

Lost in Translation: BandhuCare and the right to understand

*First do no harm
Delivering on Patient outcomes and experience*



About me

- Professor at CMC Vellore Radiation Oncology
- ***Treat*** Cancers of Head and neck, Lung, Esophagus, and prostate
- ***Teach/train doctors*** to become cancer specialists
- ***Research on*** clinical research & clinical Data Science - Lab
- Clinical lead and co-founder: QIRAIL
- Core member : CMC Bio-Medical Informatics group
- Team lead: Adoption of telemedicine solutions
- Team Lead : Digital transformation of Radiation Oncology department
- Member : CMC Ethics committee
- CAHOTech 2024 – AI development of the year and Digital transformation award.

2004 at Vellore



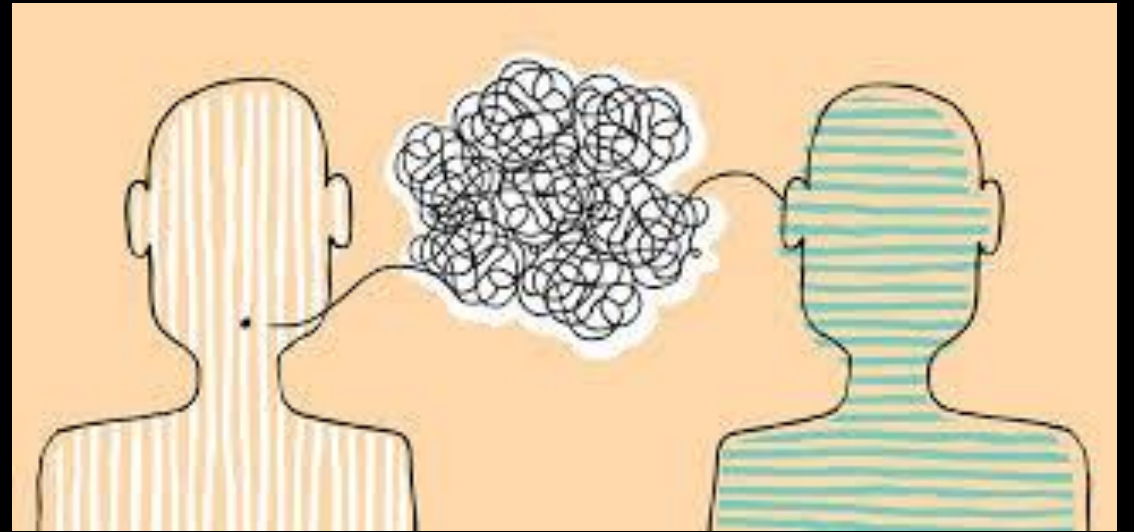
Not just a linguistic slip



- It was a potential harm event — a patient taking medication at the wrong time.
- If language can change the meaning of life-saving instructions, then language itself becomes a determinant of patient safety.

How Language Barriers Create Unsafe Care

When patients and providers don't speak the same language, every interaction becomes a potential risk.



How Language Barriers Create Unsafe Care

Medication errors: Misunderstood timing, dosage, or drug names.



How Language Barriers Create Unsafe Care

Consent & autonomy: Patients may sign forms without truly understanding risks/benefits.



How Language Barriers Create Unsafe Care



Symptom reporting:

Nuances lost when patients describe pain or side effects in their own language.

Emergency communication: In critical care, seconds matter —miscommunication can delay treatment.

How Language Barriers Create Unsafe Care

Discharge instructions:

Misinterpretation of drugs, diet follow-up, or warning signs.

Examples of inputs and outputs	
Input direction	Desired output
1 po qhs	Take 1 capsule by mouth every night at bedtime
500 mg priori to procedure	Take 1 tablet by mouth before procedure
tk 2-3 prn	Take 2 to 3 tablets by mouth as needed
1 sprays intranasally 2 times per day in each nostril	Instill 1 spray in each nostril twice daily

Problem at CMC

- Patient

- Bangla
- Tamil
- Hindi
- Malayalam
- Telugu
- Khasi
- Assamese

- Clinician

- ~~Tamil~~
- Hindi
- ~~Malayalam~~
- ~~Telugu~~
- ~~Khasi~~
- ~~Assamese~~
- ENGLISH

