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Evaluating Factors Contributing to Student Enrolment in
Environmental Health Science Undergraduate Programme at
Cardiff Metropolitan University.

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Abstract

This study investigates the factors influencing undergraduate enrolment in Environmental Health Science (EHS) programme at Cardiff Metropolitan University, addressing the critical decline in student numbers and its implications for academic sustainability and professional recruitment. Through qualitative analysis of semi-structured interviews with students (n=10) across Environmental Health and Social Science foundation programmes, the research reveals that perceived limited career prospects and poor programme reputation are major deterrents, while a lack of EHS discipline awareness amalgamate the problem. The findings emphasised the urgent need for targeted recruitment strategies, to address the implications of EHS academic programmes and professional sustainability.

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Introduction

Environmental Health Science (EHS) is crucial for safeguarding and improving public health by reducing health inequalities and addressing critical challenges associated with protecting our environment (Manifesto for environmental health, 2024). However, England faces significant shortages and recruitment challenges within the profession. The Chartered Institution of Environmental Health (CIEH, 2021) workforce survey reveals, that out of approximately 7600-7870 Full Time Equivalent (FTE) professionals across England's local authorities, only about 3360 are fully qualified Environmental Health Practitioners (CIEH 2021). This shortage resulted in prolonged vacancies and significant temporary staff reliance, with 56% of local authorities reporting unfilled positions for over 6 months and 87% using agency staff due to recruitment and resources deficiencies (CIEH, 2021; CIEH, 2022). The crisis is exacerbated by scarce pursuit of EHS qualifications, which typically requires a degree or higher degree level qualification accredited by CIEH (The Association of Graduate Careers Advisory Services (AGCAS), 2023; CIEH 2024). This study aims to evaluate factors influencing undergraduate enrolment in EHS programmes at Cardiff Metropolitan University.

The President of CIEH highlighted environmental health professionals are crucial in identifying, preventing, and addressing outbreaks (Elliott, 2024), as demonstrated during the Covid-19 pandemic (Dyjack *et al.*, 2021). Although the Covid-19 pandemic highlighted the importance of this discipline, with 8 of 10 local authority officers redeployed and 95% developing COVID policies to enhance population, undergraduate programme enrolments have remained stagnant (Knechtges, 2015; CIEH, 2022; Advance-HE, 2025). It is important to understand the factors contributing to this trend to develop effective strategies for attracting and retaining students in this essential profession (Funeka *et al.*, 2022; Zarandi *et al.*, 2022).

While the CIEH (2022) advocates for expanding apprenticeship programmes within Local Authorities as a strategy to address the severe shortage of Environmental Health Officers (EHOs) impacting the profession nationally and globally (Conye, 2021; CIEH, 2022; Oosthuizen, 2024). Solely relying on this pathway may be insufficient. The termination of Degree Apprenticeship Programmes funding in 2021, by Welsh Government highlights vulnerability of this strategy (Allies *et al.*, 2023). Focusing primarily on apprenticeships

provide more comprehensive academic foundation and may appeal to a distinct group of aspiring professionals; however, it overlooks the opportunity to attract students directly into undergraduate EHS programmes. Therefore, this study focuses on identifying factors that can enhance undergraduate recruitment.

The multidisciplinary profession of EHS explores impact of environmental elements like air quality, water, hazardous materials, climate change, and ecosystems affect human health and well-being (Martin, 2023; Shaw, 2023; World Health Organisation, 2024). This encompasses various pathways like Food Hygiene and Food Safety, Workplace Health and Safety, Housing Standards, Public Health and Environmental Protection (Nicholls and Parkinson, 2002). Frumkin (2016) highlighted the importance of the discipline to address critical challenges including disease prevention, sustainable resource management, and the mitigation of climate change impacts.

The University and Colleges Admissions Service (UCAS, 2025) and AGCAS (2023) reinforced undergraduate EHS programmes in the UK to include interdisciplinary coursework, providing theoretical knowledge and practical elements to enhanced technical skills for diverse career pathways. Smith (2013) discussed the broad topical spectra of Environmental Health literacy, to equip students with knowledge and skills to reduce, mitigate, or eliminate challenges and contribute to public health strategies (Finn and O'Fallon, 2015; Shaw, 2023). Despite the importance of EHS programmes, recent trends indicate a 5% decline in applicants contrasting with a 13% increase in broader discipline such as engineering (AdvanceHE, 2025). This trajectory expresses concerns about meeting future workforce demands in this crucial area. A reduction of graduates entering the workforce would continue to contribute to skill shortages in key sectors that depend on EHS expertise (Elliott, 2024). Additionally, a decline in applicants' enrolment can be detrimental to the sustainability of EHS academic programmes (Nicholls and Parkinson, 2002). Therefore, understanding reasons for decline is essential to reverse the trend and ensure an increase of EHS students (Poole et al., 2023).

