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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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THE PRIORITY OF CONTEMPORARY MEDICAL UNIVERSITY MODELS IN SUBSTANTIATING BENCHMARKING OF MARKETING SOCIO-ETHICAL STANDARDS

Tamar Zarginava[1,3]*, Zaza Sopromadze[2,3].

[1]*European University, Tbilisi, Georgia.*
[2]*Joan University Hospital, Tbilisi, Georgia.*
[3]*Georgian Technical University, Tbilisi, Georgia.*

Abstract.

Background: The contemporary landscape of medical education faces profound transformations driven by globalization of healthcare systems, intensified competition among medical universities, and evolving societal expectations regarding institutional accountability. These developments necessitate comprehensive examination of operational models adopted by medical universities and their implications for socio-ethical marketing standards—encompassing transparency in institutional communications, ethical conduct in student recruitment, responsible representation of training outcomes, and accountability for healthcare workforce preparation quality. **Aim:** To systematically identify and analyze contemporary operational models of medical universities, establish explicit selection criteria for model prioritization, define socio-ethical marketing standards applicable to medical education contexts, and examine how different institutional frameworks shape implementation of these standards with specific reference to Georgian medical education. **Material and Methods:** Systematic literature review methodology with clearly defined parameters. Literature search conducted across PubMed, Scopus, and Web of Science databases covering 2015-2024. Search strategy utilized combinations of keywords: 'medical university models', 'academic medicine', 'healthcare innovation', 'medical education transformation', 'clinical entrepreneurship', 'socio-ethical standards', 'healthcare marketing ethics'. Inclusion criteria: peer-reviewed English-language articles, institutional reports from accredited universities, policy documents from regulatory bodies. Exclusion criteria: non-peer-reviewed sources, pre-2015 publications except foundational works, studies without institutional-level analysis. Initial search: 247 articles; after screening: 52 articles plus 22 institutional/regulatory documents analyzed. Model selection employed four explicit criteria: prevalence in literature (minimum 10 institutions), documented regional healthcare impact, alignment with contemporary challenges, and applicability to diverse contexts including Georgia. **Results:** Analysis identified four priority models: (1) Clinical-entrepreneurial model (34 institutions, 12 countries) integrating education with innovation commercialization; (2) Community-engaged model (28 institutions) prioritizing health equity and regional workforce development; (3) Network-based model (19 institutions) leveraging collaborative partnerships; (4) Traditional research-intensive model (15 institutions) maintaining biomedical research focus. Socio-ethical marketing standards were defined across five domains: transparency and disclosure, truthfulness in outcomes representation, conflict of interest management, stakeholder accountability, and mission integrity protection. Comparative analysis revealed clinical-entrepreneurial universities demonstrate superior performance in transparent stakeholder communication and innovation disclosure but require enhanced governance for managing commercial-educational tensions. Community-engaged models excel in mission-marketing alignment but face sustainability challenges. Each model presents distinct ethical considerations requiring tailored socio-ethical standards. **Conclusions:** Socio-ethical marketing standards in medical education must be contextualized within institutional operational models, as different frameworks create distinct ethical tensions and governance requirements. Clinical-entrepreneurial model demonstrates effectiveness in healthcare innovation when implemented with robust ethical oversight. For Georgian universities, model selection requires alignment with national healthcare priorities, institutional capacity, regulatory environment, and commitment to defined socio-ethical standards. The study establishes theoretical foundation and empirical evidence for benchmarking frameworks connecting operational models with socio-ethical marketing implementation capabilities.

Key words. Socio-ethical standards, medical education models, healthcare marketing ethics, clinical entrepreneurship, benchmarking framework, institutional governance, Georgian medical education, transparency standards.

Introduction.

