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ORIGINAL ARTICLE

Structural characteristics and readability of neurology informed consent forms

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ABSTRACT

Objectives: This study aimed to evaluate the structural characteristics, readability levels, and clinical alignment of the standard informed consent forms officially published by the Turkish Neurological Society.

Materials and methods: Employing a descriptive, cross-sectional document analysis, all 20 standard neurology consent forms were systematically examined. The texts underwent preprocessing using automated text-mining algorithms. Readability was assessed using four Turkish language-specific metrics (Ateşman, Çetinkaya-Uzun, Bezirci-Yılmaz, and Sönmez) and three internationally recognized grade-level indices (SMOG [Simple Measure of Gobbledygook], Gunning Fog, and Flesch-Kincaid). Additionally, the clinical indications detailed within the forms were qualitatively reviewed within the context of contemporary multidisciplinary neurological guidelines.

Results: The consent forms demonstrated a mean word count of 490.85 ± 157.22, with substantial standard deviation indicating notable variability in structural standardization. Turkish-specific indices classified the texts between "Difficult" and "Academic" reading levels. Although the Sönmez formula mathematically categorized the forms as comprehensible, an average of 7.58% medical or foreign terminology was present. International metrics indicated that full comprehension would require a minimum of 19.06 ± 1.30 with SMOG to 27.61 ± 1.50 with the Gunning Fog index years of formal education, markedly surpassing the universally recommended sixth to eighth grade health literacy levels. Clinically, several forms for broad-spectrum immunosuppressants retained disease-specific indications (e.g., focused primarily on multiple sclerosis), while standardized templates for certain modern interventions (e.g., mechanical thrombectomy and continuous intensive care unit procedures) were not yet incorporated into the central repository.

Conclusion: The current standard neurology informed consent forms necessitate an advanced level of reading proficiency that exceeds average public health literacy. Moreover, the ongoing evolution of neurological treatments underscores the need for periodic revision of clinical indications within these documents. Incorporating plain language principles and contemporary clinical guidelines in future revisions would further facilitate patient comprehension and enhance the overall quality of medical communication.

Keywords: Health literacy, informed consent, medical communication, neurology, patient autonomy, readability.

Informed consent is a process through which patients receive information about planned medical interventions. In accordance with national legal frameworks and patient rights regulations, the consent process must include essential information pertinent to medical procedures and must be strictly comprehensible to patients.[1] Diagnostic and therapeutic interventions in neurological diseases necessitate a high degree of disclosure due to the inherent clinical complexity and the potential for significant side effects.[2]

The American Medical Association (AMA) and the National Institutes of Health (NIH) recommend that patient information materials should not exceed a sixth grade reading level.[3] Furthermore, recent data from the Turkish Statistical Institute indicates that the average formal education duration in Türkiye is approximately nine years, corresponding

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to a middle school level.[4] Nevertheless, printed consent materials used in clinical practice often significantly exceed both these international recommendations and the national education average, making comprehension challenging or even unattainable for many patients.[5] Recent research indicates that most analyzed informed consent forms have poor readability. This represents a significant barrier to understanding and underscores the critical need to utilize shorter sentences and plain language to support patient autonomy.[5]

Although previous studies have assessed readability, language-specific indices are necessary because general metrics may be insufficient. In the context of Turkish texts, research commonly uses the Ateşman[6] and Bezirci and Yılmaz[7] readability formulas, which often show that medical consent forms require undergraduate- or academic-level literacy for full comprehension.[8,9] Moreover, no comprehensive analysis has evaluated official consent forms used as standards in neurology practice using multiple contemporary Turkish and international readability algorithms.

The objective of this study was to assess the structural characteristics and readability levels of the standard informed consent forms officially published by the Turkish Neurological Society for clinical use. This evaluation uses seven national and international readability formulas (Ateşman, Çetinkaya-Uzun, Bezirci-Yılmaz, Sönmez, SMOG [Simple Measure of Gobbledygook], Gunning Fog, and Flesch-Kincaid Grade Level [FKGL]).[6,7,10-15] Ultimately, this study sought to objectively determine the suitability of these texts in relation to the educational levels of the intended patient population.

