



Plasma HDL-C Predicts Visceral Adipose Tissue in Young Military Personnel of California National Guard

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BACKGROUND

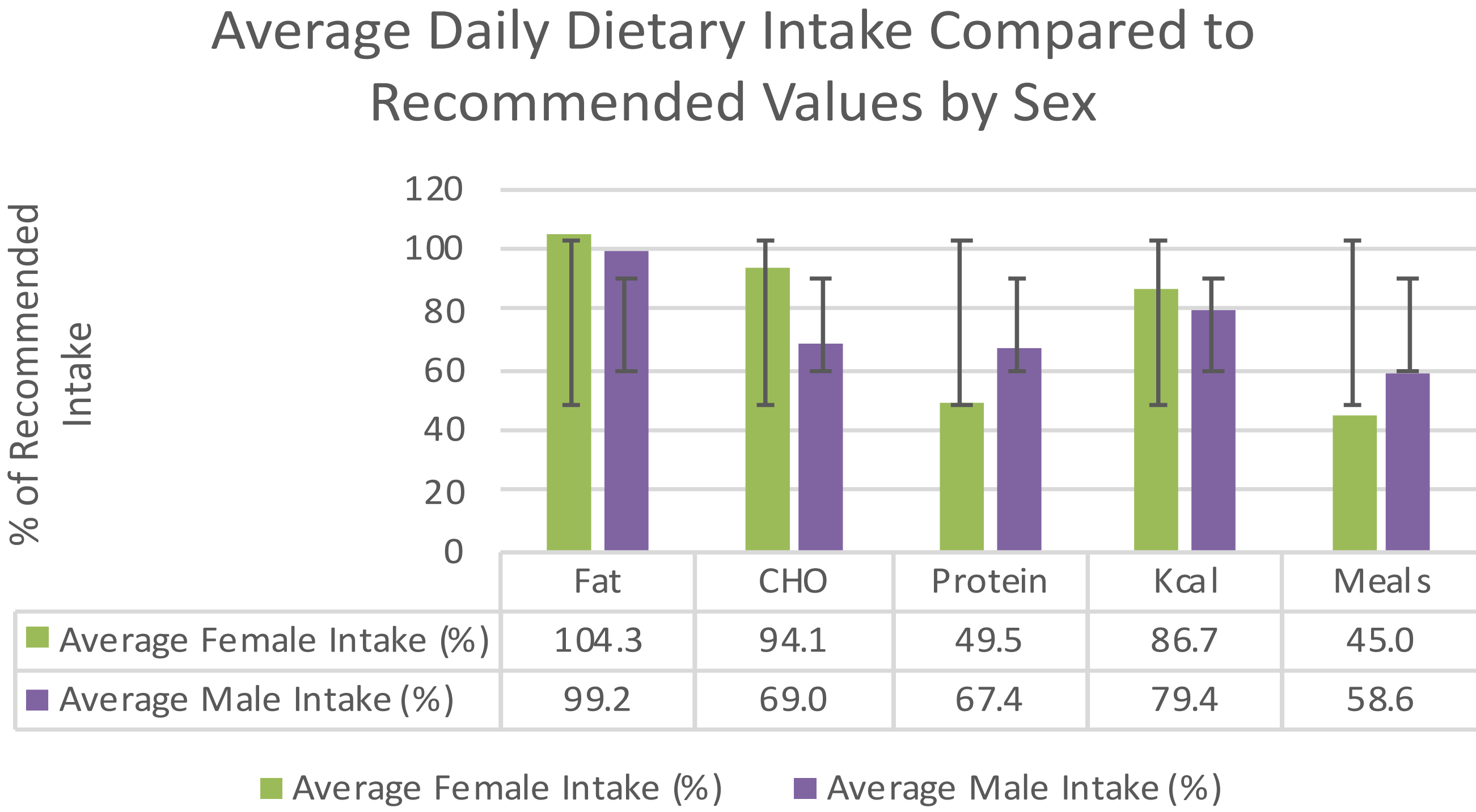
Preliminary data that indicated Insufficient dietary intake and poor nutrition knowledge scores in California National Guard men and women, raised concerns about the physical and nutritional status of personnel.

METHODS

Twenty-two young men and women of the 49th Military Police Brigade (27yrs average) of the California National Guard participated in this study entailing assessment of nutrition and health status. This study was designed to implement nutrition education and evaluate its effectiveness in reducing risk factors for Metabolic Syndrome (MetS) and improving body composition.

RESULTS

Participants reported receiving less than average daily recommended calories and variable macronutrient % of recommended values at baseline. DXA analysis revealed high %Body Fat (BF), positively correlated with high values of Visceral Adipose Tissue (VAT) in both sexes. Statistical analyses identified HDL cholesterol (HDL-C) and waist circumference as significant predictive variables of VAT, after adjusting for age and sex. Follow-up data from two participants was collected but excluded from statistical analysis due to small sample size. Exploratory (stepwise regression) analysis considering several predictive variables reveals HDL-C is the most significant predictor of VAT ($p=0.0011$), when waist circumference is excluded from the model, after correcting for age and sex. Waist circumference was excluded with the consideration that waist may be a surrogate measure for VAT. HDL-C seems to be the variable most strongly associated with VAT and HDL-C explains 67% of the variability of VAT ($RSquared=0.6741$) in the fit model after correcting for age and sex.



Body Composition Assessed by DXA

Sex (M/F)		Mean	Median	Min	Max	Std Dev
F	Body Mass (lbs)	164.8	165.0	142.3	205.0	21.7
	Region % Fat	37.2	37.9	30.1	41.3	3.7
	Lean (lbs)	97.6	94.0	82.6	117.6	12.9
	Fat (lbs)	61.3	62.0	42.9	81.8	11.2
M	Visceral Fat (lbs)	1.3	1.2	0.3	3.1	0.9
	Body Mass (lbs)	200.1	196.0	163.0	246.0	24.0
	Region % Fat	29.6	29.4	20.3	38.3	5.8
	Lean (lbs)	133.0	131.3	112.2	150.5	11.8
	Fat (lbs)	60.1	63.9	33.2	87.9	16.9
	Visceral Fat (lbs)	2.0	1.9	0.2	3.9	1.0

Blood Biomarkers

	Mean	Median	Min	Max	Std Dev
Total Cholesterol (mg/dL)	137.7	139.5	99.0	199.0	21.2
TG (mg/dL)	76.2	75.0	39.0	174.0	29.2
HDL-C (mg/dL)	48.5	47.0	36.0	67.0	8.6
LDL-C (mg/dL)	73.9	72.0	42.0	135.0	20.9
FBG (mg/dL)	85.9	87.0	76.0	100.0	6.3
HgbA1c (%)	5.1	5.1	4.6	6.1	0.3
Iron (ug/dL)	90.0	86.5	40.0	188.0	34.7
CRP (mg/dL)	0.3	0.3	0.3	0.4	0.0
Insulin (UIU/mL)	3.8	3.0	1.9	9.0	2.0

CONCLUSIONS

While the impact of high HDL-C on improved body composition and reduction of cardiovascular and metabolic risk factors is well documented in the literature, the significance of HDL-C on VAT deposition revealed in this study provokes continued research in this population.

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