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COGNITIVE AND PRAGMATIC ASPECTS OF TRANSLATING PATIENT INFORMATION LEAFLETS

This article analyzes and investigates the translation of patient information leaflets as an integral component of healthcare communication. Particular attention is paid to providing patients with comprehensible, accurate, and accessible information about medicinal products, their use, risks, and contraindications. Unlike clinical or scientific texts aimed at healthcare professionals, patient information leaflets are targeted at lay audiences with limited specialized knowledge. The study examines the cognitive and pragmatic aspects of translation that influence patients' understanding of medical information, which is crucial for treatment safety, adherence to therapeutic recommendations, and overall public health outcomes. This article examines the cognitive and pragmatic aspects of translating patient information leaflets, emphasizing the challenges of maintaining interlingual equivalence while adapting texts to the cognitive and communicative needs of target audiences. An interdisciplinary approach is employed, integrating translation studies, cognitive linguistics, pragmatics, genre analysis, terminology science, and health communication research. The study highlights the role of cognitive strategies – such as simplification, explicitation, and syntax structure reorganization – and pragmatic calibration, including tone adjustment, clarity, and functional adaptation, to enhance readability. It also addresses the challenges posed by Latin-based and internationally standardized medical terminology within the Ukrainian linguistic context. The findings demonstrate that translating patient information leaflets constitutes a complex professional activity requiring translators to combine linguistic competence, domain knowledge, and an understanding of cognitive and pragmatic processes in medical information processing. The study proposes directions for future research, including experimental investigations into cognitive load, patient comprehension, and the impact of digital tools on communication effectiveness. Practically, the research contributes to developing evidence-based recommendations for adapting patient information leaflets to Ukrainian audiences while aligning with international standards and national language norms.

Keywords: *medical translation, patient information leaflets, cognitive linguistics, pragmatics, terminology, text accessibility, health literacy.*

Introduction. Patient information leaflets (PILs) are integral components of healthcare communication, designed to provide patients with comprehensible, accurate, and accessible information about medicinal products, their usage, risks, and contraindications. Unlike clinical or scientific texts aimed at professionals, PILs are targeted at lay readers who often lack specialized medical knowledge. Ensuring that patients understand the content of such leaflets is a matter of public health significance, as misinterpretation or confusion can directly affect patient safety, treatment adherence, and health outcomes. Growing

globalization and cross-border pharmaceutical trade have further increased the need for high-quality translation of PILs across language communities.

Academic interest in the translation of PILs has expanded in recent decades, with researchers highlighting the unique linguistic, cognitive, and pragmatic challenges intrinsic to this genre. PILs occupy an intermediary communicative space that combines technical medical terminology with the requirement to be accessible to non-specialists, often necessitating strategic decisions that balance faithfulness to the source text with readability for patients. In this



way, PIL translation reflects broader issues in medical translation where the translator must navigate between specialist discourse and general language usage.

Despite the practical importance of PIL translation, research on the cognitive processes and pragmatic decision-making involved remains relatively underdeveloped, particularly in Eastern European contexts. While studies have examined readability, lay-friendliness, and structural adaptations in PILs in some language pairs (e.g., English-Arabic) [15], there is a paucity of research that systematically integrates cognitive and pragmatic theories to explain translators' choices in PIL translation. This gap is particularly pronounced in Ukrainian scholarship, where investigations of medical translation have tended to focus on terminology and equivalence rather than the intersection of language comprehension, cognitive processing, and pragmatic adaptation.

Cognitive approaches to translation emphasize the mental representations and decision processes that translators engage in when interpreting and producing texts, considering factors such as schema activation, inference, and conceptual restructuring [14]. Pragmatic perspectives, on the other hand, foreground the role of context, relevance, and audience expectations in shaping meaning and communicative effectiveness. When applied to PILs, a combined cognitive-pragmatic framework can illuminate how translators reconcile the specialized source discourse with the communicative needs of lay audiences.

The present article aims to fill the existing research gap by offering a comprehensive examination of the cognitive and pragmatic aspects of translating Patient Information Leaflets. Building on international studies and emerging Ukrainian research on medical and professional translation, this paper outlines theoretical foundations, analyzes translation challenges, and proposes strategies to enhance the effectiveness and comprehensibility of translated PILs. The research addresses both interlingual equivalence and intralingual adaptation – that is, how meaning is preserved across languages and how texts are shaped to fit the cognitive profiles and pragmatic expectations of target-language readers.

