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Sustainable Development Goals in health professions education across Central Asia and the post-Soviet space: a scoping review of progress, challenges, and the way forward

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Systematic Review

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Abstract

Background

The integration of the United Nations Sustainable Development Goals (SDGs) into health professions education is a global priority, yet the evidence base from Central Asia and the post-Soviet space remains critically underdeveloped. This scoping review mapped the existing literature on SDG integration in medical, nursing, and allied health education across 15 post-Soviet countries, assessed regional progress, identified contextual barriers, and proposed a forward-looking agenda.

Methods

A scoping review was conducted following the Joanna Briggs Institute (JBI) methodology and PRISMA-ScR guidelines. Databases searched included PubMed, Scopus, Web of Science, eLibrary.ru, and Google Scholar for publications from January 2015 to May 2025. Grey literature, institutional reports, and policy documents in English and Russian were included. Data were extracted using a standardised form and synthesised narratively.

Results

From 1,247 initial records, 42 sources met the inclusion criteria, of which only 4 were peer-reviewed empirical studies. The remaining sources comprised institutional declarations (n = 22), policy documents (n = 9), and grey literature reports (n = 7). Empirical evidence was limited to Kazakhstan (2 studies) and partial data from Russia and Uzbekistan. Three overarching themes emerged: (i) strong institutional declarations contrasted with weak empirical foundations; (ii) the persistence of post-Soviet pedagogical legacies — including teacher-centred instruction, discipline-based curricula, and limited student autonomy — that constrain active learning approaches essential for SDG education; and (iii) common regional barriers including insufficient faculty capacity, curriculum overload, resource constraints in rural institutions, and the absence of national accreditation mandates for SDG competencies. A small number of promising initiatives were identified: the Qaz Green Health Project in Kazakhstan, pilot SDG curricula in several Russian medical universities, and institutional SDG programmes at Tashkent Medical Academy and Samarkand State Medical University in Uzbekistan.

Conclusions

The post-Soviet region is at an early stage of SDG integration in health professions education, characterised by a substantial gap between institutional declarations and empirically verified outcomes. The review proposes a five-pillar regional roadmap: (1) national policy and accreditation reform; (2) faculty development in planetary health; (3) student-engaged curriculum transformation; (4) regional

research collaboration; and (5) international partnership leveraging. Implementing this roadmap would enable post-Soviet countries to align health workforce education with the 2030 Agenda and address the health impacts of climate change affecting the region.

Background

The adoption of the 17 Sustainable Development Goals (SDGs) by the United Nations in 2015 established a universal framework for addressing global challenges through 2030, with health occupying a central position within this framework [1]. SDG 3 explicitly aims to "ensure healthy lives and promote well-being for all at all ages," while the remaining 16 goals address social, economic, and environmental determinants that profoundly influence health outcomes [2]. The World Health Organization (WHO) has identified a "climate-smart health workforce" as a core pillar of climate-resilient and low-carbon health systems, mandating the integration of sustainability competencies into health professions education [3].

The global literature on SDG integration in health professions education has grown substantially since 2018, with systematic reviews documenting a range of pedagogical strategies including problem-based learning, team-based learning, simulation, and interdisciplinary approaches [4, 5, 6]. However, this evidence base has a pronounced geographic imbalance: a 2025 global scoping review found that 88% of studies on planetary health education originated from high-income countries, while research from low- and middle-income countries (LMICs) remains scarce [7]. An environmental scan of planetary health curricula (2022–2025) further documented that no courses were identified in the countries most vulnerable to climate change impacts, a finding described as representing "a profound inequity" in global health education [8].

The post-Soviet space — encompassing 15 countries that emerged from the dissolution of the Soviet Union in 1991 — represents a particularly significant and understudied region for SDG integration in health professions education. This region spans Eastern Europe (Russia, Belarus, Ukraine, Moldova), the Baltic states (Estonia, Latvia, Lithuania), the Caucasus (Armenia, Azerbaijan, Georgia), and Central Asia (Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan). These countries share a common legacy of Soviet medical education, characterised by teacher-centred pedagogies, discipline-based (rather than integrated) curricula, limited student autonomy, and centralised governance structures [9, 10]. Since independence, these countries have pursued divergent trajectories of educational reform, ranging from substantial Bologna Process alignment in the Baltic states and Ukraine to more gradual, state-directed change in Central Asia.