MATERIALS AND METHODS

This study was designed as a descriptive and cross-sectional document analysis. The reporting of this study conformed to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for cross-sectional studies.[16] The study population comprised standard informed consent forms used to inform patients prior to invasive or noninvasive procedures in neurology practice. No sampling was performed; instead, all 20 current informed consent forms publicly available on the official website of the Turkish Neurological Society (https://noroloji.org.tr/menu/32/onam-formlari), accessed on August 26, 2026, were included in the analysis without omission. As this study is based entirely on the retrospective analysis of publicly available, open-access documents (standard informed consent forms) and does not involve human participants, animal subjects, or patient records, formal ethics committee approval was not required in accordance with national and institutional ethical guidelines.

Data collection and text preprocessing

The forms, downloaded in PDF format from the Turkish Neurological Society web system, were converted into raw digital text using computer-assisted text mining methods to ensure objective evaluation. To prevent readability formulas from distorting syllable and sentence counts, standard text-cleaning (preprocessing) procedures were applied to the dataset using Regular Expressions (Regex) algorithms in Python. During this stage, the following were autonomously removed from the texts: *(i)* form titles and spaces for patient, physician, and witness identification; *(ii)* date and signature lines (long underscores); *(iii)* bullet points, numbering, and in-text numerical tables that interrupt reading flow; *(iv)* misleading punctuation marks at the ends of abbreviations (e.g., Dr.) that might be misinterpreted as sentence boundaries by the formulas. After these procedures, the texts were prepared for analysis.

Readability analysis

The structural characteristics of the preprocessed texts (total number of syllables, total number of words, total number of sentences, and the number of words with three or more syllables) were calculated. The readability, difficulty, and comprehensibility levels of the neurological consent texts were evaluated using the following seven readability algorithms, all of which have demonstrated validity for Turkish texts and are recognized as standards in the international medical literature: Ateşman index, Çetinkaya-Uzun formula, Bezirci-Yılmaz formula, Sönmez formula, SMOG, Gunning Fog index, and FKGL.

Ateşman index is the Turkish adaptation of the Flesch formula and is calculated using the following equation:

$$RS = 198{,}825 - (40{,}175 \times \chi_1) - (2{,}610 \times \chi_2).$$

Here, χ_1 represents the average number of syllables per word, and χ_2 denotes the average number of words per sentence. The resulting

Readability Score (RS) ranges from 0 to 100, with higher scores indicating greater reading ease and lower scores reflecting increased structural complexity. According to the Ateşman classification, scores in the range of 90-100 correspond to very easy, 70-89 to easy, 50-69 to moderate difficulty, 30-49 to difficult, and 1-29 to very difficult.[6]

The Çetinkaya-Uzun coefficient, developed specifically for the Turkish language, is calculated with the following formula:

$$RS = 118{,}823 - (25{,}987 \times AWL) - (0{,}971 \times ASL).$$

In this equation, AWL (average word length) is calculated by dividing the total number of syllables by the total number of words, while ASL (average sentence length) is determined by dividing the total number of words by the total number of sentences. The resulting RS reflects the reading and educational level required by the text. According to the Çetinkaya-Uzun scale, scores of 51 or above correspond to an independent reading level (Grades 5-7), scores between 35-50 represent an instructional reading level (Grades 8-9), and scores between 0-34 indicate a frustration reading level that requires Grades 10-12.[10]

Bezirci-Yılmaz formula individually weighs polysyllabic words according to the following equation:

$$NRV = \sqrt{ANW \times [(H_3 \times 0.84) + (H_4 \times 1.5) + (H_5 \times 3.5) + (H_6 \times 26.35)]}$$

