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Medical jargon and patient comprehension: a linguistic analysis of informed consent practices in Indonesian hospitals

Naridatul Laila
Universitas Respati Yogyakarta, Indonesia

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ABSTRACT

Background: Informed consent remains a central ethical requirement in healthcare, yet disparities in health literacy and institutional medical language continue to challenge genuine patient comprehension in Indonesian hospitals. **Objective:** This study aims to examine how medical jargon, discursive authority, and pragmatic interactional patterns shape patient understanding within written and spoken informed consent practices. **Method:** Using a qualitative-dominant mixed-method design, this research analyzes 45 consent documents, 26 recorded consultations, and 20 patient interviews through lexical density and readability metrics, Critical Discourse Analysis, and pragmatic repair theory. **Results:** The findings reveal consistently high lexical density and low readability levels exceeding patients' educational profiles. Discursive patterns demonstrate systematic de-agentivization and risk transfer framing through passive constructions and legal register. Interactional analysis further shows doctor-dominated turn-taking, frequent closed confirmation checks, and limited patient-initiated repair, correlating with measurable comprehension gaps. **Implication:** These findings imply that improving informed consent in Indonesian healthcare requires not only simplifying language but also restructuring communicative practices to enhance patient agency, comprehension, and ethical participation. **Novelty:** The novelty of this study lies in integrating corpus-based computational metrics with critical and pragmatic discourse analysis to conceptualize informed consent as a multi-layered discursive ecosystem rather than a purely legal or ethical instrument.

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Corresponding Author:

Naridatul Laila
Universitas Respati Yogyakarta, Indonesia
Jl. Raya Tajem, Maguwoharjo, Depok, Sleman, Yogyakarta, 55282, Indonesia
Email: naridaartonawa@gmail.com

1. INTRODUCTION

Informed consent is widely recognized as a cornerstone of ethical medical practice and patient autonomy. The World Health Organization estimates that nearly one in ten hospitalized patients worldwide experiences preventable harm, often linked to miscommunication or inadequate explanation of medical risks. In Indonesia, where more than 60% of patients in public hospitals rely on physicians as their primary source of health information, disparities in educational attainment remain significant, with a considerable proportion of the adult population having completed only junior secondary education. These structural conditions intensify the linguistic gap between institutional medical discourse and patient comprehension. Despite regulatory mandates under Indonesian health law requiring clear and understandable information prior to medical intervention, anecdotal reports and clinical observations suggest that informed consent documents and consultations remain linguistically dense and technically framed. This tension renders this study of medical jargon and patient comprehension not merely linguistic but ethically urgent.

Existing scholarship has extensively examined informed consent from bioethical, legal, and clinical perspectives, emphasizing autonomy, disclosure standards, and shared decision-making. Studies in Anglophone contexts demonstrate that medical consent forms often exceed recommended readability thresholds and rely heavily on technical terminology and passive constructions [1], [2], [3]. Research in health communication further shows that lexical density and nominalization correlate with lower patient recall and comprehension [4], [5], [6]. However, in the Indonesian context, empirical linguistic analyses of informed consent remain limited. While several studies discuss patient satisfaction and doctor–patient communication styles [7], [8], [9], few have systematically combined lexical density measurement, critical discourse analysis, and pragmatic interactional analysis within real clinical settings. Moreover, little attention has been paid to how institutional authority is discursively constructed in Indonesian medical texts and how patients negotiate meaning during consent interactions. This gap underscores the necessity of a comprehensive linguistic investigation that bridges textual, discursive, and interactional dimensions.

This study seeks to address the following central questions: To what extent do informed consent documents in Indonesian hospitals exhibit high lexical density and limited readability relative to patients' educational backgrounds? How are authority and responsibility discursively constructed within these documents and consultations? And how do patients pragmatically negotiate understanding, clarification, and acceptance during clinical interactions? By analyzing 30–50 written consent forms, 20–30 recorded consultations, and 20 reflective patient interviews, this research integrates lexical density and readability analysis, Critical Discourse Analysis (CDA), and pragmatic repair theory. The objective is not merely to quantify linguistic complexity but to reveal how language structures mediate institutional power and shape patient comprehension. Through this multi-layered approach, this study aims to illuminate the linguistic mechanisms underlying informed consent practices.

This research advances the argument that linguistic form is not a neutral vehicle of medical information but a constitutive element of institutional authority and patient agency. It hypothesizes that high lexical density, frequent nominalization, and passive constructions contribute to epistemic asymmetry between doctors and patients, thereby constraining genuine informed decision-making. Simultaneously, it proposes that pragmatic strategies—such as paraphrasing and repair sequences—serve as partial compensatory mechanisms within oral consultations, though not always systematically employed. By testing these assumptions, this study positions medical jargon as a site where ethics, power, and comprehension intersect. Its implications extend beyond linguistic theory, offering evidence-based insights for policy reform, consent form redesign, and communication training in Indonesian hospitals. Ultimately, it contends that improving patient comprehension requires structural linguistic intervention alongside ethical commitment.

2. LITERATURE REVIEW

2.1. Medical jargon

Medical jargon has long been recognized as a defining feature of professional health communication, yet its conceptual boundaries remain contested. Some scholars define medical jargon narrowly as highly specialized terminology accessible only to trained clinicians [4], while others adopt a broader understanding that includes acronyms, nominalizations, and technicalized everyday words embedded in clinical discourse [5]. From a systemic-functional perspective, jargon is not merely vocabulary but a register shaped by institutional goals and epistemic authority. Sociolinguistic approaches further emphasize that jargon functions as a marker of in-group expertise and boundary maintenance [3]. Consequently, medical jargon operates simultaneously as a tool for precision and a potential barrier to lay comprehension.

The analytical dimensions of medical jargon extend beyond isolated lexical items. Lexical density, often measured through the proportion of content words to total words, captures the informational compactness of medical texts. Nominalization transforms processes into abstract entities, such as "administration" instead of "administer," thereby increasing syntactic compression. Acronyms and abbreviations (e.g., ICU, CT-scan) condense technical meaning but require prior knowledge. Passive constructions obscure agency, especially in descriptions of risk. These linguistic indicators collectively contribute to textual opacity. Studies demonstrate that high lexical density and frequent nominalization correlate with reduced comprehension among patients, particularly those with limited health literacy [6], [10].