The region faces significant health challenges directly relevant to multiple SDGs. Central Asia is experiencing the ongoing health and environmental consequences of the Aral Sea ecological disaster — widely regarded as one of the world's worst environmental catastrophes — which has been linked to elevated rates of respiratory disease, anaemia, and infant mortality in affected populations [11]. Air quality concerns in industrial centres such as Tashkent, Almaty, Baku, and several Russian cities create additional respiratory health burdens [12]. The double burden of communicable diseases (including

multidrug-resistant tuberculosis, which is highly prevalent in several post-Soviet countries) and rising non-communicable diseases places strain on health systems [13]. Furthermore, climate change projections indicate that Central Asia will experience above-average temperature increases, intensifying heat-related morbidity and water scarcity challenges [14].

Despite these intersecting health and environmental challenges, the extent to which post-Soviet health professions education systems are preparing future doctors, nurses, and allied health professionals for SDG-related challenges remains poorly documented. While several countries in the region have made institutional declarations regarding SDG integration — notably Kazakhstan, Russia, and Uzbekistan — empirical evidence on actual student knowledge, attitudes, competencies, and educational outcomes is virtually absent from the international literature.

This scoping review had three objectives: (1) to systematically map the existing literature on SDG integration in health professions education across the 15 post-Soviet countries; (2) to assess the nature and extent of documented progress, identifying common barriers and facilitators; and (3) to propose a contextually appropriate regional roadmap for advancing SDG integration in health professions education. The review was guided by the following research questions:

1. What is the scope and nature of published literature on SDG integration in health professions education across the post-Soviet space?
2. What SDG-related educational initiatives have been documented, and what evidence exists regarding their effectiveness?
3. What barriers and facilitators influence SDG integration in this region?
4. What are the priority actions needed to advance SDG integration in post-Soviet health professions education?

Methods

Study design

This scoping review was conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews [15] and reported following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) [16]. A scoping review design was selected because the aim was to map the breadth and nature of available evidence in an area with expected limited primary research, rather than to answer a narrowly defined clinical question or assess intervention effectiveness.

Protocol and registration

Protocol and registration

The review protocol was developed a priori but not registered in PROSPERO, as scoping reviews are currently ineligible for registration in this database. The protocol is available from the corresponding author upon request.

Eligibility criteria

The PCC (Population, Concept, Context) framework was used to define eligibility criteria:

Population

Students, educators, or practitioners in undergraduate or graduate health professions education programmes, including medicine, nursing, dentistry, pharmacy, public health, and allied health sciences.

Concept

Any activity, initiative, research, or policy related to the integration of SDGs, planetary health, climate change and health, or environmental sustainability into health professions education. This included curriculum development, pedagogical interventions, needs assessments, policy analyses, institutional strategies, and empirical research on knowledge, attitudes, competencies, or educational outcomes.

Context: Any of the 15 post-Soviet countries: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

Types of sources

Peer-reviewed empirical studies (quantitative, qualitative, mixed-methods), systematic and scoping reviews, descriptive reports of educational interventions, institutional policy documents, government reports, and grey literature including dissertations and conference proceedings. Opinion pieces, editorials, and news articles without substantive data were excluded.

Language

English and Russian.

Timeframe

January 2015 (coinciding with SDG adoption) to May 2025.

Search strategy

A three-step search strategy was employed. First, an initial limited search of PubMed and eLibrary.ru was conducted to identify relevant keywords and index terms. Second, a comprehensive search was performed across the following databases: PubMed (MEDLINE), Scopus, Web of Science Core Collection, eLibrary.ru (for Russian-language publications), and Google Scholar. The search strategy

combined controlled vocabulary and free-text keywords related to three concept blocks: (1) SDGs/sustainability/planetary health/climate change; (2) health professions education/curriculum/training; and (3) post-Soviet/Central Asia/Eastern Europe with individual country names.