In this formula, ANW indicates the average number of words, while H_3, H_4, H_5, and H_6 represent the proportions of words with 3, 4, 5, and 6 (or more) syllables, respectively. The resulting New Readability Value (NRV) directly reflects the grade and educational level required to comprehend the text. According to the Bezirci-Yılmaz scale, an increase in this score corresponds to greater structural complexity: a score of 1-8 indicates primary education, 9-12 corresponds to high school, 13-16 denotes undergraduate, and values above 16 represent the academic level.[7]

Sönmez formula is a model developed by Sönmez[11] based on the assumption that the comprehensibility of a text depends on the reader's familiarity with the words contained therein. Within this model, three principal ratios are calculated: word ratio, difficulty ratio, meaning ratio. Word ratio is obtained by dividing the total number of words by the total number of sentences. Difficulty ratio is calculated by dividing the number of foreign words, medical terms, concepts, symbols, or formulae in the text by the total number of words:

$$\text{Difficulty Ratio} = \frac{\text{Foreign and Medical Terms}}{\text{Total Number of Words}}$$

Meaning ratio is determined by dividing the number of foreign and medical terms by the total number of sentences. The overall comprehensibility level of the text is determined by squaring the difficulty ratio (or by the formulation Meaning Ratio / Word Ratio × Difficulty Ratio):

Comprehensibility Score = (Difficulty Ratio).²

To calculate the difficulty ratio in the Sönmez formula, it is necessary to identify medical terms, Latin expressions, symbols, and foreign-origin words within the text. Medical jargon (e.g., intravenous, lesion, puncture), pharmacological active substances (e.g., cyclophosphamide, azathioprine, methylprednisolone), and clinical abbreviations (e.g., tPA, CSF, EMG, EEG) present in the main body of the forms were reviewed, classified, and counted by an expert neurology faculty member. The exact number of medical/foreign terms obtained was then divided by the total word count of the respective main text to calculate the isolated difficulty ratio for each form, and subsequently, the Sönmez Comprehensibility Score was determined. The resulting coefficients were then classified according to Sönmez's standard comprehensibility scale (0.00001-0.03 = clear/comprehensible, 0.04-0.15 = difficult/understandable with assistance, 0.16-1.00 = unclear/incomprehensible).[11]

The SMOG formula calculates the minimum number of years of education required for complete comprehension of the text based on the density of words with three or more syllables:

$$SMOG = 1.043 \times \frac{\text{Polysyllabic words}}{} \times \frac{30}{\text{Number of Sentences}} + 3{,}1291$$

The value obtained from the SMOG index directly represents the minimum number of years of formal education (grade level) a reader must have completed to fully comprehend the text. Health Communication Institutes and international patient education guidelines recommend that the SMOG score for consent and information materials should not exceed the sixth to eighth grade level. Scores between 9-12 indicate a high school reading level, 13-16 reflect an undergraduate (university) level, and scores of 17 or above represent postgraduate/academic expertise.[12]

Gunning Fog index (Tekbıyık turkish adaptation) determines the difficulty of Turkish texts using sentence length and the proportion of words with more than three syllables:

$$\text{Fog} = 0.4 \times \left\{ \text{ASL} + 100 \times \left(\frac{\text{Polysyllabic words}}{\text{Total number of words}} \right) \right\}$$

The numerical score generated by the Gunning Fog Index represents the minimum number of years of formal education (grade level) required to fully comprehend the text upon first reading. A higher score indicates greater complexity and difficulty. Scores of 8 and below are considered easy and suitable for the general public, scores of 9-12 refer to difficult texts intended for high school readers, while scores of 13 and above represent academic texts that demand advanced reading skills at the university or postgraduate level.[13,14]

Flesch-Kincaid Grade Level directly provides the readability level in terms of the minimum years of education required:

$$\text{FKGL} = (0.39 \times \text{ASL}) + (11.8 \times \text{AWL}) - 15.59,$$

with ASL representing the average sentence length, and AWL denoting the average word length (in syllables). The numerical value obtained from the Flesch-Kincaid Grade Level (FKGL) formula directly represents the minimum number of years of formal education (grade level) required for full comprehension of the text. A higher score indicates greater readability difficulty. International patient education standards and health communication guidelines recommend keeping the FKGL score for informed consent texts within the 6-8 range (middle school level) to ensure broad public understanding. Scores of 9-12 correspond to a high school level, 13-16 reflect an undergraduate (university) level, and scores of 17 or above indicate texts that require advanced literacy at the postgraduate level.[15]

