
Adult abdominal circumference - measured

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Identifying and Definitional Attributes

Data Dictionary: NHDD
Knowledgebase ID: 000372 Version number: 1
Metadata type: DATA ELEMENT
Registration Authority: NHIMG Admin status: SUPERSEDED
Effective date: 01-JAN-03
Definition: A person's abdominal circumference measured half way between the inferior margin of the last rib and the crest of the ilium in the mid-axillary plane. The measurement is taken at the end of normal expiration.

The measurement of abdominal circumference is not the same as that of waist circumference where the minimum girth is measured.

Adult abdominal circumference: measured is a continuous variable measured to the nearest 0.1 cm.

In order to ensure consistency in measurement, the measurement protocol described under Data Collection Methods should be used.

Context: Public health and health care.

Its main use is to enable the calculation of Adult abdomen to hip ratio which requires the measurement of hip circumference and abdominal circumference.

There is evidence that abdominal circumference alone might be used to identify people at health risk both from being overweight and from having a central fat distribution (Lean et al. 1995; Han et al. 1995; Pouliot et al. 1994; Seidell et al. 1992).

Relational and Representational Attributes

Datatype: Numeric
Representational form: QUANTITATIVE VALUE
Representation layout: NNN.N
Minimum Size: 3

Maximum Size: 4

Guide For Use: If measured abdominal circumference is not able to be collected, code 999.9

Collection Methods: Measurement protocol:

The measurement of abdominal circumference requires a narrow (< 7 mm wide), flexible, inelastic tape measure. The kind of tape used should be described and reported. The graduations on the tape measure should be at 0.1 cm intervals and the tape should have the capacity to measure up to 200 cm. Measurement intervals and labels should be clearly readable under all conditions of use of the tape measure.

The subject should remove any belts and heavy outer clothing. Measurement of abdominal circumference should be taken over at most one layer of light clothing. Ideally the measure is made directly over the skin.

The subject stands comfortably with weight evenly distributed on both feet, and the feet separated about 25-30 cm. The arms should hang loosely at the sides. Posture can affect abdominal circumference.

The measurement is taken midway between the inferior margin of the last rib and the crest of the ilium, in the mid axillary plane. Each landmark should be palpated and marked, and the midpoint determined with a tape measure and marked.

The circumference is measured with an inelastic tape maintained in a horizontal plane, at the end of normal expiration. The tape is snug, but does not compress underlying soft tissues. The measurer is positioned by the side of the subject to read the tape. To ensure contiguity of the two parts of the tape from which the circumference is to be determined, the cross-handed technique of measurement, as described by Norton et al. (1996), should be used. Ideally an assistant will check the position of the tape on the opposite side of the subject's body.

The measurement is recorded at the end of a normal expiration to the nearest 0.1 cm. Take a repeat measurement and record it to the nearest 0.1 cm. If the two measurements disagree by more than 1 cm, then take a third measurement. All raw measurements should be recorded on the data collection form. If practical, it is preferable to enter the raw data into the database as this enables intra- and, where relevant, inter-observer errors to be assessed. The subject's

measured abdominal circumference is subsequently calculated as the mean of the two observations, or the mean of the two closest measurements if a third is taken, and recorded on the form. If only a mean value is entered into the database then the data collection forms should be retained.

It may be necessary to round the mean value to the nearest 0.1 cm. If so, rounding should be to the nearest even digit to reduce systematic over reporting (Armitage and Berry 1994). For example, a mean value of 72.25 cm would be rounded to 72.2 cm, while a mean value of 72.35 cm would be rounded to 72.4 cm.

It is recommended that in population surveys, sociodemographic data including ethnicity should be collected, as well as other risk factors including physiological status (e.g. pregnancy), physical activity, smoking and alcohol consumption. Summary statistics may need to be adjusted for these variables.

National health data elements currently exist for sex, date of birth, country of birth and Indigenous Status. Data elements are being developed for physical activity and smoking.

Validation and quality control measures:

Steel tapes should be checked against a 1 metre engineer's rule every 12 months. If tapes other than steel are used they should be checked daily against a steel rule.

Within- and, if relevant, between-observer variability should be reported. They can be assessed by the same (within -) or different (between-) observers repeating the measurement, on the same subjects, under standard conditions after a short time interval. The standard deviation of replicate measurements (technical error of measurement (Pederson & Gore 1996)) between observers should not exceed 2% and be less than 1.5% within observers.

Extreme values at the lower and upper end of the distribution of measured abdominal circumference should be checked both during data collection and after data entry. Individuals should not be excluded on the basis of true biological difference.

Last digit preference, and preference or avoidance of certain values, should be analysed in the total sample and (if relevant) by observer, survey site and over time if the survey period is long.

Administrative Attributes

Source Document: The measurement protocol described below is that recommended by the World Health Organization (WHO Expert Committee 1995).

Source Organisation: World Health Organization (see also Comments)

Comments: Submitting organisation: The Expert Working Group on Data Standards for Indicators of Body Fatness in Australian Adults through the National Centre for Monitoring Cardiovascular Disease, Australian Institute of Health and Welfare.

Responsible organisations: National Health Data Committee (NHDC) / National Centre for Monitoring Cardiovascular Disease, Australian Institute of Health and Welfare.

This data element applies to persons aged 18 years or older. It is recommended for use in population surveys and health care settings.

Presentation of data:

Means, 95% confidence intervals, medians and centiles should be reported to one decimal place. Where the sample permits, population estimates should be presented by sex and 5-year age groups. Estimates based on sample surveys may need to take into account sampling weights.

For consistency with conventional practice, and for current comparability with international data sets, recommended centiles are 5, 10, 15, 25, 50, 75, 85, 90 and 95. To estimate the 5th and 95th centiles a sample size of at least 200 is recommended for each group for which the centiles are being specified.

For reporting purposes, it may be desirable to present abdominal circumference in categories. It is recommended that 5 cm groupings are used for this purpose. Abdominal circumference should not be rounded before categorisation. The following categories may be appropriate for describing the abdominal circumferences of Australian men and women, although the range will depend on the population.

Abdom < 60 cm
60 cm = Abdom < 65 cm
65 cm = Abdom < 70 cm
... in 5 cm categories
105 cm = Abdom < 110 cm

Abdom = 110 cm

Data Element Links

Information Model Entities linked to this Data Element

NHIM Physical characteristic

Data Agreements which include this Data Element
