

Digital Assessment of Italian-English Translations of COVID-19 Reports

Franca Daniele, MD

Department of Medical, Oral and Biotechnological Sciences
“G. d’Annunzio” University, Chieti-Pescara, Italy

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Abstract

The present work is concerned with assessing the quality of the English language in official reports published by the Italian Higher Health Institute and released through its website during the COVID-19 pandemic. The reports are the result of a translation from Italian into English, on which a quantitative analysis was carried out to assess the total number of errors, as well as their accuracy, adequacy, and readability. A qualitative evaluation was also undertaken focusing on the cohesive, lexical, and syntactic features of the reports, thus highlighting mistranslations. The quantitative analysis, carried out using the TAUS DQF system, evidenced a mean accuracy of 3 and a mean adequacy of 2. The Grammarly software counted a mean number of 109 errors. The Flesch-Kincaid readability tests, calculated using the Content Analysis SEO Tool, yielded a mean reading ease of 38 and a mean school grade of 8. The publication of official health reports addressed to the general public should be committed to improving lives and increasing the social impact of science. On the other hand, official health reports that are aimed at a specialized medical audience should respond to all the rules and norms of that specific language community. In both cases, the reports assessed in the present investigation seem to fail in their communicative function due to their linguistic ineffectiveness.

Keywords: COVID-19 terminology translations, accuracy, adequacy, Flesch-Kincaid readability tests, SEO Tools, Grammarly, TAUS DQF system

Introduction

The COVID-19 pandemic was an exceptional, unexpected event that has caused changes worldwide, and the way people live has undergone metamorphoses, taking novel shapes and directions. To different degrees, everyone has become disease-phobic, so seeking health information has become necessary. During this period, all types of news dealing with COVID-19 were rife across all social media and effective and correct communication is more crucial than ever. During the pandemic, the general public faced difficulties in choosing where to find standardized authentic information (Back *et al.*, 2020). Many people relied on family doctors in an attempt to understand more about the disease, and governments and their appointed health institutions had to deliver information concerning the pandemic and the coronavirus infection (Reddy and Gupta, 2020).

In Italy, the Istituto Superiore di Sanità (Higher Health Institute, ISS) cooperates with the Ministry of Health, the Regions and the entire Italian Health System in guiding health policies as the main center for research, control and technical-scientific consultancy in the field of public health. The role of the ISS is to effectively communicate and update, and during the pandemic, it published frequent bulletins on the status of the pandemic in Italy. All the reports published by the ISS are in Italian, with an English abstract, and some have been translated entirely into English. As stated on the ISS website, “COVID-19 reports are mainly addressed to healthcare professionals to cope with different aspects of the COVID pandemic. They provide essential and urgent directions for emergency management and are subject to updates.....”. However, 10 of the 20 reports are addressed to the general public (iss.it, 2020).

In order to determine the quality of the Italian-English translations performed by the ISS, the translated English reports (TERs) were evaluated. When dealing with translations of official reports, it is necessary to keep in mind that they have a purely communicative function (Salager-Meyer, 1994; Caselli *et al.*, 2021), and are usually technical and formal (Iedema, 2012). There are several ways to conduct the translation of official reports, but the resulting translations should be endowed with two essential elements: language correctness and message understandability. Language correctness is the consequence of unambiguous lexical choices so that the specific terms employed to translate from one language to another have a precise meaning, which must be the same in both the source and the target languages (Newmark, 1988; Popel *et al.*, 2020). Language correctness is also obtained through the application of the appropriate grammatical and syntactic structures in the target language. The understandability of the message depends on how much of the meaning is transferred from the source language into the target language (Snover *et al.*, 2009). In the present investigation, the correctness of the

language used in the TERs was designated as accuracy, while the understandability of the message conveyed by the TERs was defined as adequacy.

Accuracy represents the quality of a text as being correct and free from errors, and it has been addressed in many ways in translation studies (Vinay and Darbelnet, 1958; Nida, 1964; Catford, 1965; Hale and Campbell, 2002; Wang *et al.*, 2007; Miyabe and Yoshino, 2009; Sipayung, 2018). An accurate translation has been discussed as “a translation of dynamic equivalence” that “aims at complete naturalness of expression and tries to relate the receptor to modes of behavior relevant within the context of his own culture” (Nida, 1964:159). Venuti appears to implicitly disagree with Nida, when claiming that “accuracy is consistent with dynamic equivalence” (Venuti, 1998:21-2) since accuracy is somehow related to a “sending-the-reader-abroad” strategy (Venuti, 1998:19-20). In many studies concerning the evaluation of texts translated by machines, language accuracy and language fluency are treated as synonyms (Ellender, 2012; Somers, 2012; Taleghani and Pazouki, 2018). However, fluency is a skill that distinctively belongs to the human brain (Eastridge and Mozzoni, 2005; Benjamin and Gaab, 2012), represents a measure of the accomplishment of the language skills, and provides an indication of the language performance of a learner (Charniak, 2000; Willis, 2008; Latif, 2013). Thus, although the two words share the basic meaning of language correctness, fluency deals with people, while accuracy involves texts. Consequently, language accuracy was used in the present investigation, as it represents a better measure of the correctness of a translated text. Therefore, accuracy is intended as the quality of a text as being correct and free from errors.