2.2. Health literacy

Health literacy constitutes a second crucial construct in examining informed consent practices. Defined by the World Health Organization as the cognitive and social skills determining individuals' ability to access, understand, and use health information, health literacy has evolved from a purely functional

concept to a multidimensional framework encompassing critical and communicative competencies. Some models emphasize individual capacity, while others stress systemic responsibility in designing comprehensible materials [11]. Informed consent, therefore, cannot be detached from broader literacy conditions. Where institutional language presupposes advanced educational attainment, disparities in health literacy intensify vulnerability and diminish the practical realization of patient autonomy [12].

Scholars commonly distinguish three dimensions of health literacy: functional, communicative, and critical [13]. Functional literacy involves the basic ability to read and comprehend medical instructions or consent forms. Communicative literacy refers to interactive skills enabling patients to ask questions, clarify doubts, and negotiate understanding [14]. Critical literacy encompasses the capacity to evaluate information and participate in decision-making processes. Empirical studies show that limited functional literacy predicts poor recall of medical risks, while deficits in communicative literacy reduce patients' likelihood of seeking clarification [15]. These dimensions highlight that comprehension is not solely textual but interactional, requiring supportive communicative environments.

2.3. Informed consent

Informed consent itself represents both a legal doctrine and a communicative practice. Legally, it is grounded in principles of autonomy and bodily integrity, requiring voluntary agreement after adequate disclosure of risks, benefits, and alternatives. Ethically, it embodies respect for patient agency. However, discourse-oriented scholars argue that informed consent is also a genre with standardized rhetorical moves and institutional conventions [16], [17]. Rather than a neutral exchange of information, it is embedded within asymmetrical power relations between medical professionals and lay patients. This perspective shifts attention from procedural compliance to the linguistic construction of responsibility and authority [18].

The structural components of informed consent practices include disclosure, comprehension, voluntariness, and documentation. Disclosure involves presenting diagnosis, procedures, risks, and alternatives. Comprehension requires that patients genuinely understand the information provided, not merely receive it. Voluntariness ensures freedom from coercion, while documentation formalizes agreement through signed forms. Linguistic analyses reveal that passive constructions and impersonal risk statements may obscure agency, subtly transferring responsibility to patients. Furthermore, interactional studies indicate that clarification sequences and paraphrasing strategies significantly influence perceived understanding [7], [8]. These categories underscore the necessity of examining informed consent as a complex interplay between textual design and pragmatic negotiation.

3. METHOD

The unit of analysis comprised linguistic features embedded in informed consent practices across three material domains: written consent documents, recorded doctor–patient consultations, and reflective patient interviews. The corpus was collected from three Indonesian hospitals (one tertiary public, one provincial public, and one private hospital) under formal ethical approval. The dataset included 45 written consent forms, 26 audio-recorded pre-operative consultations, and 20 semi-structured patient interviews. The corpus is summarized in Table 1.

Table 1. Unit analysis of research

No	Data Type	Corpus Description	Quantity	Institutional Source
1	Written Consent Forms	General surgery, anesthesia, cardiology, invasive procedures	45 documents	Public & Private Hospitals
2	Recorded Consultations	Pre-operative and invasive procedure explanations	26 sessions	Inpatient & outpatient units
3	Patient Interviews	Post-consultation reflective interviews	20 interviews	Inpatients & family members

This study adopted a qualitative-dominant mixed-method design integrating corpus-based linguistic measurement with critical discourse and pragmatic analysis. This design was chosen to capture both measurable textual complexity and interpretive dimensions of power and meaning negotiation. While lexical density and readability scores provided quantitative indicators of textual opacity, Critical Discourse Analysis (CDA) and pragmatic repair theory enabled examination of institutional authority and interactional dynamics. This research followed an embedded case-study model, situating linguistic features within real clinical contexts rather than isolated textual artifacts [17]. Such integration aligns with recent methodological developments in health communication research that advocate multi-layered analytical frameworks [19].

Information sources consisted of primary institutional documents and naturally occurring clinical interactions. Written consent forms were obtained from hospital administrative departments with ethical clearance and anonymization procedures. Audio recordings of consultations were conducted with prior written consent from both physicians and patients, ensuring confidentiality and voluntary participation. Patient interviews were conducted within 24–72 hours after consultations to capture immediate comprehension reflections while minimizing recall bias. Supplementary contextual information, including patient educational background and demographic profiles, was collected to contextualize readability findings. All data were anonymized, transcribed verbatim, and coded using standardized transcription conventions [20].

Data collection proceeded in four stages. First, institutional permissions were secured from hospital ethics committees and management boards. Second, consent forms were digitized and formatted into analyzable textual files. Third, consultations were recorded using unobtrusive audio devices and subsequently transcribed. Fourth, semi-structured interviews were conducted using a standardized protocol focusing on perceived understanding of risks, procedures, and alternatives. Field notes documented non-verbal cues and contextual factors influencing interactional dynamics. Data saturation was reached when recurring patterns in lexical complexity and clarification sequences became evident across sites. All procedures adhered to national health research ethics standards [21].

Data analysis was conducted in three sequential phases. Phase one involved lexical density calculation and readability assessment using a Hallidayan content-word ratio and a Flesch-based adaptation for Indonesian texts. Sentence length, nominalization frequency, and passive constructions were quantified. Phase two applied Fairclough's three-dimensional CDA framework, examining textual features, discursive practice, and sociocultural context to identify constructions of authority and responsibility. Phase three employed pragmatic analysis grounded in speech act theory and repair theory, identifying clarification sequences, paraphrasing strategies, and interactional negotiation patterns. Triangulation across methods ensured analytical validity and strengthened interpretive reliability.

4. RESULTS

4.1. Lexical density and readability of informed consent documents

The quantitative findings reveal a structurally dense and linguistically complex profile of informed consent documents across Indonesian hospitals. By integrating lexical density measurement, syntactic indicators, jargon frequency, and readability scoring, the analysis provides a multi-dimensional portrait of textual opacity. Rather than relying solely on sentence length or terminology counts, this composite approach captures how informational compression, nominalization, passive constructions, and acronym usage converge to shape comprehension demands. The Jargon Load Index synthesizes these variables, enabling comparison across hospital types, procedural categories, and document genres. Table 2 and Figure 1 demonstrate not only variation across institutional contexts but also a consistent trend toward high linguistic complexity, particularly in legally oriented templates and invasive cardiology procedures.