The full search strategy for PubMed and eLibrary.ru is provided in Additional File 1.

Third, reference lists of included sources were hand-searched for additional relevant materials. Grey literature was identified through targeted searches of websites of ministries of health and education, medical universities, WHO country offices, and UNDP offices in the 15 target countries.

Source selection

All identified records were imported into Rayyan systematic review software [17]. Duplicates were removed. Two reviewers (SMM and a research assistant) independently screened titles and abstracts against the eligibility criteria. Full texts of potentially eligible sources were retrieved and independently assessed. Disagreements were resolved through discussion. The PRISMA-ScR flow diagram documenting the selection process is presented in Fig. 1.

Data extraction

A standardised data extraction form was developed in Microsoft Excel, piloted on five included sources, and refined accordingly. Extracted data included: author(s), year, country, source type (empirical study, institutional document, policy document, grey literature), study design (if applicable), population/setting, key content related to SDGs, documented outcomes or findings, and identified barriers and facilitators. Data extraction was performed by SMM and verified by a research assistant.

Data synthesis

Findings were synthesised narratively, with data organised into thematic categories derived inductively from the extracted content. Given the heterogeneity of source types and the predominance of non-empirical documents, meta-analysis was not appropriate. Frequency counts were used to summarise the distribution of sources by country, type, and SDG focus. Thematic analysis followed the approach described by Braun and Clarke [18], involving familiarisation with the data, generation of initial codes, searching for themes, reviewing themes, and defining and naming themes.

Results

Selection of sources

The search yielded 1,247 records. After removal of duplicates (n = 218), 1,029 records underwent title and abstract screening. Of these, 895 were excluded as not relevant to the review objectives. Full texts of

134 sources were assessed for eligibility. Following full-text review, 42 sources met the inclusion criteria. The PRISMA-ScR flow diagram is presented in Fig. 1.

[Figure 1: PRISMA-ScR flow diagram — to be inserted]

Characteristics of included sources

The 42 included sources comprised: peer-reviewed empirical studies (n = 4, 9.5%), institutional declarations and university reports (n = 22, 52.4%), national policy documents and government strategies (n = 9, 21.4%), and other grey literature including dissertations and conference proceedings (n = 7, 16.7%). Table 1 summarises the distribution by country and source type.

[Table 1: Distribution of included sources by country and type]

Country	Empirical Studies	Institutional Documents	Policy Documents	Grey Literature	Total
Kazakhstan	2	4	2	2	10
Russia	1	5	3	3	12
Uzbekistan	0	6	1	1	8
Kyrgyzstan	0	2	1	0	3
Ukraine	1	1	1	0	3
Belarus	0	1	0	0	1
Other (multi-country or regional)	0	3	1	1	5
Total	**4**	**22**	**9**	**7**	**42**

Note: No sources meeting inclusion criteria were identified from Armenia, Azerbaijan, Estonia, Georgia, Latvia, Lithuania, Moldova, Tajikistan, or Turkmenistan.

The geographic distribution was highly skewed toward three countries: Russia (n = 12), Kazakhstan (n = 10), and Uzbekistan (n = 8), which together accounted for 71.4% of included sources. Critically, no sources meeting the inclusion criteria were identified from nine of the 15 post-Soviet countries, indicating vast evidence deserts in the Baltic states, the South Caucasus, and parts of Central Asia.

Thematic findings

Three overarching themes were identified through the analysis: (1) the institutional declaration–empirical evidence gap; (2) the persistence of post-Soviet pedagogical legacies; and (3) common

regional barriers and emerging facilitators. A small number of promising initiatives constituted a cross-cutting sub-theme.

Theme 1: The institutional declaration–empirical evidence gap

The most striking finding of this review was the profound discrepancy between the volume of institutional declarations about SDG integration and the near-total absence of empirical evidence assessing whether these declarations translate into demonstrable educational outcomes.

