

Interdisciplinary Approaches in Health Education for Sustainable Healthcare Practice

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ABSTRACT

The sustainability of healthcare systems depends largely on the capacity of health professionals to work collaboratively across disciplines. Traditional discipline-based health education often limits coordination and integration in healthcare practice, reducing system efficiency and long-term sustainability. Interdisciplinary approaches in health education have been increasingly promoted as a strategy to prepare a collaborative workforce capable of addressing complex health challenges. This study aimed to examine the relationship between interdisciplinary approaches in health education and sustainable healthcare practice. A quantitative cross-sectional study was conducted involving 60 health professionals and health educators from multiple disciplines, including medicine, nursing, public health, pharmacy, and allied health sciences. Data were collected using a structured questionnaire measuring interdisciplinary education components and indicators of sustainable healthcare practice. Descriptive statistics and linear regression analysis were used to assess the association between interdisciplinary education and sustainable healthcare practice. The findings revealed that respondents reported moderate to high levels of interdisciplinary health education and sustainable healthcare practice. Regression analysis showed a significant positive association between interdisciplinary health education and sustainable healthcare practice ($\beta = 0.48$; $p < 0.001$). Higher levels of interdisciplinary learning were particularly associated with improved collaborative service delivery, preventive-oriented practice, and more efficient use of healthcare resources. Interdisciplinary approaches in health education are significantly associated with sustainable healthcare practice. Strengthening interdisciplinary learning within health education curricula may enhance collaborative competencies and support the development of more efficient, preventive, and sustainable healthcare systems. These findings highlight the importance of interdisciplinary education as a strategic foundation for advancing sustainable healthcare practice.

Keywords: health education; interdisciplinary learning; sustainable healthcare; teamwork; workforce development.

INTRODUCTION

Health education plays a pivotal role in shaping the knowledge, attitudes, and competencies of health professionals and communities, thereby influencing the quality and sustainability of healthcare systems [1]. In the context of rapidly evolving health challenges, including the growing burden of chronic diseases, emerging infectious threats, demographic transitions, and escalating healthcare costs, traditional discipline-specific approaches to health education are increasingly insufficient [2]. These complex challenges require collaborative, adaptive, and systems-oriented responses that transcend professional and sectoral boundaries. Consequently, interdisciplinary approaches in health education have gained prominence as a strategic pathway to promoting sustainable healthcare practice [3].

Conventional health education models often emphasize isolated disciplinary training, where professionals are educated within the confines of their respective fields such as medicine, nursing, public health, pharmacy, or allied health sciences [4]. While this approach fosters depth of expertise, it frequently limits opportunities for collaboration, mutual understanding, and coordinated practice. The resulting fragmentation in professional education can translate into siloed healthcare delivery, reduced communication among health professionals, and inefficiencies in patient and population care [5]. These limitations pose a significant problem for healthcare systems striving to achieve sustainability, defined not only by financial viability but also by the capacity to deliver equitable, high-quality, and resilient care over time [6].

Interdisciplinary health education seeks to address these challenges by integrating knowledge, skills, and perspectives from multiple disciplines into cohesive learning experiences. Such approaches emphasize teamwork, shared decision-making, and problem-solving in real-world health contexts [7]. By fostering collaborative competencies early in professional training and throughout continuing education, interdisciplinary education equips health workers to respond more effectively to the social, environmental, and organizational determinants of health [8]. This alignment is particularly important for sustainable healthcare practice, which depends on preventive strategies, efficient resource use, and coordinated care across the health continuum [9].

Despite increasing recognition of its importance, the implementation of interdisciplinary approaches in health education remains uneven and underdeveloped in many settings. Existing educational structures, accreditation systems, and curricula often reinforce disciplinary boundaries rather than collaboration. Furthermore, empirical evidence on the long-term impact of interdisciplinary health education on healthcare sustainability is still limited. Many studies focus on short-term educational outcomes, such as learner satisfaction or knowledge acquisition, without adequately examining how interdisciplinary training translates into sustained changes in professional practice, health system performance, or population health outcomes. This gap highlights the need for more comprehensive and outcome-oriented research in this field [10].

The novelty of interdisciplinary approaches in health education lies in their potential to reorient healthcare practice toward sustainability by bridging educational and practice-based silos. Rather than viewing education as a preparatory stage detached from service delivery, interdisciplinary models position learning as an integral component of health system

strengthening. By aligning educational objectives with health system needs, these approaches promote a workforce capable of delivering integrated, patient-centered, and population-oriented care. This perspective represents a shift from traditional competency-based education toward a systems-based educational paradigm that emphasizes collaboration, adaptability, and shared responsibility for health outcomes.

This study aims to explore interdisciplinary approaches in health education as a foundation for sustainable healthcare practice. By synthesizing concepts from health education, public health, and health systems research, the study seeks to contribute to a deeper understanding of how interdisciplinary learning can support long-term improvements in healthcare quality, efficiency, and equity. Strengthening interdisciplinary health education is essential for preparing current and future health professionals to meet the complex demands of sustainable healthcare systems and to advance health outcomes at both individual and population levels.