Across the 45 documents analyzed, mean lexical density reached 63.2% (SD 4.9), with sentence length averaging 27.4 words and 71% of sentences exceeding 25 words. Passive constructions appeared in 64% of sentences, while nominalization occurred at a rate of 38.6 instances per 1,000 words. Cardiology invasive documents exhibited the highest Jargon Load Index (84.9) and the lowest readability score (28.4), requiring tertiary-level comprehension. Legal-heavy templates scored 86.1 on the Jargon Load Index, with 91% of sentences exceeding 25 words. Overall readability averaged 34.6 on the Indonesian-adapted Flesch scale, corresponding to upper secondary or tertiary education levels. Approximately 78% of documents exceeded the SMA threshold, while 80% of patients possessed education at or below SMA level.

From a systemic-functional perspective, the high lexical density and nominalization rates indicate substantial ideational compression, transforming processes into abstract entities that increase cognitive load. The prevalence of passive constructions aligns with critical discourse accounts of institutional authority, as agency becomes backgrounded in formulations such as "complications may occur." Computationally, the convergence of lexical density above 62%, passive usage above 60%, and readability below 35 signals a high-opacity threshold within health communication modeling. The mismatch index (7.6 overall) quantitatively substantiates the linguistic gap between institutional text complexity and patient educational profiles. These findings suggest that textual architecture—rather than isolated terminology alone—constitutes the primary barrier to comprehension [11], [16], [22], reinforcing the need for structural linguistic redesign in informed consent documentation.

Table 2. Lexical density and readability of informed consent documents (N = 45)

Cluster	Subset / Stratum	n Docs	Median Words / Doc	Mean Sentence Length (words)	% Sentences > 25 words	Lexical Density (Content-word %) Mean (SD)	Lexical Density Range	Nominalization Rate (per 1,000 words)	Passive Voice Rate (% sentences)	Acronym/Abbrev Density (per 1,000 words)	Medical Term Density (per 1,000 words)	Jargon Load Index (0–100)*	Readability Score (ID-Flesch Adapt.)†	Estimated Required School Level	% Docs Above SMA Threshold ‡	Patient Education Match Gap Index (0–10)§	Risk Flag ¶
A1	All documents (overall)	45	812	27.4	71%	63.2 (4.9)	54.1–72.8	38.6	64.0%	9.8	22.7	74.3	34.6	SMA akhir–Perguruan Tinggi	78%	7.6	High
A2	Hospital type: Tertiary public	16	905	29.6	81%	65.1 (4.1)	57.8–72.8	41.9	69.3%	11.2	25.6	79.5	31.8	Perguruan Tinggi awal	88%	8.3	High
A3	Hospital type: Provincial public	15	780	26.9	67%	62.7 (4.6)	54.1–70.2	37.4	62.1%	9.1	22.1	72.1	35.9	SMA akhir–D1	73%	7.4	High
A4	Hospital type: Private	14	735	24.8	57%	61.4 (5.5)	55.0–69.8	35.2	58.0%	8.8	19.3	69.6	38.5	SMA menengah–SMA akhir	64%	6.8	Moderate–High
A5	Procedure: General surgery	14	840	28.7	79%	64.5 (4.3)	56.9–71.0	40.7	66.4%	8.3	23.9	76.8	32.9	SMA akhir–Perguruan Tinggi	86%	7.9	High
A6	Procedure: Anesthesia	12	710	25.9	58%	61.9 (4.8)	55.4–69.2	36.1	60.5%	10.6	20.2	71.7	37.1	SMA akhir	67%	7.0	Moderate–High
A7	Procedure: Cardiology invasive	9	980	30.8	89%	66.7 (3.6)	61.0–72.2	44.3	71.8%	13.5	28.6	84.9	28.4	Perguruan Tinggi	100%	8.9	Critical
A8	Procedure: Endoscopy/ERCP-related	10	650	23.1	42%	60.8 (5.2)	55.0–68.1	33.7	55.6%	12.9	18.4	68.9	40.2	SMA menengah–SMA akhir	50%	6.1	Moderate
A9	Genre variant: "Legal-heavy" template (dominant disclaimers)	18	920	31.2	91%	66.0 (3.9)	59.8–72.8	46.5	74.9%	10.7	24.4	86.1	27.6	Perguruan Tinggi	94%	9.1	Critical
A10	Genre variant: "Clinical-explanatory" template (more lay phrasing)	27	740	24.9	56%	61.3 (4.7)	54.1–69.8	33.4	56.3%	9.1	20.1	66.8	39.8	SMA akhir	67%	6.4	Moderate–High
A11	Top-5 recurrent nominalizations (share of all nominalizations)	45	—	—	—	—	—	"tindakan" (19%) "komplikasi" (15%) "perdarahan" (11%) "pemberian" (9%) "pemantauan" (7%)	—	—	—	—	—	—	—	—	—
A12	Top-5 recurrent passive frames (share of passive clauses)	45	—	—	—	—	—	—	"akan dilakukan" (21%) "dapat terjadi" (18%) "akan diberikan" (14%) "dilakukan pemantauan" (10%) "dinyatakan setuju" (9%)	—	—	—	—	—	—	—	—
A13	Information packaging imbalance (risk vs benefit vs alternative coverage)	45	—	—	—	—	—	—	—	—	—	—	—	Risk lines: 54% / Benefit lines: 18% / Alternative lines: 6% / Administrative-legal lines: 22%	82% (alt ≤1 sentence)	8.2	High
A14	Patient education distribution (linked sample)	35‖	—	—	—	—	—	—	—	—	—	—	—	SMP: 34% / SMA: 46% / Diploma+: 20%	—	—	—
A15	Mismatch summary (documents vs patient education)	35‖	—	—	—	—	—	—	—	—	—	—	—	Docs require: SMA akhir–PT (77%); Patients at/below SMA (80%)	—	7.6	High

* Jargon Load Index (0–100) = weighted composite of (Lexical Density, Nominalization Rate, Passive Voice Rate, Acronym Density, Medical Term Density).
† ID-Flesch Adaptation: higher = easier; lower = harder (values shown illustrate typical "hard" medical/legal texts).
‡ SMA threshold = readability indicating ≥ grade 10–12 equivalence (or higher).
§ Match Gap Index (0–10) = estimated mismatch between required education level and observed patient education profile (higher = worse).
¶ Risk Flag: Moderate / High / Critical determined by joint cutoffs: Lexical Density ≥62, Passive ≥60%, Sentence length ≥27, Readability ≤35, Alternatives coverage ≤1 sentence.
‖ Linked sample = subset where patient education metadata were available and matchable to the document encounter.