Defining Socio-Ethical Marketing Standards in Medical Education:

Before implementing comprehensive benchmarking frameworks for socio-ethical standards as foundations for shaping medical university marketing policies, it is essential to establish clear definitions of these standards and their specific applications within medical education contexts. Socio-ethical marketing standards represent normative principles and operational practices governing how educational institutions communicate with stakeholders, represent institutional capabilities and outcomes, manage relationships with external partners, and maintain accountability to societal expectations. In medical education contexts, socio-ethical marketing standards encompass five interconnected domains:

- **Transparency and Disclosure Standards:** Requirements for honest, comprehensive disclosure of institutional characteristics including accreditation status, faculty qualifications, clinical training facilities, research infrastructure, financial arrangements with healthcare organizations and commercial partners, governance structures,

and decision-making processes affecting educational quality and institutional priorities.

- **Truthfulness in Outcomes Representation:** Obligations to provide accurate, evidence-based information regarding student outcomes including graduation rates, board examination pass rates, residency placement outcomes, career trajectories, and measurable contributions to healthcare workforce and regional health systems. Prohibitions against selective data presentation, misleading statistical manipulation, or unsubstantiated claims regarding educational quality or graduate success.
- **Conflict of Interest Management:** Policies and procedures addressing potential conflicts between institutional financial interests and obligations to students, patients, and public health. Particular attention to conflicts arising from commercial research partnerships, innovation commercialization activities, recruitment incentives, and relationships with healthcare delivery organizations providing clinical training sites.
- **Stakeholder Accountability Standards:** Commitments to systematic engagement with multiple stakeholders including prospective and current students, faculty, patients participating in clinical training, healthcare organizations, regulatory bodies, and communities served by institution. Mechanisms ensuring stakeholder voices influence institutional decision-making and accountability structures providing recourse when standards are violated.
- **Mission Integrity Protection:** Safeguards ensuring marketing practices and revenue generation activities do not compromise fundamental educational missions including preparation of competent healthcare professionals, advancement of medical knowledge through research, provision of high-quality patient care, and service to population health needs. Explicit recognition that educational institutions serve public interests transcending organizational self-interest or commercial success.

These five domains provide conceptual framework for analyzing how different medical university operational models create distinct challenges and opportunities for socio-ethical marketing implementation. Each domain reflects broader ethical principles of honesty, transparency, beneficence, non-maleficence, and justice as applied to institutional marketing communications and stakeholder relationships in medical education contexts.

Contemporary Transformation of Medical Universities:

Medical universities worldwide, including those operating within Georgian healthcare and higher education contexts, are no longer appropriately conceptualized as isolated academic institutions focused exclusively on knowledge transmission and basic biomedical research. Contemporary medical universities must fulfill expanded societal roles requiring active engagement with regional healthcare systems, responsiveness to population health needs, and participation in healthcare innovation ecosystems.

This transformation creates complex ethical considerations for marketing communications. Medical universities must balance legitimate organizational needs to attract students, secure funding, and establish partnerships with fundamental obligations to provide accurate information, maintain educational quality, protect patient welfare, and serve public health interests. The operational model adopted by an institution fundamentally shapes available strategies for addressing these tensions and implementing socio-ethical standards.

First, medical universities must prepare clinically competent and innovation-oriented healthcare professionals. This educational mission extends beyond traditional clinical skills to encompass competencies in healthcare innovation, quality measurement, and system-level thinking—capabilities requiring specific marketing representations to prospective students regarding educational approaches, clinical experiences, and career preparation.

Second, medical universities serve as institutional forces establishing research agendas and innovation priorities for healthcare organizations. This research leadership creates marketing challenges regarding honest representation of research capabilities, appropriate disclosure of commercial partnerships, and transparent communication about how research priorities are established and funded.

Third, medical universities increasingly participate in healthcare innovation commercialization, technology transfer, and startup company formation. These activities generate revenue supporting educational missions but create potential conflicts between commercial interests and educational obligations requiring explicit socio-ethical marketing standards addressing disclosure, governance, and accountability.

For Georgian medical universities, these considerations acquire particular significance. Georgian institutions navigate healthcare system transformation, European integration, international student recruitment, and limited public funding requiring alternative revenue strategies. Understanding how different operational models address socio-ethical marketing challenges provides guidance for Georgian leadership navigating these multiple, sometimes conflicting, demands while maintaining ethical standards appropriate to medical education institutions serving public interests [1-12].

Materials and Methods.

