Pioneering Practices in Medical Innovation and Entrepreneurship Education: A Case Study of an Interdisciplinary Project at Youjiang Medical University for Nationalities

Yi Wei[1,2], Hanchao Feng[3,4,*],Adiza Alhassan Musah[3], Ooi Boon Keat[5], Luyin Liang[6]

[1]Center of International Cooperation and Exchange, Youjiang Medical University for Nationalities, Guangxi, China
[2]Faculty of Education, Languages, Psychology and Music, SEGi University, Selangor, Malaysia
[3]Post Graduate Centre, Graduate School of Management, Management and Science University, Shah Alam, Malaysia
[4]Office of Academic Affairs, Youjiang Medical University for Nationalities, Guangxi, China
[5]School of Education and Social Sciences, Management and Science University, Shah Alam, Malaysia
[6]Clinical Medicine Faculty, Youjiang Medical University for Nationalities, Guangxi, China
Email:leofenghc@gmail.com
*Corresponding Author

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ABSTRACT
This study examines the integration of innovation and interdisciplinary education in medical training, focusing on the "Medicine + Social Entrepreneurship + Music Therapy" project at Youjiang Medical University for Nationalities. The project sought to bridge the gap between traditional medical education and the demands of modern healthcare by equipping medical students with both clinical and entrepreneurial skills. Using a qualitative phenomenological approach, interviews were conducted with 60 students who participated in the project to explore its impact on their professional identity, career readiness, and personal development. The findings show that the project broadened students' professional identities, fostering their roles as healthcare innovators and community leaders. Participants also reported improved leadership, communication, and teamwork skills, although challenges were identified in balancing academic demands with interdisciplinary learning. The project further promoted personal growth, enhancing self-awareness, resilience, and empathy through engagement with music therapy and social entrepreneurship. The study underscores the potential of interdisciplinary innovation and entrepreneurship education in preparing future healthcare professionals to address complex public health challenges, while also identifying areas for improvement, such as the need for clearer guidelines and emotional support.

Keywords: Medical Innovation and Entrepreneurship Education, Interdisciplinary Learning, Social Entrepreneurship in Healthcare, Career Development

1. INTRODUCTION

In recent years, China' s higher education system has undergone significant reform, particularly in the integration of innovation and entrepreneurship (I&E) education into medical curriculum. This shift reflects the increasing complexities of the healthcare sector, which demand not only clinical proficiency but also entrepreneurial and innovative thinking from future healthcare professionals. The Chinese government' s 14th Five-Year Plan emphasizes the critical role of medical innovation in healthcare modernization, prompting universities to adjust their educational models accordingly (Qiu et al., 2023; Li, 2023).

Traditionally, Chinese medical universities have focused primarily on producing graduates with strong clinical skills and technical expertise. This discipline-specific approach, often characterized by rote learning and exam-focused performance, ensures students acquire the technical competencies needed for clinical practice. However, it often leaves them ill-equipped to address broader healthcare challenges such as the rise of chronic diseases, an aging population, and the need for healthcare reform (Fang et al.,

2020). These issues require healthcare professionals to be not only clinically proficient but also critical thinkers, interdisciplinary collaborators, and innovative problem solvers.

The integration of I&E education into medical curriculum aims to produce a new generation of medical professionals with both clinical and entrepreneurial skills. By fostering an entrepreneurial mindset, medical students are better prepared to address unmet healthcare needs, develop new technologies, and create innovative solutions for pressing public health issues. This approach is particularly relevant in China, where resource-limited settings often require creative, low-cost healthcare solutions (Cui, 2021; Yin, 2022).

Despite these reforms, integrating I&E education into medical curriculum in China remains in its early stages, with significant challenges. The traditional structure of medical education, which emphasizes discipline-specific learning and exams, leaves little room for the development of interdisciplinary skills such as leadership, communication, and creative problem-solving—skills essential for modern healthcare professionals (Shi et al., 2023). Many medical students struggle to reconcile the entrepreneurial and innovative skills gained through I&E programs with the rigid, exam-driven nature of their formal education. This disconnect makes it difficult for students to fully integrate these skills into their future careers, particularly in environments that prioritize technical proficiency over entrepreneurial thinking (Liu et al., 2023).

In response to these limitations, Chinese universities have started experimenting with interdisciplinary project-based learning (PBL) initiatives. These programs combine clinical education with entrepreneurial training and exposure to non-traditional fields like music therapy and social entrepreneurship. Such initiatives bridge the gap between technical and non-technical aspects of healthcare education, encouraging students to think creatively and collaborate across disciplines to tackle complex healthcare challenges (Al Tous et al., 2022). Research suggests that interdisciplinary learning improves students' ability to work across fields, communicate effectively with non-clinical professionals, and develop holistic solutions to healthcare problems (Arias et al., 2021). By incorporating hands-on projects and real-world applications, these programs provide practical skills often underemphasized in traditional curricula (Hayat, 2023).

One particularly innovative example in China is the integration of music therapy and social entrepreneurship into medical training. Music therapy, known for its therapeutic benefits in mental health, rehabilitation, and palliative care, offers a unique approach to enhancing patient-centered care. By incorporating music therapy into medical education, universities allow students to explore creative approaches to healthcare that prioritize emotional well-being and holistic treatment (Meadows et al., 2020). Social entrepreneurship introduces students to sustainable, community-driven healthcare solutions, expanding their understanding of healthcare beyond the clinical setting (Raut & Joshi, 2023).

These interdisciplinary initiatives also help students develop transferable skills essential for leadership roles in modern healthcare systems. Leadership, teamwork, communication, and critical thinking are crucial for healthcare professionals in increasingly complex environments. Interdisciplinary education fosters these skills, preparing students for the demands of 21st-century healthcare (Bendowska & Baum, 2023). By integrating fields like music therapy and social entrepreneurship into medical training, universities help students develop a holistic understanding of healthcare and apply entrepreneurial strategies to real-world challenges (Meadows et al., 2020).

Despite the growing emphasis on I&E education in China' s medical curriculum, there remain significant gaps in research, particularly regarding the long-term impact of these programs on students' career development. Existing studies focus primarily on short-term outcomes, such as business creation and entrepreneurial outputs, while little is known about how I&E education shapes students' professional identity, career adaptability, and leadership development over the long term (Long et al., 2021). Furthermore, much of the research on interdisciplinary learning remains theoretical, with few empirical studies exploring how these approaches translate into real-world career outcomes for medical students (Hayat, 2023). This highlights the need for qualitative research that explores students' lived experiences and the ways interdisciplinary education shapes their professional development (Zhao et al., 2022).

This study aims to address these gaps by exploring how I&E education delivered through an interdisciplinary PBL initiative affects medical students' professional identity, career adaptability, and leadership development. By focusing on the integration of music therapy and social entrepreneurship, this research seeks to uncover how interdisciplinary education influences students'perceptions of non-clinical career pathways and leadership roles within healthcare. Through qualitative methods, including interviews and reflective journals, this study provides insights into how students interpret the value of I&E education and how it shapes their career trajectories. Ultimately, the findings will contribute to the ongoing discussion on how to better integrate I&E education into medical curriculum to meet the evolving needs of the healthcare sector.

