An Educational Collaboration Between Russian-Born US Physicians and Young Russian Oncologists in Evidence-Based Medicine: The Higher School of Oncology

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Research article

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Abstract

**Background.** The two-year Russian oncology residency focuses on the diagnosis and treatment of malignancies but lacks evidence-based medicine (EBM) and communication skills training. To overcome these educational disparities, the 5-year national program, the Higher School of Oncology (HSO), involving Russian expatriate physician trained in the United States medicine was established. The study aim was to assess the efficacy of HSO.

**Methods.** A retrospective cohort study was conducted. Highly motivated oncology residents were enrolled in the program through the 3-step selection process. United States trained Russian expatriate physicians acted as mentors. EBM skills were taught through weekly online journal clubs and clinical case presentations. Patient communication training included annual live seminars and simulations after journal clubs. EBM knowledge was assessed using the Fresno test among newly enrolled residents and PGY2-5 HSO residents. Communication skills were evaluated via simulation exam including two clinical scenarios (maximum score 100 for each) between 17 PGY2 HSO residents and 7 non-HSO young oncologists.

**Results.** Overall, 54 residents were enrolled for 5 years (8-13 annually); 4 (7%) were terminated. The mean participant age was 24±1 years and 30 (56%) were females. Mean participant medical school GPA was 4.8±0.2 (max 5.0). The specialties distributed as follows: 33% surgical oncologists, 46% medical oncologists, 6% radiology oncologists, 6% pediatric oncologists, and 9% oncology pathologists. The median scores of the Fresno test were significantly higher among PGY 2-4 HSO residents compared to just enrolled participants: 111 (IQR: 71-128) vs 68 (IQR: 42-84), p=0.042. Fresno test performance correlated with the year of participation in the program (r_s=0.5, p<0.0001). Communication skills assessment score was significantly higher among HSO residents than in non-HSO young oncologists: 71 (IQR: 58-84) vs 15 (IQR: 10-30) for scenario #1 (p<0.0001), and 78 (IQR: 71-85) vs 22 (IQR: 4-58) for scenario #2 (p=0.005), respectively.

**Conclusion.** The involvement of Western-trained expatriates in remote education improves EBM and patient communication skills among young oncologists from their home country. This strategy can be useful in overcoming global medical education disparities in other specialties and in countries facing similar challenges.

**Background**

Optimal cancer care is based on the most up-to-date guidelines and implementing the best available evidence into clinical practice. Providing the optimal cancer care in developing countries may be challenging not only due to limited material resources, but also due to a lack of adequate oncology training. The absence of evidence-based medicine (EBM) and patient communication skills training becomes a substantial obstacle for the realization of modern oncology essentials. Understanding and
eliminating the educational deficiencies can significantly contribute to overcoming the problem of substandard oncological care.

Oncology training in Russia differs from Western postgraduate education and may be similar to other post-Soviet and developing countries. It includes only a 2-year residency program immediately following medical school, whereas many developed countries require 6 to 9 years of training, depending on the specialty. Limited access to international literature and a low prevalence of English proficient physicians contribute to the Russian oncology community isolation from the world experience. The oncological curriculum based on Soviet-era materials primarily focuses on the diagnosis and initial treatment of tumors but lacks other important competencies including EBM and patient communication. Moreover, low popularity and shortage of EBM and patient-centered approaches among experienced Russian physicians decreases awareness of the necessity of these skills and creates a hostile environment for their fulfillment in young oncologists. International collaboration is crucial and required for coping with these educational deficiencies.

Various initiatives have been recently launched by North American and European oncological societies to promote modern education and the EBM approach among young oncologists in developing countries. These initiatives include travel grants for European Society of Medical Oncology (ESMO) preceptorships, European School of Oncology (ESO) courses, Global Oncology Young Investigator Award from American Society of Clinical Oncology (ASCO), among others. However, the majority focus on short-term education of individuals rather than large group learning. Therefore, the knowledge obtained by trainees remains on an individual level without institutional change. The routine involvement of international mentors can contribute to a solution; however, it may be limited due to cost and lack of motivation. On the contrary, the invitation of expatriates trained in the US and Europe, who recognize the existing academic disparities in their home countries and have interest in improving the education of young physicians, can provide the opportunity for long-term systematic training.

