needs of others other than through everyday contacts and experiences "on the street." This emphasis on the local environment also found expression in the way that local hospital closures coloured assessments about health service priorities.

Overall, these findings challenge the idea that local voices should have great prominence in decisions about health resource allocations. These interviewees felt ill equipped to become involved in the process and were reluctant to give opinions based on self interest. This broad position might reflect the legacy of a paternalistic health service in which patients were disempowered, but it also means that consumer consultation exercises that use highly structured questionnaires must have doubtful validity. Although it might be possible to persuade respondents to tick a preference box, such a judgment seems to reflect more a perceived social ethos of equity rather than a personal view. Consumers may have an important part to play in the more consumer oriented NHS of the 1990s but until they can accept

that this role requires them to express personal preferences public consultation exercises are, ironically, likely to reflect a collectivist approach to health care provision.

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Body fat distribution before pregnancy and gestational diabetes: findings from coronary artery risk development in young adults (CARDIA) study

Shumin Zhang, Aaron R Folsom, John M Flack, Kiang Liu

An increased waist to hip ratio is associated with abnormalities of glucose metabolism and an increased risk of non-insulin dependent diabetes mellitus.¹ We therefore prospectively tested the hypothesis that a greater prepregnancy waist to hip ratio might increase the incidence of gestational diabetes.

Subjects, methods, and results

In 1985-6, the coronary artery risk development in young adults (CARDIA) study examined 5115 adults aged 18-30 years from four communities in the United States.² Second, third, and fourth examinations were performed in 1987-8, 1990-1, and 1992-3. Pre-pregnancy risk factors assessed in 1985-6 included body mass index (in kg/m²), waist (minimal abdominal girth), and hip (maximal protrusion) circumferences. Fasting serum insulin concentration was measured by immunoassay.

At each examination participants reported whether they had ever had diabetes. Women also were asked about each interim pregnancy, including "Did you have diabetes during this pregnancy?" No attempt was made to validate this self report of gestational diabetes as this was an analysis of an existing data set.

Of 1083 women who reported pregnancy during the seven years between the baseline and fourth examinations, 56 reported gestational diabetes. We excluded women with a history of diabetes or pregnancy at baseline, a pregnancy of less than 25 weeks, a multiple pregnancy, or missing gestational diabetes status, leaving 720 women, 44 of whom reported gestational diabetes.

Cumulative incidence (the number of women who reported incident gestational diabetes divided by the number of women who became pregnant) was calculated within thirds of baseline anthropometric data. Relative risks were calculated by unconditional logistic regression (SAS Institute, Cary, North Carolina).

Of the 720 women, 48% (346) were white and 52% (374) were black; at baseline, 63% (454) had > 12 years'

education; 16% (115) reported diabetes among first degree relatives; 39% (281) were parous. Age adjusted relative risks of gestational diabetes were significantly raised ($P < 0.05$) in the highest versus lowest third of baseline weight (relative risk=2.23), body mass index (2.49), waist circumference (2.31), hip circumference (2.44), and fasting serum insulin concentration (2.66), but there was no dose-response pattern. In contrast,

Multivariate adjusted relative risk of gestational diabetes in relation to baseline prepregnancy body mass index, waist to hip ratio, and other covariates; coronary artery risk development in young adults (CARDIA) study, 1986-93

Baseline characteristic	Model 1* Relative risk (95% confidence interval)	Model 2† Relative risk (95% confidence interval)
Body mass index (kg/m ²):		
14-18-22-14	1.00	1.00
21-14-24-12	0.98 (0.40 to 2.43)	1.23 (0.47 to 3.22)
24-14-53-53	1.94 (0.83 to 4.54)	1.99 (0.76 to 5.19)
	Trend P=0.113	Trend P=0.164
Waist to hip ratio:		
0.629-0.705	1.00	1.00
0.706-0.742	2.74 (1.02 to 7.35)	2.28 (0.83 to 6.25)
0.743-1.020	4.02 (1.50 to 10.77)	3.00 (1.08 to 8.35)
	Trend P=0.004	Trend P=0.02
Age:		
<20	1.00	1.00
20-24	0.95 (0.29 to 3.12)	0.96 (0.29 to 3.22)
≥25	1.21 (0.38 to 3.87)	1.35 (0.41 to 4.43)
Race:		
White	1.00	1.00
Black	0.55 (0.27 to 1.12)	0.52 (0.24 to 1.12)
Family history of diabetes in first degree relatives:		
No/unknown	1.00	1.00
Yes	2.89 (1.42 to 5.88)	2.78 (1.34 to 5.75)
Parity at baseline:		
0	1.00	1.00
1	0.86 (0.42 to 1.78)	0.81 (0.38 to 1.74)
>1	0.14 (0.02 to 1.12)	0.15 (0.02 to 1.15)
Fasting serum insulin concentration (μU/ml):		
2.5-6.7		1.00
6.8-10.8		0.70 (0.25 to 1.91)
10.9-67.1		1.82 (0.74 to 4.47)
		Trend P=0.144

*Model 1 included dummy variables for thirds of body mass index and waist to hip ratio, age (<20, 20-24, ≥25), race (black/white), family history of diabetes in first degree relatives (yes, no/unknown), and baseline parity (0, 1, >1).

†Model 2 also included fasting insulin.

Division of Epidemiology,
School of Public Health,
University of Minnesota,
Minneapolis,
MN 55454-1015, USA
Shumin Zhang, postdoctoral
fellow
Aaron R Folsom, professor

Hypertension Center,
Bowman Gray School
of Medicine, Northwestern
Winston-Salem,
NC 27157-1032, USA
John M Flack, associate
professor

Department of Community
Health and Preventive
Medicine, Northwestern
University Medical School,
Chicago, IL 60611, USA
Kiang Liu, professor

Correspondence to:
Dr Folsom.

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for waist to hip ratio the age adjusted relative risk monotonically increased from 2.61 in the second third to 4.17 in the highest third (P for trend=0.0003).

When the factors were considered jointly (table; model 1), gestational diabetes was strongly associated with waist to hip ratio (relative risk=2.7 for the middle third and 4.0 for the highest third), but not with body mass index (relative risk=1.9 for the highest third). Adjustment for fasting serum insulin concentration (model 2) attenuated slightly the association of gestational diabetes with waist to hip ratio. In model 2, fasting serum insulin concentration itself had a relative risk for the highest third of 1.82 (P for trend=0.14).

Comment

A high waist to hip ratio is associated with increased risk of gestational diabetes and may be a better marker than body mass index of excess visceral fat and insulin resistance.¹ Insulin resistance has been linked to the pathogenesis of gestational diabetes,³ although impaired insulin secretion has also been implicated.³

Among people without diabetes, fasting insulin concentration is correlated relatively highly with insulin action.⁴ A value in the upper third was associated with a higher risk of gestational diabetes, confirming that women inclined to develop gestational diabetes are indeed more insulin resistant.

Self reported diabetes is reasonably accurate⁵ but, without screening, diabetes and gestational diabetes

may go undetected. Screening for gestational diabetes is widely practised, yet no information on such screening was available for women in the CARDIA study.

Our findings require replication with validation of gestational diabetes. Nevertheless, they indicate that a high waist to hip ratio can be included among risk markers for gestational diabetes.

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