2. LITERATURE REVIEW

2.1 Interdisciplinary in I&E Medical Curriculum

Interdisciplinary education (IPE) in healthcare has gained prominence in recent years due to its significant impact on improving team collaboration, patient outcomes, and fostering innovation in healthcare settings. By breaking down professional silos, interdisciplinary collaboration can enhance the quality of healthcare and lead to more integrated and innovative approaches to patient care. For example, research conducted by Bendowska and Baum (2023) in Poland demonstrates that medical students recognize interdisciplinary teamwork as critical for improving communication and patient safety, highlighting the importance of such collaboration even in early career stages. However, while students acknowledge the value of IPE, the question remains whether current educational models are fully equipping them with the necessary skills to thrive in interdisciplinary environments. Al Tous et al. (2022) point out that, despite the growing awareness of IPE' s importance in Saudi Arabia, organizational dynamics within healthcare institutions often fail to foster true interdisciplinary collaboration. This calls for more robust institutional support and policy-driven initiatives to ensure that IPE is not only recognized but systematically integrated into healthcare training programs.

In addition to improving collaboration, IPE has been shown to significantly enhance creativity and foster innovation in healthcare, particularly when used to address complex challenges. Liu. (2021) conducted a study in Taiwan Province, China, that demonstrated how interdisciplinary teaching improves creative thinking among nursing students. Teams exposed to interdisciplinary methods scored higher in creativity and teamwork compared to those taught using traditional methods, illustrating the potential of IPE to enhance not only clinical skills but also problem-solving capabilities. However, there remains a need for more longitudinal studies to assess whether these benefits persist as students transition into professional practice. Liu et al. (2022) extended these findings by integrating design thinking into healthcare education, showing how interdisciplinary approaches foster the development of innovative healthcare products. This underscores the relevance of IPE to I & E in healthcare, especially in countries like China, where innovation-driven economic models are being promoted. However, adapting such educational models to different cultural and institutional contexts poses challenges, particularly in more rigid healthcare systems that may resist curricular reform.

A crucial aspect of interdisciplinary collaboration in healthcare is extending it beyond healthcare professionals themselves to include disciplines such as engineering. Zhou et al. (2021) explored the collaboration between nursing and engineering, revealing that this partnership, although still in its early stages, holds great potential for addressing complex healthcare problems through technology and innovation. They identified key areas where nursing and engineering can collaborate, such as patient safety and health management systems. However, they also noted that a lack of formalized frameworks and opportunities for interdisciplinary education at the institutional level often hinders such collaborations. This critical gap in healthcare education reinforces the need for more integrated educational models that involve hands-on, interdisciplinary projects reflective of real-world healthcare challenges.

The literature also highlights the importance of interdisciplinary approaches in leadership development within medical education. Gulati and Shrimpton (2021) found that non-traditional routes into medical training, including interdisciplinary backgrounds, positively contribute to leadership development. These pathways encourage diversity of thought and adaptability, qualities that are essential for healthcare leaders facing complex challenges. This further emphasizes the importance of integrating interdisciplinary experiences into medical curriculum, not only for clinical development but also for fostering leadership in healthcare I & E.

In summary, while interdisciplinary education in healthcare holds the potential to improve collaboration, creativity, and innovation, significant challenges remain in its widespread implementation, particularly in aligning educational models with real-world applications. The studies reviewed highlight the transformative potential of IPE, but they also point to the need for deeper integration into medical curriculum, stronger institutional frameworks, and sustained efforts to promote I & E.

2.2 Integrating Music Therapy and Social Entrepreneurship in Medical Education

The integration of music therapy and social entrepreneurship within medical education reflects a growing recognition of the need for healthcare professionals who are not only clinically proficient but also socially responsible and innovative. Music therapy, traditionally employed to address physical, emotional, and psychological health issues, is now finding a role within medical curriculum as a tool to enhance emotional intelligence, empathy, and communication skills. Marcos Treceño and Arias Gago (2024) highlight how music therapy, when applied in educational contexts, can serve as an innovative tool for fostering emotional management and social interaction among medical students. This aligns with

the broader goals of fostering creativity and empathy in medical students, offering a unique perspective on patient-centered care.

Furthermore, music therapy' s integration into medical education promotes interdisciplinary collaboration, combining healthcare with the arts. An (2022) explored the integration of music education with I & E, emphasizing how interdisciplinary approaches, including music therapy, foster both creative and entrepreneurial thinking. This fusion of music and entrepreneurship education helps students cultivate emotional intelligence while encouraging innovation—a dual competency necessary for future healthcare leaders to navigate the increasingly complex medical field.

Social entrepreneurship, which focuses on addressing public health challenges through innovative, sustainable solutions, is also gaining traction in medical education. Mansouri and Naseri (2023) demonstrated how therapeutic approaches such as music therapy can improve social skills in children with intellectual disabilities, offering practical examples of how these techniques can be used to foster empathy and cooperation among medical students. For future healthcare professionals, learning to apply such therapeutic methods not only enhances patient care but also addresses the broader social determinants of health, particularly in underserved communities.

Moreover, social entrepreneurship equips medical students with the tools to develop innovative healthcare solutions that address societal needs. González (2023) emphasizes the role of entrepreneurship in music therapy training, showing how students gain practical experience in launching social enterprises aimed at improving public health outcomes. This combination of clinical education and social entrepreneurship prepares students to contribute to healthcare innovation while promoting social equity in public health.

In China, where healthcare reforms are increasingly focused on innovation-driven growth, the integration of social entrepreneurship into medical curriculum aligns with broader national strategies. Long et al. (2021) found that combining entrepreneurship education with career planning significantly enhances students' entrepreneurial capabilities and career adaptability. Social entrepreneurship projects offer students the opportunity to apply entrepreneurial principles to healthcare challenges, such as improving access to rural healthcare, and foster leadership skills vital for the future of public health.

The interdisciplinary integration of music therapy and social entrepreneurship into medical curriculum reflects a shift toward developing healthcare professionals who are not only innovative but also socially conscious. As Dobrovolska (2023) argues, music therapy has the potential to address both psychological and social healthcare challenges through low-cost, accessible mental health interventions. By learning to implement such projects, medical students are better equipped to navigate the complex social health issues that often go under-addressed in traditional medical training.

In summary, integrating music therapy and social entrepreneurship into medical education cultivates a more empathetic, innovative, and socially responsible healthcare professional. By embedding these elements into medical curriculum, institutions can better prepare medical students to tackle the complexities of modern healthcare and contribute meaningfully to public health and social entrepreneurship efforts.

2.3 Shaping Professional Identity and Career Adaptability through I&E in Medical Education

Professional identity and career adaptability are increasingly recognized as crucial in healthcare education, especially in preparing medical students to meet the evolving challenges of their future careers. Professional identity, defined as the internalization of values, norms, and roles associated with a specific profession, shapes how medical students perceive their roles within the healthcare system. Career adaptability, on the other hand, involves the skills and attitudes necessary to navigate career transitions and cope with professional uncertainties (Brown & Lent, 2005). The synergy between these two constructs is particularly important in the context of medical education, where both clinical expertise and entrepreneurial thinking are becoming vital for success.

Research suggests that a well-developed professional identity is a precursor to greater career adaptability, enabling students to handle the uncertainties and complexities of their professional paths. Liu et al. (2023) found that professional identity positively correlates with career adaptability, mediated by students' engagement with their learning environment. This indicates that fostering a strong professional identity early in education can better prepare students for the dynamic nature of healthcare careers. Similarly, Haruta et al. (2021) validated the Professional Self-Identity Questionnaire (PSIQ) for medical students during clinical practice, demonstrating that participation in community-based medical education (CBME) programs significantly enhanced students' professional identity. This empirical study revealed how real-world clinical practice contributes to identity formation and readiness to transition into professional roles.The findings of Haruta et al. (2021) underscore the critical role of experiential

learning in shaping professional identity, particularly through community engagement, which aligns with the goals of I & E education.

