Students' Experience with the Online Course in Prevention Science in Two Distinct University Settings: A Pilot Study

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BACKGROUND: Online learning has the potential to increase accessibility to high quality and cost-effective resources in prevention of risk behaviors. The aim of this pilot study was to assess the experience of university students with the comprehensive online course on prevention. **METHODS:** In this pilot study, an online questionnaire was administered to 51 Czech and 31 Ukrainian university students who completed the online Introduction to Evidence-based Prevention (INEP) full semester course between February 2022 and February 2023. Students were asked about their experience with INEP represented by 17 distinct features. Data were analyzed by descriptive statistics and mean comparisons tests.

RESULTS: Students reported high overall satisfaction with INEP and with its respected features. The Structure and the Relevance features of INEP have been especially appreciated, while the Quizzes feature was perceived as only average by most students. INEP seemed to encourage most students (82%) to take other e-learning courses. **CONCLUSION:** The online INEP course received favorable feedback from university students across two distinct settings. INEP holds potential for broader integration into university study programs. These findings add to the ongoing discourse regarding enhancements in the education of future prevention professionals, making them relevant to practitioners, policymakers, and university-level decision-makers.

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● 1 INTRODUCTION

Online learning (utilizing electronic audio-visual materials) has the potential to provide access to efficient, low cost, flexible, and evidence-based education and training efforts (Bowen et al., 2014). In addition, online learning may be further utilized in specific situations, such as the COVID-19 pandemic or war conflicts.

Online learning tools are introduced and studied in various health care specializations (Lockey et al., 2022) and helping professions (e.g., Connolly & Svoboda, 2023; Wood et al., 2022). There are online learning modules implemented within the substance use field, however, majority of these focus on treatment providers (Calder et al., 2017, 2023; Marel et al., 2023; Singh & Reyes-Portillo, 2020). With few exceptions (Henriques et al., 2020) online learning modules in prevention science are not systematically evaluated, studied, and reported on.

The field of addiction and prevention science is constantly growing. So is the demand for quality education and training opportunities (Miovsky et al., 2021). The Czech Republic has a long history in the field of risk behavior prevention, marked by the development of national-level systems, structures, and policies since 1999 (Miovský et al., 2023). In contrast, our review of available evidence on prevention activities in Ukraine suggests that prevention interventions have primarily targeted vulnerable populations in response to the HIV epidemic that erupted in Ukraine around 2005 (Kruglov et al., 2008). These populations include injection drug users (Booth et al., 2009; Dauria et al., 2022; Farnum et al., 2021), sex workers (Blumer et al., 2021), and prisoners (Dauria et al., 2018). Some studies have also addressed HIV prevention among the general population (Kyrychenko et al., 2006; Zhytnik et al., 2020). Additionally, attention has been directed towards preventing suicidal behavior among youth (Shevchenko et al., 2023). Despite recent successful efforts to train addiction specialists (Yachnik et al., 2022), which have been greatly needed (Yachnik et al., 2021), Ukraine does not appear to have an established system for promoting and improving prevention or a cadre of prevention specialists capable of delivering prevention interventions concerning various risk behaviors in various contexts.

The online course *Introduction to Evidence-based Prevention* (INEP), a complex web-based module that runs on the Moodle platform, was created and introduced in 2018. The ultimate goal of INEP is to contribute to building global as well as local prevention workforce capacities through training about the most effective evidence-based interventions and prevention strategies, while adhering to the prevention professional standards. INEP was mostly used in life-long learning for the addiction professionals with various education backgrounds (Miovsky et al., 2021), but was not so far widely implemented in the university study programs.

Open online educational resources have the potential to complement traditional academic education, even in settings with limited resources (Ramskvi et al., 2021), but concerns arise regarding their perceived relevance and accuracy, which may limit their usefulness (Cheung et al., 2023). Conversely, comprehensive online or blended courses, tailored to specific target populations, emerge as promising options, as evidenced by successful pilot programs designed to educate Ukrainian healthcare professionals (Downer et al., 2018). Nonetheless, recent studies indicate unsatisfactory preparedness of Ukrainian schools for distance (online) learning, both during the COVID-19 lockdown (Shevtsoy et al., 2020) and wartime situations (Ovcharuk et al., 2023). Consequently, there is a need to investigate the feasibility of implementing online courses within Ukrainian university settings through rigorous scientific inquiry.

The aim of this pilot study was to describe the experience of university students with the online course INEP implemented in two different university settings.

● 2 METHODS

2.1 Settings

Charles University, First Faculty of Medicine in the Czech Republic and Taras Shevchenko National University of Kyiv, Institute of Psychiatry in Ukraine, study period from February 2022 to February 2023.