Statistical analysis

The statistical evaluation of the data obtained from the study was conducted using IBM SPSS version 25.0 software (IBM Corp., Armonk, NY, USA). Findings related to the structural text characteristics of the forms and their RSs were presented as descriptive statistical tables including the mean, standard deviation, minimum, and maximum values.

RESULTS

Structural characteristics of the forms

The structural characteristics and readability statistics of the evaluated forms are summarized in Table 1. An examination of the structural characteristics of the 20 neurology informed consent forms analyzed in this study revealed a mean word count of 490.85 ± 157.22 (range, 259.00 to 817.00) and a mean sentence count of 34.10 ± 8.94 (range, 21.00 to 56.00). Among the forms assessed, the "Intramuscular Botulinum Toxin Administration" consent was the longest and most structurally comprehensive

TABLE 1
Structural characteristics and readability statistics of neurology informed consent forms (n = 20)

Variables	Mean ± SD	Min-Max
Structural characteristics		
Word count	490.85 ± 157.22	259.00-817.00
Sentence count	34.10 ± 8.94	21.00-56.00
Turkish Readability Indexes		
Ateşman Index	48.13 ± 6.96	35.22-63.93
Çetinkaya-Uzun Formula	31.58 ± 3.58	22.65-38.20
Bezirci-Yılmaz Formula	19.43 ± 2.50	13.56-22.86
Sönmez Formula (Comprehensibility Score)*	0.0061 ± 0.002	0.0015-0.0109
International Grade-Level Indexes		
SMOG Index	19.06 ± 1.30	15.72-20.87
Gunning Fog Index (Tekbıyık)	27.61 ± 1.50	24.70-30.43
Flesch-Kincaid Grade Level (FKGL)	23.30 ± 1.57	20.55-27.39

SD, standard deviation; *, In the calculation of the Sönmez formula, the number of medical/foreign terms in the informational main body of each consent form was independently identified to calculate the Difficulty Ratio and Comprehensibility Score (Difficulty Ratio)2

TABLE 2
Comprehensive readability analysis and linguistic complexity metrics of neurology informed consent forms (n = 20)

Form name	Word Count	Medical Terms	Difficulty Ratio (%)	Sönmez Score	Ateşman Index	Çetinkaya Formula	Bezirci-Yılmaz Formula	SMOG Index	Gunning Fog	Flesch-Kincaid (FKGL)
ACTH (synacthen depot)	204	15	7.35	0.00541	56.25	35.64	17.48	17.67	25.61	21.54
Acute stroke transfer	206	8	3.88	0.00151	56.18	34.00	15.96	16.60	25.60	22.40
Azathioprine	288	24	8.33	0.00694	51.93	34.83	18.65	19.14	26.58	21.77
Coumadin (warfarin)	279	16	5.73	0.00329	42.08	28.31	21.75	19.80	28.52	24.73
Cyclophosphamide (endoxan)	318	27	8.49	0.00721	48.41	32.79	20.81	19.59	27.43	22.68
EEG consent form	366	25	6.83	0.00467	49.16	30.81	18.10	18.22	27.65	23.75
EMG consent form	462	29	6.28	0.00394	44.51	30.41	21.93	19.91	28.06	23.75
Evoked potentials	423	41	9.69	0.00939	42.93	29.48	22.77	19.74	27.50	24.16
IV tPA consent form	169	9	5.33	0.00284	63.93	38.20	13.56	15.72	24.70	20.55
IVIG administration	288	26	9.03	0.00815	48.27	32.24	20.18	19.42	27.61	22.96
IVMP (methylprednisolone)	288	22	7.64	0.00584	48.79	32.21	18.60	19.38	28.07	23.00
Intramuscular botulinum toxin	497	52	10.46	0.01095	40.52	28.14	22.86	20.66	29.60	24.75
Lumbar puncture (CSF)	481	27	5.61	0.00315	42.15	28.89	20.85	20.31	29.10	24.44
Methotrexate	204	17	8.33	0.00694	51.43	33.52	18.00	18.87	27.29	22.43
Mitoxantrone	346	28	8.09	0.00655	51.64	34.36	18.60	18.97	26.53	22.00
Natalizumab	367	36	9.81	0.00962	45.87	30.33	19.04	19.58	28.61	23.85
Peripheral nerve block	301	27	8.97	0.00805	38.74	27.21	20.94	20.87	29.83	25.16
Plasmapheresis and Immunoadsorption	268	28	10.45	0.01092	48.03	32.02	19.60	19.36	27.55	23.06
Tensilon and prostigmin (MG)	192	12	6.25	0.00391	56.50	35.61	16.24	17.67	25.94	21.57
Video-EEG monitoring	626	31	4.95	0.00245	35.22	22.65	22.76	19.71	30.43	27.39

