

**VALIDATION OF THE MEDFICTS FOR RAPID DIETARY FAT ASSESSMENT IN A SAMPLE OF AFRICAN-AMERICAN WOMEN  
FOR PARTICIPATION IN A NUTRITION INTERVENTION TRIAL**

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## Objective and Purpose

To compare the predictive validity of a rapid dietary fat screening instrument with that of a food frequency questionnaire when used in a study of young African American women in a nutrition intervention trial.

## Abstract

MEDFICTS is a rapid dietary fat screening instrument in which a score of 70 or higher indicates fat intake of 30% or greater. The African-American Nutrition for Life project utilized MEDFICTS to telephone screen participants' eligibility for a nutrition intervention trial that required a minimum dietary fat intake of 30%. Prior studies had used the Arizona Food Frequency Questionnaire (AFFQ) to evaluate dietary fat during recruitment. The validity of MEDFICTS was evaluated by comparing scores from 158 African-American women to the percentage of fat calories reported on the AFFQ. MEDFICTS identified 62.7% correctly. The correlation of MEDFICTS and AFFQ scores ( $r = 0.29$ ,  $p < 0.001$ ) was weak, as were sensitivity (61.6%) and specificity (65.2%). Positive and negative predictive values were 81.2% and 41.1%, respectively. Advanced analyses included examination of correctly- and incorrectly-identified group covariates and Receiver Operating Characteristic curves. In comparison to the AFFQ, MEDFICTS performed poorly. However, predictive values suggest that it was more accurate in identifying women consuming 30% or more fat calories than those consuming less. These preliminary findings led to a successful use of MEDFICTS as an initial screener in a multi-stage process. This study suggests that MEDFICTS may function differentially across some populations. No comparison ethnic/racial group limits this determination. Regardless, the findings demonstrate that using MEDFICTS alone would have resulted in a substantial loss of eligible participants and illustrate the need for population-based validation.

## Background

- Pre-menopausal African-American (AA) women have the highest incidence and mortality rates of breast cancer.
- Estrogen has been linked to increased breast cancer risk.
- Increased consumption of fruits, vegetables and fiber has been linked to lowered risk of cancer.

## African-American Nutrition for Life:

### A NULIFE



- A NULIFE is a Breast Cancer Intervention Study.
- A NULIFE is designed to delineate the association of diet with putative markers for increased breast cancer risk (total body fat, dietary fat and fiber intake, circulating triglycerides and free fatty acids, carotenoids and total and bioavailable estrogens) in pre-menopausal AA women, 25-45 years of age, who are currently consuming at least 30% dietary fat.
- Participant diet is modified through a nutrition curriculum. Though several nutrition programs have been developed for African Americans, few have focused on younger, pre-menopausal women, and diet's relationship to cancer. As part of a A NU-LIFE, our research team has developed a culturally appropriate dietary intervention for pre-menopausal AA women.

## Population Studied

- Data for this study were collected from 158 women who were screened for eligibility in the A NULIFE study.
- The participants were, on average, 37 years old (range = 26 - 47, SD=5.35).
- 113 (71.5%) had college degrees and/or graduate education.
- 105 (66.9%) were single, divorced, separated, or widowed; the remainder (n=52, 33.1%) were married.
- Reported incomes:
  - 23 (14.5%) reported less than \$25,000
  - 57 (36.1%) reported between \$25,000 and \$49,999
  - 35 (22.2%) between \$50,000 and \$99,999
  - 8 (5.1%) reported \$100,000 or more
  - 35 (22.1%) did not provide income information.

## Design

A case series design was utilized to assess the predictive validity of the MEDFICTS as a rapid dietary fat screening instrument for AA pre-menopausal women.

## Instruments

The MEDFICTS assessed if the participants were consuming at least 30% dietary fat. The AFFQ was utilized as a "gold standard" for dietary fat consumption.

### MEDFICTS:

- A rapid dietary fat screener for assessing adherence to National Cholesterol Education Program Step 1 & Step 2 diets.
- Developed for face-to-face interviews, with subsequent (small sample) validation in which the MEDFICTS was telephone administered or self-administered.
- Asks only about major contributors of dietary fat, including meat, eggs, dairy, fried foods, baked foods, convenience foods, added fats, snacks.
- Has prompts for frequency of intake and serving sizes.
- Scores can range from 0 – 216.
- Produces a threshold score: 70 or higher indicates 30% fat consumption or more.
- We utilized a telephone interview format, with scripted prompts and probes for frequency and serving size.
- Telephone screeners were trained by the study dietitian.

### Arizona Food Frequency Questionnaire:

- A self-administered, self-report tool for assessing intake of various foods and their associated nutrients.
- Provides lists of foods, with prompts for frequency of intake and average serving sizes.
- Analyzed by University of Arizona.
- Produces an analysis of macro nutrients (e.g., fat, carbohydrate, protein) and micronutrients (vitamins, minerals, etc.)
- Output includes an average number of kilocalories associated with fat, grams of fat, and percentage of calories from fat.