2.2 Student recruitment

Convenient sampling was used. In the Czech Republic, students in the present form who enrolled in the specific academic course were recruited by the course university-based instructor in two different semesters (Summer 2022 and Winter 2022).

In Ukraine, students from different faculties (psychology, medicine, journalism, law and economy) who were interested in INEP were recruited by the course university-based instructor and started the course in November 2022.

2.3 The online course

The Introduction to Evidence-based Prevention (INEP), a complex online course, was created in 2018 to deliver the fundamentals of prevention science, with a specific focus on substance use prevention. The origin, content, learning outcomes, and forms of INEP were introduced in detail here (Gabrhelík et al., n.d.). Therefore, we will provide only a brief overview. INEP consists of ten lectures that provide science-based information through written content, voiced-over presentations, recorded live talks, reading materials and reading assignments, quizzes, and final tests. Each of the 10 lectures are devoted to areas related to substance use and behavioral addictions. However, the principles of prevention science are universal and can be applied to a variety of risk behaviors. INEP, with the standard length of 40+ hours, was designed to be delivered either as a stand-alone online course or in a form of blended learning. INEP was available in English, Czech, and Spanish languages. INEP in Ukrainian language was introduced in 2022 as part of this pilot study. Czech and Ukrainian versions were identical except for quizzes which had been updated in Ukrainian ver-

sion. INEP can be accessed here in Czech https://mooc.cuni.cz/enrol/index.php?id=60 and here in Ukrainian https://mooc.cuni.cz/course/view.php?id=136.

2.4 Data collection

Questions were created and later administered to students using the Google Forms. Students were redirected directly from the INEP to Google Forms.

2.5 Measures

INEP experience

According to study aim, which was to explore the feasibility of implementing INEP in university settings in Czechia and Ukraine, a questionnaire was composed to assess several features of students' INEP experience. The evaluation criteria were meant to capture the overall reception of INEP by students and to identify issues needing further improvement, rather than the efficiency of INEP in respect to knowledge gain. Therefore, we investigated (i) content-related issues (e.g., the level of lectures' elaboration/comprehensiveness, the informativeness of lectures, the relevance of lectures in respect to promised learning goals, the quality of course's structure – whether modules were logically ordered, and the content of quizzes' questions), (ii) delivery-related issues (the aesthetic design of INEP, pace – whether lectures wasn't too quick or slow, navigation, quality of sound, quantity and quality of narration, text and fonts, voice of a narrator), and (iii) overall assessment (attractiveness – to what extent they find it interesting, perceived effectivity and impact – to what extent they find it useful for achieving their learning goals and confidence in conducting prevention, and overall satisfaction – to what extent they were satisfied with the course). In total, students responded to 17 items assessing their experience with INEP e-learning (e.g., The content of lectures corresponded with the course's goals; How would you rate the ease of navigation?; How interesting were lectures for you?). Students responded on each item using Likert scale with five points and following labels: 1 = totally disagree/very poor/not at all, 2 = disagree/below average/a bit, 3 = neither agree nor disagree/average/moderately, 4 = agree/above average/very much, 5 = totally agree/excellent/exceptionally). In addition, students were asked whether they would like to try another e-learning based on their experience with INEP (responding option yes/no).

Other variables

Basic socio-demographic data such as gender, age, and the previous experience in the field of prevention were also collected.

2.6 Analysis

Means, medians, and standard deviations were computed for each item assessing the INEP experience. Frequencies of responses were computed and displayed using a stacked bar plot. Czech and Ukrainian samples were compared using Mann-Whitney non-parametric t-test (with rank biserial correlations as effect sizes) in all assessed features of INEP experience. Chi-square test of association was used to compute country-based differences in the declared intention to take another e-learning course. Analyses were conducted using R (R Core Team, 2014).

2.7 Ethics

The ethical committee of the Ethics Committee of the National Drug and Addiction Monitoring Center (no. EKNMS-18/2022) approved the study. Approval from the Ethics Committee of the Institute of Psychiatry at the Taras Shevchenko National University of Kyiv, in Ukraine (no. 3/14/02/2022) has been obtained. All subjects were informed about the study, and all provided informed consent.

3 RESULTS

3.1 Sample

Final sample consisted of 51 Czech and 31 Ukrainian students, predominantly women (82%), aged between 18 and 24 years (70%) and with no or minimal experience in the field of prevention (90%). The Ukrainian sample was slightly younger and had a higher proportion of women), but differences were not found to be significant. All participants were university students of bachelor's degree, however, Czech participants all studied addiction science, while Ukrainian participants studied various programs – see Students recruitment. Both groups had the same proportion of participants with some previous experience in the prevention field (10%).