Of the 22 institutional documents included, virtually all articulated commitments to SDG integration. Tashkent Medical Academy (Uzbekistan) declared integration of SDGs into problem-based learning activities and the establishment of an "SDG Ambassadors" student programme [19]. Tashkent State Medical University reported incorporating SDG content into public health and epidemiology courses, with stated collaboration with the WHO and UNDP [20]. Samarkand State Medical University documented its annual SDG conference, regional roundtable discussions, and cross-sectoral dialogues [21]. Asfendiyarov Kazakh National Medical University in Kazakhstan described modernisation of its curriculum to address health-related SDG targets [22].

In Russia, several leading medical universities — including Sechenov First Moscow State Medical University and Pirogov Russian National Research Medical University — have issued statements regarding their alignment with SDG 3 and SDG 4 [23, 24]. The Russian Ministry of Health has acknowledged the relevance of the SDGs to health workforce planning in its national health strategy documents [25].

However, these declarations share common characteristics: they are aspirational rather than evaluative, they describe inputs (seminars held, modules developed) rather than outcomes (student learning achieved, competencies demonstrated), and they lack the methodological rigour necessary to contribute to the international evidence base. No included institutional document reported data from validated instruments such as the Sustainability Attitudes in Nursing Survey (SANS_2) or the Sustainability Consciousness Questionnaire (SCQ). No document described a systematic needs assessment conducted prior to curriculum development. No document reported pre-post evaluation of educational interventions.

The peer-reviewed empirical evidence was limited to only four studies. Cruz et al. (2024) conducted a qualitative study in Kazakhstan exploring perspectives of nursing, medical, and public health students regarding environmental sustainability in healthcare, as part of the Qaz Green Health Project [26]. Students expressed awareness of sustainability as a concept but demonstrated significant competence deficits, leading the authors to call for targeted educational interventions.

A single Russian-language empirical study from Moscow assessed environmental health knowledge among 200 medical students and found that while 78% expressed concern about environmental health

issues, only 23% could correctly identify the specific health impacts of climate change relevant to the Russian context [27].

One Ukrainian study, published in 2021, surveyed public health students' awareness of the SDGs and reported that only 41% could correctly name more than five of the 17 goals, despite Ukraine's alignment with European Union educational standards under the Association Agreement [28].

No empirical studies were identified from Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan, or any of the other post-Soviet countries.

Theme 2: Persistence of post-Soviet pedagogical legacies

A recurring theme across the included sources — explicit in some, implicit in others — was the influence of post-Soviet pedagogical traditions on the capacity for SDG integration. The Soviet medical education model, which all 15 countries inherited, was characterised by: teacher-centred didactic instruction (lectures as the primary teaching modality); rigid discipline-based curricula with limited horizontal or vertical integration; minimal student autonomy in learning processes; centralised curriculum governance with limited local flexibility; and an emphasis on knowledge acquisition over competency development, critical thinking, or systems thinking [9, 10, 29].

These features present significant challenges for SDG integration, which requires precisely the competencies that the Soviet model was not designed to develop: complex problem-solving, interdisciplinary thinking, collaborative practice, and advocacy skills. The active learning pedagogies identified as effective for SDG education in the global literature — problem-based learning, team-based learning, simulation, and community-based participatory approaches — represent a substantial departure from traditional post-Soviet instructional methods [5, 6].

Several institutional documents acknowledged this tension. A report from Asfendiyarov Kazakh National Medical University noted the difficulty of transitioning from "knowledge-transmission models" to "competency-based, student-centred approaches" required for SDG education [22]. Russian medical education policy documents have called for "modernisation of pedagogical approaches" while simultaneously emphasising the importance of "traditional Russian educational values," reflecting an unresolved tension between reform and tradition [24].

The implications for SDG integration are substantial. Even where institutional will exists, the pedagogical infrastructure — faculty skills, assessment systems, curricular flexibility, student expectations — may not support the transition to sustainability-oriented educational models. This was evident in the findings of Cruz et al. in Kazakhstan, where despite positive attitudes toward sustainability, students' competence deficits suggested that existing pedagogical approaches were insufficient for developing applied sustainability skills [26].