Akosah-Twumasi et al., (2018) systematic review highlighted individualistic intrinsic factors influencing career choices in youths. Thomaes et al., (2023) discussed adolescents' internal motivation through sustainable educational programs focusing on climate crisis, will improve sustainable behaviour and result in pursuit of personal motives. Evidently, Ratnapradipa,

(2011) appealed to continue environmental health education in students, as the gained knowledge influences perception, attitude and ultimately behaviour. Furthermore, appropriate adopted strategies and policies to inform training, qualification and environmental health role utilised to address misconceptions of the profession would not only improve awareness but essentially perception (Nicholls and Parkinson, 2002). Ultimately, Dunn et al., (2024) stated improving societal understanding is important to gain support and resources required, to address issues associated with the professions' prominence resulting in ongoing viability.

While Akosah-Twumasi et al., (2018) highlighted the influence of collectivist values on career choices in youths, the EHS profession often deteriorate from the lack of public recognitions, potentially reducing its appeal in communities that prioritise careers with visible societal impact (Whiley et al., 2019). Addressing this gap in perception through targeted media campaigns and community engagement could enhance EHS's profile appeal to students from collectivist backgrounds (Whiley et al., 2019). Dyjack *et al.*, (2021) highlighted inadequate awareness of the value and impact of environmental health profession requires profile enhancement through networking promotion (Dhesi, 2019; Whiley et al., 2019). Houghton (2019) supported proactive branding through media engagement, marketing and communicating initiative campaigns strategy to publicise the profession. Noticeably, The Association of Schools of Public Health in the European Region (ASPHER, 2020) 'This is Public Health', campaign developed by the United States is presently implemented by the Global Network for Academic Public Health to enhance mutual academic learning and collaborations globally. Wiseman et al., (2017) reinforced media and institutional organisations amongst other factors that influences student career decision-making. Furthermore, Rudy-Cisneros (2020) highlighted the importance of environmental health professionals advertising the career to positively influence university recruitment to address the current workforce shortage (Hilliard & Boulton, 2012; Selvey et al., 2014).

Knechtges (2015) demonstrated association between limited funding and higher education tuition, which are particularly relevant to EHS programs (Khan et al., 2023). CIEH (2024) suggests insufficient funding not only affects recruitment and retention but also limits the capacity for practical training, which is crucial in EHS. This lack of funding creates a cycle where reduced resources lead to fewer qualified professionals, further reducing the

discipline appeal and visibility (Sandoul, 2021). Similarly, insufficient funding for enhancing environmental health education through training is globally recognised. Gouge et al., (2023), highlighted that nationwide efforts in the United States to adopt and promote such education in schools have progressed slowly over more than two decades. Brooks et al., (2019) demonstrated importance of coordination among agencies, academic and other organisations, to strategically implement and maintain national training programmes to address environmental health staff training. Evidently, governmental appeals supported the apprenticeship programme strategy to simultaneously improve local authority recruitment and university-employer collaboration; it increases geographical reach and increase student enrolment for courses under threat (Universities UK, 2019; Sandoul, 2021; CIEH, 2024).

Justification

The main research problem addressed by this dissertation is to evaluate the factors contributing to student enrolment in undergraduate EHS programme at Cardiff Metropolitan university. The research addresses critical gap in national studies on declining EHS undergraduate enrolment, significant implications for professional recruitment and academic programmes sustainability (Nicholls & Parkinson, 2002; Coyne, 2021; CIEH, 2022). Identifying student enrolment barriers and motivators can inform market strategies and policy recommendations to attract potential students (Meharg *et al.*, 2016). Hemsley-Brown & Oplatka (2015) systematically analyse current research literature on factors influencing student decision-making for higher education, highlighting importance of reputation or public image of niche discipline such as EHS (Haghshenas, 2016). Also, studies highlighting undergraduate student programme enrolment factors failed to utilise a qualitative approach in entirety; however, mixed methods consisted of semi-structured interviews or focused groups were explored (Dhesi, 2015; McCormick, 2020; Oosthuizen, 2024). Similarly, quantitative approach identified degree awareness and perception influenced course enrolment; however, results obtained were not discipline (EHS) specific (Nicholls & Parkinson, 2002; Ratnapradipa, 2011; Vilcapoma-Malpartida, 2023). This gap in knowledge hinders efforts to develop specific recruitment strategies for similar programmes. It is imperative to investigate students motive towards EHS compared to other disciplines, awareness of career opportunities within EHS, and potential barriers that may deter