The aim of the article is to provide a comprehensive theoretical and analytical examination of the cognitive and pragmatic aspects of translating patient information leaflets, with a particular focus on how translation strategies influence the comprehensibility, functional adequacy, and safety of medical information for lay audiences in the Ukrainian linguistic and regulatory context. To achieve the stated aim, the

article sets out to accomplish the following **research objectives**: (1) to conceptualize patient information leaflets as a specialized institutional genre of medical communication and to identify their key communicative, functional, and regulatory characteristics relevant to translation; (2) to analyze the cognitive processes involved in translating patient information leaflets, including issues of cognitive load, schema activation, inference, and information processing by non-expert readers; (3) to examine the pragmatic dimension of PIL translation, focusing on functional equivalence, audience orientation, directive and preventive functions, and pragmatic calibration of warnings, instructions, and recommendations; (4) to investigate the role of medical terminology, particularly Latin-based and internationally standardized terms, in shaping patient comprehension and cognitive accessibility in Ukrainian translations; (5) to contextualize PIL translation within the Ukrainian healthcare and regulatory environment, identifying specific linguistic, terminological, and professional challenges faced by translators.

Theoretical Framework. The theoretical framework of the present study is grounded in an interdisciplinary approach that integrates translation studies, cognitive linguistics, pragmatics, genre analysis, terminology science, and health communication research. Such an approach is necessitated by the specific communicative nature of PILs, which differ substantially from other types of medical texts in terms of target audience, communicative purpose, and pragmatic constraints. Unlike clinical guidelines or academic medical articles, PILs are addressed primarily to non-professional recipients and are intended to inform, instruct, and guide patient behavior in a safe and comprehensible manner. Consequently, the translation of PILs cannot be adequately described solely through traditional models of linguistic equivalence or terminological correspondence but must be examined through the prism of cognitive processing and pragmatic effectiveness.

Within this interdisciplinary perspective, genre theory provides a particularly productive lens for examining patient information leaflets, as it allows their communicative purpose, structural regularity, and institutional regulation to be systematically related to translation strategies and constraints.

Patient information leaflets constitute a highly regulated institutional genre defined by a standardized structure, recurrent communicative moves, and legally prescribed content [17; 1]. PILs are typically produced within a framework of pharmaceutical regulation and are subject to approval by national and

international regulatory bodies such as the European Medicines Agency. This institutional embeddedness imposes strict constraints on both source texts and their translations, limiting the translator's freedom while simultaneously increasing responsibility for communicative clarity and accuracy [4].

Research on PILs emphasizes that their primary function is not merely informational but action-oriented: patients are expected to understand dosage instructions, recognize contraindications, identify adverse reactions, and make informed decisions regarding medication use. As a result, PILs combine elements of instructional discourse, warning discourse, and explanatory medical discourse, creating a hybrid genre that poses specific challenges for translation. Scholars note that failures in PIL communication often stem not from incorrect information but from insufficient comprehensibility and inappropriate pragmatic framing [1, p. 31].

Within translation studies, institutional genres such as PILs have been analyzed as texts where communicative purpose and regulatory compliance override stylistic considerations [9, p. 137]. This observation is particularly relevant for English–Ukrainian translation, where PILs must satisfy both international pharmaceutical standards and national linguistic norms. The genre-specific constraints of PILs thus necessitate a theoretical framework that prioritizes functional adequacy, cognitive accessibility, and pragmatic precision. These functional and regulatory constraints foreground the need to examine not only the structural and pragmatic organization of patient information leaflets but also the cognitive mechanisms through which their content is processed and understood by lay readers.

The cognitive dimension of PIL translation is central to understanding how medical information is processed by non-expert readers. Cognitive linguistics and relevance theory provide valuable insights into how patients interpret written medical information, allocate attention, and derive meaning under conditions of limited background knowledge [16, p. 113]. According to relevance theory, effective communication is achieved when the recipient obtains sufficient cognitive effects with minimal processing effort. In the context of PIL translation, this principle implies that translators must actively reduce cognitive load while preserving essential medical content.

