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THEORETICAL AND METHODOLOGICAL FOUNDATIONS OF A COMPARATIVE STUDY OF ENGLISH AND UZBEK TELEMEDICINE TERMINOLOGY

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Abstract: This article examines the theoretical and methodological foundations for a comparative study of English and Uzbek telemedicine terminology. The research focuses on the conceptual boundaries, structural patterns and translation equivalence of key terms such as telemedicine, telehealth, remote patient monitoring, teleconsultation, store-and-forward, teleradiology and telerehabilitation. The study combines comparative-typological, structural-semantic, componential, terminographic and translation-equivalence methods. International digital-health classifications demonstrate the need for a shared terminology capable of reducing ambiguity across clinical, technological and research contexts. In Uzbek professional discourse, direct borrowing, calquing and descriptive translation frequently coexist, which may produce variation and partial semantic overlap. The article proposes a four-criterion methodological model based on conceptual adequacy, systemic consistency, linguistic naturalness and normative stability. The model is intended to support more consistent English-Uzbek terminology transfer and the development of standardized bilingual telemedicine resources.

Keywords: telemedicine, telehealth, medical terminology, comparative linguistics, terminological equivalence, digital health, standardization, translation strategy.

INTRODUCTION

The rapid integration of digital technologies into health care has not only transformed service delivery but has also generated a dense layer of specialized terminology. Telemedicine occupies a central position in this lexical field because it refers to health-care activities performed across distance through information and communication technologies. The World Health Organization describes telemedicine as the delivery of health-care services where distance is a critical factor and emphasizes its potential to expand access, strengthen clinical management and support continuity of care [1]. At the same time, the broader digital-health environment includes related concepts such as telehealth, eHealth, mHealth, remote monitoring and virtual care. Their meanings are not always consistently delimited in academic publications, institutional documents or professional communication. WHO therefore promotes a shared classificatory language for digital interventions and services so that different stakeholders can describe similar functions in comparable terms [2].

The problem becomes more complex in bilingual terminology. English functions as one of the principal source languages of contemporary digital-health vocabulary, while Uzbek increasingly incorporates these terms through borrowing, calquing and explanatory translation. A direct formal equivalent, however, does not always preserve the conceptual scope of the source term. For example, telemedicine and telehealth are often treated as interchangeable in everyday use, although many scholarly and institutional definitions distinguish the more clinically focused telemedicine from the broader telehealth concept [3–5]. This creates a methodological need to study not only lexical correspondence but also conceptual structure, professional function and normative stability. The purpose of this article is to establish a theoretically grounded methodology for comparing English and Uzbek telemedicine terminology and to identify practical criteria for selecting adequate Uzbek equivalents.

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A comparative analysis of telemedicine terminology should begin with the principle of concept priority. A term is not simply an isolated lexical item; it is a linguistic representation of a specialized concept situated within a professional knowledge system. Consequently, comparison must proceed from the concept to the term rather than from word form to word form. In telemedicine, this requirement is particularly important because a number of English umbrella terms partially overlap. Sodhi et al. demonstrate that telemedicine and telehealth have long coexisted with different patterns of use and definition, even within a specialized journal [3]. Otto et al. argue that telemedicine-related terms require ontological delimitation because inconsistent conceptual boundaries hinder the comparison and interpretation of evidence [4]. Burrell et al. similarly show that definitions of digital health, eHealth, mHealth and telehealth/telemedicine overlap substantially and that operational definitions are necessary when research results are compared [5]. These findings indicate that an English-Uzbek study must first identify the essential semantic features of a concept before evaluating the adequacy of its Uzbek designation.

The second theoretical principle is systemic organization. Telemedicine vocabulary is formed at the intersection of medicine, information technology and communication. Its terms therefore belong to interconnected micro-systems rather than to a random list of words. Terms such as remote patient monitoring, teleconsultation, teleradiology, telerehabilitation, synchronous telemedicine and asynchronous telemedicine encode different parameters: participants, clinical purpose, communication mode, temporal mode, data type and technological channel. The meaning of a unit becomes clearer when its place within this system is established. For example, remote patient monitoring denotes a process of collecting and reviewing patient-related data outside the conventional clinical setting; teleradiology refers specifically to the transmission and interpretation of radiological images at a distance; store-and-forward denotes an asynchronous model in which clinical information is captured, stored and transmitted for later assessment. In translation, the Uzbek equivalent should reproduce the relevant conceptual distinction instead of merely imitating the English word structure.

