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Readability of Diabetes Self-Report Measures

The recent proliferation of self-report measures designed to assess patients' knowledge, attitudes, and behavior regarding diabetes suggests a need for evaluation of the readability of these instruments. This information could be useful to both clinicians and researchers in the selection of measures appropriate to their respective patient populations, and it could serve a sensitizing function for those involved in the future development of such instruments. Consequently, we analyzed the readability of 26 diabetes self-report instruments with the Flesch reading ease formula (1,2). This is a well-validated and reliable method that yields a reading ease score and a grade equivalent based on calculation of average sentence length and average number of syllables per word. Table 1 shows the reading ease and grade equivalent

TABLE 1
Flesch reading ease scores for directions and stimulus items of 26 diabetes self-report measures

Measure	Refs.	Directions		Stimulus items	
		Flesch reading ease score	Grade equivalent	Flesch reading ease score	Grade equivalent
Self-Efficacy for Diabetes Scale	3	87.0	6	87.2	6
Diabetes Opinion Survey-R4	S.B. Johnson, unpublished observations	90.6	5	78.2	7
Diabetes Educational Profile 1980 version, part A	4	78.0	7	77.0	7
Sullivan Diabetic Adjustment Scale	5	96.0	5	77.0	7
Barriers to Adherence Questionnaire	6	80.1	6	76.2	7
Hypoglycemic Fear Survey	7	75.9	7	75.9	7
Diabetes-Specific Perceived Social Support	8	55.0	10–12	75.3	7
Diabetes Care Profile 1984 version	9	90.0	5	75.0	7
Diabetes Regimen Adherence Questionnaire	10	58.0	10–12	74.0	7
Parents' Diabetes Opinion Survey-R4	S.B. Johnson, unpublished observations	81.2	6	71.7	7
How Do You Feel About Diabetes and Its Treatment?	8	90.3	5	71.5	7
Test of Diabetes Knowledge R2	11	54.9	10–12	71.0	7
Insulin Dependent Patient Questionnaire	12	67.0	8,9	69.0	8,9
DKN Scales	13			69.0	8,9
Diabetes Self-Care Behaviors	8	42.9	13–16	68.0	8,9
Diabetes Health Belief Scale	14			68.0	8,9
Diabetes Educational Profile	15	95.6	5	67.6	8,9
Diabetes Quality-of-Life Scale	16			67.0	8,9
Attitude Scale Statements	17			65.6	8,9
Non-Insulin Dependent Patient Questionnaire	12	67.0	8,9	64.0	8,9
ATT39	18			62.0	8,9
Diabetes Knowledge and Management Skills Questionnaire	10	54.0	10–12	61.3	8,9
Health Belief Questionnaire	10	58.0	10–12	59.0	10–12
Diabetes Family Behavior Checklist	19	77.9	7	53.5	10–12
Diabetes Knowledge Test	20	71.0	7	51.0	10–12
Diabetes Information Test	21	47.0	13–16	48.0	13–16

scores for directions and stimulus items for each measure.

Reading difficulty ranged from the 7th grade to college level, with most measures readable at or below the high school level. Only one instrument, however, achieved a reading ease score below the 7th grade level, suggesting that the average child ≤ 12 yr of age could be expected to have difficulty comprehending most of these measures. Thus, few measures are sufficiently readable to justify administration to preadolescents. For eight of the measures evaluated, reading ease scores for directions and stimulus items differed by ≥ 2 grade levels, underscoring the need for careful attention to readability in all components of self-report measures.

The information shown in Table 1 should assist researchers and clinicians in the selection of diabetes self-report measures with reading levels appropriate to their respective patient populations. We hope this readability assessment will also encourage greater attention to this issue among people involved in the development of self-report measures.

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