1a. **Full Title:** Dimensions of Social Support and Risk of CHD Events, Carotid Arterial Wall Thickness, and Mortality

1b. **Abbreviated Title:** Dimensions of Social Support

2. **Writing Group:**

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3. **Timeline:**

   Analysis to begin following Publications Committee approval. Manuscript anticipated for initial review by August 2000.

4. **Rationale:**

   A considerable literature has demonstrated the salutary effects of social support on morbidity and mortality rates across a variety of diseases (1-3) including cardiovascular disease (4,5). While there is general agreement on the likely benefits of social support, there is less consensus on the specific dimensions or types of support most likely to be associated with positive outcomes. The diversity of definitions and operationalizations of support employed across studies have prompted calls for greater specificity in defining the social support construct so that the unique contribution of specific dimensions of social support can be evaluated both within and across studies (6,7).

   In ARIC, two measures of social support were collected. The Lubben Social Network Scale (8) provides a measure of social network or structure (i.e., frequency and number of social ties). The Interpersonal Support Evaluation List (ISEL; 9) is a measure of perceived functional...
support, assessing the supportive functions provided by social relationships. The ISEL was originally developed as a 40-item scale. Four subscales are derived, each thought to contribute unique variance to the support-disease relationship: (a) Appraisal Support, perceived availability of emotional support; (b) Tangible Support, perceived availability of material aid; (c) Belonging Support, perceived availability of others to interact socially; and (d) Self-Esteem Support, perceived availability of others to whom one compares favorably.

The version of the ISEL employed in ARIC is a shorter 16-item version composed of 4 subscales (4-items each). Although this short version also assumes a four factor model, to our knowledge, this has never been validated psychometrically. Brookings and Bolton (10) performed a factor analysis of the 40-item version of the ISEL and found support for a four-factor model, however a more general unitary factor was also suggested.

Several obvious distinctions limit the generalizability of the Brookings and Bolton (10) results to the ARIC cohort, including characteristics of the scale (item length, 40 vs. 16; and response format, true/false vs. 4-point scale) and of the sample (college students \( N = 133 \) vs. middle-aged population-based sample). Moreover, recent studies have raised the possible importance of gender- and/or ethnic-specific effects of social support on health (4, 11). That is, certain dimensions of support may contribute more to positive outcomes in specific subgroups of the population than in others. In order to evaluate this hypothesis, one must first demonstrate the validity of the measure in the population of interest (i.e., is it measuring the same construct across groups).

The large ARIC sample size provides a unique opportunity to examine the factor structure of this shorter version of the ISEL for the total group and by gender and ethnicity. The current study proposes a confirmatory factor analysis of the 16-item ISEL used in ARIC. As plausible models have been proposed previously, confirmatory factor analysis will provide a rigorous test of alternate factor structures. Using LISREL, we will obtain maximum likelihood estimates of the factor loadings and factor correlations, as well as a model of how well the proposed model fits the data. The factor structure which fits the data best will then be used to examine the association of specific dimensions of support to CHD risk, carotid arterial wall thickness, and mortality.

Overlap with other ARIC manuscripts:
Some overlap is acknowledged with manuscript # 538 (The relationship of social support to incident myocardial infarction and ischemic stroke). In addition to the factor analysis, the focus of the current manuscript is somewhat broader, including all CHD events, carotid artery wall thickness, and all-cause mortality.

5. Main Study Questions:

Does a four factor model of the ISEL provide a better fit with the data than alternative models (1, 2, 3 or null factor model) for the total cohort?

Does a four factor model of the ISEL provide a better fit with the data than alternative models (1, 2, 3 or null factor model) in all gender, ethnic, and gender-ethnic subgroups?

What is the relative contribution of structural and functional support (ISEL total score) to the incidence and recurrence of CHD events (MI, silent MI, revascularization procedures), carotid
arterial wall thickness, and mortality (CHD-specific, all-cause)?

Does the association of structural and functional support (ISEL total score) with the incidence and recurrence of CHD events (MI, silent MI, revascularization procedures), carotid arterial wall thickness, and mortality (CHD-specific, all-cause) vary by gender or ethnicity?

What is the relative contribution of the ISEL subscales to the incidence and recurrence of CHD events (MI, silent MI, revascularization procedures), carotid arterial wall thickness, and mortality (CHD-specific, all-cause)?

Does the association of the ISEL subscales with the incidence and recurrence of CHD events (MI, silent MI, revascularization procedures), carotid arterial wall thickness, and mortality (CHD-specific, all-cause) vary by gender or ethnicity?

6. Data:

Confirmatory factor analysis will be performed using LISREL. We will obtain maximum likelihood estimates of the factor loadings and factor correlations, as well as a model of how well the proposed 4-factor model fits the data compared to alternate models (i.e., 1, 2, 3, and a null factor model). The chi-square goodness-of-fit statistic will be used as a global test of each models ability to reproduce the sample variance/covariance matrix. Models will be examined for the group as a whole, and by gender, ethnic, and gender-ethnic subgroups.

Study questions regarding risk of CHD events and mortality will be tested using Cox proportional hazards models, adjusted for the potential confounding effects of age, sex, ethnicity, income, education, systolic and diastolic blood pressure, total cholesterol, HDL, LDL, BMI, fibrinogen, prevalent disease (hypertension, diabetes), antihypertensive use, HRT (women), ETOH consumption, smoking, physical activity, and family history of CHD. TIA/stroke symptoms and FEV\textsubscript{1} will also be controlled in models of all-cause mortality. Multivariate linear regression models will be used to examine the relationship between social support variables and carotid wall thickness. The regression models will be adjusted for traditional cardiovascular risk factors.

Visit 2 variables include: social support variables (Lubben, ISEL), cardiovascular risk factors (listed above), and carotid arterial wall thickness. In addition, follow-up through 1995 for incident CHD events and mortality will be used.

References

morbidity and mortality: The contribution of social networks and support. *Annals of Behavioral Medicine, 15*, 112-118.