The third principle is functional equivalence. In specialized translation, two terms can be considered adequate equivalents only when they perform the same conceptual and communicative function in the target professional environment. Formal similarity is useful but secondary. Internationalisms such as telemeditsina, teleradiologiya and telereabilitatsiya are comparatively economical because their Greek-Latin components are recognizable across many languages. Other units require structural adaptation. Remote patient monitoring is more naturally represented in Uzbek as bemorni masofadan monitoring qilish or masofaviy bemor monitoringi, while store-and-forward is clearer through a descriptive equivalent such as saqlab, keyin uzatish texnologiyasi. The latter case demonstrates that literal borrowing may preserve form while obscuring meaning. In Uzbek medical terminology, studies of English-Uzbek correspondences likewise show that borrowing, calquing and explanatory translation often operate simultaneously [6; 7]. Comparative medical-linguistic research also confirms that equivalence may involve cultural and semantic adaptation rather than simple lexical replacement [8].

Methodologically, no single analytical method is sufficient. The comparative-typological method reveals similarities and differences in how the two languages organize specialized nominations. Structural-semantic analysis identifies one-word, compound and multi-component models and clarifies the relations between their components. Componential analysis divides a term into semantic features such as distance, participant, medical function, communication mode, synchronicity and data type. Terminographic analysis compares definitions and variants across classifications, dictionaries, standards, journal articles and institutional documents. Translation-equivalence analysis then determines whether the Uzbek form is a full equivalent, partial equivalent,

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functional equivalent, calque, borrowing or descriptive translation. Used together, these methods allow the researcher to move from lexical form to conceptual content and finally to normative recommendation.

The corpus of a comparative study should also be methodologically controlled. Reliable material can be drawn from WHO digital-health classifications and implementation guides, peer-reviewed telemedicine research, English-language professional glossaries and Uzbek medical or technological publications. Corpus selection should prioritize documents published within a defined period and should distinguish normative sources from ordinary usage. Normative or quasi-normative sources are valuable for definitions and preferred forms, whereas journal articles and professional texts reveal real variation. A bilingual database can then record each English term, its definition, context, Uzbek equivalents, structural model, translation technique, frequency, synonymy and recommended status. Such a database prevents the analysis from becoming impressionistic and makes it possible to justify why one equivalent is preferred over another.

Table 1. Comparative representation of selected English telemedicine terms in Uzbek

English term	Recommended Uzbek equivalent	Transfer method	Methodological note
telemedicine	telemeditsina	international borrowing	Core term for distance-based clinical health services
telehealth	masofaviy sog‘liqni saqlash / tele-sog‘liq	functional-descriptive translation	Broader scope than telemedicine in many classifications
teleconsultation	telekonsultatsiya / masofaviy konsultatsiya	borrowing + calque	May denote clinician-patient or clinician-clinician consultation
remote patient monitoring	bemorni masofadan monitoring qilish	calque with syntactic restructuring	Preserves patient, distance and monitoring components
store-and-forward	saqlab, keyin uzatish texnologiyasi	descriptive translation	Represents asynchronous transmission of clinical information
synchronous telemedicine	sinxron telemeditsina	international borrowing	Real-time interaction
asynchronous telemedicine	asinxron telemeditsina	international borrowing	Interaction does not require simultaneous presence
teleradiology	teleradiologiya	international borrowing	Remote transmission and interpretation of radiological images
telerehabilitation	telereabilitatsiya	international borrowing	Remote provision or support of rehabilitation services
e-prescription	elektron retsept	calque	Digital

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			prescription creation and transmission
remote diagnosis	masofaviy diagnostika	calque	Diagnostic assessment performed at a distance

The examples in Table 1 show that English-Uzbek telemedicine equivalence cannot be reduced to one translation technique. Borrowing is effective when the international form is already transparent and morphologically compatible with Uzbek. Calquing is preferable when the source components can be reproduced naturally in Uzbek syntax. Descriptive translation is necessary when a literal transfer would be semantically opaque. The English expression store-and-forward is a clear case: its technical meaning is not immediately recoverable through phonetic borrowing, whereas a descriptive Uzbek form reveals the asynchronous sequence encoded by the original. In contrast, teleradiology and telerehabilitation are efficiently transferred as teleradiologiya and telereabilitatsiya because the international combining form tele- and the medical bases are already compatible with professional terminology.