Empirical studies demonstrate that patients often experience difficulties when confronted with dense medical terminology, complex syntactic structures, or implicit assumptions about prior knowledge [7, p. 69]. These difficulties are further exacerbated

in translated PILs if source-text structures and lexical choices are transferred without adaptation to the cognitive capacities of the target audience. Consequently, cognitive-oriented translation strategies such as simplification, explicitation, restructuring, and controlled redundancy play a crucial role in enhancing patient comprehension.

S. Göpferic emphasizes that translation competence in specialized domains involves not only linguistic knowledge but also the ability to anticipate cognitive processing difficulties on the part of the target audience [6, p. 17]. In PIL translation, this competence manifests in the translator's capacity to evaluate whether a terminological or syntactic choice facilitates or hinders understanding. Thus, retaining complex Latin-based medical terms without explanation may satisfy terminological accuracy but fail cognitively, as patients may not be able to integrate such terms into their mental models of health and illness. The English term *contraindication* is often rendered into Ukrainian as *протипоказання*, which is generally accessible to lay readers; however, the unadapted use of *контраіндикація* may increase cognitive load and require additional inference. Similarly, translating *gastrointestinal hemorrhage* as *шлунково-кишкова кровотеча* supports conceptual clarity, whereas retaining the internationalized form *гастроінтестинальна геморагія* may obscure meaning for non-specialist readers.

Beyond lexical and terminological choices, cognitive processing difficulties in PIL translation also arise at the level of syntactic organization, where structural complexity may significantly affect patient comprehension. English PILs frequently contain long, nominalized constructions such as “*the administration of the medicinal product should be discontinued in the event of adverse reactions.*” A structurally equivalent Ukrainian rendering preserves accuracy but may hinder comprehension, whereas a cognitively adapted version – “*припиніть прийом препарату, якщо з'являються побічні реакції*” – reduces processing effort while maintaining the intended directive force.

In addition to lexical and syntactic factors, cognitive accessibility in translated patient information leaflets is further influenced by the extent to which texts presuppose background medical knowledge on the part of lay readers. Terms such as *renal impairment* or *hepatic dysfunction* are cognitively demanding if translated literally (*ниркова недостатність, порушення функції печінки*) without contextual clarification, especially for patients unfamiliar with organ-specific pathology. Adding brief explicitation

(“*порушення роботи нирок*”) facilitates schema activation and supports patient comprehension without compromising medical accuracy.

The cognitive dimension also intersects with memory and decision-making processes. Research indicates that patients often rely on PILs when making decisions about medication adherence, particularly in situations involving side effects or dosage adjustments. If translated PILs overload patients cognitively, the likelihood of misinterpretation or non-compliance increases. Thus, cognitive considerations are not peripheral but central to the quality and safety of translated medical communication. However, cognitive accessibility alone does not guarantee communicative effectiveness, as patient understanding must ultimately be aligned with the pragmatic and functional goals embedded in the structure and formulation of patient information leaflets.

The pragmatic and functional dimensions of PIL translation are closely intertwined with cognitive aspects. Functionalist approaches to translation, particularly C. Nord’s model of translation-oriented text analysis, stress that translation strategies must be determined by the intended function of the target text [13]. In the case of PILs, the dominant function is directive and preventive: the text seeks to guide patient behavior and prevent misuse of medication.

J. House argues that pragmatic equivalence involves preserving the communicative value of the text rather than its formal features. Applied to PIL translation, this means that linguistic choices must be evaluated in terms of their ability to elicit appropriate interpretations and actions from patients [8]. Thus, modal verbs, imperative constructions, and warning formulations must be rendered in a way that conveys the intended level of obligation or risk without causing undue alarm or ambiguity.

Pragmatic failures in PIL translation may have serious consequences. R. Clerehan and R. Buchbinder note that overly technical or ambiguous wording can lead patients to misjudge the severity of side effects or misunderstand contraindications [3]. Therefore, pragmatic adequacy in PIL translation is closely linked to patient safety and ethical responsibility. Translators are required to mediate between institutional medical discourse and everyday language use, adapting professional formulations to the communicative norms of lay readership.