3.2 E-learning experience evaluation

The experiences with INEP e-learning were mostly positive. The average values exceeded neutral evaluation (3) in case of all assessed features (*Table 2*). Mean and median of overall satisfaction with INEP was close to 4, i.e., most students found INEP to be "above average" satisfactory. The highest appreciation was reported for the Structure and the Relevance. Ukrainian students were more satisfied with all features of INEP compared to Czech students; most t-tests were significant and with moderate to large effect sizes (*Table 1*). In the Ukrainian sample, seven features were for most students "excellent". The largest difference between Czechs and Ukrainians was found in the evaluation of Quizzes, which has been perceived as "average" by most Czechs and "excellent" by most Ukrainians. The lowest score was obtained for the overall impact (i.e., the perceived impact of INEP e-learning on delivering prevention interventions), where a few "very poor" responses were obtained (*Figure 1*). However, most responses were "excellent" or "above average" for all other evaluated features of INEP e-learning (*Figure 1*).

Most students (82%) declared that they would take another e-learning course based on their experience with INEP. The prevalence of students willing to participate in further e-learn-

Figure 1 | The distribution of responses on content-related, delivery-related and overall features of INEP e-learning experience (N = 82)
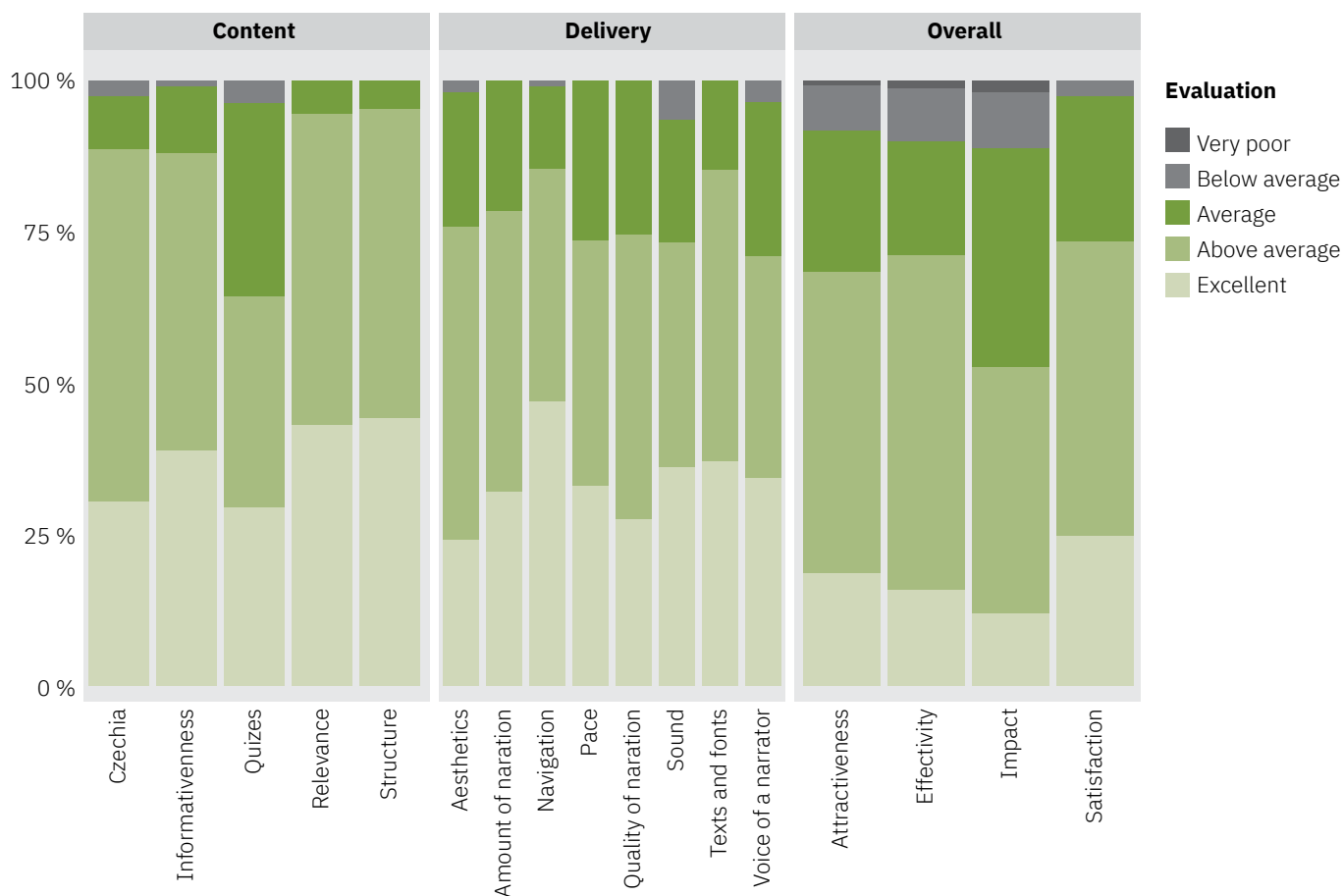
Table 1 | Characteristics of students