Integrating I&E education with career development strategies in medical curriculum has been shown to further enhance professional identity and career adaptability by broadening students' understanding of their roles and equipping them with skills beyond clinical knowledge. Zhang et al. (2023) explored the integration of I&E education with career planning and highlighted how such a curriculum offers medical students practical competencies in I & E. Their findings suggest that incorporating hands-on I&E projects and career counseling into medical training promotes autonomous thinking, enabling students to engage with real-world healthcare challenges more effectively. This approach not only strengthens professional identity but also prepares students to navigate complex professional environments with greater adaptability .

The relationship between entrepreneurial education and career development has also been emphasized in the work of Zhao et al. (2022), who examined how co-creation strategies between teachers and students foster a culture of innovation in medical education. Their findings indicate that interdisciplinary collaboration and entrepreneurial thinking improve students' readiness for both clinical practice and entrepreneurial ventures, contributing to their overall career adaptability. This approach aligns with global trends in healthcare, where the ability to innovate and adapt to new technological and societal demands is critical for future healthcare leaders.

In addition, Long et al. (2021) conducted large-scale empirical research involving over 24,000 Chinese medical students, analyzing the drivers of entrepreneurship education and its impact on career adaptability. Their study found that integrating entrepreneurship education with structured career guidance significantly enhanced students' employability and professional adaptability. By combining entrepreneurial skills with career planning, medical students were better equipped to meet the demands of both clinical and non-clinical career paths, highlighting the importance of interdisciplinary approaches to medical education.

While the integration of I&E with career education has demonstrated considerable benefits, challenges remain. Studies such as those by Van Schalkwyk et al. (2020) and Bleakley (2006) argue that professional identity formation and career adaptability can be hindered by the intense pressures of medical education, such as long hours, high expectations, and emotional burnout. These pressures can limit students' ability to fully explore entrepreneurial opportunities and career development options. Van Schalkwyk et al. (2020) emphasize the importance of transformative learning environments that provide opportunities for reflective practice and mentorship, fostering both professional identity and adaptability. In a related discussion, Bleakley (2006) highlights the critical role of team-based learning in medical education, suggesting that teamwork and collaboration are essential in broadening students' professional identity and enhancing their resilience in the face of challenges. To address these issues, medical schools must implement structured support systems, such as mentorship programs and interdisciplinary learning environments, that encourage students to develop both their clinical and entrepreneurial skills while navigating the complexities of healthcare careers.

In summary, integrating I&E education with career development in medical curriculum can profoundly impact the professional identity and career adaptability of medical students. By providing a combination of entrepreneurial experiences, interdisciplinary learning, and structured career guidance, medical schools can better equip students with the skills needed to navigate the uncertainties of a healthcare landscape increasingly shaped by I & E. This holistic approach ensures that future healthcare professionals are not only technically competent but also adaptable, innovative, and prepared to lead in a dynamic and complex field.

While the literature provides substantial support for interdisciplinary education (IPE) and its potential to enhance collaboration, creativity, and innovation within healthcare (Liu et al., 2021; Bendowska & Baum, 2023), significant gaps remain in understanding how these approaches influence long-term career adaptability and leadership development in medical professionals. Moreover, although studies have explored non-traditional disciplines such as music therapy and social entrepreneurship as valuable tools for developing empathy and social responsibility in healthcare professionals (Marcos Treceño & Arias Gago, 2024; Mansouri & Naseri, 2023), their integration into core medical curriculum remains limited. Current research predominantly focuses on short-term educational outcomes, with minimal attention to how these disciplines foster the entrepreneurial thinking that could reshape healthcare delivery and career trajectories over time.

Additionally, despite growing recognition of the importance of entrepreneurship education in preparing medical students for the complexities of modern healthcare, there is a lack of detailed analysis on how entrepreneurial education can be systematically integrated with career adaptability training. This is particularly relevant in regions such as China, where healthcare reform and innovation-driven growth are

key national priorities (Huang et al., 2023; Zhang et al., 2023). Although some institutions have begun incorporating entrepreneurship education, the literature does not fully explore how entrepreneurial competencies, combined with career development frameworks, can prepare healthcare professionals to effectively navigate both clinical and non-clinical career paths.

This study seeks to address these gaps by examining the integration of I&E education with career development strategies within medical curriculum. Specifically, it explores how interdisciplinary approaches, including music therapy and social entrepreneurship, can foster professional identity formation, career adaptability, and leadership in medical students. By focusing on these areas, the research aims to provide insights into how innovative educational models can better prepare healthcare professionals to navigate the evolving demands of the healthcare sector. The study also contributes to the understanding of how institutional reforms and curricular adjustments can overcome existing barriers to IPE implementation, ultimately fostering more adaptable and innovative healthcare leaders.

3. RESEARCH METHODOLOGY

3.1 Research Design

This study employs a qualitative, phenomenological research design to explore the lived experiences of medical students who participated in the "Medicine + Social Entrepreneurship + Music Therapy" interdisciplinary project. Phenomenology was selected as the research design because it is particularly effective in capturing the depth and richness of participants' personal experiences and reflections (van Manen, 2023). By focusing on lived experiences, phenomenology enables researchers to explore how individuals perceive, interpret, and give meaning to the phenomena they engage with, making it ideal for understanding how medical students internalize interdisciplinary learning.

Phenomenological research is well-suited to this study because it allows for an in-depth exploration of the complex interactions between medical knowledge, music therapy, and social entrepreneurship, and how these interactions shape students' professional identity, career adaptability, and skill development (Creswell & Poth, 2016). This method emphasizes the subjective nature of learning, which is crucial for capturing the nuanced ways in which students experience and reflect on their involvement in such a unique interdisciplinary project.

Following the phenomenological approach, the study systematically identifies the core essence of students' experiences by engaging in iterative cycles of data collection and analysis. Key steps include conducting in-depth interviews, transcribing these interviews, inductive coding, thematic analysis, and the clustering of emergent themes (Moustakas, 1994). This rigorous process ensures that both shared and individual experiences are captured, providing a comprehensive understanding of how interdisciplinary education influences career-related outcomes.

By employing this methodology, the study aims to reveal not only the explicit outcomes of interdisciplinary education but also the underlying meanings and interpretations that students assign to their learning experiences. Through this phenomenological lens, the research provides valuable insights into how the integration of medicine, music therapy, and social entrepreneurship contributes to the broader professional development of medical students.

3.2 Project overview

The "Medicine + Social Entrepreneurship + Music Therapy" project was an interdisciplinary educational initiative at Youjiang Medical University for Nationalities (YMU), building upon the foundation of the Tongxin Student Choir activities. The project aimed to integrate music therapy into the choir's framework and guide students in developing public welfare entrepreneurship projects centered around the broader theme of medicine and music therapy. In this 13-week program, students were divided into groups, encouraged to identify suitable sub-themes related to healthcare and music therapy, and design socially responsible, entrepreneurial solutions to address these challenges.

This initiative allowed students to combine clinical knowledge with creative approaches from music therapy while applying entrepreneurial strategies to develop sustainable public welfare projects. By incorporating music therapy, the program fostered emotional well-being, creativity, and empathy, while the entrepreneurship component helped students understand how to create impactful, community-driven healthcare solutions.

The project was structured into four key phases, each building upon the previous one. This phased approach ensured that students not only gained theoretical knowledge but also implemented their projects in real-world settings. Through this method, they developed a comprehensive understanding of how to integrate medicine, music therapy, and public welfare entrepreneurship to address healthcare challenges in underserved communities.