A remote educational program, the Higher School of Oncology (HSO), was designed by Russian expatriate physicians practicing in the US with a goal to introduce components of Western oncology medical education to Russian postgraduate oncological training. This study aims to evaluate the efficacy of the HSO program and suggests a model of remote training for young oncologists that can potentially be implemented in developing countries.

**Methods**

**Study Design**

A retrospective study was conducted to analyze the efficacy of the remote educational program involving Russian expatriate physicians practicing in the US in training young oncologists in Russia.

**Participants and Settings**
Medical school and general surgery internship graduates were enrolled in HSO through a highly competitive 3-step application process including assessment of medical school performance, curriculum vitae review, medical knowledge test, essay writing, and personal interview. Annual enrollment of 8–13 residents from 250–830 applicants across Russia, Ukraine, Belarus, and Kazakhstan. Enrollees entered the 2-year oncology residency program located in Moscow or Saint-Petersburg hospitals.

Data Source and Variables

Participant data was collected prospectively. English proficiency was estimated according to the Common European Framework of Reference (CEFR) for languages where A1/A2 is a basic user, B1/B2 independent user, and C1/C2 proficient user.(9) Medical school performance was evaluated by grade point average (GPA) with a maximum of 5.0.

Aim and Intervention

The Higher School of Oncology program

The 5-year national program “The Higher School of Oncology” was initiated in 2015 by a US practicing surgical oncologist, trained in Russia and then in the US. The program partnered with a Russian non-profit cancer awareness organization, dedicated to promoting evidence-based medicine (EBM) that provided local technical and organizational support including curriculum, networking, and student financial resources. The curriculum consisted of topics ranging from basic tumor biology to specific concepts in surgical, medical, and radiation oncology. Russian speaking physicians from various US clinics specializing in medical, surgical, and radiation oncology, pathology, and palliative care instructed students on critical reading of scientific literature, clinical decision making, conducting scientific work, and patient communication through online videoconferences with journal clubs and resident case presentations. (Fig. 1)

Online Journal Club

Two-hour weekly journal clubs were held each weekend which included articles focused on key oncological trials published within the past 15 years. After article appraisal, participants discussed various ways to implement scientific findings from trials to the local healthcare system. Examples included introduction of sentinel lymph node biopsy for melanoma and peritoneal washings for gastric cancer. Through simulated scenarios, participants explored the necessary steps in the organizational process, engagement of multi-disciplinary team members, and advantages of the method for both patients and the cancer care team.

Communication Skills Training

Patient-centered skills were taught through live seminars conducted among PGY1 program residents during mentor visits to Russia and via mentor supervised simulations among residents after online journal clubs. Communication skills training included empathy, delivering bad news regarding poor
prognosis and iatrogenic injuries, explaining complicated figures, research results, and other complex issues using simple non-medical language. The seminars consisted of theoretical and simulation. Theoretical basis for the seminars originated from the preparatory materials for the United States Medical License Exam (USMLE) Step II Clinical Skills exam and seminal papers on the topic. Simulations of common scenarios included explanation of risks and benefits of adjuvant chemotherapy, conducting pre-operative conversations, and delivering bad news to patients. Bad news delivery was taught according to SPIKES protocol.\(^{10}\)

**Transition from student to teacher**

In addition to the above classes, PGY 3–5 HSO residents conducted their own journal clubs and several short courses for junior residents on a variety of subjects including biostatistics, academic writing, system-based practice in oncology, and medical public relations in social networks. HSO residents also taught similar courses to medical students, residents from other programs, and attending physicians with the aim to promote EBM and a more patient-centered approach among Russian physicians.