Patient information leaflet translation represents a form of risk-sensitive communication. The translator’s task extends beyond textual transfer to include pragmatic calibration: adjusting tone, clarity, and

explicitness to ensure that the message is interpreted as intended. This reinforces the need for an integrated theoretical framework that combines pragmatic analysis with cognitive considerations. Within this integrated cognitive-pragmatic framework, terminological choice emerges as a particularly critical factor, as it directly influences both patient comprehension and communicative risk.

Terminology constitutes one of the most challenging aspects of PIL translation, particularly due to the prevalence of Greco-Latin medical terms. Terminology theory conceptualizes terms as verbal representations of specialized concepts embedded in structured knowledge systems [2]. While such terms are indispensable in professional medical communication, their use in patient-oriented texts raises significant cognitive and pragmatic issues.

R. Temmerman’s sociocognitive approach to terminology highlights that terminological choices are shaped by social context, communicative purpose, and user needs [18]. In PILs, the uncritical transfer of professional terminology may create barriers to comprehension. This is especially relevant for Latin-based terms that are familiar to healthcare professionals but opaque to patients. The coexistence of Latinisms and vernacular equivalents presents translators with a strategic choice: retain the technical term, provide an explanatory paraphrase, or replace it with a more accessible expression.

Medical translation pedagogy emphasizes that patient-oriented texts require a different terminological strategy than professional genres [12, p. 88]. In PIL translation, controlled terminological simplification and selective explicitation are often necessary to achieve cognitive accessibility. At the same time, excessive simplification may lead to loss of precision or legal vulnerability. Thus, translators must balance terminological accuracy with communicative effectiveness.

In the Ukrainian context, this balance is further complicated by the ongoing development of patient-oriented medical terminology. Ukrainian medical discourse historically relies on a mixture of international terms, calques, and descriptive equivalents. Recent studies indicate that patients often struggle with untranslated Latinisms, while healthcare professionals prefer internationally standardized terminology [10, p. 79]. This divergence underscores the importance of context-sensitive terminological decision-making in PIL translation. This tension between professional terminology and patient comprehension highlights the need to consider not only terminological accuracy but also the principles of

plain language, health literacy, and overall readability in PIL translation.

Health literacy has emerged as a key concept in research on medical communication and PIL effectiveness. Health literacy refers to an individual's ability to access, understand, and use health-related information to make informed decisions [19]. Translators of PILs must therefore consider not only linguistic equivalence but also readability and accessibility.

Plain language principles advocate the use of clear syntax, familiar vocabulary, logical structure, and explicit explanations [2]. Regulatory bodies increasingly require PILs to undergo readability testing to ensure patient comprehension [5]. These requirements have direct implications for translation, as target texts must meet readability standards independently of their source texts.

Research shows that translated PILs often fail readability tests if translators adhere too closely to source-text structure and terminology [11]. This finding supports the argument that PIL translation should be guided by target-oriented strategies that prioritize patient comprehension. Readability constitutes a core determinant of communicative success rather than a superficial stylistic feature from a cognitive-pragmatic perspective.

Incorporating plain language strategies into PIL translation does not imply abandoning professional standards. Rather, it involves restructuring information in a way that aligns with patients' cognitive schemas and communicative expectations. This reinforces the view that cognitive and pragmatic considerations must be integrated into the theoretical framework of PIL translation. Applying these cognitive and pragmatic principles in practice is particularly critical within the Ukrainian context, where sociolinguistic and regulatory factors shape the translation of patient information leaflets.

The translation of patient information leaflets into Ukrainian occurs within a specific sociolinguistic and regulatory environment. The Ukrainian healthcare system has undergone significant transformation in recent years, accompanied by increased alignment with European pharmaceutical regulations. This process has intensified the demand for high-quality Ukrainian-language PILs that are both legally compliant and accessible to patients.

Ukrainian scholars emphasize that patient-oriented medical texts require distinct linguistic and terminological strategies compared to professional medical discourse [10]. However, standardized guidelines for PIL translation into Ukrainian remain limited, placing considerable responsibility on translators. In this

context, cognitive-pragmatic competence becomes a critical professional skill.

Theoretical and empirical insights from international research must therefore be adapted to Ukrainian linguistic norms and patient expectations. This adaptation underscores the importance of integrating global theoretical models with national research traditions, ensuring that PIL translation practices are both scientifically grounded and locally relevant.