Phase 1: Preparation and Skill Development

In this phase, students participated in a series of workshops and seminars aimed at providing them with foundational knowledge in the three integrated disciplines: medical science, music therapy, and social entrepreneurship. These workshops were led by a multidisciplinary team of experts, including medical faculty, professional music therapists, and experienced entrepreneurs. The goal was to enhance students' understanding of how these fields intersect and to prepare them for the subsequent phases of the project.

Medical Science Workshops: Focused on the basics of community healthcare, common health issues faced by underserved populations, and how music therapy could be integrated into treatment plans.

Music Therapy Training: Introduced students to the principles and techniques of music therapy, emphasizing its therapeutic benefits in mental health, rehabilitation, and chronic disease management.

Social Entrepreneurship Seminars: Covered topics such as identifying social needs, creating sustainable healthcare solutions, and understanding the principles of entrepreneurship in a public health context.

In addition to these workshops, students participated in team-building activities to develop leadership, communication, and conflict resolution skills. These activities helped students prepare for working in interdisciplinary teams, a crucial aspect of the project.

Phase 2: Project Design and Planning

In this phase, students were organized into small teams and assigned the task of designing innovative healthcare interventions that integrated the principles of medicine, music therapy, and social entrepreneurship. Each team was responsible for identifying a specific community health challenge, such as mental health support, elderly care, or chronic disease management. They then developed a project that addressed this challenge by combining their clinical knowledge with therapeutic approaches.

Needs Assessment: Students conducted field visits to local communities and healthcare facilities to assess the specific needs of the populations they aimed to serve. This involved interviews with community members, healthcare providers, and local leaders to gather data on prevalent health issues and potential areas for intervention.

Project Proposal Development: Based on the needs assessment, each team developed a comprehensive project proposal. This included outlining the healthcare intervention, identifying target populations, defining the role of music therapy in treatment plans, and detailing the entrepreneurial strategies that would ensure the sustainability of the project.

Mentorship and Peer Review: Students received guidance from mentors in healthcare, entrepreneurship, and music therapy as they refined their project ideas. Peer review sessions allowed teams to present their proposals to their classmates and receive constructive feedback, fostering collaborative learning and critical evaluation skills.

Phase 3: Project Implementation

During the implementation phase, students executed their healthcare interventions within real community settings. This phase provided students with practical experience in applying their medical knowledge and entrepreneurial skills while integrating music therapy into their interventions. Students worked closely with local healthcare providers, community organizations, and patients to ensure that their projects were effectively addressing the identified health challenges.

Workshops and Health Education Sessions: Teams organized community workshops and public health education sessions where they used music therapy as a tool to engage participants and provide therapeutic support. These workshops focused on mental health, stress management, chronic disease awareness, and other relevant healthcare topics.

Music Therapy Interventions: Students conducted individual and group music therapy sessions tailored to the specific needs of the community. These sessions aimed to improve mental health outcomes, provide emotional support, and enhance overall well-being.

Public Health Interventions: In addition to music therapy, students implemented broader public health initiatives, such as chronic disease screening, nutritional counseling, and physical health assessments, using their clinical knowledge.

Throughout the implementation, teams received ongoing feedback from mentors and community stakeholders. They adapted their interventions based on real-time feedback to ensure that their projects were responsive to the evolving needs of the community.

Phase 4: Evaluation and Reflection

The final phase focused on evaluating the outcomes of the healthcare interventions and reflecting on the overall project experience. Students assessed both the impact of their projects on the target populations and their personal and professional development throughout the process.

Project Evaluation: Each team conducted a thorough evaluation of their intervention' s effectiveness, using both qualitative and quantitative data collected from surveys, interviews, and focus groups with community members and healthcare providers. These evaluations measured the health outcomes achieved, the sustainability of the entrepreneurial models implemented, and the overall community response to the interventions.
Reflective Workshops: Students participated in structured workshops where they discussed the challenges they faced, the skills they developed, and the lessons they learned during the project. These workshops encouraged critical thinking and self-assessment, helping students connect their experiences to their future careers in healthcare.
Career Development Reflection: Students were also encouraged to reflect on how the interdisciplinary project influenced their professional identity and career aspirations. They considered how their experiences in integrating medicine, music therapy, and entrepreneurship could shape their future roles as healthcare professionals, particularly in addressing complex healthcare challenges in innovative ways.
Final Presentations: Teams presented their findings and reflections to the university faculty, external stakeholders, and fellow students. These presentations highlighted the successes of their interventions, the impact on community health, and recommendations for improving similar projects in the future.

3.3 Participant Selection

The participants in this study were 60 members of the Tongxin Student Choir at YMU. These students were chosen because they had completed a semester of professional music training, which included courses in choral singing, vocal techniques, and music theory. Additionally, they had successfully completed the university's required I & E course, which provided them with essential skills in project management, creative thinking, and problem-solving. Prior to joining the interdisciplinary project, the participants had also been introduced to basic music therapy training, making them well-prepared for the integration of these fields.
Purposive sampling was employed to ensure that all participants had substantial prior experience in both music and entrepreneurial education. This approach facilitated an in-depth investigation of how interdisciplinary elements, such as the combination of medical knowledge, music therapy, and entrepreneurship, influenced students' professional development, career adaptability, and skill acquisition. The diversity within the group, in terms of academic year and previous experiences, allowed the study to capture a range of perspectives on how these interdisciplinary learning experiences affected students at different stages of their medical education.

3.4 Data Collection

The primary data collection method used in this study is semi-structured interviews, a well-established qualitative approach designed to explore participants' personal experiences in depth while allowing flexibility during the conversation. The semi-structured interviews were designed with a flexible guide to allow exploration of predetermined areas of interest, such as the integration of music therapy, entrepreneurship, and medicine. Questions were developed to encourage deep reflection, for example, “Can you describe a moment during the project that changed your perspective on healthcare?” Interviewers were trained to adapt the conversation based on participants' responses, allowing for the emergence of new themes while ensuring coverage of core research questions (Smith et al., 2021).
Each interview, lasting between 45 and 60 minutes, was conducted either face-to-face or via video conferencing, depending on the participant' s preference and availability. The interview guide was designed using the principles of Interpretative Phenomenological Analysis (IPA), which emphasizes exploring how individuals make sense of their personal experiences. Key areas covered in the interviews included:
1) Students' perceptions of the interdisciplinary integration of medicine, music therapy, and social entrepreneurship.
2) The real-world application of social entrepreneurship and music therapy in healthcare settings.
3) Challenges encountered in balancing traditional medical education with innovative approaches.
4) The influence of the project on their professional identity and career development.

3.5 Data analysis

The data analysis followed the structured steps of IPA, a method particularly suited for exploring how individuals make sense of personal, lived experiences. IPA is both descriptive and interpretative, combining an in-depth examination of participants' personal experiences with an interpretation of how these experiences connect to broader social and psychological contexts (Smith et al., 2021). The IPA process involves the following steps:

1) Reading and Re-reading: The researcher first conducted a detailed, line-by-line analysis of the interview transcripts to become fully immersed in the data.
2) Initial Noting: Key phrases and reflections were identified through inductive coding, which allowed the data to speak for itself, free of preconceived categories.
3) Emergent Themes: Codes were grouped into emergent themes, reflecting commonalities in participants' descriptions. This step identified key experiences, such as professional identity transformation, interdisciplinary learning, and leadership development.
4) Superordinate Themes: Broader, abstract categories were developed by comparing emergent themes across participants, highlighting shared and unique experiences. For example, the theme of "interdisciplinary integration" encompassed experiences related to both the challenges and benefits of combining medical education with social entrepreneurship and music therapy.
5) Thematic Clustering: Themes were clustered and hierarchized into a thematic map that displayed the relationships between the themes. This process involved refining themes, eliminating redundancies, and ensuring that each theme was distinct while maintaining coherence with the others.
6) Interpretation and Cross-Case Analysis: The researcher compared themes across cases to explore both commonalities and variations in how students experienced and made sense of the project. This allowed for an interpretation that moved beyond description to generate deeper insights into how students internalized their interdisciplinary experiences.
Finally, a write-up was prepared where themes were presented in a narrative form, using direct quotes from participants to illustrate key points. The write-up balanced the descriptive content of participants' experiences with interpretative insights generated through the IPA process, ensuring that the analysis remained grounded in the data while also providing deeper meaning.

