Assessment of diabetes

In this study, diabetes was defined based on self-report or an HbA1c value of 6.5% or more in NGSP equivalent value (6.1% or more in JDS). Subjects were defined as having self-reported diabetes if 1) they had ever been told they had diabetes as the result of a health checkup, 2) they had ever been diagnosed with diabetes by a physician, or 3) taking medication for diabetes or using insulin. The positive predictive value for the similar questionnaire about self-reported diabetes was 94% [1].

HbA1c value was standardized according to JDS Lot 1 (baseline survey) and JDS Lot 2 (follow-up survey). The methods used to measure and calibrate the HbA1c values at baseline are described elsewhere [2]. In the follow-up study, the JDS standard material was changed to JDS Lot 2, which consists of five concentrations of HbA1c, and the values of each concentration were calibrated with Lot 1. Standardization of HbA1c using JDS Lot 2 was performed as follows: first, each concentration of the standard material was measured 10 times, and the mean value for each concentration was calculated after excluding the highest and lowest value. Next, the following linear regression was performed,

$$(\text{mean value for each concentration}) = a \times (\text{assigned value of each concentration}) + b$$

Finally, the standardized HbA1c value was calculated from the measured HbA1c value by the following equation using the regression parameters a and b:

$$(\text{standardized HbA1c}) = \frac{(\text{measured HbA1c}) - b}{a}$$

Calibration was carried out whenever the assay conditions (instrumental and laboratory

chemical) were changed.

The JDS value can be transformed to the NGSP equivalent value by simply adding 0.4 to the JDS value [3]. The HbA1c value in this paper was represented in NGSP equivalent value if not specified as JDS. We used the HbA1c threshold for the diagnosis of diabetes according to the diagnostic criteria of diabetes of the Japan Diabetes Society for epidemiologic studies [3].

References

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