## Methods

- 158 screened participants completed both the MEDFICTS and an AFFQ.
- The MEDFICTS was phone administered during eligibility screening.
- The AFFQ was self-administered at home and collected at an orientation session for the A NULIFE study.
- A small sub-sample (n=16, 10.1%) completed their AFFQ (and a 3-day food record) at a separate setting as part of specific validation study activities.
- 19 (12.0%) intervention study participants also completed a food record, for a total of 35 completed food records.

## Results

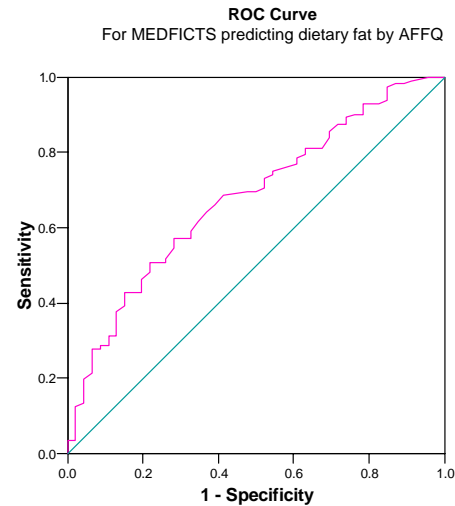
- MEDFICTS identified 62.7% correctly (compared to AFFQ).
- The correlation of MEDFICTS and AFFQ scores ( $r = 0.29$ ,  $p < 0.001$ ) was significant but weak.
- The dichotomized MEDFICTS ( $< 70$ ,  $\geq 70$ ) was an accurate predictor of 30% or greater dietary fat consumption ( $\chi^2(1) = 9.44$ ,  $p < .05$ , Cramer's  $V = 0.244$ ,  $p < .05$ ).
- Sensitivity (61.6%) and specificity (65.2%) were weaker than desired. Positive and negative predictive values were 81.2% and 41.1%, respectively.
- A similar pattern was observed for the MEDFICTS compared to 3-day food records. This analysis was limited by the small sample overall ( $n=35$ ), as well as the small number consuming less than 30% fat ( $n=5$ ).
- ROC curve analysis demonstrated that the MEDFICTS was statistically different than chance ( $p < .05$ ) in predicting dietary fat consumption above or below 30%.
- A reduction in the threshold score resulted in increased sensitivity but decreased specificity.

Performance of MEDFICTS		compared to	
Performance Measures		AFFQ (n=158)	3-Day Food Record (n=35)
Correctly Identified	True Positives	69 (43.7%)	18 (51.4%)
	True Negatives	30 (19.0%)	3 (8.6%)
Incorrectly Identified	False Positives	16 (10.1%)	2 (5.7%)
	False Negatives	43 (27.2%)	12 (34.3%)
Sensitivity		61.6%	60.0%
Specificity		65.2%	60.0%
Positive Predictive Value		81.2%	90.0%
Negative Predictive Value		41.1%	20.0%
Area Under Curve		0.678	0.597

## Results

An examination of correctly- and incorrectly-identified group covariates demonstrated:

- No significant differences in participant status, education level, marital status, income, number of chronic health conditions or participant age.
- Significant differences between interviewers with formal dietetic education and those without dietetic education ( $\chi^2(1) = 10.84$ ,  $p < .05$ , Cramer's  $V = 0.262$ ,  $p < .05$ ). However, this finding was in the opposite direction of what was expected.



## Conclusions

- Predictive values suggest MEDFICTS is more accurate in identifying those consuming higher-fat diets than those consuming less fat in their diet
- The current threshold score of 70 may underestimate fat consumption of 30% or greater in this population.
- These data suggest that use of the MEDFICTS with this study population would result in a number of “false negatives” which illustrates the need for population-based validation of screening instruments.
- The high motivation level of respondents to participate in the study might have led to socially desirable responses (i.e., reporting a lower fat intake than actually consumed) resulting in overall underestimation of fat intake.

## Conclusions

- For research projects recruiting AA premenopausal women consuming 30% fat or more, the use of the MEDFICTS alone could result in a substantial loss of eligible participants.
- MEDFICTS may serve as a useful initial screener in a multi-stage process, where those with lower MEDFICTS scores (i.e., less than 70) can have their fat intake validated through a secondary method.
- Interviewer personnel and training are key elements in consistency of use with MEDFICTS, especially when administered on the phone.
- Further exploration is needed to fully understand the discrepancy between those with formal dietetic training and those without, and the interaction of this training with the use of MEDFICTS.

## Limitations

- No comparison ethnic/racial group to assess population differences.
- All data are based upon self-report instruments.
- The list of foods on the MEDFICTS instrument may not have included common sources of dietary fat for this population.

## References

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