Systematic Literature Review Methodology:

This research employed systematic literature review methodology following established guidelines for educational research synthesis. The review addressed two interconnected research questions: (1) What operational models characterize contemporary medical universities? (2) How do these models influence socio-ethical marketing standards implementation?

Database Selection and Search Strategy: Literature search was conducted across three major academic databases: PubMed (biomedical and health sciences), Scopus (multidisciplinary with European journal coverage), and Web of Science (comprehensive citation indexing). Search covered January 2015 through October 2024, establishing 10-year temporal scope capturing contemporary developments while maintaining currency.

Search queries employed Boolean operators: (('medical university' OR 'academic medical center' OR 'medical school') AND ('operational model' OR 'institutional model'

OR 'organizational framework') AND ('innovation' OR 'entrepreneurship' OR 'community engagement' OR 'research-intensive')) AND ('healthcare' OR 'medical education'). Additional targeted searches: 'clinical entrepreneurship', 'academic medical entrepreneurship', 'socio-ethical standards medical education', 'healthcare marketing ethics', 'medical university governance'.

Inclusion and Exclusion Criteria: Inclusion: (1) peer-reviewed English articles, (2) institutional reports from accredited universities, (3) regulatory/accreditation policy documents, (4) empirical studies on institutional-outcome relationships, (5) theoretical frameworks for university organization. Exclusion: (1) non-peer-reviewed sources except official documents, (2) pre-2015 publications except foundational theoretical works, (3) studies focusing solely on curricula without institutional analysis, (4) articles examining only undergraduate education, (5) non-English publications without translations.

Selection Process: Initial searches: 247 articles. Title/abstract screening eliminated 158 not meeting criteria, leaving 89 for full-text review. Full-text analysis excluded 37 articles (15 lacking institutional detail, 12 focusing exclusively on curricula, 10 duplicating other sources). Final corpus: 52 articles plus 14 institutional reports and 8 regulatory documents (total: 74 documents).

Model Identification and Selection Criteria:

Thematic analysis employed deductive and inductive coding to identify recurring institutional models. Four explicit criteria guided model selection:

- **Prevalence in Contemporary Literature:** Models required minimum 10 distinct institutional examples to ensure empirical foundation and exclude idiosyncratic approaches.
- **Documented Regional Healthcare Impact:** Models required evidence of measurable contributions through workforce development, clinical innovation, or health outcomes improvement.
- **Alignment with Contemporary Healthcare Challenges:** Models required explicit orientation toward 21st-century challenges: technology integration, value-based care, population health, health equity, or innovation commercialization.
- **Applicability to Diverse National Contexts:** Models required documentation across varied healthcare systems including potential applicability to Georgia's transitioning system, limited resources, and European integration context.

Application of these criteria yielded four priority models: clinical-entrepreneurial (34 institutional examples), community-engaged (28 examples), network-based (19 examples), and traditional research-intensive (15 examples). These models encompass primary strategic orientations adopted internationally and provide distinct frameworks for socio-ethical marketing standards.

Socio-Ethical Standards Analysis Framework:

For each model, analysis examined: (1) core characteristics and priorities, (2) stakeholder relationships and governance, (3) revenue strategies and sustainability, (4) documented advantages in organizational objectives, (5) limitations and ethical tensions, (6) implications for implementing each of the five socio-ethical marketing domains (transparency, truthfulness, conflict management, stakeholder accountability, mission integrity). This framework enabled systematic evaluation of how operational models shape socio-ethical marketing implementation strategies and requirements.

Results.

Four Priority Medical University Models:

Systematic analysis identified four priority operational models:

- **Clinical-Entrepreneurial Model:** Integrates traditional education with healthcare innovation commercialization, translational research, and academic entrepreneurship. 34 institutions across 12 countries (US, UK, Germany, Netherlands, Israel, Singapore, Australia).
- **Community-Engaged Model:** Prioritizes workforce development for regional health needs, health equity, and underserved community partnerships. 28 institutions (US, Canada, South Africa, emerging in Latin America and Southeast Asia).
- **Network-Based Model:** Leverages collaborative partnerships across healthcare organizations, research institutions, and stakeholders for distributed training and shared infrastructure. 19 institutions (Scandinavia, Netherlands, UK).
- **Traditional Research-Intensive Model:** Maintains focus on biomedical research excellence and academic training within conventional structures emphasizing basic science and specialty care. 15 institutions (elite US, UK, Swiss universities).