We adapt

- **Gestures and Non-Verbal Communication - Risk: Gestures can be misinterpreted, leading to incorrect assumptions about severity or location of pain.**
- **Family Members as Interpreters---Family may filter information, omit sensitive details, or lack medical vocabulary, compromising accuracy.**
- **Multilingual Staff or Volunteers--Not scalable, and staff may not always be available.**
- **Pictorial Aids and Visual Tools - -Limited nuance — complex instructions (e.g., tapering doses) are hard to convey visually.**
- **Translation Apps and Technology-Quick, scalable, covers multiple languages.**
 - **Risk: Literal translations may miss medical context (e.g., “pressure” mistranslated as “stress” instead of “blood pressure**



Indian problem



Health care is not local



Education is not in local languages



We need to crack this as the base problem for all communication tools in healthcare where the patient is the target



MINUTE DETAILS

India

■ **2-2.3 min**

Bangladesh

■ **48 sec**

Pakistan

■ **1.3 min**

China

■ **2 min**

Singapore

■ **9.3 min**

United States

■ **21 min**





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THE TIMES OF INDIA

Doctors in India see patients for barely 2 minutes: Study

TNN | Nov 9, 2017, 07:19 AM IST



MUMBAI: The average time that India's neighbourhood doctors, called primary care consultants, spend with patients is a negligible two minutes. Neighbouring Bangladesh and Pakistan seem worse off, with the length of medical consultation averaging 48 seconds and 1.3 minutes, respectively, according to the largest international study on consulting time, published in medical journal BMJ Open.

Contrast this with first-world countries such as Sweden, the US or Norway where a consultation crosses 20 minutes on an average. "It is concerning that 18 countries covering around 50% of the world's population have a latest-reported mean consultation

Bhaashini,
IIIT-H &
CMC
Vellore

BandhuCare

AI-Powered Support for India's Cancer Patients.

Bridging the gap between clinic and home.



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<https://www.cmch-vellore.edu/>

**HimangY
Adaptation**

<https://himangy.iiithcanvas.com/>

Revan.AI

<https://revanai.in/>

Bhashini

Bhashini is an **Indian government project** developed by Ministry of Electronics and Information Technology under its National Language Translation Mission.

Bhashini was fine-tuned for healthcare domain – CMC data

Linguistics division IIIT

On premise and Cloud solutions out of it.

The "Magic": Safe & Responsible AI (Agentic RAG)

Domain-Constrained RAG

We use a state-of-the-art Agentic AI.

A Knowledge Agent performs Retrieval-Augmented Generation (RAG) by only accessing our expert-vetted clinical database.

An Orchestrator Agent manages the flow, ensuring safety and compliance before any response is generated.

The Result: 100% Trust

This architecture makes BandhuCare fundamentally safe and trustworthy.



No Hallucinations: The AI cannot invent medical advice.



Clinically Vetted: Every answer is based on data approved by our medical team.



Context-Aware: The platform understands the patient's context.

See BandhuCare in Action



Today · 11:18 PM

0:00

ನನಗೆ ತಿಂಡಿ ತಿನ್ನಲಿಕ್ಕೆ ಬಹಳ ಕಷ್ಟವಾಗಿದೆ

6:28 PM

ತಿನ್ನಲು ಕಷ್ಟವಾಗುವುದು ನರ ಸಂಕೋಚನ, ದವಡೆಯ ಅಪಸಾಮಾನ್ಯ ಕ್ರಿಯೆ ಅಥವಾ ತಲೆ ಮತ್ತು ಕುತ್ತಿಗೆಯಲ್ಲಿ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ನಂತರದ ಬದಲಾವಣೆಗಳಂತಹ ಸಮಸ್ಯೆಗಳನ್ನು ಸೂಚಿಸಬಹುದು. ಇದು ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ನಂತರ ಪ್ರಾರಂಭವಾದರೆ, ನೋವು ಇದ್ದರೆ ಅಥವಾ ನೀವು ದವಡೆ ಅಥವಾ ಮುಖದಲ್ಲಿ ದೌರ್ಬಲ್ಯವನ್ನು ಅನುಭವಿಸುತ್ತಿದ್ದರೆ ನೀವು ಹಂಚಿಕೊಳ್ಳಬಹುದೇ? ಇದು ನರಗಳು, ಸ್ನಾಯುಗಳು ಅಥವಾ ರಚನಾತ್ಮಕ ಬದಲಾವಣೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದೆಯೇ ಎಂದು ನಿರ್ಣಯಿಸಲು ಸಹಾಯ ಮಾಡುತ್ತದೆ-ಸಿಎಮ್ಸಿ ಅಸ್ಪತ್ರೆಯಲ್ಲಿ ತುರ್ತು ಮೌಲ್ಯಮಾಪನದ ಅಗತ್ಯವಿದೆ.

