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5-1-2019

The Functional Food Diet: A Pilot Study

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Recommended Citation

Knight, Caroline and Hamill, Ralph, "The Functional Food Diet: A Pilot Study" (2019). *MaineHealth Maine Medical Center*. 691.

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BACKGROUND

Recently, several functional foods have been identified which have health benefits beyond providing energy and substrate molecules for cellular chemistry. These foods are effective in reducing fat absorption and lowering low-density lipoprotein (LDL) cholesterol (Asgary, Rasquar, & Keshvari, 2018). In the past, diets low in saturated fat have been found to be ineffective in lowering LDL cholesterol. Statins are capable of lowering LDL cholesterol up to 60% when the latest generation is used at maximal dose (Law, Wald & Rudnicka, 2003). However, some patients do not tolerate statins because of side effects. Evidently, decreasing the LDL lowers the risk of cardiovascular disease. A meta-analysis showed that a drop of 1 mmol/L of LDL cholesterol translates to a 9% drop in death from all causes (Cholesterol Treatment Trialists' Collaborators, 2008). Optimizing the lowering of LDL cholesterol levels is an important goal for the reduction of cardiovascular risk and can be made possible by combining a number of functional foods.



Figure 1: Recommended "Functional Food" Daily Diet

In addition, it was recommended subjects consume margarine containing plant sterols and oatmeal daily.

PURPOSE

This study aimed to investigate the change in LDL cholesterol level between the baseline diet and the functional food diet. Additionally, to observe the change in HDL cholesterol, total cholesterol, triglycerides and diastolic and systolic blood pressure.

METHODS

This pilot study was an unblinded interventional study designed to evaluate the effects of the functional food diet on subjects who do not consume these foods on a regular basis. Males and non-pregnant females aged 18 years or older were enrolled. A subject's participation consisted of two study visits; an enrollment visit and an end of study visit four weeks after enrollment. At both visits, blood pressure, height, weight and abdominal girth were measured and blood was obtained for the lipid panel. A dietary recommendation for a Functional Food Daily Diet was given to each patient at their enrollment visit (Figure 1). Additionally, all participants were counseled in avoidance of trans fat and high fructose corn syrup. Reduced consumption of red and processed meat and full fat dairy products was also recommended. Compliance was calculated from a self reported dietary record. Paired t-tests were utilized to examine the difference in six outcome measures before and after the diet intervention, and were further stratified by the median percent compliance level. T-values were considered significant at the .05 level. Analysis was done using SAS Enterprise Guide 7.1.

RESULTS

Fifty patients with an average age of 57.8 completed the study. The median percent compliance level was determined to be 86% (range= 50-100%). On average, HDL increased by 2.49 mg/dL after the diet intervention among all study participants, with a standard deviation of 7.39 (p= 0.03, see Figure 2), and this measure did not differ significantly when stratified by percent compliance. LDL decreased by an average of 5.78 mg/dL among all study participants, with a standard deviation of 16.98 (p= 0.03). Those with >=86% compliance with the diet had an even higher average decrease in LDL (13.52, p=<.0001) compared to those with <86% compliance, who actually had an increase of 2.32 mg/dL (p=0.52). The remaining outcome measures were not statistically significantly different among participants overall after the diet intervention.

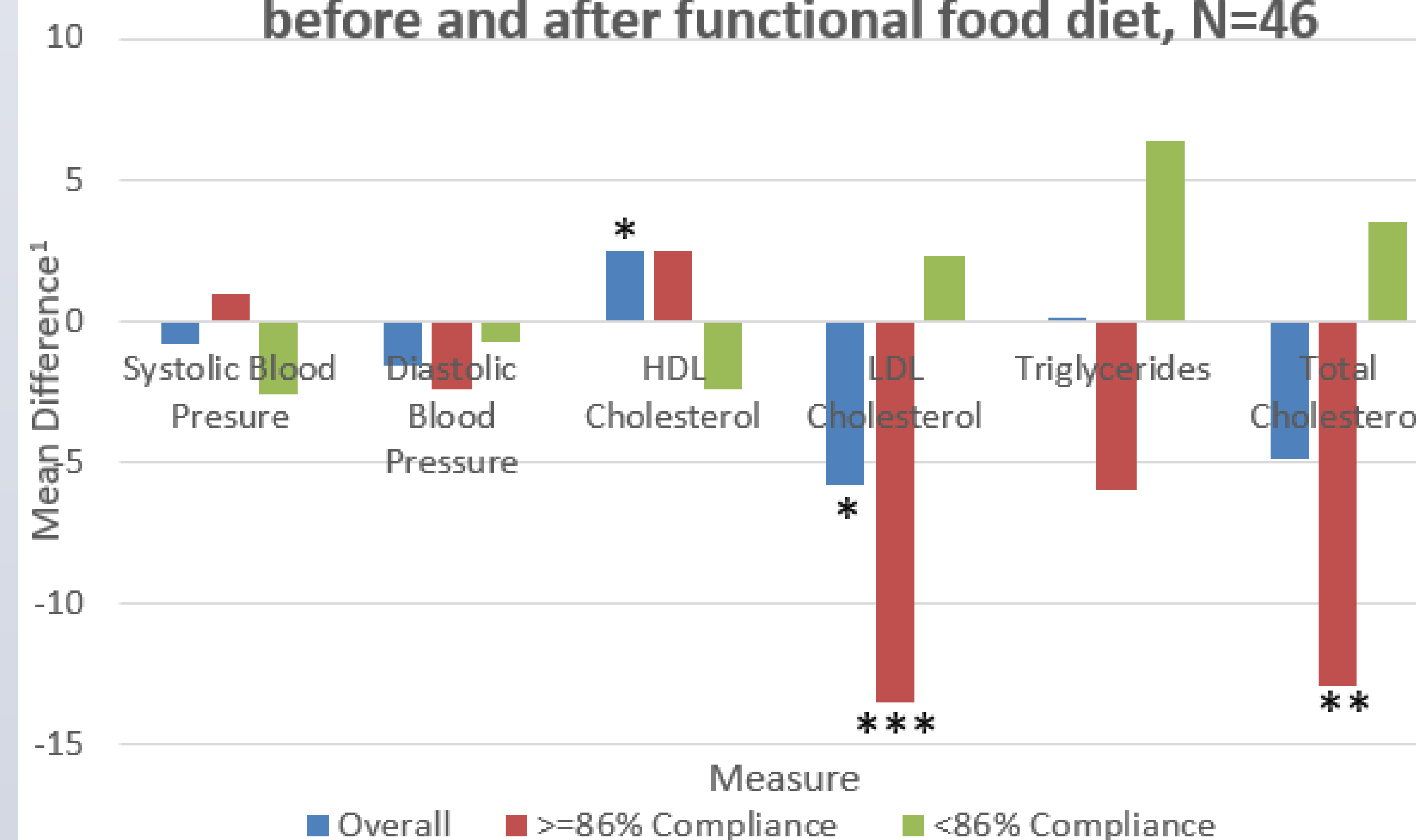
CONCLUSION

A functional food diet may prove to be easier to comply with than diets low in saturated fat while also lowering LDL cholesterol. It may also allow for a lower dose of statin therapy in some patients and it may help patients who cannot take statins at all due to side effects in order to lower their LDL cholesterol.

ACKNOWLEDGEMENTS

The Northern New England Clinical and Translational Research network NIH grant # U54GM115516 supported this work.

Figure 2: Difference in outcome measures before and after functional food diet, N=46



Note. *p<0.05 **p<0.01, ***p<0.001

¹ Measured as after - before functional food diet