**Efficacy assessment**

Changes in EBM knowledge after program introduction were assessed using the Fresno test which scores twelve open-ended questions with standardized grading rubrics, maximum total score of 212.\(^{11}\) A blinded assessment of recently enrolled residents (before program exposure) and PGY2-5 HSO residents was performed by two independent EBM experts. Communication skills were evaluated with actor-simulated exams and participants blinding by an independent private education group engaged in teaching communication skills. Each resident obtained two of four available clinical scenarios: three cancer-related scenarios (breast, colon, and gastric) to test oncology specific communication approaches and one cardiac scenario to assess basic communication skills. Scenarios were rated among 17 PGY-2 HSO-residents (during two years) and 7 non-HSO young oncologists with maximum score 100, for each scenario. The following criteria were analyzed: ability to reduce patient anxiety, ask open-ended questions, identify patient concerns, actively listen and provide empathy, assess patient values and preferences, ability to provide relevant patient information, maintain an appropriate pace of information delivery, presenting options with pros and cons, and the ability to make shared decisions.

**Statistical analysis**

Statistical analysis was conducted using SPSS V.23.0 software. Participants and intervention characteristics were analyzed. Continuous variables are presented as means or medians and categorical variables as proportions. Differences between groups in the Fresno test and communication skills exam scores were assessed using the unpaired Mann-Whitney test. The Kruskal-Wallis one-way analysis of variance (ANOVA) for pairwise comparisons of medians was used to assess differences in the Fresno test performance among PGY1-5 residents. Correlation between the Fresno test score and participation year in the HSO was analyzed with the bivariate Spearman rank correlation test. Results are presented in boxplots. P-value < 0.05 was considered statistically significant.
Results

Over five years, 54 residents were selected for HSO participation. Four residents were terminated from the program during their first year due to low attendance (n = 2), low academic performance (n = 1), and unethical behavior (n = 1).

Participant characteristics at enrollment

Participant characteristics are presented in Table 1. Mean age at enrollment was 24 ± 1 years. There were 24 (44%) males, 30 (56%) females. Among 54 enrolled residents, 11 (20%) were internship graduates. Distribution of resident specialties included 33% (n = 18) surgical oncology, 46% (n = 25) medical oncology, 6% (n = 3) radiology oncology, 6% (n = 3) pediatric oncology and 9% (n = 5) oncology pathology.

Mean medical school GPA was 4.8 ± 0.2. Enrollment English proficiency levels were 13 (24%) A2, 31 (57%) B1/B2, and 10 (18%) C1/C2. More than half of the participants (54%) had prior research experience. Thirty-three (61%) residents worked as nurses and 14 (26%) volunteered in clinics during medical school.

Journal Club and EBM knowledge

Overall, 195 journal clubs were conducted over 5 years, averaging 39 sessions annually. The majority of journal clubs were dedicated to surgical and medical oncology trials (87%). Other topics included radiology (6%), palliative therapy (3%), oncological pathology (3%), and hematology (1%).

EBM knowledge significantly improved with HSO program advancement. Fresno test scores increased from 68 (interquartile range [IQR]: 42–84) before program exposure to 111 (IQR: 71–128) in PGY2-5 HSO residents, p = 0.042. There was EBM knowledge improvement with length of participation: newly enrolled PGY1 (before HSO) - median score 68 (IQR: 42–84), PGY2–88 (IQR: 69–113), PGY3–91 (IQR: 67–141), PGY4–120 (90–139), PGY5–121 (IQR: 114–139), p = 0.040. Fresno test performance correlated with year of program participation (PGY1-5) (r_s=0.5, p < 0.0001) (Fig. 2).

Communication skills

Median score for scenario #1 was significantly higher in HSO residents than in non-HSO residents: 71 (IQR: 58–84) and 15 (IQR: 10–30), respectively, p < 0.0001. The performance in scenario #2 was also better in HSO residents compared to non-HSO residents: median 78 (IQR: 71–85) vs 22 (IQR: 4–58), p = 0.005 (Fig. 3).

Discussion

This study presents results of the remote educational program “Higher School of Oncology”, which supplemented the standard oncology residency curriculum with the aim to promote EBM and a patient-centered approach (PCA) among young Russian oncologists. The program enrolled highly motivated and competitive residents and included weekly 2-hour journal clubs, patient communication skills seminars,
regular patient simulations, and short courses dedicated to academic writing, biostatistics, and leadership. After 5 years of HSO existence, motivation to participate did not decline in mentors, residents, or local organizers. EBM knowledge of residents significantly improved after program exposure and directly correlated with the length of participation. Communication skills after 2 years of HSO participation were significantly better than in non-HSO young oncologists. These findings suggest that the remote educational program conducted by US-trained expatriates is sustainable and efficient in EBM training and patient communication skills among young physicians from their home country.