	Sample		Czech	Ukraine
	N	%	%	%
Country				
Czechia	51	62.2	–	–
Ukraine	31	37.8	–	–
Gender				
Women	65	82.3	79.2	87.1
Men	14	17.7	20.8	12.9
Missing	3			
Age in years	M = 27.1 (SD = 9.9)		M = 27.3 (SD = 10.8)	M = 23.4 (SD = 7.5)
Age group				
18–24 years	57	69.5	60.8	83.9
25–40 years	16	19.5	25.5	9.7
more than 41 years	9	11	13.7	6.5
Experience in the field of prevention				
Less than 1 year	74	90.2	90.2	90.3
1 year or more	8	9.8	9.8	9.7

M = Mean, SD = standard deviation

Table 2 | Means, medians, standard deviations, and country-based differences in e-learning (INEP) experience

	Whole sample			Czech sample			Ukrainian sample			Difference	
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	MD	Effect size
Overall											
Attractiveness	3.67	4	0.94	3.33	3	0.89	4.23	4	0.73	-1.0***	0.53
Effectivity	3.67	4	0.92	3.31	4	0.91	4.27	4	0.58	-1.0***	0.57
Impact	3.38	3	0.93	3.12	3	0.93	3.83	4	0.75	-1.0**	0.42
Satisfaction	3.95	4	0.78	3.67	4	0.74	4.42	4	0.62	-1.0***	0.52
Content											
Elaboration	4.06	4	0.69	3.84	4	0.67	4.42	4	0.56	-1.0***	0.43
Informativeness	4.23	4	0.73	4.02	4	0.71	4.58	5	0.62	-1.0***	0.43
Quizzes	3.74	4	0.89	3.37	3	0.69	4.35	5	0.84	-1.0***	0.61
Relevance	4.39	4	0.56	4.2	4	0.53	4.71	5	0.46	-1.0***	0.47
Structure	4.37	4	0.58	4.27	4	0.53	4.52	5	0.63	-0.4*	0.24
Delivery											
Aesthetics	3.86	4	0.72	3.76	4	0.65	4.03	4	0.81	-0.7	0.21
Amount of narration	4.04	4	0.7	3.86	4	0.66	4.33	4	0.66	-1.0**	0.36
Navigation	4.28	4	0.76	4.24	4	0.71	4.35	4	0.84	-0.3	0.12
Pace	3.99	4	0.81	3.69	4	0.74	4.48	5	0.68	-1.0***	0.54
Quality of narration	3.93	4	0.72	3.73	4	0.67	4.26	4	0.68	-1.0**	0.4
Quality of sound	3.93	4	0.93	3.67	4	0.89	4.35	5	0.84	-1.0***	0.43
Text and fonts	4.16	4	0.68	4.04	4	0.63	4.37	4.5	0.72	-0.5*	0.27
Voice of a narrator	3.91	4	0.88	3.73	4	0.78	4.23	5	0.96	-1.0**	0.34

MD = Mean difference; *p < .05, **p < .01, ***p < .001

ing was higher in the Ukrainian sample (97%), compared to the Czech sample (73%). The difference in the distribution was significant (χ^2 (1) = 7.28, p = .007) and large (OR = 11.0; 95% CI: 1.36–88.4).

4 DISCUSSION

The overall experience of students with the online INEP course delivered in the university settings was generally positive in both countries; 72% (n = 59) of students were generally very or rather satisfied with INEP. In terms of the content of INEP, the structure and the relevance of INEP has been especially appreciated. On the contrary, students were least satisfied with quizzes; even though, only a very small proportion (4.9%; n = 4) of students rated quizzes as below average. The technical features of INEP (Aesthetics, Amount of narration, Navigation, Pace, Quality of narration, Quality of sound Text and fonts, Voice of a narrator) were rated as above average; only a small proportion of students (9%; n = 7) rated Sound below average. In total, 82% of students reported that INEP encouraged them to take other online classes.

