
Hgb	Hemoglobin
MOH	Ministry of Health
NGOs	Non-Governmental Organizations
PCBS	Palestinian Central Bureau of Statistics
PHPT	Primary Hyperparathyroidism
SPSS	Statistical Package for Social Science