The concept of accuracy has been presented as ‘lexical meaning’ while that of adequacy as ‘conceptual meaning’ (Zaky, 2000). Language adequacy is the second feature assessed in the present investigation, and it has been viewed as the result of the rebuilding and restoring of the traits and functions of the source language into the target language (Chang, 2011). Actually, adequacy is acquired through the transportation of meaning from one language into another (Snover *et al.*, 2009). Toury uses adequacy and acceptability to elaborate his concept of equivalence. Adequacy derives from a translation process that moves towards the source language. A translated text is acceptable when the translation process moves towards the target language (Toury, 1981; 2004). Adequacy is determined on the basis of the comparison of the textual elements, whereas acceptability on the comparison of the target cultural elements (Delzendehrooy, 2010). Adequacy is simply the appropriateness of a translation, and acceptability implies comprising the cultural elements. Equivalence is a relation between the source language and the target language (Casas-Tost, 2012). An ‘adequate’ translation could be

defined as a translation that preserves the meaning of the source text and does not add any information to it. Considering the different languages, a number of actions may be undertaken to achieve lexical, semantic and stylistic meanings, so that the adequate communicative impact reaches the receiver. In this way, the translator reinterprets the source text and uses many strategies to reproduce adequacy in the target text (Chang, 2011). In the present investigation adequacy is a term that applies specifically to a feature of a translation, and it is meant as the result of the transportation of the meaning from one language into another (Snover *et al.*, 2009; Popel *et al.*, 2020).

To address these linguistic and translation phenomena, the Italian-English translations of the reports on the COVID-19 pandemic that were published by the ISS were studied. The application of methodologies that seem to be seldom considered and utilized in translation studies and translation quality evaluation related to medical writings was shared. The paper also discusses the centrality of language in relation to the problem of ‘good translations’, which are necessary for a comprehensive and capillary widespread of health and medical knowledge outside the boundaries of single nations.

Materials and Methods

Twenty (20) of the Italian Covid-19 reports concerning the coronavirus pandemic in Italy have been translated into English and released by the ISS from April until December 2020. Assuming that all the original Italian reports had been written properly, only the TERs were utilized for the present analysis. Ten of these reports were addressed to the general public, six to health operators, and four specifically to doctors (iss.it, 2020). Translators were reported as being different for the 20 TERs, but no inquiry was made into their identity, experience or background. Both the Italian and English versions of the reports were downloaded directly from the website of the ISS (iss.it, 2020).

Quantitative Analysis

A quantitative analysis was carried out by applying methodologies, systems and scores that seem to be rarely considered and utilized in translation studies and translation evaluation related to medical writings. The TERs were probed using the TAUS DQF software, which has been specifically designed to evaluate translation quality by means of fluency and adequacy rating scales (taus.net 2020). The Translation Automation User Society (TAUS) Dynamic Quality Framework (DQF) includes various tools that have been utilized in many studies for the evaluation of translation quality (do Carmo, 2020; Kirchner, 2020; Chang, 2021; Firat, 2021; He, 2021; Jaccomard *et al.*, 2021).

The corpus included a total number of words of 222.744, with a mean number of words of 11.137, a minimum of 3570 and a maximum of 26.177 words. The total number of sentences was 20.551, with a mean number of sentences of 1028, a minimum of 418 and a maximum of 2506 sentences. In order to probe the TERs through the TAUS DQF system, each text was divided into fragments containing approximately the same number of lines (8-10). The total number of fragments was 1489, with a mean number of fragments of 78, a minimum of 23 and a maximum of 153 fragments (Table 5). Accuracy and adequacy means, medians, and modes were calculated using Excel flowsheets.

Modified Accuracy and Adequacy Rating Scales

The accuracy and adequacy of the TERs were scored using an accuracy rating scale as well as an adequacy rating scale, both enabling the scoring of fragments from 1 to 4. These scales were modified respectively from the TAUS 5-score fluency rating scale and 5-score adequacy rating scale (taus.net 2020), in order to better adapt them to the specific text genre of the present analysis (Castilho *et al.*, 2018; Candel-Mora, 2022). The modified accuracy scale allowed scoring of the language correctness and precision in each fragment (Table 1).

Table 1. Modified Accuracy Scale

- Score 1 = incomprehensible language
- Score 2 = incorrect language
- Score 3 = good language
- Score 4 = flawless language

The modified adequacy score rating scale indicated how much of the meaning of the source Italian reports was conveyed into the TERs. It allowed scoring of the meaning in each fragment (Table 2).

Table 2. Modified Adequacy Scale

- Score 1 = none of the meaning in the source text is contained in the translation
- Score 2 = portions of the meaning in the source text are contained in the translation
- Score 3 = almost all of the meaning in the source text is contained in the translation
- Score 4 = all of the meaning in the source text is contained in the translation

Grammarly

Along with the modified accuracy rating scale, to further test the level of language correctness (accuracy) of the TERs, the Grammarly software was used (grammarly.com, 2020), since it has been widely tested (Avila *et al.*, 2021; Iftitah and Kuswardani, 2021; Nguyen and Ngo, 2021; Sutaryo *et al.*, 2021; Tabrizi and Etemad, 2021). The software allows the number of spelling and grammar errors in a text to be counted.

Flesch-Kincaid readability tests

In addition to the modified adequacy rating scale, in order to gain more insight into the understandability (adequacy) of the TERs, the Flesch-Kincaid readability tests were employed, which have been considered precious measures when evaluating the quality of translations, as they indicate the accessibility of a text (Dye, 1971; Karwacka, 2021). The Flesch-Kincaid readability tests include both the Flesch Reading Ease and the Kincaid Grade Level.

The Flesch Reading Ease test measures the readability of an English text in relation to its language complexity (Flesch, 1948; Avila *et al.*, 2021). It is an index of the reading ease and effectiveness of a writing in transmitting the message for which it was created (Table 3).