The lower satisfaction with quizzes has been identified among Czech students who completed INEP before quizzes were updated to be more appropriate for university setting (i.e., more challenging). Ukrainian students who completed INEP with updated quizzes rated them better and were also more satisfied

with other features of INEP. All available language versions of INEP have been provided with these new quizzes. Ukrainian students evaluated all aspects of INEP except aesthetics and navigation. This difference might be caused by different recruitment strategies in Czechia and Ukraine; in Ukraine, INEP was offered to a relatively large group of students from which only the most motivated entered the course, while in Czechia, INEP was offered to a relatively small group of students as a part of their compulsory curriculum. Also, Czech participants studied addiction science and might be familiar with some information presented in INEP, which could decrease the level of perceived interest in them. Additionally, Ukrainian students might have had worse experience with previous online learning (Ovcharuk et al., 2023), which made them more satisfied with INEP. Finally, the wartime situation as such might affect the evaluation.

INEP is available free of charge in four language versions (English, Czech, Spanish, and Ukrainian). Other language versions (e.g., in Portuguese) are under development. This makes the fundamentals in prevention science globally available to all kinds of specializations represented by the respected study programs (including, for example, addiction, medicine, psychology, pedagogy, social work, law, economy, journalism etc.) and across all levels of university education (bachelor, Master's, doctoral). It should also be noted that INEP can be used in lifelong learning as well. In this respect, INEP capitalizes the advantages of open educational resources (OER). At the same

time, it does not seem to suffer from the common disadvantages of OER such as the lower perceived relevance and accuracy (Cheung et al., 2023).

One of the interesting findings was that INEP seemed to encourage students' interest in other e-learning courses. Thus, well-prepared and well-designed e-learning courses can support the openness of universities (represented by school management and course instructors) towards a wider implementation of online teaching, whether fully automated, self-study courses or as blended learning courses. INEP can be implemented in study programs where either the expertise (i.e., university instructors with the necessary knowledge and/or experience) in prevention is lacking or the capacity of university instructors can be used for more complex and demanding tasks, e.g., research activities. This might be especially useful for economically disadvantaged countries (Ma & Lee, 2023) and/or countries in specific circumstances such as war conflicts; recent studies from Ukraine reported on the insufficient sources for educating addiction professionals in general (Yachnik et al., 2021, 2022).

INEP provides information on prevention (predominantly of substance use and addictive behaviors). But it was not designed to provide students with necessary skills and competence needed to design, implement, and deliver prevention interventions in real-world settings. Therefore, additional educational and training activities in prevention should follow to further increase prevention professional capacities, that could generally improve the culture of prevention (Petras et al., 2021). In addition, adequate support, resources, and training for both instructors and learners are crucial to maximize the benefits of online training and overcome its limitations. In the specific case of implementing an online course in another country was found to be beneficial to use local figures to enhance cultural relevance (Downer et al., 2018), which could be the next step in INEP development.

4.1 Strengths and limitations

The strength is that this is the first study to evaluate INEP – a new comprehensive, universal, free, and online educational tool that is compliant with the EMCDDA (European Monitoring Centre for Drugs and Drug Addiction) standards. Another strength resides in tracking more online learning features related to both content and delivery, which enables a more detailed understanding of how students perceive INEP. The evaluation was done by students without previous experience in prevention. This could be perceived both as a strength (the students were naïve) and limitation (students had no previous experience and framework to refer to). Another limitation was

that the samples from both countries were small and, thus, the evidence provides only indicative findings. Lastly, we did not control for how much effort students invested in INEP (in terms of acquisition of knowledge) - an important factor related to students' satisfaction.

The war in Ukraine brought both limitations and strengths. Students frequently faced technical issues due to blackouts and Internet interruptions caused by bombings. However, the online format allowed for flexible completion of training courses when the connection was restored, unlike unavailable face-to-face programs.

4.2 Future directions

With respect to the international relevance of INEP, it would be beneficial to assess the efficacy of INEP in terms of acquisition of knowledge in different target groups. Further, comparison of different forms of delivery of INEP (stand-alone vs. blended learning) would provide useful information to decision makers and stakeholders within university education and other training practices. Finally, the instructors' perspective would provide useful information that could further contribute to improvements of the INEP content and delivery.

5 CONCLUSION

The online INEP course was well perceived by the university students from two different settings. And thus, INEP can be recommended for wider implementation in university study programs. Studies that further explore different modes of delivery and efficacy of INEP are warranted.

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