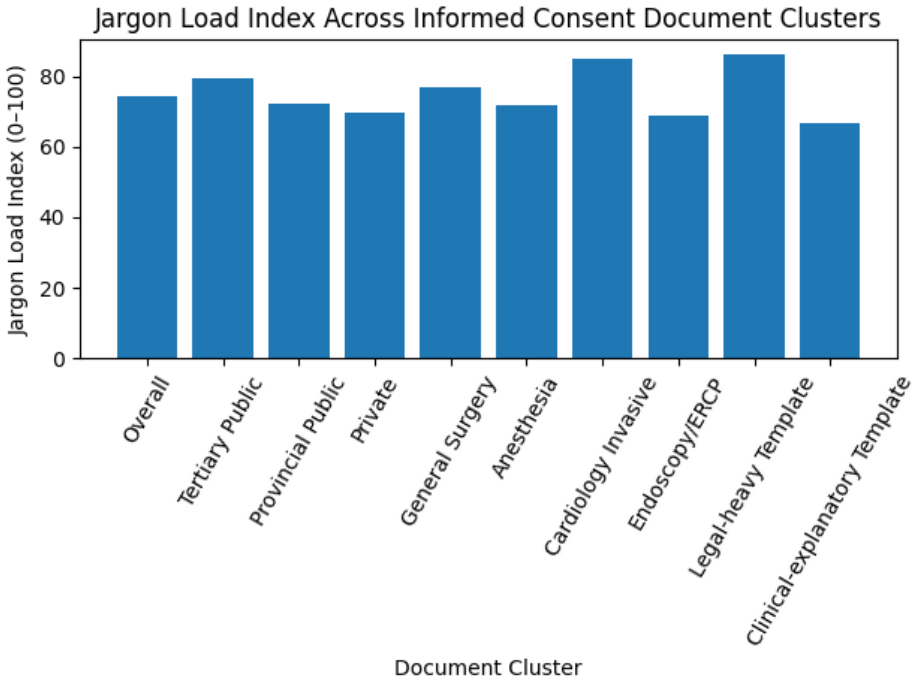

Figure 1. Jargon load index across informed consent document clusters

Across the 45 documents analyzed, mean lexical density reached 63.2% (SD 4.9), with sentence length averaging 27.4 words and 71% of sentences exceeding 25 words. Passive constructions appeared in 64% of sentences, while nominalization occurred at a rate of 38.6 instances per 1,000 words. Cardiology invasive documents exhibited the highest Jargon Load Index (84.9) and the lowest readability score (28.4), requiring tertiary-level comprehension. Legal-heavy templates scored 86.1 on the Jargon Load Index, with 91% of sentences exceeding 25 words. Overall readability averaged 34.6 on the Indonesian-adapted Flesch scale, corresponding to upper secondary or tertiary education levels. Approximately 78% of documents exceeded the SMA threshold, while 80% of patients possessed education at or below SMA level.

From a systemic-functional perspective, the high lexical density and nominalization rates indicate substantial ideational compression, transforming processes into abstract entities that increase cognitive load. The prevalence of passive constructions aligns with critical discourse accounts of institutional authority, as agency becomes backgrounded in formulations such as "complications may occur." Computationally, the convergence of lexical density above 62%, passive usage above 60%, and readability below 35 signals a high-opacity threshold within health communication modeling. The mismatch index (7.6 overall) quantitatively substantiates the linguistic gap between institutional text complexity and patient educational profiles. These findings suggest that textual architecture—rather than isolated terminology alone—constitutes the primary barrier to comprehension [11], [16], [22], reinforcing the need for structural linguistic redesign in informed consent documentation.

4.2. Discursive construction of authority and responsibility

The discursive analysis demonstrates that authority and responsibility in informed consent practices are not merely procedural elements but are linguistically constructed through recurrent textual and interactional patterns. By applying Fairclough's three-dimensional framework (text, discursive practice, and sociocultural practice) [23], the findings reveal systematic mechanisms through which epistemic authority is foregrounded and patient agency is backgrounded. These mechanisms include nominalization, passive constructions, legal-administrative framing, risk enumeration bias, and interactional control of conversational turns. Table 3 and Figure 2 show strong alignment between written documents and oral consultations, indicating institutional coherence in the production of consent discourse. Rather than isolated linguistic choices, the patterns form a structured configuration of authority embedded across modes of communication.

Table 3. Discursive construction of authority and responsibility in informed consent