Table 3. Flesch Reading Ease

F > 90:	readability for middle school students
F > 60:	high readability
F < 50:	low readability
F < 30:	readability for college graduates and over

The Flesch reading ease ranges from 1 to 100, where 100 is an easy text and 20 is an extremely hard text to understand (such as an academic text) (Table 3). The optimal reading ease is around 60-70, corresponding to an average difficulty of the texts, which can be read and understood by about 80% of readers.

The Kincaid school grade also captures the readability of an English text using school grade level (1-12 and over according to the American education system, which is very similar to the Italian one – Table 4). The Kincaid school grade determines the schooling grade a reader must have in order to read and understand a text. A school grade of 6-8 ensures that the content of a text can be read by 80% of readers (Kincaid, 1975; Avila *et al.*, 2021).

Table 4. Kincaid Grade Level

Level 0 - 6	basic
Level 6 - 12	average
Level 12 - 18	skilled
Level > 18	academic

Therefore, the Flesch-Kincaid tests provide information on the readability of a text in relation to both its complexity and the reader's school grade. Indeed, a Flesch reading ease of 60-70 and a Kincaid grade of 6-8 indicate that a text can be read and understood by a large number of readers. In this investigation, both the Flesch reading ease and the Kincaid school grade tests were calculated using the Content Analysis Search Engine Optimization (SEO) Tool, which is a digital software used to analyze and modify the content of websites. Common tasks associated with SEO include creating high-quality

content and optimizing content around specific keywords (seoscout.com, 2020).

Qualitative Analysis

Error Analysis

All 20 TERs were processed directly by the author of the present paper using the Error Analysis method (Corder, 1967, 1981; Schaumann and Stenson, 1976; James, 1998). Error Analysis has been explained as a systematic description of an error made by language users in their written production in the target language (Corder, 1981; Pym, 1992; Ellis, 1994; Brown, 2000). This means that in translation studies, error analysis could be interpreted as a process resulting from a comparison of the source language and the target language (Pym, 2023). Indeed, in this specific context, an error has been viewed as a systematic deviation from the accepted system in the target language (Norrish, 1983).

In the present investigation, the qualitative evaluation was aimed at disclosing exclusively the inaccuracies and mistranslations in the TERs, and the 4-Stage process was adopted (Ellis, 1994; Gass and Selinker, 2008). The first stage was the collection of the TERs as already described in the Quantitative Analysis section of the present paper. The second stage included error identification, which was obtained by reading the TERs and checking language consistency by comparing the source language in the Italian reports with the target language in the TERs. The third stage of the analytical process involved the assessment of the TERs via description and categorization of the errors detected (Ellis, 1994; Gass and Selinker, 2008), which were developed taxonomically, specifying errors in terms of linguistic categories (Dulay *et al.*, 1982). For the purposes of the present analysis, errors were classified according to language level (e.g. syntactic, etc.), general linguistic category (e.g. passive sentence, etc.), and more specific linguistic elements (e.g. articles, prepositions, verb form, etc.). Therefore, first, terminology and glossary adherence concerning medical technical and sub-technical terms used in the TERs were detected. Second, the grammar and syntax phenomena that were examined included articles, prepositions, possessives, verb use, subject-verb agreement and compound phrases. Third, cohesion was analyzed. Finally, internationalization of the TERs was studied in relation to how well the content had been prepared for localization in English; thus, dates, names of institutions, etc. were explored. The fourth stage of the analysis consisted in providing explanations on the nature and development of the errors observed, and attempting to determine how and why they had been generated (Ellis, 1994; Gass and Selinker, 2008).

Results

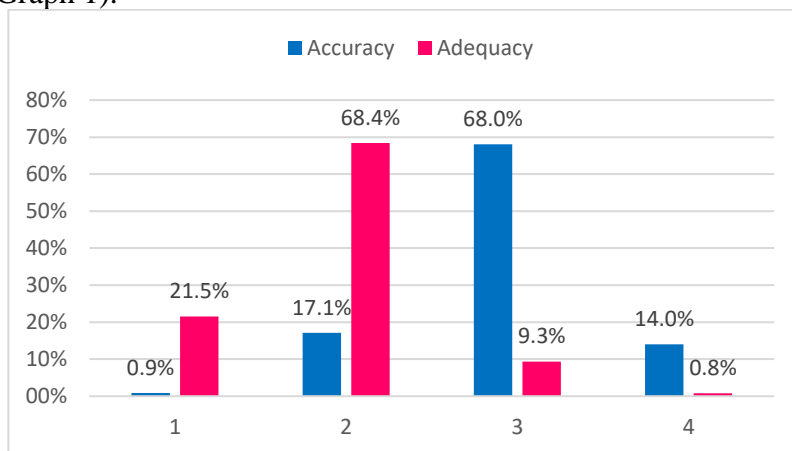
Quantitative analysis

Considering the heterogeneity of the TERs and acknowledging the enormous number of mistranslations, a quantitative analysis could be done using only a limited number of variables. The total number of spelling and grammar errors counted by the Grammarly software was 2173, with a mean number of errors of 109, a minimum of 48 and a maximum of 281 errors. The errors include lexical entities as well as grammatical and syntactic features of the TERs, so the total number of errors was correlated with both the number of sentences and the number of fragments. Indeed, in the total corpus, 10.57% of the sentences and 145.94% of the fragments had some kind of error (Table 5). This latter percentage results because the total number of errors is greater than the total number of fragments; thus, a large number of fragments had one error and some had more than one.

