

Multilingual Educational Environment as a Factor of Communication Quality and Teamwork Efficiency in Emergency Medical Training

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INTRODUCTION & AIM

Effective communication is critical for patient safety in emergency medicine.

Multilingual education may complicate teamwork and rapid decision-making.

Kazakhstan's trilingual policy (Kazakh–Russian–English) creates heterogeneous learning environments.

Aim

To assess the impact of language of instruction on: teamwork and intergroup interaction, perceived communication clarity, integration of students in emergency medical training.



METHOD

Study design

Descriptive cross-sectional survey

Participants

Medical students (3rd-5th year), $n = 248$
English track: $n = 82$
Kazakh track: $n = 78$
Russian track: $n = 88$

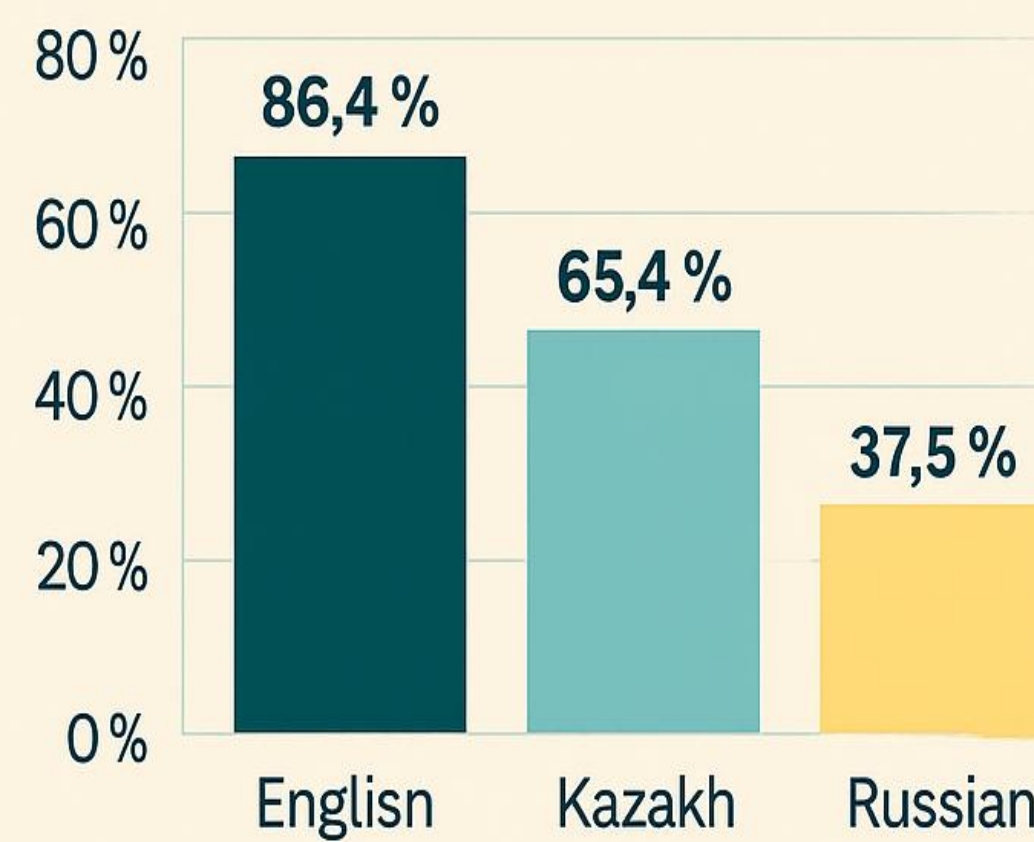
Instruments

Structured questionnaire
 χ^2 test with Cramer's V
Relative risk (RR) with 95% CI
Significance level: $p < 0.05$

Statistical analysis

- χ^2 test with Cramer's V
- Relative risk (RR) with 95% CI
- Significance level: $p < 0.05$

RESULTS & DISCUSSION



Intergroup Interaction

- Significant differences by language track ($\chi^2 = 42.90$; $p < 0.001$; Cramer's V = 0.416)
- Highest interaction: English medium – 86.4%
- Russian medium – 37.5% (RR = 2.31; 95% CI: 1.74 – 3.06)

Communication Clarity

- Significant variation between language tracks ($p < 0.001$)
- More frequent misunderstandings in English and Kazakh tracks

Perceived Barriers and Integration

- English and Kazakh tracks: language-related barriers
- Russian track: low motivation
- Most effective strategies: mixed-language simulation training and project-based learning



Figure 2. Intergroup interaction, communication clarity, and perceived barriers across language tracks in emergency medical students

CONCLUSION

- Multilingual emergency medical education represents both a risk factor and a developmental resource.
- Language of instruction significantly influences: teamwork quality, communication accuracy, intergroup integration.
- Mixed-language simulation-based training is the most effective tool to: reduce communication barriers, enhance teamwork efficiency, build intercultural competence.
- Structured multilingual integration should be systematically embedded in emergency curricula.

FUTURE WORK / REFERENCES

Longitudinal studies on clinical performance outcomes.
Objective assessment of communication errors in simulations.
Development of standardized multilingual simulation protocols.

Figure 1. Study design and methodological framework