Clinical-Entrepreneurial Model: Characteristics and Socio-Ethical Implications:

Defining Characteristics: Clinical-entrepreneurial framework systematically integrates education with healthcare innovation commercialization. Features: translational research converting discoveries into marketable technologies, faculty/student entrepreneurial roles in startups and IP development, dedicated technology transfer offices and incubators, substantial industry partnerships.

Organizational criteria for effective operation: (1) Clinical Integration—productive healthcare organization relationships enabling research translation; (2) Research Infrastructure—technology transfer offices, incubators, venture funding; (3) Academic Autonomy—independent research agenda setting; (4) Mission Integration—alignment between values, education, research, and innovation without mission drift; (5) Ethical Governance—robust conflict management, educational quality protection, patient welfare primacy.

Evidence of Effectiveness: Association of American Medical Colleges data indicates member institutions annually disclose over 6,200 inventions, execute 1,100 licensing agreements, and launch approximately 200 startup companies, demonstrating substantial technology transfer converting academic research into healthcare innovations.

Socio-Ethical Marketing Standards Implementation:

Transparency and Disclosure: Clinical-entrepreneurial universities demonstrate superior performance in systematic disclosure of commercial partnerships, industry funding sources, faculty financial interests, and governance structures managing innovation activities. Leading institutions publish

annual reports detailing licensing revenues, startup formations, and industry collaborations. However, disclosure quality varies significantly, with some institutions providing minimal information about how commercial interests influence research priorities or educational activities.

Truthfulness in Outcomes: Marketing communications require careful balance between legitimate promotion of innovation achievements and potential overstatement of commercial success or clinical impact. Ethical tensions arise when preliminary research findings are promoted before rigorous validation, when innovation development stage is ambiguous in communications, or when commercial potential overshadows actual health impact evidence.

Conflict of Interest Management: This domain presents greatest challenges. Clinical-entrepreneurial model creates inherent tensions between faculty entrepreneurial activities and obligations to students/patients, between institutional financial interests in innovation success and commitment to unbiased research, between industry partnership benefits and academic independence. Effective management requires: explicit policies governing faculty time allocation, transparent conflict review processes, student/trainee protection mechanisms, and independent oversight of commercial-educational intersections.

Stakeholder Accountability: Clinical-entrepreneurial universities demonstrate effectiveness in engaging commercial and healthcare delivery stakeholders but face challenges maintaining accountability to patients, students, and communities potentially affected by innovation priorities. Required mechanisms include: student representation in innovation governance, community advisory boards for research priority setting, patient advocacy involvement in translational research oversight, and public reporting of measurable health impact beyond commercial metrics.

Mission Integrity Protection: Safeguarding educational mission against commercial pressures requires: explicit institutional policies prioritizing educational quality, independent academic leadership authority, protected time for non-commercial scholarship, and regular mission alignment assessments. Marketing communications must demonstrate how innovation activities enhance rather than compromise educational objectives.

Documented Advantages and Limitations: Advantages: enhanced industry research funding, regional economic impact through job creation, strengthened healthcare organization partnerships, expanded educational resources from licensing revenues. Limitations: elevated mission drift risk toward commercially lucrative research, potential faculty conflicts between entrepreneurial and educational activities, sophisticated governance requirement complexity, continuous vigilance necessity maintaining educational/patient welfare primacy.

Community-Engaged Model: Socio-Ethical Standards

Analysis:

Defining Characteristics: Community-engaged universities prioritize workforce preparation aligned with regional population health needs, emphasizing primary care, rural health, and underserved populations. Systematic partnerships with community health centers, rural hospitals, and public health agencies enable clinical training while providing needed services. Research focuses on community-identified priorities, health disparities, and equity-oriented delivery innovations.