enrolment. Consequently, addressing these questions during the research would aim to fill a critical gap in existing literature and contribute to remedying the shortages of multi-skilled professionals capable of focusing on environmental challenges and creating a healthier and more sustainable world (Martin, 2023).

Research Aims and Objectives

The primary aim of this study is to evaluate factors contributing to student enrolment in undergraduate EHS programmes at Cardiff Metropolitan University. To achieve this aim, the study will focus on the following objectives:

1. Identifying key influences on students' programme selection decisions.
2. Assessing awareness among prospective students regarding career pathways associated with EHS.
3. Gathering suggestions from stakeholders (e.g., current students) for improving enrolment rates.

Methodology

According to Somekh and Lewin (2005), a research methodology is a structured approach to gather and analyse data for a specific study by outlining and justifying the underlying principles, theories, and values in achieving the research objectives (Mackenzie & Knipe, 2006; Mills & Burke, 2014). This section will explain the research design, sampling, data collection and analysis, and ethics considerations. It will also justify using a constructivist qualitative method to understand multiple perspectives (Creswell and Creswell, 2023).

Research design

A qualitative research approach, incorporating a guide and standardised open-ended interview strategy, was employed to fulfil the study's purpose. This method was selected to address the limitations of quantitative surveys commonly used in prior research (Nicholls &

Parkinson, 2002; Ratnapradipa, 2011; Khan, 2023). It is beneficial in generating rich data and adopting an inductive approach to explore relatively under-researched topics, such as students' perspectives on Environmental Health programme enrolment (Anderson, 2010; Almeida et al., 2017). The use of interviews ensures a consistent line of inquiry across participants (Patten, 2002. pg.343). One-to-one semi-structured interviews were conducted, either online via Microsoft Teams or in person in study rooms based on participants' preferences, to deeply explore their values, perspectives, and recommendations (Braun and Clarke, 2013). Participant consent was obtained beforehand. Interviews were chosen for their ability to incorporate personal views and allow flexibility for probing, yielding detailed insights from fewer participants compared to surveys (Patten, 2002; Almeida *et al.*, 2017; Creswell and Creswell, 2023). This qualitative method is particularly effective for engaging individuals hesitant to complete surveys and for describing, explaining, and interpreting phenomena (Halcomb and Davidson, 2006; Dunwoodie *et al.*, 2022). The findings aim to inform strategies for increasing recruitment into the Environmental Health Science discipline.

Sampling

The study employed purposive sampling approach exploring diverse in-depth perspectives (Patton, 2013), selecting participants from specific cohorts (first, second and foundation programmes), ensuring representation across varying levels of exposure to EHS programme. A non-randomised convenience sampling utilised for participant recruitment due to practical constraints; however, to minimise bias, participants were targeted from different demographics and academic interests. Recruitment occurred at Cardiff Metropolitan University (November – December 2024), via Moodle postings, in-person announcements, and snowball sampling. Eligibility criteria included students aged 18+ enrolled in Environmental Health (first and second year), and Health or Social Science foundation programmes, excluding those under 18 or in other programs. Of 16 initial participants, 10 completed the study after 6 dropouts. The final sample size was sufficient for a small thematic analysis to achieve data saturation (Braun and Clarke, 2013). Participants completed socio-demographic questionnaire, with Table 1 summarising their characteristics.