Theme 3: Common regional barriers and emerging facilitators

Analysis of the included sources identified a set of barriers and facilitators that recurred across multiple countries, suggesting they are regional rather than country-specific phenomena.

Barriers:

Faculty capacity deficits. The most commonly cited barrier, appearing in 28 of 42 sources (66.7%), was the lack of faculty knowledge, skills, and confidence to teach SDG-related content. In most post-Soviet medical universities, faculty members received their own education within the Soviet or early post-Soviet system and have had limited exposure to planetary health, sustainability science, or the pedagogical approaches required for SDG education [19, 22, 24, 26].

Curriculum overload. Twenty-two sources (52.4%) cited the already crowded medical curriculum as a barrier to incorporating new sustainability content. The traditional post-Soviet curriculum is heavily weighted toward biomedical sciences and clinical disciplines, leaving limited space for cross-cutting themes [9, 25].

Resource constraints in rural institutions. While resource challenges affect all countries to varying degrees, they are particularly acute in rural medical institutions in Central Asia. A report from Kyrgyzstan noted the absence of basic digital infrastructure and limited internet connectivity as barriers to implementing interactive, technology-enhanced pedagogies [30].

Absence of national accreditation mandates. Seventeen sources (40.5%) noted the lack of national-level requirements for SDG competencies in medical education accreditation standards. Without such mandates, individual institutions' SDG initiatives remain voluntary, fragmented, and vulnerable to shifting institutional priorities.

Limited research capacity. The dearth of empirical studies itself constitutes a barrier: without data on student knowledge, attitudes, and competencies, curriculum development proceeds without an evidence base [26, 27].

Language barriers. A region-specific barrier is the limited availability of SDG educational resources in Russian and national languages. Most published SDG education materials are in English, which may limit accessibility for faculty and students in countries where English proficiency among medical educators is variable [28].

Facilitators:

Despite these barriers, several sources identified facilitating factors that could support SDG integration.

International partnerships. Collaborations with international organisations and universities were identified as enablers in multiple countries. The Qaz Green Health Project in Kazakhstan is funded through international research collaboration [26]. The WHO Alliance for Transformative Action on Climate and Health (ATACH) provides a framework for health workforce development that Uzbekistan has formally

joined [20]. Erasmus+ projects have supported curriculum modernisation in several post-Soviet countries, though not specifically targeting SDG content [28].

Student enthusiasm. Where student perspectives have been assessed, they reveal a generation of learners more environmentally conscious and globally connected than their predecessors. The Russian empirical study found that students expressed high interest in learning about climate-health connections despite low current knowledge levels [27]. The Kazakhstan qualitative study documented students' desire for more sustainability education [26].

National SDG coordination mechanisms. Most post-Soviet countries have established national SDG coordination bodies, typically housed in ministries of economy or finance, and several have presented Voluntary National Reviews (VNRs) to the United Nations [31]. While these mechanisms have historically focused on other sectors, they provide an existing governance infrastructure that could be leveraged for SDG integration in education.

Existing public health infrastructure. A legacy of the Soviet system that can be leveraged positively is the strong tradition of public health and epidemiology in post-Soviet medical education. Preventive medicine, sanitation, and hygiene have historically been core components of the curriculum, providing a foundation upon which planetary health and sustainability content can be built [9].

Promising initiatives: a cross-cutting sub-theme

Several specific initiatives, while limited in scale and lacking rigorous evaluation, represent promising developments that could inform regional strategy.

Kazakhstan — Qaz Green Health Project (2023–2025)

This is the most substantive documented initiative in the region. Led by Cruz and colleagues, the project aims to develop environmental sustainability competencies in healthcare through qualitative needs assessment, curriculum development, and faculty training. The initial qualitative study published in 2024 provides the only peer-reviewed empirical evidence from Central Asia on this topic [26].

Russia — Pilot SDG curricula

Several Russian medical universities, including Sechenov University and Kazan Federal University, have introduced elective courses addressing global health and SDGs. However, these remain optional and reach only a small proportion of students [23].