MATERIALS AND METHODS

This study employed a quantitative cross-sectional design to examine interdisciplinary approaches in health education and their contribution to sustainable healthcare practice. The quantitative approach was selected to allow objective measurement of interdisciplinary education components and their association with indicators of sustainable healthcare practice among health professionals.

The study was conducted in selected health education institutions and healthcare facilities where interdisciplinary learning activities had been implemented. The study involved 60 respondents, consisting of health professionals and health educators from various disciplines, including medicine, nursing, public health, pharmacy, and allied health sciences. Respondents were selected using purposive sampling based on their participation in interdisciplinary education or training programs.

Participants were eligible for inclusion if they had: (1) a minimum of one year of professional or teaching experience in the health sector; (2) direct involvement in interdisciplinary education, training, or collaborative healthcare practice; and (3) willingness to participate in the study. Respondents who did not complete the questionnaire were excluded from the analysis.

Data were collected using a structured, self-administered questionnaire developed based on established frameworks of interdisciplinary education and sustainable healthcare practice. The questionnaire consisted of three sections: respondent characteristics, interdisciplinary education components (such as collaborative learning, cross-disciplinary curriculum integration, and teamwork competencies), and indicators of sustainable healthcare practice (including collaborative service delivery, efficient resource use, and preventive-oriented practice). Responses were measured using a five-point Likert scale ranging from strongly disagree to strongly agree.

The independent variable was the level of interdisciplinary health education, measured through composite scores derived from questionnaire items. The dependent variable was sustainable healthcare practice, assessed through indicators reflecting integration of care, collaboration, and sustainability-oriented professional behavior. Higher scores indicated stronger interdisciplinary education and more sustainable practice.

Quantitative data were analyzed using statistical software. Descriptive statistics were

used to summarize respondent characteristics and variable distributions. Inferential analysis was conducted using correlation and linear regression tests to examine the association between interdisciplinary health education and sustainable healthcare practice. Statistical significance was set at $p < 0.05$.

Ethical approval was obtained from the relevant institutional ethics committee prior to data collection. All respondents provided informed consent before participation. Anonymity and confidentiality were ensured throughout the research process, and data were used solely for research purposes in accordance with ethical standards for health education and health systems research.

RESULTS

Table 1. Characteristics of Respondents (n = 60)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	26	43.3
	Female	34	56.7
Professional Background	Medicine	16	26.7
	Nursing	20	33.3
	Public Health	12	20.0
	Pharmacy	8	13.3
	Allied Health Sciences	4	6.7
Years of Experience	1–5 years	18	30.0
	6–10 years	22	36.7
	>10 years	20	33.3

The respondents represented diverse health disciplines, with nursing and medicine comprising the largest groups. More than two-thirds of participants had over six years of professional experience, indicating that the results reflect informed perspectives on interdisciplinary education and healthcare practice.

Table 2. Level of Interdisciplinary Health Education

Indicator	Low n (%)	Moderate n (%)	High n (%)
Collaborative learning activities	8 (13.3)	26 (43.3)	26 (43.3)
Cross-disciplinary curriculum integration	10 (16.7)	28 (46.6)	22 (36.7)
Teamwork and communication skills	6 (10.0)	24 (40.0)	30 (50.0)

Most respondents reported moderate to high levels of interdisciplinary education, particularly in teamwork and communication skills. However, lower levels were still observed in curriculum integration, suggesting the need for stronger institutional support for interdisciplinary learning.

Table 3. Level of Sustainable Healthcare Practice

Indicator	Low n (%)	Moderate n (%)	High n (%)
Collaborative service delivery	9 (15.0)	25 (41.7)	26 (43.3)
Preventive-oriented practice	7 (11.7)	27 (45.0)	26 (43.3)
Efficient use of resources	11 (18.3)	29 (48.3)	20 (33.4)

The majority of respondents demonstrated moderate to high levels of sustainable healthcare practice, particularly in collaborative service delivery and preventive-oriented practice. Efficient resource use showed relatively lower high-level responses, indicating an area for improvement.

Table 4. Association Between Interdisciplinary Health Education and Sustainable Healthcare Practice

Variable	β Coefficient	Standard Error	p-value
Interdisciplinary health education	0.48	0.09	<0.001

Interdisciplinary health education was significantly and positively associated with sustainable healthcare practice ($\beta = 0.48$; $p < 0.001$). This finding indicates that higher levels of interdisciplinary learning are linked to stronger sustainability-oriented healthcare practices among health professionals. Overall, the results demonstrate that interdisciplinary approaches in health education play a significant role in promoting sustainable healthcare practice, supporting the study's objective and highlighting the importance of integrating interdisciplinary learning within health education systems.