Table 5. Quantitative results

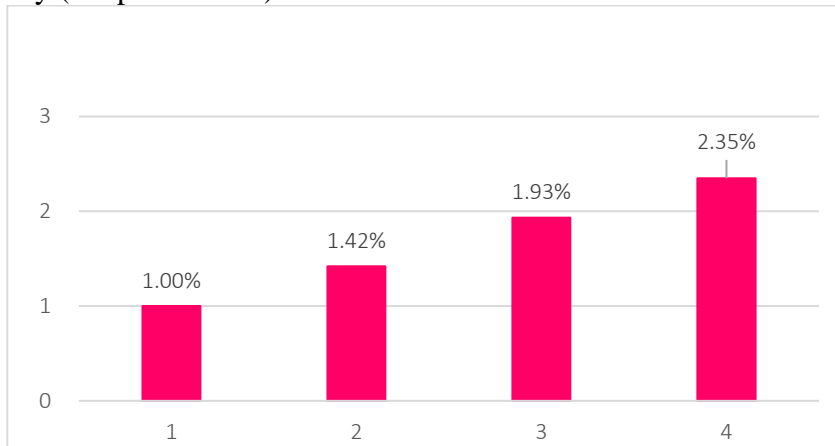
	Total	Mean	Minimum	Maximum	% with errors
Words	222.744	11.137	3570	26.177	---
Sentences	20.551	1028	418	2506	10.57%
Fragments	1489	78	153	23	145.94%
Spelling and grammar errors counted by Grammarly	2173	109	281	48	---

The fragments in the TERs scored through the accuracy and adequacy rating scales (Tables 1 and 2) modified from the TAUS DQF yielded a mean accuracy of 3 and a mean adequacy of 1.9. The fragments with an accuracy score of 1 were 0.9%, and the fragments with an adequacy score of 4 were 0.8% (Graph 1).

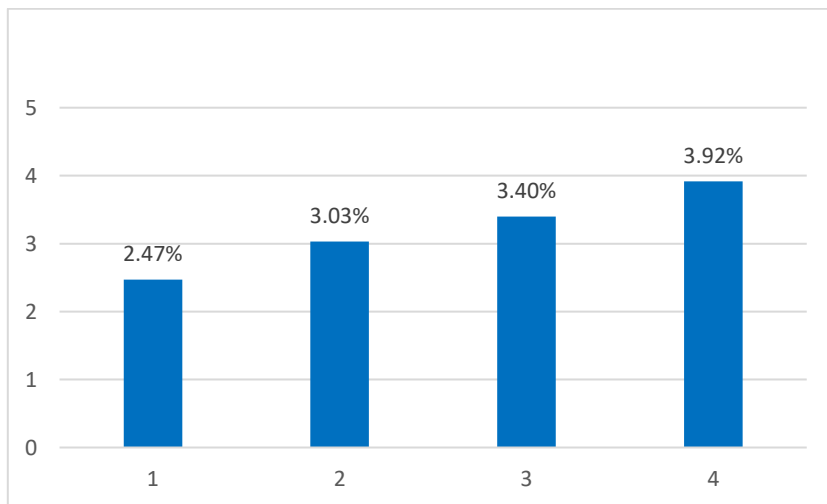


Graph 1. Mean accuracy and adequacy

In general, accuracy was 55% more represented than adequacy. Indeed, accuracy showed a mean value of 55% higher than adequacy. Conversely, adequacy had a value of 36% lower than accuracy; it seemed more difficult to obtain 4 in adequacy as well as 1 in accuracy. The accuracy mode was located at 3 (68% of the fragments), while the adequacy mode was located at 2 (68.4% of the fragments). In general, the data suggested a direct correlation between accuracy and adequacy, and as accuracy increased so did adequacy (Graphs 2 and 3).



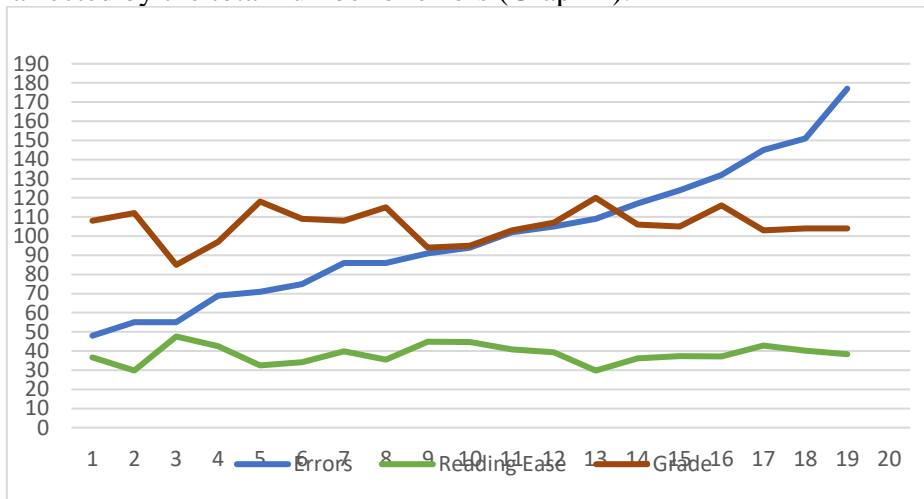
Graph 2. Mean adequacy vs. each accuracy value



Graph 3. Mean accuracy vs. each adequacy value

The mean Flesch reading ease was 39, with a minimum of 30 and a maximum of 48 (Table 3). The mean Kincaid school grade was 10, with a minimum of 8 and a maximum of 12 (Table 4). The median school grade was 10.6; while the median reading ease was 39.4. Means and medians of both the Flesch reading ease and the Kincaid school grade nearly overlapped. Neither

the Flesch reading ease nor the Kincaid grade and thus readability appeared to be affected by the total number of errors (Graph 4).



