RESEARCH

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Use of Google Translate in medical communication: evaluation of accuracy

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Communication is the cornerstone of medicine, without which we cannot interact with our patients.[1] The General Medical Council's *Good Medical Practice* states that "Doctors must listen to patients, take account of their views, and respond honestly to their questions."[2] However, we still often interact with patients who do not speak the local language.

In the United Kingdom most hospitals have access to translation services, but they are expensive and often cumbersome. A complex and nuanced medical, ethical, and treatment discussion with patients whose knowledge of the local language is inadequate remains challenging. Indeed, even in a native language there is an element of translation from medical to lay terminology.

We recently treated a very sick child in our paediatric intensive care unit. The parents did not speak English, and there were no human translators available. Reluctantly we resorted to a web based translation tool. We were uncertain whether Google Translate was accurately translating our complex medical phrases.[3 4] Fortunately our patient recovered, and a human translator later reassured us that we had conveyed information accurately.

We aimed to evaluate the accuracy and usefulness of Google Translate in translating common English medical statements.

Methods

Ten commonly used medical statements were chosen by author consensus. These were translated via Google Translate to 26 languages. Translations only were sent to native speakers of each of these languages and translated back to English by them. The returned English phrases were compared with the originals and assessed for meaning. If translations did not make sense or were factually incorrect they were considered as wrong. Minor grammatical errors were allowed.

Results

Ten medical phrases were evaluated in 26 languages (8 Western European, 5 Eastern European, 11 Asian, and 2 African), giving 260 translated phrases. Of the total translations, 150 (57.7%) were correct while 110 (42.3%) were wrong. African languages scored lowest (45% correct), followed by Asian languages (46%), Eastern European next with 62%, and Western European languages were most accurate at 74%. The medical phrase that was best translated across all languages was "Your husband has the opportunity to donate his organs" (88.5%), while "Your child has been fitting" was translated accurately in only 7.7% (table⇓). Swahili scored lowest with only 10% correct, while Portuguese scored highest at 90%.

There were some serious errors. For instance, "Your child is fitting" translated in Swahili to "Your child is dead." In Polish "Your husband has the opportunity to donate his organs" translated to "Your husband can donate his tools." In Marathi "Your husband had a cardiac arrest" translated to "Your husband had an imprisonment of heart." "Your wife needs to be ventilated" in Bengali translated to "Your wife wind movement needed."

Discussion

Google Translate is an easily available free online machine translation tool for 80 languages worldwide.[5] However, we have found limited usefulness for medical phrases used in communications between patients and doctor.[3 6 7]

We found many translations that were completely wrong. Google Translate uses statistical matching to translate rather than a dictionary/grammar rules approach, which leaves it open to nonsensical results.[4 8]

In today's world "just Google it" is considered to be the answer to everything, but for health related questions this should be treated with caution.[9] Google Translate should not be used for

taking consent for surgery, procedures, or research from patients or relatives unless all avenues to find a human translator have been exhausted, and the procedure is clinically urgent. We have, however, not assessed the accuracy of human translators, who cannot be assumed to be perfect and may be subject to confidentiality breaches.

We looked at translations from and to English only. Western European languages were the most accurately translated, implying a bias in translating algorithms towards those languages more commonly used in computing. Previous research has used one phrase, using the same algorithm to translate and retranslate, which is likely to increase the stated accuracy.[10 11]

Conclusion

Google Translate has only 57.7% accuracy when used for medical phrase translations and should not be trusted for important medical communications. However, it still remains the most easily available and free initial mode of communication between a doctor and patient when language is a barrier. Although caution is needed when life saving or legal communications are necessary, it can be a useful adjunct to human translation services when these are not available.

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Table

Table 1| List of medical phrases translated via Google Translate

Phrase translated	Sample or most common error	Percentage correct
Your wife is stable	Your wife cannot fall over	53.8
Your husband had a cardiac arrest	Your husband's heart was imprisoned	53.8
Your husband had a heart attack	Your husband's heart was attacked	73.1
Your wife needs to be ventilated	Your wife needs to be aired	26.9
Your child's condition is life threatening	Your child's state is not life stopping	69.2
Your child has been fitting	Your child has been constructing	7.7
Your child will be born premature	Your child is sleeping early	76.9
Your husband has the opportunity to donate his organs	Your husband is now ready to donate	88.5
We will need your consent for operation	We need your consent for operating (such as machinery)	61.5
Did he have high fever at home?	Your home temperature was high	65.4