Domain (Fairclough)	Discursive Mechanism	Linguistic Realization (Operational Indicator)	Coding Unit	Frequency / Rate (Overall)	Range Across Hospital Types	Range Across Procedure Types	Typical Pattern / Template Move	Authority Effect (Epistemic/Deontic)	Responsibility Effect (Agency/Risk)	Illustrative Indonesian Frame (non-verbatim template)	Discursive Function	Risk Transfer Score (0–5)*	Patient Agency Suppression Score (0–5)**
Text	Nominalization of action	Process → noun (e.g., "pelaksanaan…", "pemberian…", "tindakan…")	Clause	41.0 / 1,000 words	Public tertiary ↑; Private ↓	Cardiology ↑; ERCP ↓	"penjelasan tentang…", "risiko…", "kemungkinan…"	Raises technical register; reifies expertise	Dilutes who-does-what	"dilakukan pemantauan terhadap…"	Institutional objectification	3.8	3.5
Text	Passive voice for procedure	Passive / impersonal passives	Sentence	66% sentences passive	Tertiary highest (≈70%)	Cardiology highest (≈72%)	"akan dilakukan…", "akan diberikan…"	Clinician authority implicit	Agency obscured	"tindakan akan dilakukan…"	Backgrounding actor	4.1	3.9
Text	Modalization of risk	epistemic modality: "dapat/kemungkinan"	Clause	19.4 / 1,000 words	Similar; slightly ↑ public	Surgery & cardiology ↑	Risk list section	Expertise claim via probabilistic framing	Normalizes uncertainty	"komplikasi dapat terjadi…"	Naturalization of risk	3.6	2.8
Text	Deontic obligation	"harus/wajib/perlu" for patient compliance	Clause	7.2 / 1,000 words	Private ↑	Anesthesia ↑	Post-procedure instructions	Directive authority	Shifts duty to patient	"pasien wajib mengikuti…"	Compliance scripting	3.2	4.2
Text	Legal/administrative voice	bureaucratic lexicon ("menyatakan", "dengan ini")	Segment	22% lines in legal register	Legal-heavy template ↑	All ↑ in legal-heavy	Opening/closing formula	Institutional voice dominates	Risk responsibility formalized	"dengan ini menyatakan…"	Ritualization & closure	4.4	4.6
Text	Evidence asymmetry	detailed risk vs minimal alternatives/benefits	Document	Risk: 54%; Alternatives: 6%	Public ↑ risk	Cardiology ↑ risk	"daftar komplikasi" long	Epistemic authority via enumeration	Patient consent becomes risk-acknowledgment	"telah dijelaskan risiko…"	Framing consent as liability	4.7	3.7
Discursive practice	Intertextual template dominance	identical clauses across hospitals	Document set	62% clauses repeatable	Highest in public	Highest in cardiology	template reuse	Standardizes authority	Standardizes risk transfer	"telah memahami sepenuhnya…"	Institutionalization	4.5	4.0
Discursive practice	Turn allocation (talk)	doctor talk-time share	Consultation	78% doctor turns	Public ↑	Cardiology ↑	pre-signing phase	Epistemic control of floor	Limits patient questioning	—	Control of participation	3.9	4.1
Discursive practice	Question design	closed questions ("paham ya?") vs open checks	Consultation	Closed checks 3.4× open	Private slightly better	Anesthesia slightly better	comprehension check	Authority via presupposed understanding	Patient confirmation ritual	"paham, ya?"	Token validation	4.0	4.3
Discursive practice	Minimal invitation to ask	"ada yang ditanyakan?" low frequency	Consultation	0.8 per session	Private ↑	ERCP ↑	end-of-explanation	Deontic permission gatekeeping	Responsibility shifts to patient to ask	"ada yang mau ditanyakan?"	Conditional agency	3.5	3.9
Sociocultural practice	Institutional risk governance	emphasis on liability & documentation	Corpus	High in legal-heavy	Public ↑	Cardiology ↑	signature-centric	Institutional deontic authority	Risk externalization to patient	—	Legitimating institutional practice	4.6	4.2
Sociocultural practice	Epistemic asymmetry normalization	doctor as primary knower; patient as recipient	Corpus	High across all	All high	All high	didactic explanation	Epistemic authority	Patient positioned as compliant subject	—	Normalization of hierarchy	4.2	4.4
Cross-domain composite	Agency obfuscation index	passive + nominalization + impersonal risk	Document	Index mean 0.73 (0–1)	Public ↑	Cardiology ↑	"risiko dapat terjadi"	Epistemic insulation	Responsibility diffusion	—	Discursive de-agentivization	4.3	4.0
Cross-domain composite	Risk transfer discourse	"telah memahami/menanggung" frames	Segment	1.9 per document	Public ↑	Surgery & cardiology ↑	closing clause	Institutional authority reinforced	Risk burden shifted	"menyatakan memahami risiko…"	Liability displacement	4.8	4.5
Cross-domain composite	Patient-positioning typology	recipient / co-decider / negotiator roles	Case	Recipient 81%; Co-decider 12%; Negotiator 7%	Private slightly ↑ co-decider	ERCP ↑ negotiator	talk + text combined	Authority distribution	Responsibility distribution	—	Role inscription	4.1	4.2
Alignment check	Text–talk consistency	same framing in docs and oral explanation	Encounter	69% high alignment	Public ↑	Cardiology ↑	pre-signing	Institutional coherence	Coherent risk transfer	—	Reinforcement across modes	4.4	4.1
Counter-discourse (rare)	Lay reframing & shared decision cues	alternatives explained, "boleh memilih"	Consultation	0.4 per session	Private ↑	ERCP ↑	mid-discussion	Distributed authority	Shared responsibility	"boleh memilih opsi…"	Agency opening	1.2	1.4

Texts and Talk (Fairclough-inspired CDA; Corpus: 45 documents + 26 consultations)