The necessity of introducing a HSO program to Russian postgraduate education was developed from the deficiencies of Russian oncology education. Modern oncology training should include skills as epidemiology knowledge, critical appraisal of medical literature, research literacy, implementation of best available evidence into clinical decision-making, and patient communication skills along with standard and comprehensive theoretical basis. While many of these proficiencies are mandatory for postgraduate oncology training in well-resourced countries, the Russian curriculum lacks them. In addition, the short duration of oncology medical residency, which starts immediately after medical school without practice in general specialties (e.g. internal medicine, general surgery), poor research culture, and low prevalence of English-reading mentor physicians impedes obtaining these skills by oncology residents. The absence of an appropriate learning environment might also be an obstacle for acquiring EBM and PCA concepts. Despite rising interest in evidence-based practice among some representatives of progressive segment of the Russian medical community, this approach is still unpopular among practicing physicians, who make up the majority of mentors for young doctors. International grants and studying abroad can raise awareness for young physicians about the importance of EBM and PCA and facilitate obtaining these skills; however, its implementation in real practice might be challenging without a mentor utilizing these concepts, the support of peers, and a welcoming learning environment. In the presented program, we tried to overcome existing barriers with role models of successful US-trained compatriot mentors, team building, and group practice of skills that can be taught remotely, such as EBM and efficient patient communication. International cooperation with practicing physicians combined with developing a core of young professionals with modern knowledge and a fresh perspective may create an appropriate environment and lead to a positive shift of the educational paradigm.

Journal club and case presentations were selected as main tools for teaching EBM skills and key oncology concepts. Studies show that regular participation in a journal club during postgraduate education improves critical thinking and epidemiological skills. It is challenging to introduce a journal club in circumstances where the majority lacks English reading skills and there is a shortage of mentors experienced in EBM. In our program, weekly online journal clubs were conducted by international experts. The Fresno test assessment showed significant improvement of EBM skills even after the first year of training. The median score of HSO residents was 111 (IQR: 71–128) which is lower than expert level (mean 147.5) in the study of Ramos et al. of Fresno test validation. This can be explained by the difference of baseline levels in participants. The mean score of novice students in their study was 95.6, whereas the median score of our residents before HSO was only 68 (IQR: 42–84). Despite enrollment of
highly selective participants at the beginning of the program, the majority were unable to explain basic concepts and principles of EBM including the primary endpoint, confidence interval, or intention-to-treat analysis, indicating an obvious deficit of clinical epidemiology knowledge. However, by the end of the first year, residents were able to critically appraise articles and, by the third year, started mentoring junior residents through conducting journal clubs. This may explain the continuing Fresno test performance improvement with every year of program participation, since teaching others during independent conduction of journal clubs may allow honing of EBM skills. These findings suggest that online journal clubs moderated by international experts can be effective in areas with a lack of local EBM experts.

Patient communication is another core professional competency which is not mandatory in Russian medical school and postgraduate curriculum.(20) Acquisition of communication skills by young physicians usually occurs in a passive “watch and copy” way during observation of more experienced colleagues. Along with a limited efficacy and absence of feedback, this approach leads to absorption of a paternalistic model, which remains widespread in Russian clinics.(21) To address these issues and promote PCA, patient communication training was included in the HSO program. Live seminars were conducted annually during US mentors personal visits to Russia, followed by regular simulations during and after online journal clubs in order to demonstrate and practice necessary techniques. Subsequent assessment with two clinical scenarios showed improved communication skills among PGY2 HSO residents compared to non-HSO young physicians. After 3 years, two HSO residents created an online patient communication course for Russian-speaking physicians and a Telegram™ channel, “How to say,” with the same focus and >2000 followers.(22, 23) Based on these findings, we can conclude that teaching patient-centered communication to young physicians not only improves their own skills but also promotes the spread of PCA within an overall paternalistic medical community.