4.FINDINGS

The results are derived from in-depth, semi-structured interviews with 60 participants, offering insights into their lived experiences during the project.The thematic analysis identified several key themes, including the enhancement of professional identity and career adaptability, the acquisition of interdisciplinary and transferable skills, and personal growth through self-reflection. Additionally, challenges encountered during the project and participants' recommendations for future iterations were also explored. In the following sections, each theme is discussed in detail, supported by illustrative quotes from the interviews. These themes collectively provide a nuanced understanding of the project's impact on the participants, highlighting both the strengths of the initiative and areas for improvement.

4.1 Theme 1: Impact on Professional Identity and Career Readiness

Broadening of Professional Identity

For many students, the project was transformative in redefining their professional identity. Traditionally, students at YMU were primarily focused on clinical skills, with little exposure to interdisciplinary or creative approaches to healthcare. However, through this project, many participants began to envision themselves not just as clinicians but as healthcare innovators and community leaders.
One student reflected, “Before this project, I thought being a doctor meant diagnosing and treating patients, but now I see that I can also be someone who brings innovative ideas to healthcare.” Another student, who had worked on a project related to mental health awareness, remarked, “I realized that my role could be much bigger—I can educate communities, help design health campaigns, and make a broader impact beyond the hospital setting.” This shift aligns with literature on interdisciplinary education, which suggests that exposing students to multiple fields fosters a broader understanding of their professional role (Maloney et al., 2022).

Challenges in Career Path Integration

However, not all students found it easy to reconcile the new skills and perspectives gained with the realities of their medical education and future careers. Several students expressed difficulty in applying what they had learned to the structured, exam-driven environment of medical school. “It was eye-opening,” one student said, “but when I returned to my regular medical classes, it felt like everything was so rigid again. I struggled to see how these skills would actually help me pass my exams or get a job at a major hospital.”
Another student voiced a similar sentiment, stating, “I feel like entrepreneurship and innovation are great, but in reality, I' m worried that focusing on this might distract me from what I need to do to secure a good residency.” These reflections highlight a broader issue within the current medical education framework, where non-clinical skills like leadership, creativity, and entrepreneurship are often undervalued (Hindin et al.,2023).

Career Readiness and Practical Skills Development

On the positive side, many students noted that the project equipped them with practical skills that enhanced their career readiness. These included teamwork, leadership, and communication skills, which are often underemphasized in traditional medical curriculum but are essential in the modern healthcare landscape. One student reflected, "I learned how to lead a group, manage a project, and communicate effectively with different stakeholders. These are skills I wouldn' t have developed just by studying medicine alone."

The hands-on nature of the project also allowed students to gain real-world experience in managing healthcare projects. Another student shared, "We had to develop a mental health campaign for our community. It was challenging, but we learned how to design interventions, engage with the public, and measure the impact of our work." Such experiences directly contributed to their confidence in taking on leadership roles in healthcare settings, a key aspect of career readiness (Inayat et al., 2023).

Conflict Between Traditional Expectations and New Career Opportunities

Several students also reported feeling a tension between the entrepreneurial focus of the project and the traditional expectations for their medical careers, especially from their families. One participant mentioned, "My parents expect me to become a surgeon in a prestigious hospital, but now I' m considering starting my own clinic focused on community mental health. It' s hard because there' s a lot of pressure to follow the traditional path."

Another student elaborated, "I was excited by the idea of entrepreneurship, but I' m not sure if my future employers will value this experience. It feels like there' s a gap between what' s expected of me as a doctor and the new skills I' m developing." This struggle between traditional career expectations and the desire to explore non-traditional roles in healthcare is common, particularly in cultures that place high value on established medical careers (Gennissen et al., 2021).

Unintended Consequences: Overwhelming Scope

Some participants also noted that the interdisciplinary and intensive nature of the project was overwhelming at times, particularly when trying to balance it with their regular medical coursework. One student shared, "At first, I was really excited about the project, but then it started feeling like too much. Between managing our group project, attending workshops, and preparing for exams, it became hard to keep up."

Another student echoed this concern, stating, "It was difficult to manage both the creative demands of the project and the rigid structure of medical school. Sometimes I felt like I was pulled in too many directions." These comments highlight the importance of balancing practical and academic demands in interdisciplinary projects, ensuring that students are not overwhelmed by the scope of the learning experience (Kilty et al.,2021).

In conclusion, the "Medicine + Social Entrepreneurship + Music Therapy" project had both positive and challenging effects on students' professional identity and career readiness. While many participants gained valuable skills and a broader understanding of their role as future healthcare professionals, some struggled to reconcile the innovative aspects of the project with the rigid structure of traditional medical education. The project underscores the need for medical curriculum that integrate entrepreneurial and interdisciplinary learning, but it also highlights the challenges students face in navigating these dual demands. Moving forward, it is essential to provide better support for students as they explore non-traditional career paths in healthcare while also meeting the expectations of their medical training.

4.2 Theme 2: Development of Interdisciplinary and Transferable Skills

The "Medicine + Social Entrepreneurship + Music Therapy" project aimed not only to foster a deeper understanding of healthcare innovation but also to equip students with a range of interdisciplinary and transferable skills. The project provided opportunities for medical students to engage in a learning environment that emphasized collaboration, communication, and critical thinking. Through interviews, students reflected on their experiences in acquiring skills that extended beyond their medical training, identifying both successes and challenges in the process.

Fostering Collaboration Across Disciplines

One of the most frequently cited benefits of the project was the opportunity for students to work with peers from different academic backgrounds, including music therapy and entrepreneurship. This interdisciplinary collaboration allowed students to learn how to integrate different types of knowledge and expertise, ultimately enhancing their problem-solving abilities. As one participant noted, "Working with students from music and business was a completely new experience for me. I had to learn how to

communicate my ideas in a way that non-medical people could understand, and I also gained new insights into how music therapy could be used as a complementary tool in healthcare settings."
This type of interdisciplinary learning is crucial for healthcare professionals, who must often collaborate with individuals from other fields to develop comprehensive care plans (Bendowska & Baum, 2023). In this case, the project helped bridge the gap between medical education and the broader healthcare context, emphasizing the importance of teamwork and shared expertise.

Enhancing Communication and Empathy
Many students reported significant improvements in their communication skills, particularly in terms of conveying complex medical concepts in a clear and accessible manner. For example, one student shared,"I used to think that medical terminology was enough, but this project made me realize that if I want to make an impact, I have to explain things in a way that everyone can understand. This was particularly true when we were presenting our social entrepreneurship ideas to non-medical audiences."
Additionally, the project's focus on music therapy encouraged students to develop greater empathy, as they learned how to listen actively and respond to the emotional needs of their peers and community members. Another participant explained, "In our group, we used music to connect with each other on a deeper level. It helped me understand that being a doctor is not just about diagnosing and treating; it's also about building relationships and understanding patients' emotional needs." Such experiences are aligned with existing research on the role of empathy in medical practice, where emotional intelligence is increasingly recognized as a critical component of effective patient care (Peisachovich et al., 2023).