Particular attention should be paid to the telemedicine/telehealth distinction. In many contexts, telemedicine is associated primarily with clinical services provided at a distance, while telehealth may also include non-clinical activities such as health education, administrative support and broader public-health functions. The distinction is not absolutely uniform across all sources, which is precisely why it must be made explicit in comparative research. If both English terms are systematically translated as telemeditsina, the broader semantic range of telehealth can disappear in Uzbek. A methodological solution is to register the hierarchy of concepts and to select the Uzbek designation according to the intended scope. Where a text uses telehealth as an umbrella concept, masofaviy sog‘liqni saqlash or a carefully defined tele-sog‘liq equivalent may be preferable. Where the focus is on diagnosis, consultation or treatment at a distance, telemeditsina is more precise. This approach preserves conceptual differentiation and reduces terminological synonymy.

Standardization should not be understood as the mechanical elimination of all variants. Variation may be legitimate when different audiences or genres require different degrees of technicality. A research article can retain an international form and provide an Uzbek explanation at first mention. A patient-facing document should prioritize transparency and readability. A regulatory or terminographic source should identify one recommended form while listing common synonyms and deprecated variants. WHO’s current classification approach is instructive because it explicitly uses synonyms to support consistent classification while maintaining a structured framework [2]. For Uzbek telemedicine terminology, the same principle can be adapted: each entry in a bilingual terminological resource should contain the English headword, preferred Uzbek equivalent, definition, synonyms, field label, usage note and, where necessary, a warning about conceptual overlap.

On the basis of the analysis, four criteria can be proposed for evaluating English-Uzbek telemedicine equivalents. The first is conceptual adequacy: the target term must preserve the defining semantic features of the source concept. The second is systemic consistency: the term should fit the structural and conceptual relations of the surrounding terminology. The third is linguistic naturalness: the Uzbek form should comply with the grammatical, derivational and collocational patterns of the language. The fourth is normative stability: the selected form should be suitable for repeated and consistent use in academic, clinical and institutional communication. None of these criteria should be absolutized. An international borrowing may be concise but insufficiently transparent; a descriptive translation may be clear but too long for routine professional use. The optimal equivalent is therefore the form that best balances conceptual precision, professional economy and linguistic acceptability.

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A further methodological direction is corpus-based terminology research. A specialized parallel or comparable corpus containing English telemedicine literature and Uzbek medical-digital texts would allow researchers to identify actual frequencies, collocations, synonym preferences and contextual meaning shifts. Corpus data could also reveal which English structures tend to produce calques, which units are usually borrowed and which concepts remain unstable in Uzbek usage. In the longer term, such material could support automatic term extraction, bilingual glossary development and machine-assisted translation. Because digital health develops rapidly, the terminological database should be dynamic: new forms need periodic review, and earlier recommendations may require revision when professional practice changes. This is particularly relevant to emerging areas such as artificial-intelligence-assisted telemedicine, virtual wards, connected diagnostics and hybrid care models.

CONCLUSION

The comparative study of English and Uzbek telemedicine terminology requires a concept-oriented and system-based methodology. English source terms should not be transferred into Uzbek solely on the basis of formal resemblance. Their semantic scope, position in the telemedicine concept system, communicative function and normative status must first be established. The distinction between telemedicine and telehealth illustrates the central problem: close lexical proximity does not guarantee conceptual identity. Comparative-typological, structural-semantic, componential, terminographic and translation-equivalence methods are most effective when applied as a unified analytical framework.

The analysis confirms that Uzbek telemedicine terminology is likely to continue developing through a combination of international borrowing, calquing and descriptive translation. International forms support cross-border professional communication, whereas calques and explanatory equivalents improve semantic transparency in Uzbek. For standardization purposes, four criteria are especially important: conceptual adequacy, systemic consistency, linguistic naturalness and normative stability. A bilingual terminological database built on these principles would improve translation accuracy, academic writing and interdisciplinary communication among clinicians, linguists, translators and digital-health specialists. It would also provide a methodological basis for future corpus-based and lexicographic research on the rapidly expanding language of telemedicine.

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