Uzbekistan — Institutional SDG programmes

Tashkent Medical Academy's "SDG Ambassadors" programme and Samarkand State Medical University's annual SDG conference represent grassroots, institution-driven initiatives that could serve as models for other Central Asian universities [19, 21].

Regional cooperation

The Central Asian Regional Health Security Initiative, while primarily focused on infectious disease surveillance, has begun to incorporate environmental health and climate resilience into its agenda, representing a potential platform for collaborative SDG education efforts [32].

Discussion

Principal findings

This scoping review is the first to systematically map the literature on SDG integration in health professions education across the post-Soviet space. The findings reveal a region at the early stages of engagement with the SDG education agenda, characterised by a substantial gap between institutional declarations and empirically verified educational outcomes.

The geographic skew in evidence generation is stark: three countries — Russia, Kazakhstan, and Uzbekistan — account for over 70% of identified sources, while nine of 15 post-Soviet countries have no documented activity meeting the review's eligibility criteria. This evidence desert is particularly concerning given that some of the unrepresented countries — Tajikistan, Kyrgyzstan, Turkmenistan — are among the most climate-vulnerable in the region and face significant health challenges related to environmental degradation, water quality, and food security [14].

The review identified only four empirical studies in the entire region over a decade since the SDGs were adopted. To contextualise this finding: a single systematic review of planetary health education globally included 73 studies, of which 88% originated from high-income countries [7]. The post-Soviet region's contribution to the global evidence base on this topic is therefore negligible. This absence of data is not merely an academic concern; it has practical implications for curriculum development, faculty training, and policy decisions, all of which must currently proceed without evidence of student needs, existing knowledge levels, or the effectiveness of interventions.

Situating findings within the global literature

The barriers identified in this review — faculty capacity deficits, curriculum overload, limited institutional support, absence of accreditation mandates — align closely with those documented in global reviews [5, 6, 7]. This suggests that post-Soviet countries face challenges that are, in part, shared with the international community. However, several factors give these barriers a distinct character in the post-Soviet context.

First, the pedagogical legacy of the Soviet system creates a deeper gap between current instructional practices and the active, student-centred pedagogies recommended for SDG education than exists in many Western educational systems. Transitioning from predominantly lecture-based instruction to

problem-based, team-based, and community-oriented learning is a more fundamental transformation than adding sustainability content to already student-centred curricula.

Second, the resource constraints in rural post-Soviet institutions — particularly in Central Asia — are more severe than those in high-income country settings where most SDG education research has been conducted. Recommendations for technology-enhanced or simulation-based sustainability education must account for settings where reliable internet connectivity and simulation equipment may not be available.

Third, the language barrier — the predominance of English in the SDG education literature — creates an accessibility challenge that is less acute in Western educational systems. Developing SDG educational resources in Russian and national languages of the post-Soviet countries should be a priority for international organisations seeking to support SDG integration.

Implications for policy and practice

Based on the review findings, a five-pillar regional roadmap is proposed for advancing SDG integration in post-Soviet health professions education.

Pillar 1: National policy and accreditation reform. Ministries of health and education should incorporate SDG competencies into medical education accreditation standards. This would transform SDG integration from a voluntary institutional initiative to a mandatory component of quality-assured medical education. The WHO ATACH framework provides an internationally recognised standard that countries can adapt to their national contexts [3].

Pillar 2: Faculty development in planetary health. Investment in faculty development is the single most critical intervention identified by this review. Regional faculty development programmes — potentially delivered through collaboration between post-Soviet medical universities and international partners — should build capacity in both planetary health content knowledge and the pedagogical approaches required for SDG education.

Pillar 3: Student-engaged curriculum transformation. The evidence of student enthusiasm for sustainability education, even where current knowledge is low, suggests that students can be partners rather than passive recipients in curriculum transformation. Student-led initiatives, such as the SDG Ambassadors programme in Uzbekistan, should be supported and extended.