Implementation of EBM requires skills of system-based practice (SBP). Otherwise, it may be challenging to introduce new practice based upon evidence in the healthcare system which is structured differently than the one from which the evidence was obtained. SBP refers to the knowledge that each individual practice is a part of a larger healthcare system and the physicians ability to use the system to maintain and develop patient care.(24) SBP was defined as one of the six core competencies of medical residency graduates defined by the Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties (ABMS) in 1998.(25, 26) However, SPB skills remain abstract and there is no clear consensus on how they should be taught and evaluated. HSO taught these skills through discussing essential steps when introducing scientific evidence and protocols into clinical practice following journal clubs. These skills are crucial for young Russian oncologists as, traditionally, the initiative to implement new strategies in Russian clinics comes from administration whereas, the majority of physicians believe that they are not entitled to initiate change. In such conditions, the absence of SBP skills may lead to the disutility of obtained knowledge by HSO residents. Teaching leadership skills and SBP is necessary along with EBM and PCA in circumstances where these approaches are not widespread.

A sustainable remote program required several key components. First, the involvement of Russian expatriate physicians with US oncology training, who were therefore aware of their home country’s
education culture, and had substantial modern knowledge to apply to medical education discrepancies. Furthermore, the mentors’ dedication to advance oncology training in their homeland provided the motivation necessary to maintain a complex long-term program. Second, rigorous requirements for the applicants along with a strict 3-step selection process to identify highly motivated participants to best utilize this intense program and who had the ambition and career potential to promote and spread obtained skills in the medical community. Since four participants (7%) were terminated during PGY1 that encouraged us to conduct self-assessments to improve the process of selection and education. Third, a close partnership with a non-profit cancer awareness organization localized in St. Petersburg, Russia and particularly its leader provided an effective on-site administration to support these processes. We believe that collaboration of leaders applying their expertise in the areas of medical education and organizational strategies along with enrollment of highly motivated students is crucial for building a solid and efficient remote educational program.

Despite overall positive outcomes, there were a number of challenges during program development. Technical difficulties related to internet speed and connection obstructed videoconferencing in the beginning. To prevent these issues, a convenient platform for video communication, high-quality equipment, such as cameras and microphones were needed. Not only was equipment an obstacle but, there was also the challenge of overcoming discomfort while communicating through video conferencing screens. Additionally, the 7–8 hour time zone difference between Russia and the US resulted in limited time options for communication and videoconferencing. Due to scheduling constraints, seminars were often only possible during the weekends requiring high dedication of both mentors and trainees.

The status quo bias of the local medical community proved to be the biggest challenge for all HSO participants. Teaching EBM skills and efficient patient communication is challenging in circumstances where medical professionals are unaware that these skills are beneficial and lacking. This can degrade mentor and participant motivation as well as provoke a negative response in the local community toward the new educational strategy. After the first six months, HSO residents faced a confrontational reaction expressed by part of the local medical community in response to attempts of practicing EBM and shared decision-making. This reluctance to implement new strategies might be an expected behavior previously described after EBM introduction.(27–29) In addition to resistance, an absence of local role models practicing EBM and PCA was discouraging for HSO residents and mentors. However, the involvement of regional like-minded physicians, EBM popularization in social networks, and training residents to teach these skills have helped to better convey the main project idea and mitigate initial antagonism. After two years of program initiation and implementation, rejection changed to keen interest within the medical and patient community, which led to invitations to deliver EBM lectures, moderate journal clubs, and conduct training in patient communication. We also saw increased demand for HSO residents by a number of Russian medical institutions. All HSO residents (n = 27), have graduated from official Russian residency, successfully employed as oncologists according to their subspecialty with 71% (n = 19) in high-volume oncology hospitals. Learning how to expand the project under conditions of resistance was an essential element in implementing new educational strategies.
This study has several limitations related to retrospective design. First, we were unable to provide the results of the patient communication exam for all HSO residents as it was conducted for only two resident enrollments during PGY2, due to cost of simulation with actors and independent expert assessment. Second, there is potential selection bias between the groups of communication assessment as HSO residents had passed a rigorous 3-step selection before enrollment; therefore, their communication baseline skills could be higher. Third, there was no assessment of a long-term impact of the program on the participants’ career or the Russian medical education system due to only 5-year follow-up. Prospective studies with longer surveillance are needed to overcome these limitations.