SMOG, simple measure of gobbledygook; FKGL, Flesch-Kincaid Grade Level; ACTH: adrenocorticotropic hormone; EEG, electroencephalography; EMG, electromyography; IV tPA, intravenous tissue plasminogen activator; IVIG, intravenous immunoglobulin; IVMP, intravenous methylprednisolone; CSF, cerebrospinal fluid; MG, myasthenia gravis. In the calculation of the Sönmez formula, the exact number of medical/foreign terms in the informational main body of each consent form was independently identified to calculate the Difficulty Ratio. The final Sönmez score represents the square of this ratio.

(817 words), while the "IV tPA Consent Form" was the shortest (259 words). The substantial standard deviation in word count (±157.22) indicates a considerable lack of structural standardization across the current repository.

Readability levels (Turkish formulas)

Readability analyses conducted using Turkish language-specific algorithms indicated that the mean Ateşman Index score was 48.13 ± 6.96 (range, 35.22 to 63.93), suggesting that the forms generally fell within the difficult category. The mean score according to the Çetinkaya-Uzun formula was 31.58 ± 3.58, indicating that the forms typically required a frustration reading level (Grades 10-12). The Bezirci-Yılmaz index, which assigns a higher penalty to polysyllabic words, yielded a mean value of 19.43 ± 2.50, demonstrating that all forms necessitated an academic (postgraduate) level of reading proficiency. The Sönmez formula, which assesses the prevalence of medical terminology, showed that the texts contained a mean of 7.58 ± 1.91% (range, 3.88 to 10.46%) medical and foreign terms. Owing to the formula's square-based computational method, the mean Sönmez Comprehensibility Score was 0.0061 ± 0.0029 (range, 0.0015 to 0.0109), which remained within the clear/comprehensible threshold mathematically.

Although the aggregate results pointed to low overall readability, considerable heterogeneity was observed among individual forms (Table 2). For example, Ateşman index scores spanned from 35.22 for the highly complex "Video-EEG Monitoring Consent Form" to 63.93 for the "IV tPA Consent Form."

Educational level requirements (international grade-level indexes)

Assessment of international grade-level indices demonstrated that the minimum years of formal education required for comprehension were 19.06 ± 1.30 (range, 15.72 to 20.87) years according to the SMOG, 27.61 ± 1.50 (range: 24.70-30.43) years based on the Gunning Fog index (Tekbıyık adaptation), and 23.30 ± 1.57 (range: 20.55-27.39) years according to the FKGL. A similarly marked disparity was evident in the SMOG, with the required years of education ranging from approximately 16 years for the "IV tPA Consent Form" to nearly 21 years for the "Peripheral Nerve Block Consent Form," underscoring a consistent failure to meet public health literacy standards across all evaluated documents.