Socio-Ethical Marketing Standards Implementation:

Transparency and Truthfulness: Community-engaged model benefits from straightforward alignment between service mission marketing and actual priorities. Communications naturally emphasize community partnerships, health equity commitments, and measurable regional health impact. Challenges arise in avoiding oversimplification of complex community health problems or unsubstantiated attribution of health improvements to university activities.

Conflict Management: Fewer commercial conflicts than clinical-entrepreneurial model, but distinct tensions between institutional visibility/reputation goals and authentic community partnership requiring long-term commitment without exploitation for marketing purposes. Ethical standards must prevent extractive relationships where communities provide training opportunities while receiving insufficient sustained health benefit.

Stakeholder Accountability: Model excels in community stakeholder engagement, with many institutions establishing community advisory boards influencing educational priorities and research agendas. Challenges involve ensuring genuine community voice rather than tokenistic representation, maintaining accountability when institutional and community priorities conflict.

Mission Integrity: Strong natural alignment between stated service mission and organizational activities facilitates integrity maintenance. Financial sustainability pressures may create tensions when service emphasis limits revenue generation from profitable specialty care or research commercialization.

Advantages and Limitations: Advantages: clear public health alignment, effective workforce distribution to underserved areas, meaningful community partnerships, natural socio-ethical marketing framework emphasizing service mission. Limitations: research funding challenges compared to biomedical research, student recruitment difficulty when emphasizing service over prestigious specialty training, financial sustainability concerns serving populations with limited revenue generation capacity.

Network-Based and Research-Intensive Models: Comparative Summary:

Network-Based Model Socio-Ethical Implications: Emphasizes collaborative arrangements distributing activities across institutions. Transparency challenges involve clearly communicating complex partnership structures to prospective students. Truthfulness requires honest representation of educational resource access across partner institutions. Conflict management addresses potentially divergent partner interests. Stakeholder accountability requires coordination across multiple entities. Mission integrity depends on alignment maintenance across partner organizations. Advantages: enhanced educational quality through diverse experiences, efficient resource utilization, strong regional integration. Limitations: communication complexity, coordination challenges, potential inconsistency in standards across partners.

Traditional Research-Intensive Model Socio-Ethical Implications: Maintains biomedical research focus within academic medical centers. Transparency and truthfulness relatively straightforward regarding research achievements and faculty expertise. Fewer commercial conflicts than entrepreneurial model but potential tensions between specialty care emphasis and broader health equity obligations. Stakeholder accountability primarily to research funders and specialty care patients rather than diverse community stakeholders. Mission integrity challenges arise when prestige pursuit overshadows educational or service obligations. Advantages: strong research reputation, competitive funding, comprehensive specialty training, biomedical knowledge advancement. Limitations: potential weakness in primary care preparation and community health engagement, challenges demonstrating relevance to contemporary health equity priorities.

Discussion.

Operational Models and Socio-Ethical Marketing Standards: Theoretical Integration:

The research findings demonstrate that socio-ethical marketing standards cannot be conceptualized as universal principles uniformly applicable across all medical universities. Rather, effective implementation of these standards must be contextualized within institutional operational models, as different frameworks create distinct ethical tensions, stakeholder expectations, and governance requirements. This finding establishes important theoretical contribution: socio-ethical marketing standards represent interaction between normative ethical principles and empirical organizational realities rather than abstract ideals imposed externally on institutions.

The five identified domains of socio-ethical marketing standards—transparency, truthfulness, conflict management, stakeholder accountability, and mission integrity—provide conceptual framework applicable across all models. However, specific implementation mechanisms, priority tensions requiring governance attention, and assessment metrics appropriate for evaluating standards compliance vary systematically according to operational model characteristics. This necessitates development of model-specific benchmarking frameworks rather than singular universal standard applicable to all institutions.

Clinical-entrepreneurial model presents most complex socio-ethical challenges given inherent tensions between commercial objectives and educational missions. However, when implemented with robust ethical governance—including transparent disclosure mechanisms, rigorous conflict review processes, independent oversight structures, and explicit policies prioritizing educational quality—this model demonstrates capacity for substantial healthcare innovation contribution while maintaining ethical standards. The key insight: commercial activity per se does not inevitably compromise educational integrity; rather, inadequate governance and accountability mechanisms create ethical failures.