Conclusions

Involvement of Western-trained expatriates in remote oncology training improves EBM knowledge and enhanced patient communication skills among young oncologists in their home country. This strategy allows for the creation of sustainable program and can be efficient in circumstances where EBM and patient-centered approaches are not widespread and there is a lack of mentors practicing them. We believe that programs like the Higher School of Oncology can provide systemic changes in cancer care in developing countries and also replicated in other specialties.

Abbreviations

ABMS
American Board of Medical Specialties
ACGME
Accreditation Council for Graduate Medical Education
ASCO
American Society of Clinical Oncology
CEFR
Common European Framework of Reference
EBM
Evidence-based medicine
ESMO
European Society of Medical Oncology
ESO
European School of Oncology
GPA
grade point average
HSO
the Higher School of Oncology
IQR
interquartile range
Declarations

Ethics approval and consent to participate

Mercy Medical Center Institutional Review Board, Baltimore, MD, determined that the project did not meet the definition of human subject research and therefore no formal ethics approval or informed consent process was required. All participant data were de-identified and saved confidentially.

Consent to publication

Not applicable

Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

EB, IF, and VG developed a study conception and design. EB performed the literature review, collected and interpreted the data, and drafted the first version of manuscript. MS contributed to the manuscript drafting, its critical revision for content, English stylistics and grammar. MK contributed to data acquisition and revision of the manuscript. IF and VG contributed to the final revision of the manuscript.
All authors contributed to the review and amendments of the manuscript for important intellectual content and approved the final version for submission.

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References

1. Are C, Berman RS, Wyld L, Cummings C, Lecoq C, Audisio RA. Global Curriculum in Surgical Oncology. Ann Surg Oncol. 2016;23(6):1782–95.
2. Are C, Malik M, Patel A, Wong S, Balch C. The training and certification of surgical oncologists globally. Ann Surg Oncol. 2015;22(3):710–8.
3. Are C, Caniglia A, Malik M, Cummings C, Lecoq C, Berman R, et al. Variations in Training of Surgical Oncologists: Proposal for a Global Curriculum. Ann Surg Oncol. 2016;23(6):1769–81.
4. Jargin SV. Some Aspects of Medical Education in Russia. American Journal of Medicine Studies. 2013;1(2):4–7.
5. Telen MJ. Teaching evidence-based medicine in the former Soviet Union: lessons learned. Trans Am Clin Climatol Assoc. 2014;125:88–102. discussion – 3.
6. Norlen O, Stalberg P, Oberg K, Eriksson J, Hedberg J, Hessman O, et al. Long-term results of surgery for small intestinal neuroendocrine tumors at a tertiary referral center. World J Surg. 2012;36(6):1419–31.
7. Rindi G, Petrone G, Inzani F. The 2010 WHO classification of digestive neuroendocrine neoplasms: a critical appraisal four years after its introduction. Endocr Pathol. 2014;25(2):186–92.
8. Lawrence B, Gustafsson BI, Chan A, Svejda B, Kidd M, Modlin IM. The epidemiology of gastroenteropancreatic neuroendocrine tumors. Endocrinol Metab Clin North Am. 2011;40(1):1–18. vii.
9. Frilling A, Modlin IM, Kidd M, Russell C, Breitenstein S, Salem R, et al. Recommendations for management of patients with neuroendocrine liver metastases. Lancet Oncol. 2014;15(1):e8–21.
10. Baile WF, Buckman R, Lenzi R, Glober G, Beale EA, Kudelka AP. SPIKES-A six-step protocol for delivering bad news: application to the patient with cancer. Oncologist. 2000;5(4):302–11.
11. Ramos KD, Schafer S, Tracz SM. Validation of the Fresno test of competence in evidence based medicine. BMJ. 2003;326(7384):319–21.
12. Balch C. What Is a Surgical Oncologist?: By the Editors of the Annals of Surgical Oncology. Ann Surg Oncol. 2018;25(1):7–9.
13. Are C, Caniglia A, Malik M, Smith L, Cummings C, Lecoq C, et al. Global variations in the level of cancer-related research activity and correlation to cancer-specific mortality: Proposal for a global
curriculum. European journal of surgical oncology: the journal of the European Society of Surgical Oncology the British Association of Surgical Oncology. 2018;44(1):43–52.