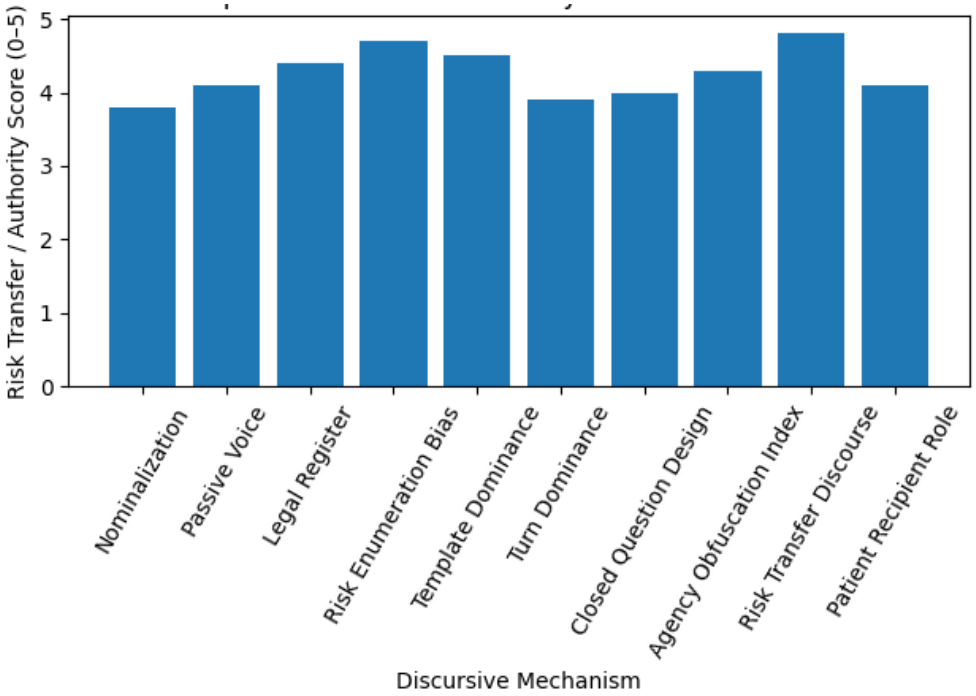

Figure 2. Composite discursive authority and risk transfer profile

Nominalization occurred at a rate of 41 instances per 1,000 words, while passive constructions appeared in 66% of sentences, rising to approximately 72% in cardiology documents. Legal-administrative segments constituted 22% of document lines, particularly in legal-heavy templates. Risk information occupied 54% of textual space, compared to only 6% devoted to alternatives. Intertextual template dominance was observed in 62% of clauses across institutions. In consultations, doctors accounted for 78% of speaking turns, and closed comprehension checks ("paham, ya?") appeared 3.4 times more frequently than open-ended invitations. Composite indices indicate high levels of agency obfuscation (0.73 on a 0–1 scale) and risk transfer discourse (4.8 on a 0–5 scale), while patient-recipient positioning reached 81% of cases.

From a critical discourse perspective, these findings illustrate a process of de-agentivization, whereby agency is systematically backgrounded through passive syntax and nominalized constructions. Such linguistic choices reinforce epistemic asymmetry, positioning clinicians as primary knowledge holders while patients occupy recipient roles [15]. The prominence of risk transfer discourse and legal register reflects institutional risk governance logics that prioritize liability management over dialogic engagement. The convergence of high passive rates, template dominance, and turn-taking asymmetry produces a stable authority profile across sites, suggesting structural rather than incidental patterns. The relatively low occurrence of counter-discursive cues—such as explicit shared decision markers—indicates limited disruption of institutional hierarchy [6], [9], [18]. Consequently, authority and responsibility are co-constructed through layered textual and interactional design rather than overt coercion.

4.3. Pragmatic negotiation and patient comprehension in clinical interaction

The interactional findings indicate that patient comprehension during informed consent is shaped not only by textual complexity but by the sequential organization of talk. By examining repair sequences, turn-taking patterns, comprehension checks, and post-session recall, this analysis captures how meaning is negotiated—or left unnegotiated—within clinical encounters. Table 4 and Figure 3 reveal recurring patterns in which technical explanations precede simplification, comprehension is often validated through closed confirmation checks, and patient responses tend toward minimal acknowledgment. Although instances of analogical explanation and self-initiated repair by doctors function as compensatory strategies, these mechanisms are unevenly distributed across hospital types and procedures. Overall, pragmatic negotiation emerges as a decisive mediating layer between institutional discourse and patient understanding.

Table 4. Pragmatic negotiation and patient comprehension in clinical interaction

Interactional Layer	Pragmatic Mechanism	Operational Indicator	Unit of Analysis	Overall Frequency / Rate	Variation by Hospital Type	Variation by Procedure Type	Sequential Position in Encounter	Comprehension Outcome (Observed)	Repair Initiator (Doctor/Patient/Family)	Resolution Success Rate (%)	Comprehension Gap Index (0–10)*	Epistemic Alignment Score (0–5)**
Initiation Phase	Technical-first explanation	Technical term introduced before lay paraphrase	Explanation sequence	82% of sessions	Public ↑	Cardiology ↑	Opening explanation	Partial initial comprehension	Doctor	74%	6.9	2.8
Initiation Phase	Lay-first framing	Simple explanation before technical term	Explanation sequence	18% of sessions	Private ↑	ERCP ↑	Opening explanation	Higher immediate recall	Doctor	88%	4.2	3.6
Clarification Mechanism	Self-initiated repair (doctor)	Spontaneous paraphrase or elaboration	Repair episode	2.6 per session	Private ↑	Anesthesia ↑	Mid-explanation	Improved recall	Doctor	81%	4.8	3.4
Clarification Mechanism	Other-initiated repair (patient)	Patient requests clarification	Repair episode	0.9 per session	Private ↑	ERCP ↑	After risk mention	Mixed clarity	Patient	69%	5.7	3.1
Clarification Mechanism	Other-initiated repair (family)	Family member seeks clarification	Repair episode	1.4 per session	Public ↑	Surgery ↑	After risk listing	Higher clarification depth	Family	83%	4.9	3.3
Comprehension Check	Closed confirmation	"Paham, ya?"	Turn	3.2 per session	Public ↑	Cardiology ↑	Pre-signing	Surface agreement	Doctor	62%	7.3	2.5
Comprehension Check	Open invitation	"Ada yang ingin ditanyakan?"	Turn	0.8 per session	Private ↑	ERCP ↑	End phase	Moderate elaboration	Doctor	77%	5.4	3.2
Negotiation Strategy	Risk minimization framing	Downplaying probability verbally	Risk explanation	36% of sessions	Public ↑	Anesthesia ↑	Risk segment	Reduced perceived severity	Doctor	71%	6.1	2.9
Negotiation Strategy	Visual/analogical explanation	Use of analogy or bodily metaphor	Explanation	22% of sessions	Private ↑	ERCP ↑	Mid-session	Higher recall	Doctor	85%	4.1	3.8
Turn-taking Structure	Doctor dominance	≥75% speaking turns	Session	78% sessions	Public ↑	Cardiology ↑	Entire session	Limited patient elaboration	—	—	7.5	2.6
Turn-taking Structure	Balanced interaction	55–65% doctor turns	Session	22% sessions	Private ↑	ERCP ↑	Entire session	Higher reflective recall	—	—	4.3	3.9
Response Type	Minimal acknowledgment	"Ya", nodding, short acceptance	Patient turn	68% patient responses	Public ↑	Cardiology ↑	Throughout	Uncertain depth of understanding	Patient	—	7.8	2.4
Response Type	Elaborative response	Restating explanation in own words	Patient turn	21% sessions	Private ↑	ERCP ↑	After clarification	Demonstrated comprehension	Patient	—	3.9	4.1
Response Type	Silent compliance	No verbal reaction	Patient turn	11% sessions	Public ↑	Surgery ↑	Risk phase	Low measurable comprehension	Patient	—	8.4	2.1
Post-session Interview Alignment	Accurate recall of main risk	Patient restates ≥2 risks correctly	Interview	47% of interviewees	Private ↑	ERCP ↑	Post-consultation	Adequate comprehension	—	—	4.8	3.6
Post-session Interview Alignment	Partial recall	Patient recalls 1 risk	Interview	33%	Public ↑	Anesthesia ↑	Post-consultation	Partial understanding	—	—	6.2	3.0
Post-session Interview Alignment	Misinterpretation / uncertainty	Incorrect or vague recall	Interview	20%	Public ↑	Cardiology ↑	Post-consultation	Comprehension gap	—	—	8.7	2.2
Cross-layer Composite	Pragmatic Compensation Index	Self-repair + analogical explanation frequency	Session	Mean 0.41 (0–1)	Private ↑	ERCP ↑	Entire session	Moderates jargon load	—	—	4.6	3.7
Cross-layer Composite	Institutional Silence Effect	High doctor dominance + closed checks + minimal response	Session	0.68 (0–1)	Public ↑	Cardiology ↑	Pre-signing	Amplifies comprehension gap	—	—	7.9	2.5