Graph 4. Reading ease vs. total number of errors; grade level vs. total number of errors

Qualitative analysis

The qualitative evaluation displayed a mixture of language patterns and yielded an enormous variety of linguistic elements. All the TERs had different language styles, and there was no consistency in terms of British/American spelling and English in general, even within the single TER. The TERs had been translated in such a wrong way that it was extremely difficult to understand their meanings and to group the linguistic items for a correct examination. A substantial number of paragraphs were like the one that follows, in which overt grammatical and linguistic errors could not be identified. However, the meaning is exceedingly hard to capture for a native speaker/reader of English due to a dense bureaucratise and an Italian-sounding style that make the passage opaque.

“Interventions must be implemented and adapted flexibly according to different needs, considering both elements related to the pandemic (level of local spread, the trend over time, phase) and professional, personal, and context elements that can determine higher risk of distress for workers” (iss.it, 2020).

Technical and sub-technical terminology

When translating official reports, lexical cohesion is imperative (Tanskanen, 2006; Alotaibi, 2015) so that the reader can immediately identify the word and match it with the meaning, which has to be the same throughout the entire text (Table 6).

Table 6. Lack of lexical cohesion

Italian	Translation	Author's translation
indicazioni	indications provisions recommendations guidance guidelines	guidelines
appendice	appendix annex	attachment
trasporto	transport shipping shipment	transportation
cartelle cliniche	clinical charts clinical records	medical records

The Italian word *indicazione* meaning ‘advice’ in the TERs was sometimes translated as ‘indications’ but other times as ‘provisions’, neither of which means ‘advice’ but ‘the action of providing or supplying something for use’. The word *indicazione* is used in medicine as ‘indications’ to denote that a particular drug has been created and can be used for a particular symptom or disease.

In Italian, the word *appendice* has a double meaning: (1) appendix of a book, and (2) ‘vermiform appendix’, which is a part of the intestine, and their plurals are respectively ‘appendices’ and ‘vermiform appendices’. The word *appendice* was translated as ‘appendix’ or ‘annex’, with the meaning of ‘attachment’. A similar term that appeared in the TERs is *indice*, which has different meanings in Italian: ‘index finger’, ‘index of a book’. In medicine ‘index’ expresses the index of an element or a process in the human body. Therefore, the plural for ‘index’ is ‘indexes’ when the terms are used in Standard English (e.g. indexes of books, etc.) and ‘indices’ in medical English (e.g. inflammatory indices, body mass indices, etc.).

The word *trasporto* was translated as ‘transport’, ‘shipment’ and ‘shipping’ without any distinctions between the latter two terms. ‘Transport’ means precisely the transfer of something from one place to another; ‘shipping’ is the transportation of goods by sea or some other means; ‘shipment’ refers to a large amount of goods sent to a place. The three terms are profoundly different and cannot be interchanged.¹

Another anomaly that was revealed in the TERs is that some terms were applied mutually. The terms ‘illness’, ‘disease’, ‘pathology’ were all adopted to translate a state of unhealthiness. However, the three terms do not have the same meaning. In everyday medical conversation, a cold is an illness; cancer is a disease, each implying a different degree of involvement and the diverse severity of the state of unhealthiness. While the term ‘disease’ is a technical term used by doctors, the term ‘illness’ refers to the way patients perceive their own state of not being well. Instead, the term ‘pathology’ is used to indicate the science that studies the causes and effects of diseases, and can be divided into many branches of medicine. The problem is that this term can

¹ All the definitions are from the PubMed-Medline

be a false friend, because in Italian the term *patologia* has a double meaning: (1) the study of diseases involving man, animals and plants, and (2) ‘disease’; thus, a distinction must be made between Italian and English. Both *patologia* and ‘pathology’ involve the study of disease processes, but in Italian it includes all aspects of a disease, while in English, it comprises only the study of samples of body tissues, which in Italian is called *anatomia patologica*. Another example concerns translation of the phrase ‘sick person’, to which seven different variants were applied: patient, subject, person, citizen, case, resident and guest. In this context, one particular translation must be evidenced, ‘case’. This way of referring to patients has long been recognized as dehumanizing discourse and it should never be employed (Mintz, 1992; Robbins, 2018).

The terms ‘oxidative’ and ‘oxidizing’ were translated with the same meaning. Oxidizing is the act of chemically combining with oxygen, and reactive oxygen species undergo or cause a reaction in which electrons are lost to another species. Oxidative relates to the process or result of oxidizing or being oxidized. Although profoundly different, the expressions of ‘mortality’, ‘lethality’ and ‘fatality’ were used interchangeably.

Other extremely frequent linguistic items that could mislead are false friends, and Table 7 depicts the ones most frequently mistranslated and misused in the TERs. Among these *disposizione*, which means ‘availability’ must be pointed out, since it is always mistranslated into ‘disposal’ meaning ‘getting rid of something’. Also, the term *scala*, which in English has a double correspondent: ‘scale’ and ‘degree’, in this particular context should have been translated as ‘degree’.²

Table 7. False friends

Italian	Translation	Author’s translation
effettivo	effective	real, true
eventuale	eventual	possible
rilevante	relevant	important
disposizione	disposal	availability
...la scala del fenomeno.....	...the scale of the phenomenon....	...the degree of the phenomenon....