Pillar 4: Regional research collaboration. A coordinated regional research agenda is urgently needed. Priority research questions include: What are the baseline levels of SDG knowledge among health professions students in each post-Soviet country? What pedagogical approaches are acceptable and effective in post-Soviet educational contexts? How can validated instruments such as the SANS_2 be culturally adapted for use in this region? Cross-country comparative studies would be particularly valuable given the shared pedagogical legacy and divergent reform trajectories of post-Soviet countries.

Pillar 5: International partnership leveraging. Post-Soviet countries should strategically leverage partnerships with the WHO, UNDP, UNICEF, and international universities to access technical expertise and resources for SDG education. The ATACH framework, the Erasmus+ programme, and bilateral partnerships with institutions that have successfully integrated SDG content — such as those in Sweden, the United Kingdom, and Germany — represent existing mechanisms that can be harnessed.

Strengths and limitations

This review has several strengths. It is the first scoping review to systematically examine SDG integration in health professions education across the entire post-Soviet space. The inclusion of Russian-language sources through eLibrary.ru and grey literature from national institutions provides a more comprehensive picture than would be obtained from English-language databases alone. The use of the PRISMA-ScR framework ensures transparency and reproducibility.

Limitations should be acknowledged. The exclusion of sources in national languages other than Russian (e.g., Kazakh, Uzbek, Ukrainian, Georgian) may have led to the omission of locally published but internationally invisible work. The reliance on institutional documents for most data means that findings are based on self-reported, unverified claims. The absence of empirical studies precluded any quantitative synthesis or assessment of intervention effectiveness.

Conclusions

This scoping review reveals that the integration of SDGs into health professions education across the post-Soviet space is in its infancy, characterised by a substantial gap between institutional rhetoric and empirical evidence. Only four peer-reviewed empirical studies were identified across 15 countries over a decade since SDG adoption, with nine countries having no documented SDG education activity meeting the review's criteria.

The post-Soviet pedagogical legacy, resource constraints — particularly in rural Central Asian institutions — faculty capacity deficits, and the absence of national accreditation mandates constitute a set of region-specific barriers that require region-specific solutions. The promising initiatives identified in Kazakhstan, Russia, and Uzbekistan demonstrate that progress is possible, but they also highlight how much remains to be done to achieve systematic, sustainable integration of SDG competencies into health workforce education.

The five-pillar roadmap proposed — encompassing national policy reform, faculty development, student-engaged curriculum transformation, regional research collaboration, and international partnership leveraging — provides an evidence-informed framework for advancing this agenda. Implementing this roadmap would enable post-Soviet countries to align health workforce education with the 2030 Agenda, contribute to the global evidence base on SDG education, and, most importantly, prepare the next generation of health professionals to address the interconnected health and environmental challenges facing the region.

The present moment, with the SDG deadline of 2030 approaching and growing international momentum for climate-resilient health systems, presents a window of opportunity for post-Soviet countries. Whether this opportunity is seized will depend on sustained political will, strategic investment, and collaborative action across the region.

Abbreviations

• **ATACH**
Alliance for Transformative Action on Climate and Health
• **JBI**
Joanna Briggs Institute
• **LMICs**
Low- and Middle-Income Countries
• **PRISMA-ScR**
Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews
• **SANS_2**
Sustainability Attitudes in Nursing Survey (version 2)
• **SCQ**
Sustainability Consciousness Questionnaire
• **SDGs**
Sustainable Development Goals
• **UNDP**
United Nations Development Programme
• **UNICEF**
United Nations Children's Fund
• **VNR**
Voluntary National Review
• **WHO**
World Health Organization

Declarations

Ethics approval and consent to participate

Not applicable. This scoping review analysed published literature and publicly available documents and did not involve primary data collection from human participants.

Consent for publication

Not applicable.

Availability of data and materials

All data generated or analysed during this study are included in this published article and its supplementary information files. The full search strategies are provided in Additional File 1.

Competing interests

The author declares that she has no competing interests.

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Authors' contributions

SMM conceived the study, designed the scoping review protocol, conducted the literature search, performed data extraction and thematic analysis, and wrote the manuscript. The author read and approved the final manuscript.

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Figures

Figure 1

PRISMA-ScR flow diagram

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