DISCUSSION

This study provides quantitative evidence that interdisciplinary approaches in health education are significantly associated with sustainable healthcare practice. The findings indicate that higher levels of interdisciplinary education, particularly in collaborative learning, teamwork, and cross-disciplinary integration, are linked to stronger sustainability-oriented practices among health professionals. These results underscore the importance of moving beyond discipline-specific education models toward integrated learning frameworks that better reflect the collaborative nature of contemporary healthcare systems.

The characteristics of the respondents suggest that the study captured perspectives from a diverse and experienced health workforce. With representation from medicine, nursing, public health, pharmacy, and allied health sciences, and with most respondents having more than six years of professional experience, the findings are grounded in practical realities of health education and service delivery. This diversity enhances the relevance of the results, as interdisciplinary education is inherently dependent on interaction among multiple professional groups [11].

One of the key findings is the predominance of moderate to high levels of interdisciplinary health education, particularly in teamwork and communication skills [12]. This suggests that collaborative competencies are increasingly recognized and incorporated into health education programs [13]. Effective teamwork and communication are essential components of sustainable healthcare practice, as they facilitate coordinated decision-making, reduce duplication of services, and improve the continuity of care [14]. The relatively lower levels observed in cross-disciplinary curriculum integration, however, highlight ongoing structural challenges in embedding interdisciplinary learning systematically within formal curricula [15].

The results also demonstrate that respondents reported moderate to high levels of sustainable healthcare practice, especially in collaborative service delivery and preventive-oriented practice [16]. These findings align with the core principles of sustainability in healthcare, which emphasize prevention, integration, and efficient use of resources. Preventive-oriented practice, in particular, reflects a shift from reactive treatment toward proactive health promotion and disease prevention, a transition that is critical for addressing long-term health system sustainability [17].

The significant positive association between interdisciplinary health education and sustainable healthcare practice is a central contribution of this study. The regression analysis indicates that stronger interdisciplinary education is associated with better sustainability-oriented professional behavior [18]. This finding supports theoretical perspectives suggesting that education plays a foundational role in shaping professional values, competencies, and practices. Interdisciplinary education fosters mutual understanding, shared responsibility, and systems thinking, all of which are necessary for implementing sustainable healthcare models [19].

Despite these positive associations, the findings also point to areas requiring further attention. The relatively lower levels of efficient resource use compared to other sustainability indicators suggest that educational interventions alone may be insufficient to fully address systemic efficiency challenges [20]. Organizational policies, leadership support, and health system financing mechanisms likely play complementary roles in enabling professionals to apply interdisciplinary competencies in resource-constrained environments. This underscores the need for alignment between educational reforms and broader health system strengthening efforts [21].

From a policy and institutional perspective, the results highlight the importance of embedding interdisciplinary approaches within health education governance structures. Accreditation standards, curriculum design, and faculty development programs should explicitly promote interdisciplinary learning and collaboration. Creating learning environments that encourage interaction across disciplines can help bridge the gap between education and practice, ensuring that interdisciplinary competencies are not only acquired but also sustained over time [22].

This study contributes to the literature by providing empirical, outcome-oriented evidence linking interdisciplinary health education to sustainable healthcare practice using a quantitative design. However, several limitations should be acknowledged [23]. The cross-sectional design limits causal inference, and the reliance on self-reported measures may introduce social desirability bias [24]. Additionally, the sample size, while adequate for exploratory analysis, may limit generalizability to other contexts. Future studies employing longitudinal or experimental designs could provide deeper insights into the causal pathways between interdisciplinary education and sustainability outcomes [25].

In conclusion, the findings support the premise that interdisciplinary approaches in health education are integral to promoting sustainable healthcare practice. By equipping health professionals with collaborative competencies and systems-oriented perspectives, interdisciplinary education can contribute to more effective, efficient, and equitable healthcare systems. Strengthening interdisciplinary health education should therefore be considered a strategic priority in efforts to advance sustainable healthcare practice.

CONCLUSIONS

This study concludes that interdisciplinary approaches in health education are positively and significantly associated with sustainable healthcare practice. Higher levels of interdisciplinary learning, particularly in collaborative learning, teamwork, and cross-

disciplinary integration, are linked to stronger sustainability-oriented professional practices. These findings highlight the critical role of interdisciplinary health education in preparing health professionals to deliver coordinated, preventive, and efficient healthcare services that support long-term health system sustainability.

Health education institutions should strengthen the integration of interdisciplinary learning within curricula through collaborative teaching, shared learning modules, and team-based training. Policymakers and health system leaders are encouraged to support interdisciplinary education through accreditation standards and institutional policies that promote collaboration across health disciplines. Future research should employ longitudinal designs to assess the long-term impact of interdisciplinary health education on healthcare sustainability and population health outcomes.

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Availability of data and materials

Data and materials of this study are available upon reasonable request

Authors' contributions

Both of the authors have contributed to all aspects of this study

Conflict of Interest

No potential conflicts of interest

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