DISCUSSION

The findings revealed a pronounced gap between the structural complexity of standard neurology informed consent forms and the health literacy thresholds advocated by international authorities. Prestigious organizations such as the AMA and the NIH unequivocally recommend that patient education materials be composed at a sixth to eighth grade reading level to facilitate widespread comprehension.[17,18] Our results, consistent with prior analyses in other medical domains, demonstrate that neurology consent forms demand a substantially higher level of academic attainment for full comprehension.[19,20]

Nonetheless, evaluating Turkish medical texts presents distinctive linguistic challenges. Recent scholarship has shown that readability formulas developed specifically for Turkish, such as those by Ateşman, Çetinkaya, and Bezirci-Yılmaz, frequently yield discrepant outcomes and may not wholly correspond with expert judgment.[21] In addition, the absence of standardized Turkish vocabulary lists requires algorithms such as the Sönmez formula to identify unfamiliar or foreign terms subjectively, complicating objective implementation.[21] Specifically, with a mean SMOG score requiring over 19 years of formal education, an average patient would theoretically need the reading proficiency of a medical student or a postgraduate scholar to fully grasp the clinical risks and procedures detailed in these forms.

Despite these limitations, excluding Turkish-specific indices would be methodologically unsound given the language's agglutinative structure and unique syllabic patterns. Accordingly, this study adopted a comprehensive strategy, employing a diverse array of seven national and international readability metrics. By integrating data from syllable-sensitive indices, terminology-oriented formulas, and widely recognized grade-level algorithms, this multidimensional framework mitigates the inherent biases associated with any single metric. The resulting consensus provides robust evidence that the cognitive demands posed by these essential medical documents substantially exceed the average health literacy capacity of the general population.

A significant methodological issue arose in interpreting the Sönmez Comprehensibility Score within our findings. According to this formula, the consent forms were mathematically classified as clear/comprehensible (mean score: 0.0061 ± 0.0029).

However, this outcome reflects a computational artifact rather than a genuine assessment of clinical readability. The analyzed texts contained an mean of 7.58 ± 1.91% (range, 3.88 to 10.46%) medical and foreign terminology. Since the Sönmez algorithm determines the comprehensibility score by squaring the difficulty ratio (a value less than one), the resulting coefficient is artificially reduced, which can misleadingly categorize jargon-heavy texts as comprehensible. In practical terms, a medical document in which nearly eight out of every hundred words constitute complex pharmacological agents (e.g., azathioprine and cyclophosphamide) or clinical abbreviations (e.g., CSF and tPA) imposes a considerable cognitive burden on the average patient. This paradox underscores a fundamental limitation of relying exclusively on quantitative readability formulas without accounting for the qualitative semantic complexity inherent in medical terminology.

Beyond linguistic complexity, this review highlights an important opportunity to better align the content of standard consent forms with the evolving landscape of neurological therapeutics. Notably, several forms pertaining to immunosuppressive and immunomodulatory agents, such as azathioprine, methotrexate, mitoxantrone, and cyclophosphamide, were initially developed with a primary emphasis on multiple sclerosis. However, as contemporary clinical guidelines have expanded the indications for these therapies to include other major conditions, such as myasthenia gravis and central nervous system vasculitis, continued reliance on multiple sclerosis-centered consent forms for these heterogeneous patient populations may inadvertently lead to patient confusion and miscommunication.[22-25]

Moreover, the ongoing advancements in acute stroke management underscore the necessity of regularly updating the consent form repository to encompass standardized documents for high-risk, innovative interventions, including mechanical thrombectomy. Moreover, comprehensive tertiary hospitals equipped with specialized departments, such as neurology intensive care units, advanced stroke centers, and sleep laboratories, require a broader spectrum of standardized forms. While immediate life-saving interventions (e.g., emergent intubation during acute respiratory arrest) inherently operate under the principle of presumed consent without the need for prior written forms, planned intensive care unit procedures (e.g., central venous catheterization and therapeutic hypothermia) and specialized diagnostic tests (e.g., polysomnography) strictly require formal informed consent. The absence of standard central templates for these specific procedures forces local institutions to draft ad hoc forms that may lack uniform legal and linguistic standards. In addition, while specific consent forms for medications necessitating comprehensive patient education, such as valproic acid, may be available through subspecialty societies such as the Turkish Epilepsy Society, the integration of these essential documents into a centralized repository would facilitate a unified, comprehensive, and accessible standard for all neurologists in clinical practice.

