



ABSTRACT

Problem statement: Cardiovascular disease (CVD) is now the leading cause of mortality worldwide especially in developed nations. General risk factors for these illnesses include hypertension, smoking, and hyperlipidemia. High cholesterol levels cause 18 percent of strokes and 56 percent of ischemic heart disease, globally resulting in 4.4 million deaths annually. Fish is a crucial component of a well-balanced diet. The beneficial effects of fish consumption are largely documented by populations that eat a lot of fish. Fish is a good source of Omega-3 polyunsaturated fatty acids (PUFAs) which improve the lipid profile by lowering cholesterol and saturated fat intake.

Objective: The aim of this study was to examine the association of beneficial effect of long-term dietary intake of fresh fish namely Rohu (*Labeo rohita*) with serum lipid profile in healthy female subjects.

Methods: Of the 60 healthy female subjects, 50 volunteers were enrolled in this cross-sectional study to assess the relationship between fish consumption frequency and serum lipid profile. A total of 44 people were chosen at random. Six subjects withdrew from the study prior to the start of the randomization process. The subjects were divided into two groups: experimental (n=22) who reported eating 250g of uniform grilled fish every two weeks, and control (n=22) who did not report eating fish at all during the trial. The control group had two withdrawals, while the experimental group had two. The intervention was stopped for those who withdrew for medical reasons, and 40 subjects completed the 12-week intervention according to study protocol. The sample population selection criteria focused on a healthy population between the ages of 22 and 45 with no known major illnesses or medication use. After devising a questionnaire to assess the general health status of the target female group, a survey was undertaken. The habitual food consumption was assessed by using a self-administered food-frequency questionnaire. Dietary compliance was measured using a 7-day food record twice during the intervention (weeks 6 and 11) as well as a daily fish consumption record. Fasting blood samples were obtained from the peripheral vein at baseline (0-week), 6-week, and 12-week and centrifuged at 1000 rpm for 10 minutes to separate serum using GYROZEN-1236MG/GRS-r250-4. On a Beckman Coulter AU 680 Analyzer, serum total



cholesterol, LDL and HDL cholesterol, and triglycerides (TG) were measured using commercial kits (OSR6116, OSR6196, OSR6195, and OSR61118, respectively). This research took three months to complete (12-weeks).

Results: An independent T-test and one-way ANOVA statistical analysis were employed to assess the effect of fish diet on female lipid profile. The subjects in the fish group demonstrated a significant reduction (11%; $p=0.002$) in Body Mass Index (BMI), (16%; $p=0.01$) in total cholesterol, (15%; $p=0.004$) in total triglycerides and (9%; $p=0.000$) in Low-density lipoprotein (LDL) cholesterol. There was a trend toward increase in high-density lipoprotein cholesterol (HDL-C) by 20% ($p=0.000$) in fish group compared to non-significant change in the control group.

Conclusions: The results indicate that a high frequency of fish eating was associated with lipid profile parameters in a significant way. The combined benefits of lower total cholesterol, total triglycerides, LDL-C, BMI and rise of HDL-C levels clearly suggest that fish consumption may have a beneficial influence on lipid profile modification.

Keywords: Cardiovascular disease, risk factors, fish (Rohu), n-3 long chain polyunsaturated fatty acids (PUFAs), Lipid profile parameters (BMI, serum total cholesterol, serum triglycerides), young to middle age, healthy female population, Beckman Coulter AU 680 Analyzer.