The Prevalence Of Heterozygous Familial Hypercholesterolemia among premarital couples In Qalubya governorate In Egypt

PROTOCOL THESIS

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Introduction

Premarital care (PMC) involves the promotion of health and well-being of a woman and her partner before pregnancy and is considered a primary preventive approach for couples planning for conception and an important step towards protecting society and allowing people to enjoy life **(Bener et al., 2019).**

PMC includes premarital health counseling and a general medical examination. Premarital examinations can particularly be important in the prevention of the spread of disease **(Alharbi et al., 2018).**

Premarital genetic counseling reduces the probability of children that might be affected by a disorder, through defining the necessity of treatment (e.g. familial hypercholesterolemia and phenylketonuria) or helping the couple to make a decision whether or not avoiding conception in the presence of a high risk of abnormality **(Shabana, 2020).**

Genetic disorders occur in about 2%-5% of all live births, account for up to 30% of pediatric hospital admissions and cause about 50% of childhood deaths in industrialized countries. The issue of PMC is of immense significance to prevent congenital malformation in Arab Nations because of the high occurrence of consanguineous marriages **(Nouri et al., 2017).**

Studies reported that consanguinity rates among the Egyptians throughout the last 40 years range between 29% and 39%. Hearing impairment, mental retardation, autosomal recessive osteoporosis and blood disorders such as thalassemia are among diseases which may result from marriage

among relatives and can be identified and prevented via premarital counselling.

In Egypt the first pre-marriage check-up center has been in service since mid-2001. Even though the attendants' number is still limited. It seems that many young couples are unconvinced about the worth of PMC **(Kabbash et al., 2019).**

The most common genetic cause of premature coronary artery disease (CAD) is familial hypercholesterolemia (FH), an autosomal dominant condition in which half the offspring of an affected individual will also be affected from birth. The causative mutations are mainly found in the LDL receptor gene (LDLR) and less frequently in the apolipoprotein B gene and the proproteinsubtilisin/kexintype 9 gene (PCSK9) **(Al-Allaf et al., 2017).**

Furthermore, FH accelerates atherosclerotic coronary disease by 10 to 40 years. 55% of men and 24% of women with FH between 50and 59 years of age have had some clinical manifestation of CAD, such as myocardial infarction and angina pectoris **(Safdar et al., 2018).**

Patients with homozygous FH, which affects approximately 1 per 300000 inhabitants, have total cholesterol levels > 500 mg/dL and very premature CAD. Untreated, these individuals die before they are 20 years old. Therefore, FH is a public health problem, and diagnosis and treatment are mandatory **(Ramaswami et al., 2020).**

Diagnosis of FH is based on high concentrations of low-density lipoprotein cholesterol (LDL-C), family history of hypercholesterolemia, presence of premature CAD, and cholesterol deposition in the form of xanthomas and/or arcus senilis **(Rallidis et al., 2020).**

Early diagnosis allows preventive measures to be taken. If patients with FH and no history of CAD are treated with statins, the risk of CAD is reduced by 79%, to a level similar to that of the general population.

Although many recent guidelines for the management of FH have highlighted the high associated cardiovascular risk, most patients with FH remain undiagnosed and untreated **(Masanae et al., 2019).**

There are a series of barriers to diagnosis and treatment. First, patients with most severe FH are usually first identified in specialist care or lipid clinics, whereas most patients are attended in primary care.

Many individuals and family members with FH who have CAD have other common risk factors and so genetic hypercholesterolemia is not diagnosed. In the case of treatment, statin doses are insufficient and combination treatment is used too sparingly **(Santos et al., 2020).**

Moreover, therapy is often started in the late stages of disease, when atherosclerosis has already developed as a result of life-long high LDL-C concentrations. Finally, health care systems are not sufficiently aware of the problem and there is a lack of screening programs **(Gwyther et al., 2018).**

From the point of view of public health, the best strategy for covering this gap in diagnosis and treatment of FH is the implementation of a family-based cascade screening program. This process consists of diagnosing FH in the family members of an individual, the index case (IC), identified as having FH. Few countries have implemented national programs for genetic detection through cascade screening **(Lázaro et al., 2017).**

Aim of the work

The aims of this cross sectional study is to:

- Identify people with Heterozygous familial hypercholesterolemia planning to marry.

PATIENTS AND METHODS

- This study is a cross sectional study. The study population consisted of all people who are presenting for the authorized health institution to be subjected to the premarital lab testing recommended from the Egyptian Health authority for their engagement.

- The study will be conducted in Qalubya governorate

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✓ **Type of the study:**

A cross sectional study

✓ **Patients:**

Inclusion criteria:

All people who are presenting for the authorized health institution to be subjected to the premarital lab testing recommended from the Egyptian Health authority for their engagement.

Exclusion criteria:

People who are presenting for the authorized health institution to be subjected to the any reason rather than premarital lab testing.

❖ Ethical consideration:

- Approval of the study protocol by an Ethical Scientific Committee of Banha University will be obtained.

- Informed verbal and written consent will be obtained from the parents before enrollment in the study.

✓ Methods:

Methodology

This study is a cross sectional study.

The study population consisted of all people who are presenting for the authorized health institution to be subjected to the premarital lab testing recommended from the Egyptian Health authority for their engagement.

The study will be conducted in Banha city

DATA COLLECTION

Standard data will be collected for all relative persons at time of consulting the authorized health institution in which the premarital lab testing is done.

The data collection form includes:

Clinical data

- Age and gender
- Cardiovascular risk factors like: Diabetes mellitus (duration, oral hypoglycemic drugs Insulin).
- Hypertension.
- Dyslipidemia.
- Current cigarette smoking.
- Family history of CAD.

- Premature death in family and presence of chronic kidney disease (creatinine >2.5 mg or dialysis),

Laboratory work up:

- Fasting lipid profile (total cholesterol, LDL, HDL and TGs).
  - If LDL-C is above 190mg/dl then Lab tests which includes:
- T3, T4, TSH
- FBS (Fasting blood sugar)
- S.creatinine
- Liver enzymes (to exclude secondary hypercholesterolemia)

Statistical analysis:

Collected data will be presented in tables and suitable graphs and analyzed using appropriate statistical methods.

Results

The results will be studied, tabulated, and analyze statistically.

Discussion

The obtained results will be discussed in light of the available literature

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