The Turkish Neurological Society functions as the principal authority responsible for establishing standards in neurological practice throughout Türkiye. While major academic and research hospitals typically have dedicated quality assurance departments that draft and regularly update patient consent materials, neurologists practicing in rural or district state hospitals depend heavily on the Turkish Neurological Society's centralized repository for access to clinically and legally robust documentation. However, the high standard deviation observed in the structural length of the current forms indicates the absence of a unified template, which complicates the standardization of patient communication. Although practitioners in rural settings may not frequently administer intravenous thrombolytics or advanced monoclonal antibodies, they routinely perform essential procedures such as electroencephalography, electromyography, and peripheral nerve blocks. Consequently, standardized, legally sound, patient-centered consent forms for these commonly performed outpatient interventions are essential.

To pioneer a comprehensive update of informed consent repositories, national medical societies could revise clinical indications to reflect current multidisciplinary guidelines. Furthermore, to truly enhance patient autonomy, the society could develop highly comprehensible supplementary patient information leaflets—similar to the successful Patient Information Leaflet models implemented by the UK's National Health Service.[26,27] Transitioning to a plain language policy (simplifying complex neurological terminology and utilizing shorter sentence structures) will help bridge the gap between academic medicine and patient health literacy. These proactive adaptations will better align with universal sixth to eighth grade reading

level recommendations and significantly improve the overall quality of patient communication across the country.

Despite the rigorous methodological framework adopted in this study, several limitations must be acknowledged. First, the analysis was confined to the 20 standard informed consent forms officially published for neurology practice within a specific national context, thus limiting the generalizability of the findings. Second, as emphasized in the extant literature, readability formulas offer mathematical estimations of textual difficulty based predominantly on quantitative metrics and syllabic counts; however, they do not directly assess readers' actual semantic comprehension. Third, although an expert neurologist reviewed the consent form and foreign terms with meticulous attention, the lack of a universally standardized medical vocabulary dataset in Turkish inevitably introduces some subjectivity to this process. Finally, this study is limited to evaluating written consent materials. In actual clinical settings, particularly in neurology, comprehension is profoundly affected by the physician's verbal communication and by patient-specific clinical variables, such as acute distress or cognitive impairment (e.g., dementia and aphasia), which are inherently beyond the scope of computational readability assessments. Future research should employ mixed-methods designs, integrating computational readability analyses with empirical data collected directly from patients. Experimental studies that compare patient comprehension and anxiety levels when exposed to current standard forms versus linguistically simplified and clinically updated versions would yield valuable insights for optimizing informed consent processes.

In conclusion, informed consent constitutes a fundamental pillar of ethical medical practice, fulfilling its ultimate goal when patients can comfortably comprehend the provided, clinically current information. The findings of this study suggest that while the current standard neurology informed consent forms are structurally comprehensive, their linguistic complexity may pose comprehension challenges for the general public. Additionally, the rapid and continuous evolution of neurological treatments presents a valuable opportunity to periodically review and update the clinical indications within these forms, ensuring they consistently reflect the most contemporary practices. Collaborative initiatives by national neurological societies to refine these essential documents through the use of plain language and integration of updated clinical content will further empower patient autonomy and elevate the standard of patient-physician communication in neurology.

Data Sharing Statement: The raw data (informed consent texts) analyzed during the current study are openly accessible in the public domain via the official website of the Turkish Neurological Society (TND) at https://noroloji.org.tr/menu/32/onam-formlari. The processed datasets (readability scores and terminology ratios) are available from the corresponding author upon reasonable request.

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