Development of Leadership and Project Management Skills
Several participants also highlighted the role of the project in developing their leadership and project management skills. As medical students, many had not previously been exposed to opportunities for managing group dynamics or leading teams in a non-clinical context. The project, however, placed students in leadership roles where they were responsible for organizing group tasks, managing time, and coordinating efforts across different disciplines.
One student reflected, "Being the leader of my group was a completely new experience. It was challenging to balance everyone's ideas and keep the project on track, but it taught me a lot about how to lead effectively." Another student emphasized the value of project management skills in her future career, stating, "This experience made me realize that being a good doctor also means being a good manager. You have to be able to organize your team and make decisions under pressure."
However, the leadership roles also came with challenges, particularly for students who were not accustomed to taking on managerial responsibilities. One participant admitted, "I struggled with delegating tasks because I was used to doing everything myself. This project showed me that leadership is about trusting your team and letting go of control." These reflections underscore the importance of leadership training in medical education, which has traditionally focused on clinical competencies but is increasingly recognizing the value of managerial and leadership skills (Sethi, et al., 2021).

Balancing Practical and Theoretical Learning
While the majority of students appreciated the hands-on nature of the project, some expressed frustration with the balance between practical and theoretical learning. For example, one student noted, "I enjoyed working on the project, but I felt like we could have had more guidance on the theoretical aspects of social entrepreneurship. It was hard to fully understand the business side without more in-depth teaching." This comment highlights a common challenge in interdisciplinary projects, where students may feel they lack sufficient grounding in unfamiliar disciplines (Elkhamisy et al., 2022).
Nevertheless, most participants agreed that the practical nature of the project significantly enhanced their learning experience. One student summarized, "In our regular medical courses, we focus so much on memorization and exams. This project was different because we had to actually apply what we were learning in a real-world context. It made everything feel more relevant."

Challenges in Transferability
Despite the overall positive feedback, some students questioned how transferable the skills they developed during the project would be to their future medical careers. For example, one participant remarked, "I learned a lot about teamwork and communication, but I'm not sure how much of this will help me in a hospital setting. It feels like the healthcare system still values technical skills over these softer skills." This comment reflects a broader concern within the medical field, where transferable skills like communication and leadership are often undervalued compared to clinical competencies (Ostafiichuk, 2021).

In summary, the “Medicine + Social Entrepreneurship + Music Therapy” project provided medical students with valuable opportunities to develop interdisciplinary and transferable skills, such as communication, empathy, leadership, and project management. While the hands-on nature of the project was widely appreciated, some students struggled with balancing practical application with theoretical understanding, and there were concerns about the relevance of these skills to their future medical careers. Overall, the project succeeded in broadening students' skill sets and fostering a more holistic approach to healthcare, though challenges remain in ensuring that these skills are recognized and valued in traditional medical settings.

4.3 Theme 3: Personal Growth and Self-Reflection

A critical outcome of the “Medicine + Social Entrepreneurship + Music Therapy” project was the personal growth and self-reflection experienced by the participants. The project not only focused on developing professional and interdisciplinary skills but also served as a platform for students to reflect on their own personal and emotional development. This theme emerged strongly during the interviews, where students discussed how their participation in the project allowed them to grow as individuals, enhancing their self-awareness, emotional intelligence, and resilience.

Increased Self-Awareness and Confidence

Many participants described the project as a pivotal experience that allowed them to gain a deeper understanding of their own strengths and weaknesses. Through their involvement in the project, students were able to step outside of their comfort zones, engage in unfamiliar tasks, and confront challenges that tested their abilities. One participant reflected,"This project was unlike anything I had done before. I had to take on roles I wasn' t comfortable with, but it taught me a lot about myself. I realized that I could handle much more responsibility than I thought."

The experience also boosted their self-confidence, particularly in situations requiring them to lead or collaborate with peers from different disciplines. One student noted, "I used to doubt my ability to lead a group, but this project gave me the confidence to do it. I had to organize our tasks and keep everyone on track, and it was tough, but I did it. Now I feel more confident about taking on leadership roles in the future."

This process of self-discovery aligns with previous research, which highlights that experiential learning and interdisciplinary projects often serve as a catalyst for increased self-awareness and personal growth among students (Ivaniuk et al., 2022). Through these reflective processes, students not only learned about their academic and professional capacities but also gained a better understanding of their personal motivations and aspirations.

Emotional Intelligence and Empathy Development

The inclusion of music therapy as a key element of the project provided a unique avenue for students to engage with emotions—both their own and those of others. Several participants discussed how working with music in a therapeutic context deepened their emotional intelligence and heightened their sense of empathy. One student shared, "Music has this way of bringing emotions to the surface. Through the project, I learned to listen more carefully to what people were feeling, not just what they were saying. It made me more empathetic in my interactions."

Another participant explained how music therapy allowed them to connect with their peers on a more emotional level, fostering an environment of trust and openness. "There were moments during the project where we all connected deeply through music. I felt that I was better able to understand the emotions of others, which is something I can take with me into my future career as a doctor."

This development of empathy and emotional intelligence is especially relevant in healthcare settings, where understanding patients' emotional states is crucial to providing holistic care (Peisachovich et al., 2023). Participants indicated that these skills, cultivated through music therapy, would be invaluable in their future interactions with patients, helping them approach healthcare from a more compassionate perspective.

Resilience and Coping with Challenges

While the project fostered growth, it also presented numerous challenges, which required students to build resilience. The interdisciplinary nature of the project meant that students often had to navigate unfamiliar areas, such as entrepreneurship or music therapy, while balancing their medical studies. One participant described the difficulty of this balancing act, saying, "It was overwhelming at times. Balancing the demands of this project with our regular studies was really hard, but it taught me resilience. I realized that sometimes, you just have to push through and find a way to make it work."

Another student reflected on the lessons learned from failure, recounting how their initial project ideas had to be scrapped and reworked. "Our first idea didn' t work out, and it was frustrating. But we had to go back to the drawing board and start again. It was a lesson in perseverance and adaptability, which I think will be important in my future career."
Resilience, as noted by many participants, became a critical outcome of the project. The ability to persevere in the face of challenges is a skill that will serve these students well in both their personal lives and their future medical careers, where resilience is often key to handling the emotional and physical demands of the profession (Romadhona et al., 2023).

Reflective Learning and Personal Insights
The project also encouraged students to engage in reflective learning, prompting them to think critically about their personal experiences and how these shaped their understanding of their roles as future healthcare professionals. Many participants indicated that the reflective elements of the project—such as group discussions and personal journaling—were particularly valuable for processing their experiences. One student noted, "The reflective sessions were an important part of the project. They helped me process what I was learning and understand how it applied to my personal and professional growth."
In particular, students discussed how the project made them rethink their future career paths, with some expressing a newfound interest in integrating music therapy or social entrepreneurship into their medical careers. "Before this project, I had never thought about combining medicine with entrepreneurship. Now, I see how I can use these skills to create something meaningful in healthcare," one participant shared.
The process of self-reflection not only solidified the skills and knowledge gained through the project but also allowed students to make connections between the project and their long-term career goals. Reflective learning has long been recognized as a powerful tool for personal growth, particularly in healthcare education, where it can lead to more self-aware and empathetic practitioners (Simon &Al-Ghailani, 2023).