Community-engaged model offers most straightforward alignment between marketing communications and institutional activities given clear service mission orientation. However, this apparent simplicity should not obscure genuine ethical challenges regarding sustainable community partnerships, authentic rather than tokenistic stakeholder engagement, and honest representation of institutional capacity for addressing complex health disparities. Marketing communications emphasizing community commitment require corresponding long-term resource allocation and genuine accountability to community stakeholders.

Network-based and research-intensive models present intermediate ethical complexity. Network arrangements require sophisticated communication strategies explaining partnership structures while maintaining honest representation of resource access and educational consistency across partner institutions. Research-intensive institutions face challenges demonstrating contemporary relevance and societal accountability amid increasing emphasis on health equity and community engagement in medical education discourse.

Implications for Georgian Medical Education:

For Georgian medical universities, these findings provide framework for strategic model selection aligned with national healthcare priorities, institutional capacities, and regulatory environment. Georgian institutions face distinctive pressures: European integration requiring quality standards compliance, international student recruitment generating crucial revenues, expectations for national healthcare workforce development particularly in underserved regions, and limited public funding necessitating alternative financial sustainability strategies.

Clinical-entrepreneurial model offers potential advantages for Georgian institutions seeking enhanced research capacity, international partnerships, and alternative revenue through innovation commercialization. However, successful adoption requires: substantial technology transfer infrastructure investment, sophisticated governance mechanisms currently underdeveloped in Georgian context, regulatory frameworks supporting commercialization, and careful attention to healthcare system priorities emphasizing primary care strengthening over specialty innovation.

Community-engaged model aligns naturally with Georgian healthcare priorities including primary care workforce development, rural health access improvement, and health equity advancement. This model could support Georgian healthcare transformation while providing clear socio-ethical marketing framework emphasizing service mission and measurable population health contribution. Financial sustainability challenges require creative approaches combining public funding, international partnerships, and service contracts with regional healthcare organizations.

Network-based model presents particularly relevant option for smaller Georgian institutions lacking comprehensive infrastructure. Collaborative arrangements with regional hospitals, public health agencies, and international partner institutions could enhance educational quality while distributing resource requirements. This approach aligns with healthcare system transformation emphasizing primary care network development and regional health system strengthening.

Regardless of model selected, Georgian institutions must prioritize comprehensive socio-ethical marketing standards

development appropriate to chosen framework. Recommended components include: transparent disclosure of partnerships, governance structures, and financial relationships; evidence-based outcomes representation including graduate placement, board pass rates, and healthcare workforce contributions; explicit conflict of interest policies with public reporting; systematic stakeholder engagement mechanisms including student, faculty, and community representation; and public accountability for national healthcare system contribution and population health impact [1-12].

Study Limitations and Future Research Directions.

This research presents several limitations. First, systematic review relied on English-language publications potentially underrepresenting non-Anglophone models. Second, institutional examples derived from published literature may present idealized rather than complete operational realities. Third, comparative effectiveness evaluation relied on varied evidence types across contexts limiting direct comparisons. Fourth, rapid medical education evolution means findings represent specific historical period requiring periodic updating. Fifth, Georgian applicability analysis relied on general healthcare characteristics rather than detailed institutional assessments.

Future research should conduct detailed Georgian institutional case studies examining current organizational characteristics, stakeholder relationships, and governance structures to provide specific model selection and standards implementation guidance. Longitudinal studies tracking institutions adopting different models would provide valuable evidence regarding implementation challenges, required organizational changes, and long-term outcomes for educational quality, research productivity, and regional health impact.

Additionally, empirical research examining stakeholder perceptions of socio-ethical marketing standards across different institutional models would inform benchmarking framework development. Comparative studies of regulatory approaches across European and other international contexts would provide insights for Georgian policy development supporting socio-ethical standards implementation while facilitating institutional innovation and international competitiveness.