Table 8 shows other linguistic items that were studied in the TERs. Words like *informazioni* and *evidenze* in Italian have both singular and plural correspondents; this is not so in English, where instead both these terms are always singular and require a singular verb. These words are repeatedly mistranslated and applied as plurals, with consequent mistranslation of the verbs as well. Other plurals of sub-technical and technical terms that need to be exhibited are ones deriving from Latin or Greek, which were very often

² All the definitions are from the PubMed-Medline

misused and consequently matched with wrong verbs. Terms like ‘crisis’ and ‘analysis’ have respectively ‘crises’ and ‘analyses’ as plurals, but in Italian they are invariable and the same word is used for both singular and plural, *crisi* and *analisi*; these were always translated as singulars, even though they had a plural verb. In Table 8 the term *flogosi* must be evidenced; ‘phlogosis’ is an archaic word for ‘inflammation’, whereas *flogosi* is still used in Italian medical language, in English it is almost never seen because the word in use is ‘inflammation’.³

Table 8. Wrong plural nouns

Italian	Translation	Author’s translation
informazioni	informations	information
evidenze	evidences	evidence
crisi, analisi (plural)	crisis, analysis	crises, analyses
indici di flogosi	phlogistic indexes	inflammatory indices

Grammar and Syntax

Tables 9 and 10 show some of the many misuses of articles and prepositions when translating from Italian into English, and the focus is on the fact that translators tend to comply with the source language.

Table 9. Articles

Italian	Translation	Author’s translation
il monitoraggio	the monitoring	monitoring
un monitoraggio di molti...	a monitoring of many	monitoring of many
alle differenze correlate al sesso	to the sex-related differences	to sex-related differences
in assenza di una possibile diagnosi alternativa	in absence of possible alternative diagnosis	in the absence of a possible alternative diagnosis

For the phrase...*alle differenze correlate al sesso...*, the correct translation into English is ‘...to sex-related differences...’. No article is required because ‘sex-related differences’ had never been mentioned or specified before, neither was the phrase supported by prepositions or relative pronouns that could justify the use of the article (e.g. ...*alle differenze correlate al sesso, che potrebbero condurre a risultati sbagliati...* ...to the sex-related differences that might lead to wrong results...). Needless to say, the lack of agreement between the article ‘a’ and the indefinite ‘many’ is a serious mistake.

³ All the definitions are from the PubMed-Medline

Table 10. Prepositions

Italian	Translation	Author's translation
prima di arrivare nella biobanca	before arrival in the biobank	before arriving at the biobank
tra professionisti	between professionals	among professionals
separazione tra le aree di cura	separation between areas of care	separation among areas of care
in base alle attuali conoscenze	according to as current knowledge	according to current knowledge

From a grammatical and syntactic point of view, the translation of verbs was astonishing (Table 11). The translators confused the noun ‘breath’ and the verb ‘to breathe’.

Table 11. Verbs

Italian	Translation	Author's translation
dedicato all'ascolto dei lavoratori	dedicated to listen to workers	dedicated to listening to workers
la principale trasmissione della SARS-CoV-2 avviene attraverso	the main SARS-CoV-2 transmission occurs is through	the main SARS-CoV-2 transmission occurs through
respira aria calda	breath hot air from	breathe hot air

Many times, verbs were not accompanied by the corresponding subjects, and a lack of agreement resulted (Table 12).

Table 12. Subject-verb agreement

Italian	Translation	Author's translation
in breve, i soggetti maschi con normali livelli di attività di G6PD, non hanno alcuna carenza di G6PD	in summary, male subject with normal levels of G6PD activity, have no G6PD deficiency	in summary, male subjects with normal levels of G6PD activity have no G6PD deficiency
che lo psicologo identifica la persona	that the psychologist identify the person to	that the psychologist identifies the person to
sangue, urine e feci devono essere raccolti	blood, urine and feces has to be collected	blood, urine and feces have to be collected
perchè il virus è inattivato a 26-27 °C	because the virus inactivate at 26-27 °C	because the virus is inactivated at 26-27 °C
le caratteristiche cliniche della KD si sovrappongono	the clinical features of KD overlaps	the clinical features of KD overlap.....

In the TERs, a persistent absence of ‘esses’ for plural nouns and third person singular in the present tense of verbs was observed. This phenomenon could be explained by the fact that Italian language generally has a pattern of alternating consonants with vowels and almost all Italian words end with a vowel. Instead, English packs consonants together and most words end with a consonant. Italian speakers tend to impose vowel sounds where none appears

in English, like between consonants in clusters and at the end of words (McCully, 2009; Ashby, 2011).

Concerning compound phrases, one of the main and simplest rules of compounding is that nouns can act as adjectives, and in English, adjectives are always invariable, meaning that they cannot be plural. This is an extremely common mistake made by Italians when attempting to premodify, as premodification and compounding are specifically Anglo-Saxon and Italian has no corresponding forms. Italian cannot be premodified and compounding is not possible; thus, Italians have serious problems in translating compounds or even using premodification when writing in English (Musacchio, 2006; Pierini, 2015) (Table 13).

Table 13. Premodification and compounding

Italian	Translation	Author's translation
interazioni tra farmaci	drugs interaction	drug interactions
gruppo di età 0-60	0-60 years age groups	age groups 0-60 years
gruppo di età al di sopra degli 89 anni	over 89 years age group	age group over 89 years
i manager delle strutture	facilities managers	facility managers

No specific training is required to translate possessives correctly (Table 14), so they can be easily translated from Italian into English. Possessives can be utilized only with persons and animals, and the 'of' form must be used in other cases. A second choice could be to nominalize and compound. However, many mistranslations were captured in the TERs.