Challenges in Personal Growth
Despite these positive outcomes, some students expressed difficulties in the personal growth process, particularly in dealing with the emotional demands of the project. One participant admitted, "At times, the project was emotionally draining. It forced me to confront feelings I wasn' t ready to deal with, and that was tough."Another shared that the fast-paced nature of the project left little room for deeper personal reflection: "We were so busy trying to get everything done that there wasn' t always time to really think about what we were learning or how we were growing."
These reflections indicate that while personal growth was a key outcome of the project, it was not without its challenges. The intensity of the experience, combined with the emotional demands of music therapy and the pressures of interdisciplinary collaboration, made personal growth a complex and, at times, difficult process for some students.
In summary, the “Medicine + Social Entrepreneurship + Music Therapy” project fostered significant personal growth and self-reflection among participants. Students reported enhanced self-awareness, emotional intelligence, and resilience, as well as a greater capacity for empathy and reflective learning. However, these positive outcomes were accompanied by challenges, including the emotional demands of the project and the fast-paced nature of the learning environment. Despite these difficulties, the project provided a valuable platform for students to explore their personal and professional identities, preparing them for the emotional and interpersonal complexities of their future careers in healthcare.

4.4 Theme 4: Challenges and Recommendations for Future Projects
The “Medicine + Social Entrepreneurship + Music Therapy” project, while successful in fostering interdisciplinary learning and personal growth, was not without its challenges. Throughout the interviews, participants expressed several difficulties they encountered during the project, as well as suggestions for improving similar initiatives in the future. These challenges ranged from time management issues and interdisciplinary coordination to the need for clearer project guidelines and better emotional support.

Time Constraints and Workload Management
One of the most commonly reported challenges was the time pressure faced by students. Balancing the demands of the project with their regular academic responsibilities was difficult for many. "We were juggling so many things at once—our regular studies, choir practice, and the project itself. It was overwhelming at times, and I felt like I couldn' t give my best to all of them," said one participant. The

short-term nature of the project, while beneficial for keeping the students engaged, also contributed to the feeling of being rushed. "We had a limited time to execute our project, and it felt like we were constantly racing against the clock. There wasn' t enough time to reflect deeply on what we were learning or to iterate on our ideas," another student noted.

Interdisciplinary Collaboration Challenges

While the interdisciplinary approach of integrating medicine, social entrepreneurship, and music therapy was praised for its innovation, it also posed challenges. Students from different disciplines sometimes struggled to find common ground, especially in the initial stages of the project. "At first, it was hard to understand what the music therapy students were talking about. We' re used to thinking in medical terms, so it took a while for us to adjust to this new language," remarked one medical student. Similarly, some participants noted that the lack of prior experience with entrepreneurial thinking made it difficult to fully grasp the social entrepreneurship component of the project. "I had never thought of starting a business or developing a project like this before. It was a steep learning curve,"admitted one student.

To address these challenges, participants recommended more preparatory sessions before the project' s official start. These sessions could include workshops on interdisciplinary communication, team-building exercises, and foundational training in entrepreneurship. "I think we would have benefited from some kind of orientation where we could learn how to communicate across disciplines before jumping into the project," suggested one student.

Emotional and Psychological Challenges

Engaging with music therapy introduced an emotional component that some students found difficult to navigate. While many appreciated the opportunity to explore their emotions and develop empathy, others found it emotionally taxing. "Some of the music therapy exercises brought up a lot of emotions, and I wasn' t always sure how to handle them. It was uncomfortable at times," shared one participant. Others felt that the emotional demands of the project were not adequately addressed in terms of support from mentors. "We were dealing with a lot emotionally, and I think having some kind of counselor or mentor to help us process these feelings would have been helpful," another student remarked.

The recommendation to provide better emotional support during future projects was echoed by several participants. They suggested that future iterations of the project should include access to mental health professionals or counselors who can guide students through the emotional aspects of their work. "It would have been great to have someone to talk to when things got overwhelming. It' s important to have support when dealing with emotionally charged subjects like this," one student emphasized.

Need for Clearer Guidelines and Project Structure

Several participants expressed frustration with the lack of clear guidelines and structure at the beginning of the project. "We didn' t really know what was expected of us, and that made it hard to focus. There were times when we felt lost," explained one participant. The open-ended nature of the project, while encouraging creativity, also led to confusion about deliverables and assessment criteria. "We were told to create something innovative, but we weren' t sure how it would be evaluated. That added a lot of stress," another student commented.

To mitigate this issue, students recommended providing more detailed project guidelines and clear assessment rubrics at the outset. "Having a clearer sense of what we were working towards would have helped us stay focused and reduced some of the stress," suggested one participant. Additionally, a mid-project check-in or feedback session with mentors could help students stay on track and ensure they are meeting the project' s objectives.

In summary, the results revealed that participants experienced a broadening of their professional roles, gained practical interdisciplinary skills, and encountered personal growth through increased self-awareness and emotional intelligence. However, students also faced challenges, particularly in balancing the demands of the project with their medical coursework, navigating interdisciplinary collaboration, and coping with the emotional aspects of the project. Key recommendations for future iterations include providing clearer guidelines, better emotional support, and enhanced preparatory sessions to ease interdisciplinary collaboration. Overall, the project demonstrated the potential of interdisciplinary education to foster holistic professional development, while also highlighting areas for improvement in its execution.

5.DISCUSSION

This study aimed to explore the impact of interdisciplinary I&E education on medical students' professional identity, career readiness, and skill development, particularly within the context of the

"Medicine + Social Entrepreneurship + Music Therapy" project at YMU. The research sought to understand how participation in this project shaped students' perceptions of their future roles in healthcare, the development of transferable skills, and their overall personal growth.

The findings reveal that the project significantly broadened students' professional identities, allowing them to envision themselves not only as clinicians but also as innovators and leaders in community healthcare. Participants reported enhanced career readiness, particularly in developing non-clinical skills such as leadership, teamwork, and communication. Nonetheless, students noted challenges in integrating these newly acquired skills within the traditional, exam-driven structure of medical education. Additionally, the project fostered personal growth, with many participants experiencing increased self-awareness, emotional intelligence, and resilience. Despite the overall positive outcomes, students identified areas for improvement, including clearer project guidelines, better interdisciplinary coordination, and emotional support during the program.

In summary, these findings underscore the potential of interdisciplinary education to broaden medical students' professional identities and equip them with essential non-clinical skills, while also highlighting challenges in integrating such initiatives into traditional medical curriculum.

The results of this study demonstrate the value of interdisciplinary I&Education in enhancing medical students' professional identity, career readiness, and skill development. These findings align with existing literature on interdisciplinary learning and experiential education, which emphasizes the importance of exposing students to multiple disciplines to foster a broader understanding of professional roles (Frenk et al., 2010). In this study, the integration of medicine, music therapy, and social entrepreneurship enabled students to look beyond traditional clinical roles and envision themselves as healthcare innovators capable of addressing complex public health challenges.

The broadening of professional identity reported by participants supports previous research that highlights the transformative potential of interdisciplinary education in healthcare settings. Raut and Joshi (2023) argue that 21st-century healthcare professionals must extend their roles beyond clinical expertise to include responsibilities as educators, community leaders, and innovators. This study confirms that exposing medical students to non-clinical fields such as social entrepreneurship and music therapy can significantly reshape their perceptions of what it means to be a healthcare professional. The ability to apply clinical knowledge in innovative, community-focused projects helped participants expand their understanding of their future careers, which aligns with the work of Davis et al. (2021), who emphasize the role of interdisciplinary education in fostering a more comprehensive view of healthcare roles.

At the same time, some students struggled to reconcile the new skills they acquired with the rigid, exam-focused structure of traditional medical education, which often undervalues non-clinical skills like leadership and innovation. This concern echoes the findings of Hayat (2023), who noted that many medical curriculum still prioritize technical skills over the interdisciplinary and leadership skills that are becoming increasingly critical in modern healthcare.