Conclusions and Prospects for Future Research.

In conclusion, the translation of Patient Information Leaflets represents a cognitively and pragmatically complex task that extends beyond linguistic equivalence to encompass audience comprehension, safety, and functional effectiveness. Translators must reconcile specialized medical terminology, often rooted in Latin and internationalized forms, with the cognitive capacities and literacy levels of lay readers. The integration of cognitive linguistics and pragmatic theory provides a framework for understanding how patients process, interpret, and act upon medical information, highlighting the necessity of strategies such as simplification, explicitation, controlled redundancy, and functional adaptation. In the Ukrainian context, the interplay between international regulatory standards and emerging patient-oriented medical terminology further emphasizes the importance of context-sensitive translational decisions. Achieving both accuracy and accessibility requires translators to operate as mediators who anticipate cognitive processing challenges while ensuring that pragmatic intent, such as warnings and dosage instructions, is effectively communicated.

Prospects for future research include empirical studies that examine how cognitive load, comprehension, and decision-making interact in patients using translated PILs, particularly in underexplored Eastern European languages. Corpus-based and experimental approaches could provide data-driven insights into effective terminological strategies, plain-language adaptation, and pragmatic calibration, supporting the development of standardized guidelines for Ukrainian PIL translation. Additionally, exploring the role of digital tools, interactive patient education resources, and multilingual support could further enhance comprehension and patient safety. By systematically linking cognitive and pragmatic theory with applied translation practice, future research can strengthen the quality, usability, and cross-linguistic consistency of patient information leaflets, thereby contributing both to the professionalization of medical translation and to improved healthcare outcomes.

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Слагіна Н. І., Федчишин Н. О. КОГНІТИВНО-ПРАГМАТИЧНІ АСПЕКТИ ПЕРЕКЛАДУ ІНСТРУКЦІЙ ДЛЯ ПАЦІЄНТІВ

У статті проаналізовано та досліджено переклад інструкцій із медичного застосування для пацієнтів як невід’ємного елементу медичної комунікації. Особлива увагу приділено наданню пацієнтам зрозумілої, точної та доступної інформації про лікарські засоби, їхнє використання, фактори ризику та протипоказання. На відміну від клінічних або наукових текстів, орієнтованих на медичних фахівців, інструкції-вкладки для пацієнтів адресовані аудиторії з базовим рівнем обізнаності. Досліджено вплив когнітивних та прагматичних аспектів перекладу на розуміння пацієнтами медичної інформації, що є ключовим фактором для безпеки лікування, дотримання терапевтичних рекомендацій та загального стану здоров’я населення. Акцентовано увагу на когнітивних та прагматичних аспектах перекладу інструкцій-вкладок для пацієнтів, наголошуючи на проблемах збереження міжмовної еквівалентності та адаптації тексту до когнітивних і комунікативних потреб цільової аудиторії. Використано міждисциплінарний підхід, що інтегрує перекладознавство, когнітивну лінгвістику, прагматику, аналіз жанру, термінознавство та дослідження медичної комунікації. Розглянуто роль когнітивних стратегій (спрощення, експліцитація, перебудова синтаксичної структури) та прагматичного калібрування (корекція тону, ясності й стилю) для підвищення зрозумілості текстів, а також проблеми використання латинської та міжнародної медичної термінології в україномовній інтерпретації. Продемонстровано, що переклад інструкцій із медичного застосування для пацієнтів є складною

професійною діяльністю, яка потребує від перекладача поєднання лінгвістичної компетенції, знань предметної сфери та розуміння когнітивних і прагматичних аспектів сприйняття медичної інформації. У висновках запропоновано напрями подальших досліджень, включно з експериментальним аналізом когнітивного навантаження, усвідомленням пацієнтом інформації та впливом цифрових ресурсів на ефективність комунікації. Практичне значення статті полягає у формуванні науково обґрунтованих рекомендацій щодо адаптації інструкції із медичного застосування для україномовної аудиторії з урахуванням міжнародних стандартів та національних мовних норм.

Ключові слова: *переклад медичних текстів, інформаційні листки для пацієнтів, когнітивна лінгвістика, прагматика, термінологія, доступність тексту, рівень медичної грамотності.*

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