Table 14. Possessives

Italian	Translation	Author's translation
nome degli ingredienti	...ingredients' names...	ingredient names... OR names of the ingredients
settimane prima dello sviluppo dei sintomi	weeks before symptoms' development	weeks before symptom development OR weeks before development of symptoms
l'impegno del TVMR è	TVMR's commitment is	TVMR commitment is OR Commitment of TVMR is
l'impegno dell'associazione	the association's commitment	the association commitment OR the commitment of the association
i temi dell'epidemia	the epidemic's issues	the issues of the epidemic
gestire la comunicazione delle morti	managing death's communication	dealing with notification of death

Internationalization

The qualitative evaluation of internationalization items revealed a number of mistakes. In both American and British English variants, only two types of ‘disease experts’ are recognized: ‘medical doctors’ and ‘physicians’, who could respectively be either ‘family doctors’ or ‘general practitioners’. A third type of ‘disease expert’ is a ‘consultant’ or ‘specialist’, meaning a person who has further studied a specific branch of medicine (e.g. a gynecologist, dermatologist, internist, surgeon, etc.). In the TERs, six different translations were given to express these three types of ‘disease experts’, resulting also in a lack of cohesion (Table 15).

Table 15. Disease experts

Italian	Translation	Author’s translation
medico in servizio	attending physician	doctor, physician
medico del territorio	the doctor of the territory	doctor, physician
medico	physicians	doctor, physician
medico di base	general practitioner	general practitioner, family doctor
ex guardia medica	the care continuity doctor	general practitioner, family doctor
specialista	specialist doctor	specialist, consultant

In English, the use of the definite article ‘the’ with acronyms depends on the acronym itself. For example, the acronym F.D.A. requires the definite article, while the acronym WHO does not. Although at the beginning of some TERs a list of acronyms was provided, some of them were not accompanied by the article ‘the’. Other acronyms were difficult to understand since their original Italian forms were retained. For example, the acronym PCR has two different meanings; in Italian it means *proteina C reattiva* (C-reactive protein-CRP) and in English it means polymerase chain reaction (*reazione a catena della polimerasi - RCP*). Unless accepted and shared by the international scientific community, some acronyms should not be kept in their original forms, especially when they are included in texts addressed to different people with different backgrounds. The acronym ‘SARS-CoV-2’ needs to be highlighted, as it was translated as ‘Syndrome Acute Respiratory Severe Coronavirus 2’ instead of ‘Severe Acute Respiratory Syndrome Coronavirus 2’.⁴

The translation of dates is also worth mentioning. Dates need to switch the month with the number and this latter becomes ordinal instead of cardinal for American English (Garner, 2016). Their editing in the TERs lacked coherence with both American and English variants, throughout the texts (Table 16).

⁴ All the definitions are from the PubMed-Medline

Table 16. Dates

Italian	Translation	Author's translation BrE	Author's translation AmE
...che fino al 7 maggio	...that up until May 7	...that until May 7th	...that until May 7th
decreto del 24 aprile 2006	decree 24 April 2006	decree on 24 April 2006 OR decree on 24 th April 2006	decree on the 24 th of April, 2006 OR April 24 th , 2006
4 agosto 2006	4 August 2006	4 August 2006 OR 4 th August 2006	the 4 th of August, 2006 OR August 4 th , 2006

For institutions and associations that are present in one country but not in others, the choice of words should be as broad as possible. The name of the institution that created and hosted the TERs on its own website, *Istituto Superiore di Sanità* was translated in at least five different ways: ‘National Institute of Health’, ‘the National Institute of Health in Italy’, ‘the National Institutes of Health in Italy’, ‘Higher Institutes of Health’, and ‘Italian National Institute of Health’. The same is true for *Agenzia Italiana del Farmaco*, which is the Italian Drug Agency; it was translated as: ‘Italian Agency of Drug’, ‘Italian Medicines Agency’, ‘Italian Drug Agency’. The Italian words *Albo* or *Ordine* that were translated as ‘Register’ or ‘Order’ are actually nothing more than a list of names of people who are recognized as being part of a specific profession such as doctors, psychologists, lawyers, etc., so adequate and precise translations should be provided for each specific case. In addition, terms like ‘nationally’ or ‘national’ should be avoided. Instead, the name of the country should be favored, e.g. not ‘nationally’ but ‘in Italy’, not ‘on national ground’, but ‘on Italian ground’, etc.

Discussion

The present study concerned the evaluation of the quality of 20 TERs issued by the ISS. The TERs resemble medical reports written using a certain amount of technical and sub-technical medical terminology together with a certain standard language. The corpus included a total number of words of 222.744, a sufficiently large corpus that can be subjected to statistical analyses.

The correctness and the understandability of the translations from Italian into English were reflected respectively in the accuracy and adequacy results derived from the two accuracy and adequacy rating scales. Indeed, the mean for accuracy was 3, indicating that the TERs had been written using some appropriate forms of English and reasonably good grammatical and linguistic structures, but were not devoid of mistakes. The mean for adequacy

obtained from the adequacy rating scale was 2, showing that only portions of the meaning in the original Italian reports were contained in the TERs. Furthermore, mean and mode (the value that appears most frequently in a data set) corresponded, being 3 for accuracy and 2 for adequacy, and denoting that these numbers truly mirror the situation of the mean and mode in the TERs.

The results demonstrate that accuracy is more represented than adequacy (55% more), implying that the English language had good grammatical and syntactic structures in the TERs. However, this was not sufficient to make translations understandable and appropriate, probably because these two latter features are strongly affected by the errors that were in any case present and by the Italian-sounding style used in the TERs, which made the texts awkward and ineffective. These phenomena are also evidenced by the fact that an accuracy score of 1 (the lowest score) alongside an adequacy score of 4 (the highest score) were both extremely difficult to obtain. Of course, as could easily be assumed, the direct correlation between these two traits highlights that the more a translated text is accurate and linguistically correct, the greater its adequacy and understandability, even though good language does not seem to be enough for good understanding.