The development of career readiness and transferable skills, particularly in leadership, teamwork, and communication, was a major outcome of the project. This result is consistent with the work of Bornman and Louw (2023), who emphasize the importance of collaborative skills in healthcare education. The project' s focus on teamwork across disciplines, particularly with students from non-medical fields such as music therapy and entrepreneurship, reinforced the vital role of communication in healthcare environments. These findings also support research by Kleib et al. (2021), which argues that interdisciplinary education fosters collaboration and critical thinking, both essential components of effective healthcare delivery.

Additionally, the enhancement of leadership and project management skills through hands-on experience mirrors the findings of Sethi et al. (2021), who suggest that leadership training should be integrated into medical curriculum to prepare students for their future roles as healthcare leaders. The project' s emphasis on social entrepreneurship also contributed to students' development of practical skills that extend beyond traditional medical training, offering valuable insights into how healthcare professionals can engage with communities and develop sustainable health interventions.

Nevertheless, some participants expressed concerns about the applicability of these skills in clinical settings, reflecting the broader challenge of integrating non-clinical competencies into medical education (Ogden et al., 2013). This tension between clinical and non-clinical skills underscores the need for curricular reforms that better integrate interdisciplinary learning into the core medical curriculum, ensuring that students appreciate the relevance of leadership, communication, and entrepreneurship to their future roles.

Participants also reported personal growth and emotional development, particularly in terms of self-awareness and resilience, which aligns with existing research on the benefits of experiential learning.

Senok et al. (2010) suggest that experiential projects encourage students to reflect on their strengths, weaknesses, and motivations, ultimately leading to greater self-awareness and personal growth. In this study, the inclusion of music therapy provided a unique avenue for emotional engagement, allowing students to develop greater empathy and emotional intelligence, both of which are crucial for patient-centered care (Hackey, 2023).

However, the emotional demands of the project underscored the need for better support systems, such as access to mental health professionals during emotionally intense projects. This observation aligns with the findings of Ensz and Mohiyeddini (2023), who argue that resilience-building activities must be paired with adequate emotional support to prevent burnout and ensure long-term benefits.

Finally, the challenges identified by students, including time constraints, interdisciplinary coordination, and the need for clearer project guidelines, reflect common issues in interdisciplinary education (Bientzle et al., 2018). The complexity of managing multiple disciplines and balancing the demands of regular medical coursework with the project suggests the need for better preparatory sessions and clearer structural guidance in future iterations of similar projects. These findings imply that while interdisciplinary education offers significant benefits, its successful implementation requires careful planning and support to address the challenges students face in balancing academic and practical learning demands.

6.IMPLICATIONS AND RECOMMENDATIONS

The findings from this study carry significant implications for medical education, healthcare innovation, and the development of future healthcare professionals. The results emphasize the importance of integrating interdisciplinary I & E education into traditional medical curriculum. This project provided students with the opportunity to develop non-clinical skills such as leadership, teamwork, communication, and creativity, which are increasingly valued in modern healthcare settings (Bornman & Louw, 2023). By exposing medical students to interdisciplinary fields like music therapy and social entrepreneurship, the project broadened their understanding of healthcare roles and encouraged them to think beyond traditional clinical responsibilities (González, 2023). This suggests that medical schools should consider incorporating interdisciplinary learning into their core programs, preparing future healthcare professionals to address complex public health challenges through innovative and socially responsible approaches (Davis et al., 2021).

Moreover, the study indicates that policy and curriculum reforms are necessary to ensure that non-clinical skills are given greater prominence within medical education (Hayat, 2023). Currently, medical programs tend to prioritize technical and exam-driven knowledge, which may not fully equip students for the broader demands of healthcare leadership and innovation (Ogden et al., 2021). By embedding interdisciplinary education into the core curriculum, institutions can better prepare students for diverse career pathways in healthcare, positioning them to make a meaningful impact on both clinical and community health issues (Al Tous et al., 2022).

In light of these findings, several recommendations can be made for the design and implementation of future interdisciplinary education projects. First, medical institutions should strive to embed interdisciplinary education more fully into their core curricula, ensuring that students are not only trained in clinical skills but also in leadership, innovation, and entrepreneurship (Sethi et al., 2021). To achieve this, programs should include preparatory workshops that focus on interdisciplinary communication, teamwork, and the fundamentals of entrepreneurship, ensuring students are well-equipped to collaborate across different fields (Bientzle et al., 2021). Additionally, it is essential to provide clearer project guidelines at the outset, offering students a structured timeline, defined deliverables, and transparent assessment criteria. Support systems should also be strengthened, with mental health resources and mentorship available to help students manage the emotional challenges of socially impactful projects (Ensz & Mohiyeddini, 2023). Reflective learning opportunities should be more structured and embedded throughout the project, allowing students to process their experiences and make meaningful connections between their project work and their future professional goals (Simon & Al-Ghailani, 2023). These improvements would enhance the educational experience, ensuring that students are fully supported in developing the skills necessary to succeed in both clinical and non-clinical healthcare roles, while also preparing them to become leaders and innovators in the field.

7.LIMITATIONS AND FUTURE RESEARCH

The present study, while offering valuable insights into the effects of interdisciplinary I&E education on medical students, has several limitations that should be acknowledged. First, the study relied exclusively on qualitative data gathered through semi-structured interviews with 60 participants, all of whom were drawn from the same institution, YMU. While this allowed for in-depth exploration of the participants'

experiences, the findings may not be fully generalizable to other contexts or medical schools, particularly those with different curricular structures or cultural environments. Additionally, the study participants were members of a specific interdisciplinary project that incorporated music therapy and social entrepreneurship, which may have shaped their responses in ways that do not fully reflect the broader range of interdisciplinary approaches in medical education. Furthermore, as the data collection was conducted shortly after the conclusion of the project, participants' reflections were based on immediate experiences. Longer-term impacts on their professional identity, career paths, and skill development could not be captured. Future research could address this by incorporating longitudinal studies that follow participants over time and assess how their interdisciplinary education shapes their career trajectories and influences their professional roles.

Future research should explore the applicability of these findings in different educational settings and across various healthcare disciplines. Comparative studies across multiple institutions, both within China and internationally, would provide a broader understanding of how interdisciplinary I&E education affects medical students in diverse contexts. Such research could investigate how different cultural, institutional, and educational factors influence the integration of non-clinical skills and interdisciplinary approaches into medical training. Moreover, future studies should examine the specific contributions of each interdisciplinary component, such as music therapy and social entrepreneurship, to the development of professional identity and career readiness. This would help identify which interdisciplinary elements are most impactful and how they can be effectively integrated into medical curriculum. Quantitative studies could also be conducted to complement the qualitative findings of this study, providing more objective measures of the impact of interdisciplinary education on career outcomes, skill acquisition, and students' long-term professional success. Additionally, exploring the role of faculty and institutional support in facilitating interdisciplinary education would offer insights into how to better structure and implement these programs for maximum benefit.

8.CONLUSION

In conclusion, this study demonstrates the significant impact of interdisciplinary I&E education on medical students' professional identity, career readiness, and skill development. Through the "Medicine + Social Entrepreneurship + Music Therapy" project at YMU, students broadened their roles beyond clinical practice to include leadership, teamwork, and innovative problem-solving. While the project fostered personal growth and essential non-clinical skills, it also revealed challenges, such as integrating these skills within traditional medical curriculum and the need for clearer guidelines and support. These findings highlight the importance of integrating interdisciplinary approaches into medical education to better equip future healthcare professionals for complex challenges in modern healthcare.

Author Contributions

Yi Wei and Hanchao Feng contributed equally to this work.

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