14. Vlassov V. Is there epidemiology in Russia? J Epidemiol Community Health. 2000;54(10):740–4.

15. Barchuk A, Gushchin V. Alternative Ways to Study Global Variation in Cancer-Related Research Activity. Ann Surg Oncol. 2018;25(12):3774–5.

16. Geltzer A. When the standards aren't standard: evidence-based medicine in the Russian context. Social science & medicine (1982). 2009;68(3):526 – 32.

17. Linzer M, Brown JT, Frazier LM, DeLong ER, Siegel WC. Impact of a medical journal club on house-staff reading habits, knowledge, and critical appraisal skills. A randomized control trial. Jama. 1988;260(17):2537–41.

18. Ebbert JO, Montori VM, Schultz HJ. The journal club in postgraduate medical education: a systematic review. Med Teach. 2001;23(5):455–61.

19. Green ML. Graduate medical education training in clinical epidemiology, critical appraisal, and evidence-based medicine: a critical review of curricula. Academic medicine: journal of the Association of American Medical Colleges. 1999;74(6):686–94.

20. Schopper HK, Mohamed NA, Seegel M, Gorina K, Silverman J, Rosenbaum M. Lost in translation: Cultural divides in communication skills teaching identified in the ICCH 2016 student symposium. Patient education and counseling. 2017;100(11):2071-3.

21. Lichterman BL. Basic problems of medical ethics in Russia in a historical context. Journal international de bioethique = International journal of bioethics. 2005;16(3–4):168–9.

22. Kotov MPR. Online course "How to communicate with patient efficiently" [Available from: https://study.communication-school.ru/].

23. Kotov M. Telegram channel "How to Say" [Available from: https://t.me/how_say?fbclid=IwAR04359y5reaQuWKulglGmVCeWsEmLPxtb7IBvY5Z1z9CIPW4IdfjPXUio8.

24. Johnson JK, Miller SH, Horowitz SD. Systems-Based Practice: Improving the Safety and Quality of Patient Care by Recognizing and Improving the Systems in Which We Work. In: Henriksen K, Battles JB, Keyes MA, Grady ML, editors Advances in Patient Safety: New Directions and Alternative Approaches (Vol 2: Culture and Redesign). Advances in Patient Safety. Rockville (MD)2008.

25. Jo VY, Fletcher CD. Myoepithelial neoplasms of soft tissue: an updated review of the clinicopathologic, immunophenotypic, and genetic features. Head Neck Pathol. 2015;9(1):32–8.

26. Hornick JL, Fletcher CD. Myoepithelial tumors of soft tissue: a clinicopathologic and immunohistochemical study of 101 cases with evaluation of prognostic parameters. Am J Surg Pathol. 2003;27(9):1183–96.

27. Porta M. Is there life after evidence-based medicine? Journal of evaluation in clinical practice. 2004;10(2):147–52.

28. Aarons GA. Measuring provider attitudes toward evidence-based practice: consideration of organizational context and individual differences. Child and adolescent psychiatric clinics of North
29. Barzkar F, Baradaran HR, Koohpayehzadeh J. Knowledge, attitudes and practice of physicians toward evidence-based medicine: A systematic review. Journal of evidence-based medicine. 2018;11(4):246–51.

Tables

| Table 1. Participant characteristics at enrollment |
|-----------------------------------------------|
| Variables                                      |
| Age at enrollment, years, mean ± SD            |
| Sex, n (%)                                     |
| Male                                           |
| Female                                         |
| Specialty, n (%)                               |
| Surgical oncology                              |
| Medical oncology                               |
| Radiology oncology                             |
| Pediatric oncology                             |
| Oncology pathology                             |
| GPA from medical school (max 5.0), mean ± SD   |
| English level, n (%)                           |
| A2 (basic user)                                |
| B1/B2 (independent user)                       |
| C1/C2 (proficient user)                        |
| Residency/Internship before HSO, n (%)         |
| Work as nurse during medical school, n (%)     |
| Volunteering in clinic during medical school, n (%) |
| Research experience, n (%)                     |

HSO, Higher School of Oncology; GPA, grade point average; SD, standard deviation