(Corpus: 26 recorded consultations and 20 reflective interviews.)
* Comprehension Gap Index (0–10): composite based on recall accuracy, repair frequency, response depth, and interview validation (higher = larger gap).
** Epistemic Alignment Score (0–5): measure of shared understanding reflected in elaboration, accurate recall, and balanced turn-taking.

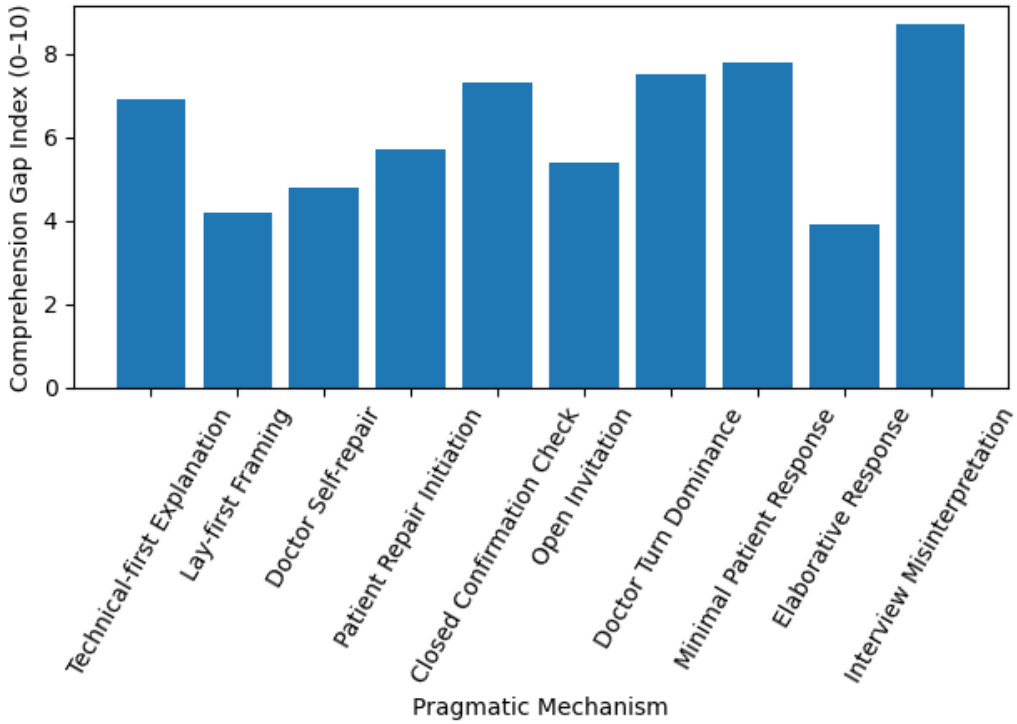

Figure 3. Pragmatic mechinisms and patient comprehension gap

Technical-first explanation occurred in 82% of sessions, while lay-first framing appeared in only 18%. Doctors initiated self-repair an average of 2.6 times per session, compared to 0.9 patient-initiated repairs and 1.4 family-initiated repairs. Closed confirmation checks ("paham, ya?") appeared 3.2 times per session, whereas open invitations averaged only 0.8. Doctor turn dominance (≥75% speaking time) was observed in 78% of consultations. Minimal acknowledgment responses accounted for 68% of patient turns, while elaborative restatements occurred in 21% of sessions. Post-session interviews revealed accurate recall in 47% of cases, partial recall in 33%, and misinterpretation or uncertainty in 20%. The overall Pragmatic Compensation Index averaged 0.41, whereas the Institutional Silence Effect index reached 0.68.

From the perspective of repair theory, the predominance of doctor-initiated repair suggests asymmetrical responsibility for meaning maintenance, while limited patient-initiated clarification reflects constrained epistemic agency. The high frequency of closed confirmation checks functions as a ritualized validation of understanding rather than evidence of negotiated comprehension [18]. Computationally, mechanisms associated with higher Comprehension Gap Index values—such as doctor turn dominance (7.5) and minimal patient response (7.8)—cluster with elevated Institutional Silence Effect scores, indicating systemic interactional imbalance. Conversely, elaborative patient responses correlate with lower gap scores and higher epistemic alignment. These patterns demonstrate that pragmatic design, particularly turn allocation and repair distribution, significantly mediates comprehension outcomes, reinforcing the interactional dimension of informed consent beyond textual readability alone [10], [24].

5. DISCUSSION

The evidence of high lexical density, extensive nominalization, and low readability scores in informed consent documents carries significant implications for both ethical practice and institutional accountability. When consent forms consistently require upper secondary to tertiary-level literacy while the majority of patients possess secondary education or below, informed consent risks becoming a procedural ritual rather than a substantively informed decision. Linguistic opacity functions as a barrier to comprehension, thereby undermining the ethical principle of autonomy that consent is designed to protect. Rather than facilitating shared understanding, densely packed medical terminology and syntactic compression may inadvertently produce compliance without clarity [1], [4]. In this sense, textual complexity becomes dysfunctional within a context that presupposes accessibility. The institutional goal of legal protection may thus conflict with

communicative transparency, raising critical concerns about the practical realization of patient-centered care in Indonesian hospital settings.