6:29

Type your question here



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ஆப்பரேஷன் முடிஞ்சு ரெண்டு வாரம் ஆயிச்சு தொண்டையில் ஓட்டை போட்டிருக்கு அந்த ஓட்டையிலிருந்து இப்போது ஏதோ தண்ணி மாதிரி வருந்து ஏதாவது பிரச்சின இருக்கா

6:48 PM

தொண்டையில் ஒரு ஓட்டை இருப்பது இயல்பானது. இப்போது நீர் மாதிரி வலி தொண்டை பகுதியில் செயல்படும் ஒரு பிரச்சினையாக இருக்கலாம். இது எப்படி பரவுகிறது? எது குறைந்து வருகிறது? உணவு அல்லது நடுவில் உள்ள வலியை விளக்குங்கள். சிஎம்சி மருத்துவமனையில் சிகிச்சை பெறுங்கள்.

6:48 PM

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ഓപ്പറേഷൻ കഴിഞ്ഞ കഴുത്തി വച്ചിരിക്കുന്ന ടി ഇ പി ട്യൂബുണ്ടല്ലോ അതിൽന്ന് കുറച്ച് എന്തോ വെള്ളം പോലെ ലീക്ക ആവുന്നുണ്ട് എന്തെങ്കിലും ചെയ്യണോ

3:18 PM

ശസ്ത്രക്രിയയ്ക്ക് ശേഷമുള്ള ടിപ്പി ട്യൂബ് ചോർച്ച സാധാരണമല്ല, ഇത് ഒരു സങ്കീർണ്ണതയെ സൂചിപ്പിക്കാം. അത് സ്വയം കൈകാര്യം ചെയ്യാനോ വൃത്തിയാക്കാനോ ശ്രമിക്കരുത്. മൂല്യനിർണ്ണയത്തിനായി ഉടൻ തന്നെ സിഎംസി ആശുപത്രി സന്ദർശിക്കുക. ഏതെങ്കിലും ചോർച്ച അണുബാധ, സ്ഥാനചലനം അല്ലെങ്കിൽ അനുചിതമായ ഫിറ്റ് എന്നിവയെ സൂചിപ്പിക്കും-ഒരു മെഡിക്കൽ പ്രൊഫഷണലിന് മാത്രമേ ഇത് വിലയിരുത്താനും

Type your question here



Today · 11:18 PM

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वेन विल म मेरा खाने का पाइप नाक में जो है वो कब निकलेगा

6:30 PM

वेन का मतलब है कि नाक से भोजन पाइप निकलने का समय निर्धारित नहीं किया जा सकता है क्योंकि यह व्यक्तिगत चिकित्सा निर्णय पर निर्भर करता है। आपके लिए नाक से भोजन पाइप निकलने का समय डॉक्टर द्वारा चिकित्सा जांच के बाद तय किया जाएगा। कृपया डॉक्टर के पास जाएँ और इसकी जाँच कराएँ।

6:30 PM

Type your question here

Layers of BandhuCare

- Engaging patients with curated information
- Patient Journalling
- Sentiment analyses and reports to clinicians
- Collection of PROMS – Transformed from traditional methods
- Ethical consenting

The Right Team to Build This

A Unique Consortium

Our strength lies in our unprecedented partnership between India's top clinical, technical, and community experts.

- ✓ **Clinical Lead:** CMC Vellore
- ✓ **Technical/AI/Deployment Lead:** : HimangY, IIIT-H and Revan.AI



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CMC Vellore is a leading Indian medical institution overseeing clinical implementation, ethical governance, and on-site data collection.



Revan AI is an applied AI company building multilingual speech and healthcare pipelines, powering large-scale annotation and translation platforms like Bhashini and COILD.

BandhuCare

“From gestures and family interpreters to apps and multilingual staff, patients have always found ways to be heard.

But safety demands more than improvisation — it demands the right to understand.

That’s what BandhuCare delivers.”

“If patients cannot understand, they cannot consent. If they cannot consent, we risk violating the very principle of ‘First, do no harm.’”