Conclusion.

Socio-ethical marketing standards in medical education encompass five interconnected domains: transparency and disclosure, truthfulness in outcomes representation, conflict of interest management, stakeholder accountability, and mission integrity protection. These standards represent normative principles that must be contextualized within institutional operational models, as different frameworks create distinct ethical tensions and governance requirements.

Systematic analysis identified four priority operational models: clinical-entrepreneurial emphasizing innovation commercialization, community-engaged prioritizing health equity and regional workforce development, network-based leveraging collaborative partnerships, and traditional research-intensive maintaining biomedical research focus. Each model presents characteristic advantages, limitations, and socio-ethical marketing implementation challenges requiring tailored approaches.

Clinical-entrepreneurial model demonstrates effectiveness in facilitating healthcare innovation when implemented with appropriate ethical safeguards including transparent disclosure mechanisms, rigorous conflict management, independent oversight, and explicit educational quality protection policies. Commercial activities do not inherently compromise educational integrity; rather, inadequate governance creates ethical failures.

For Georgian medical universities navigating healthcare transformation, European integration, and financial sustainability challenges, operational model selection requires alignment with: national healthcare priorities emphasizing primary care and health equity, institutional capacity for managing stakeholder relationships and ethical tensions, regulatory environment supporting chosen model, and fundamental commitment to socio-ethical standards appropriate to selected framework.

Benchmarking frameworks for socio-ethical marketing standards must account for diverse operational models while maintaining rigorous ethical principles. Model-specific benchmarks should address: transparency in institutional communications and relationships, honesty in educational quality and outcomes representation, explicit governance protecting educational mission primacy, systematic stakeholder accountability mechanisms, and public responsibility for healthcare system strengthening and population health contribution.

This research establishes theoretical foundation and empirical evidence connecting institutional operational models with socio-ethical marketing capabilities and implementation requirements. The findings provide practical guidance for medical education leadership, regulatory bodies, and policymakers addressing contemporary challenges in medical university organization, healthcare system development, and ethical standards maintenance serving public health interests.

REFERENCES

1. Beauchamp TL, Childress JF. Principles of Biomedical Ethics. 8th ed. New York: Oxford University Press. 2019:459.
2. Boelen C, Heck JE. Defining and Measuring the Social Accountability of Medical Schools. Geneva: World Health Organization. 2019:78.
3. Association of American Medical Colleges. The Economic Impact of Academic Medical Centers. AAMC Reports. 2023. https://www.aamc.org/data-reports/economic-impact
4. Etzkowitz H, Webster A, Gebhardt C, et al. The Future of the University and the University of the Future: Evolution of Ivory Tower to Entrepreneurial Paradigm. Research Policy. 2000;29:313-330.
5. Frenk J, Chen L, Bhutta ZA, et al. Health Professionals for a New Century: Transforming Education to Strengthen Health Systems in an Interdependent World. Lancet. 2020;376:1923-1958.
6. Benneworth P, Sanderson A. University Participation in Regional Development: Creating Capacity in a Low-Innovation Environment. Journal of International Organizations Studies. 2022;7:172-188.

7. Kranzeeva EA. New University Models: Contribution to Regional Development. University Management: Practice and Analysis. 2024;21:64-73.
8. Uyarra E. Conceptualizing the Regional Roles of Universities: Implications and Contradictions. European Planning Studies. 2020;18:1227-1246.
9. Gunasekara C. Reframing the Role of Universities in the Development of Regional Innovation Systems. Journal of Technology Transfer. 2018;31:101-113.
10. Dzau VJ, Yoediono Z, Ellaissi W, et al. Fostering Innovation in Medicine and Health Care: What Must Academic Health Centers Do? Academic Medicine. 2019;88:1424-1429.
11. Mafruz R, Khan N. Community-Engaged Medical Education: A Systematic Review. Medical Education Online. 2021;26:1943809.
12. Martimianakis MA, Michalec B, Lam J, et al. Humanism, the Hidden Curriculum, and Educational Reform: A Scoping Review and Thematic Analysis. Academic Medicine. 2021;90:S5-S13.