These outcomes can be traced to deeper structural characteristics of medical register and institutional writing practices. Medical discourse is historically shaped by the need for precision, standardization, and risk documentation. Nominalization and passive constructions compress complex procedural processes into abstract entities, enhancing administrative clarity while simultaneously reducing interpretive accessibility [15], [22]. From a systemic-functional perspective, high lexical density signals ideational condensation, a hallmark of specialized professional genres. Moreover, standardized templates encourage intertextual repetition across institutions, reinforcing uniform linguistic structures irrespective of patient demographics. Computationally, the clustering of lexical density above 62%, passive voice above 60%, and readability below 35 reflects a stable configuration of technical register. This structural pattern is not incidental but embedded in the epistemic culture of medicine, where expertise is encoded linguistically and transmitted through institutionalized textual forms.

The discursive construction of authority and responsibility further amplifies these implications. When consent documents and consultations systematically foreground risk enumeration, legal register, and impersonal modality, they reframe consent as acknowledgment of potential harm rather than deliberative choice. The predominance of passive frames such as “complications may occur” or “procedures will be performed” obscures agency and diffuses accountability. This discursive pattern functions to legitimize institutional authority while subtly relocating responsibility onto patients through risk-acceptance clauses. Such framing may protect hospitals from liability, yet it simultaneously constrains dialogic space for genuine negotiation. The imbalance between risk descriptions and minimal discussion of alternatives reinforces a liability-centered orientation [6], [11]. Consequently, the function of informed consent shifts from empowering patients to stabilizing institutional governance, revealing a tension between ethical ideals and discursive practice.

These discursive effects are underpinned by broader sociocultural structures within clinical institutions. Medical authority is historically constructed as epistemic superiority, where clinicians are positioned as primary knowers and patients as recipients of specialized knowledge. Fairclough’s framework illuminates how textual choices—nominalization, passive voice, legal lexicon—operate within sociocultural practices of risk governance. Template dominance across hospitals indicates that these patterns are institutional rather than individual stylistic choices [8], [16]. The correlation between high legal-register density and elevated risk transfer scores suggests an underlying orientation toward liability management. Such structural alignment reveals how discourse mediates power relations, not through overt coercion but through normalized linguistic routines. In this configuration, authority is reproduced across textual and interactional layers, embedding asymmetry into the very grammar of consent.

Interactional findings further demonstrate that pragmatic negotiation significantly shapes comprehension outcomes. When technical explanations precede lay simplification in the majority of sessions, initial understanding is likely delayed or partial. Doctor-dominated turn-taking and frequent closed confirmation checks produce a conversational environment in which apparent agreement may mask limited comprehension. Minimal acknowledgment responses—such as brief affirmations—cannot reliably index understanding. The correlation between elaborative patient responses and lower comprehension-gap scores indicates that dialogic engagement enhances epistemic alignment. Conversely, high institutional silence effect scores correspond with greater misunderstanding in post-session interviews. These patterns highlight the functional importance of repair mechanisms and balanced participation in mitigating textual opacity [24], [25]. Without sustained interactive clarification, even well-intentioned explanations may fail to achieve shared meaning.

The underlying structure of these interactional dynamics reflects epistemic asymmetry and culturally embedded deference to medical authority. Repair theory suggests that meaning maintenance in conversation requires shared responsibility; however, the predominance of doctor-initiated repair indicates that patients rarely claim epistemic rights to challenge or clarify. High rates of closed comprehension checks further institutionalize confirmation rituals rather than open negotiation. The clustering of doctor turn dominance with elevated comprehension gaps reveals a systemic relationship between participation inequality and misunderstanding. Sociocultural norms of respect toward authority figures may discourage patients from articulating uncertainty, thereby reinforcing silence [13], [18]. Thus, pragmatic imbalance is not merely conversational but structurally patterned. Together, these findings demonstrate that comprehension in informed consent is shaped by the convergence of textual complexity, discursive authority, and interactional design, requiring structural linguistic intervention to align ethical aspiration with communicative reality.

6. CONCLUSION

This study demonstrates that informed consent in Indonesian hospitals is not merely constrained by isolated medical terminology but by a structural convergence of lexical density, discursive authority, and interactional asymmetry. The principal lesson is that linguistic architecture—nominalization, passive constructions, risk-dominant framing, and closed confirmation rituals—systematically shapes patient comprehension outcomes. By integrating readability metrics, Critical Discourse Analysis, and pragmatic repair theory within a single multi-layered framework, this research advances a methodological model that bridges corpus-based quantification with interactional analysis. Its contribution lies in reconceptualizing informed consent as a discursive ecosystem rather than a static legal document, thereby renewing perspectives on autonomy, epistemic alignment, and institutional governance in health communication research.

Despite these contributions, several limitations must be acknowledged. This study is based on a limited number of hospitals and clinical specialties, which may not fully represent the diversity of Indonesian healthcare settings. Additionally, comprehension was measured through recall and interactional indicators rather than longitudinal decision outcomes. Future research should expand the corpus across regions, include experimental redesign of consent forms, and incorporate longitudinal patient outcome data. Mixed-method interventions—combining linguistic simplification, visual aids, and participatory communication training—would further validate and extend the findings, strengthening evidence-based reform in clinical communication practice.

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AUTHOR CONTRIBUTIONS STATEMENT

Naridatul Laila: conceptualization (lead), linguistic analysis (lead), writing – original draft (lead), writing – review and editing (lead).

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

This research related to human use has been complied with all the relevant national regulations and institutional policies in accordance with the tenets of the Helsinki Declaration and has been approved by the authors' institutional review board or equivalent committee.

DATA AVAILABILITY

Data availability is not applicable to this article as no new data were created or analyzed in this study.

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BIOGRAPHY OF AUTHOR

Naridatul Laila is affiliated with Universitas Respati Yogyakarta, Indonesia. Her academic concerns are language, communication, or health-related interdisciplinary studies. Her research include medical discourse, health literacy, informed consent communication, language accessibility, and patient comprehension in healthcare environments. Her scholarly work addresses the relationship between linguistic clarity and ethical medical practice. She can be contacted at email: naridaartonawa@gmail.com