The accuracy of the TERs was detected also using the Grammarly software to count the number of spelling and grammar errors in the TERs, and a mean number of 109 errors was found. The errors counted by the Grammarly software include both the lexical entities and the grammatical and syntactic features of the translations, and the evidence that almost 11% of the sentences and almost 150% of the fragments contained some kind of error is alarming. Although this quantitative analysis failed to identify both the type of error and where exactly the errors occurred in the texts, the data obtained show that only a negligible number of fragments was free from errors. Indeed, almost all fragments contained one error, and many fragments had more than one error (1489 fragments *vs.* 2173 errors), which is an enormous amount for translations of official reports that were aimed at communicating important information.

More insight into the adequacy of the TERs was gained by means of the Flesch-Kincaid readability tests. The optimal Flesch reading ease is around 60-70, corresponding to an average difficulty of the texts, which can be read and understood by about 80% of readers. The mean reading ease in the TERs analyzed was 38, being over half of what it should have been (38 *vs.* 60-70), and clearly revealing that the TERs were readable by a professional audience, but they were too difficult if they were intended for the general public. The TERs do not appear to be effective, and their communication purpose seems to be unfulfilled for both the general public, because much less than 80% of readers understand them, as well as for health professionals, because they lack a remarkable academic nature. The Kincaid school grade level of 10 was way

over 6-8, representing the grade levels that assure readability by 80% of readers. This datum indicates that the TERs are extremely difficult for the general public, being understood only by people in 10th grade and over. On the other hand, if the TERs were to deliver an effective academic message, they should have had a grade over 18. Both reading ease and grade level and thus readability did not seem to be affected by neither the total number of errors nor the accuracy of the texts, probably because the two tests depend largely on the linguistic and semantic complexity of the terms and of the sentences. On the contrary, the low mean adequacy of 2 (implying the scarce understandability of the TERs) appears to further support the global limited readability of the TERs. The data derived from reading ease and grade level analyses, if individually considered, appear to show the ineffectiveness of the TERs, when combined together, they suggest the total failure of the reports in delivering readable information to the general public with an average school grade as well as to health professionals having higher school grades.

Accuracy was assessed also qualitatively to complement the quantitative evaluation. Error analysis was adopted to identify, shape, and further support and strengthen the quantitative findings, and this allowed to shed light on some of the most frequent linguistic inaccuracies detected in the TERs. The Error analysis displayed no lexical cohesion among the TERs, since some terms were translated differently across the TERs and even within the single TER. This trait resulted probably because the translations had been carried out by different translators, as stated in TERs themselves (iss.it, 2020). The examined lexical items were mainly technical and sub-technical terms, as the linguistic nature of the TERs was distinctly medical. Surprising elements were the misused grammatical and syntactic items like verbs, verb-subject agreement, compounds, and the unsuccessful international adaptation of the TERs. The idea in reading the TERs is that they seem to have been performed using a meticulous word-for-word style without even re-reading what had been translated.

In the field of medicine and public health, especially in a period like the one that we are still going through with the coronavirus infection, inaccuracies are unacceptable. The present investigation yielded disappointing results concerning the translation of technical and sub-technical terms, as evidenced in the qualitative evaluation. The quantitative analysis highlighted the centrality of linguistics in the context of translating such complex writings (Jakobson, 1959; 2013; 2021), which favors the management of the customs and norms used in medical language and the creation of quality translations (Taavitsainen and Pahta, 2000; Valdes and Vandepitte, 2021; Veira *et al.*, 2021). The results of this work seem to show that grammar and syntax are still the cornerstones and pilasters for the construction of a good translation. However, a good and accurate translation does not appear to correspond to an

understandable, adequate and readable text, probably because other factors (e.g. cultural) play crucial roles.

It is worth noting that texts like the TERs are extremely hard to translate, and the main difficulties lie in the fact that sometimes, lexical items do not have a direct correspondence in the two languages (Larson, 1984; Carl, 2021; Mikhailov, 2021). This problem probably arises because the objects, the concepts or the terms do not exist in one of the two languages, so, in these instances, it is better to explain rather than translate. A second important element to underline is the extensive use of bureaucratese, which strongly affects correctness and understandability (Ross, 1983; Lutz, 1989; Orwell, 1990; Watson and Lynch, 1998; Hamilton and Foltzer, 2021). A third factor to take into account is the fact that these TERs use a variety of different registers that a single translator cannot in any way master alone; maybe in these cases, such texts should be approached by teams with different competences and specialties, and not by a single translator. Finally, these types of translations should be performed consistently with the target language, by persons who translate into their native language (Hatim and Mason, 2005), are fluent in the source language (Robinson, 2012), and have a good knowledge of the subject matter (Hatim and Mason, 2014).

The data derived from this investigation seem to demonstrate the ineffectiveness of the language used in the TERs. The reasons why such translations have been performed are not clear, since they are not specified in the reports. The ISS states that the reports were addressed to health professionals, but 10 of the 20 reports were targeted at the general public. Therefore, it could be hypothesized that they are intended to provide health information to both non-Italian speakers living in Italy during the pandemic, and readers and health professionals outside Italy, since Italy was the first country to undergo the total lockdown. The publication of official health reports addressed to the general public should be committed to improving lives and increasing the social impact of science. On the other hand, when official health reports are aimed at a specialized medical audience, they should respond to all the rules and norms of that specific language community. In both cases, the TERs seem to fail in their communicative function due to their linguistic ineffectiveness.

This investigation highlights some linguistic and translation phenomena as well as the application of new methodologies like the TAUS DQF system, the Grammarly software, the Flesch-Kincaid readability tests, and the Content Analysis SEO Tool, which could be useful for linguists in discussing new and better approaches to performing translations and evaluating translation quality.

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