Data collection

The qualitative research involved primary data collection through one-to-one, semi-structured, open-ended interviews with students. The interview questions were designed to address the study's aims and research questions, scheduled and conducted interviews, and recorded responses. Altogether, 10 participants, 4 Social Science Foundations students (SS) and 6 Environmental Health students (EH) satisfied the inclusion criteria. Participants received an information sheet, consent form, and socio-demographic questionnaire via email on in person, returning signed consent forms and completed questionnaires before interviews. Interviews were audio-recorded for accuracy and lasted 20-60 minutes, depending on participant responses. Scheduling was based on participant availability and preference (Microsoft Teams or in-person), with 1-2 interviews conducted weekly over six weeks. Microsoft Teams facilitated scheduling, automatic transcription, and minimising inconvenience for nine participants, while a smartphone app (Voice Memos) captured audio recordings for in-person interviews. One in-person interview required reserving study rooms via Cardiff Metropolitan University's 'Connect2' system. Participants were informed of the study's purpose and their right to withdraw at any time. Transcriptions were electronically generated, reviewed twice for accuracy by comparing to audio recordings, and finalised for consistency. All audio files and transcriptions were securely stored on Cardiff Metropolitan One Drive Server with pseudonyms replacing participant names to ensure anonymity and confidentiality. A reflexive journal documented researcher's thoughts and potential biases throughout the study. Consistency was maintained by utilising a standardised interview guide across participants while allowing flexibility for probing during interviews.

Pilot testing

Pilot testing was conducted with peers to evaluate the feasibility of the data collection method before formal interviews. The target sample size was 3 participants, but only one was recruited after two initially agreed. Participant was approached in person and received preparatory documents (participant information sheet, consent form, and socio-demographic questionnaire) via email prior the interview. The interview was conducted on Microsoft Teams after obtaining consent. Transcribed data was analysed to identify errors,

align questions with research objectives, improve consistency and formatting, and address biases on ambiguities (Creswell and Creswell, 2023). The pilot revealed the need to refine discipline-specific questions and extend the interview duration from 40 to 60 minutes detailed responses. To prevent viability concerns and experimenter bias, the pilot data was excluded from the final analysis (Creswell and Creswell, 2023).

Data analysis

After data collection, the accurately edited transcriptions were analysed using the Braun and Clarke's (2022) six-step method for thematic analysis. The approach was adopted to identify, analyse, organise, describe and report inductive themes that were identified within the raw data (Braun and Clark, 2022). Firstly, data familiarisation involved a process of dataset immersion by repeatedly listening to recordings and reading transcripts using an inductive approach provide valuable orientation to develop themes from the data (Braun and Clarke, 2022). Secondly, NVivo12 a computer assisted qualitative data analysis software (CAQDAS) was used to systemically process and generate initial codes from the dataset by analysing participants' perception relevant to the research questions and each given analytical descriptions (Braun and Clarke, 2022). Thirdly, clusters of codes sharing a core concept potentially providing meaningful answer to the research questions were each identified and collated in candidate theme (Braun and Clarke, 2022). Next, developing and reviewing candidate themes were carried out to ensure appropriate alignment with the coded extracts and the full dataset to determine relationships (Braun and Clarke, 2022). The created themes underwent a refining, defining, and naming process to ensure conciseness by enabling each theme to be clearly demarcated and built around a core concept (Braun and Clarke, 2022). Lastly, the analytic datasets were interweaved into a coherent and persuasive formal report writing addressing the research questions (Braun and Clarke, 2022).

Ethical considerations

Ethics approval (UG-9947) for this study was obtained from Cardiff Metropolitan University Ethics Committee. Participants were informed of their voluntary participation and provided a

consent letter outlining the study's purpose, their role, and withdrawal procedures (Creswell and Creswell, 2023). To maintain confidentiality, participants' names were anonymised, and all data (raw, transcriptions, and analysis) were securely stored on a password-protected computer in a OneDrive folder accessible only to the researcher and supervisor. Cardiff Metropolitan University will retain and securely dispose of this data after 5 years, adhering to the General Data Protection Regulations and Data Protection Act (2018) (UK Research Integrity Office, 2023).

Results

In total, 10 students participated in this study, were interviewed from the Environmental Health and Social Science Foundation Programmes. Table 1 displays representation from each programme with age ranging from 18-49, 60% age group 18-24 and equal distribution of gender. Also, 80% of participants were white and 70% reported living with a disability (physical, mental, sensory impairment or neurodiverse).

Table 1: Demographics of interviewed participants.

	N	%
Programmes		
BSc Environmental Health (EH)	6	60
Social Science Foundation (FS)	4	40
Age		
18-24	6	60
25-49	4	40
Gender		
Female	5	50
Male	5	50
LGBTQ		

Yes	1	10
No	9	90
Ethnicity		
White	8	80
Ethnic minority groups	2	20
Employment		
Yes	4	40
No	6	60
Disability		
Disability	7	70
No Disability	3	30

Thematic analysis revealed three overarching themes in relation to factors impacting students' enrolment: influential factors, career opportunity awareness and enrolment strategies to improve programme enrolment.

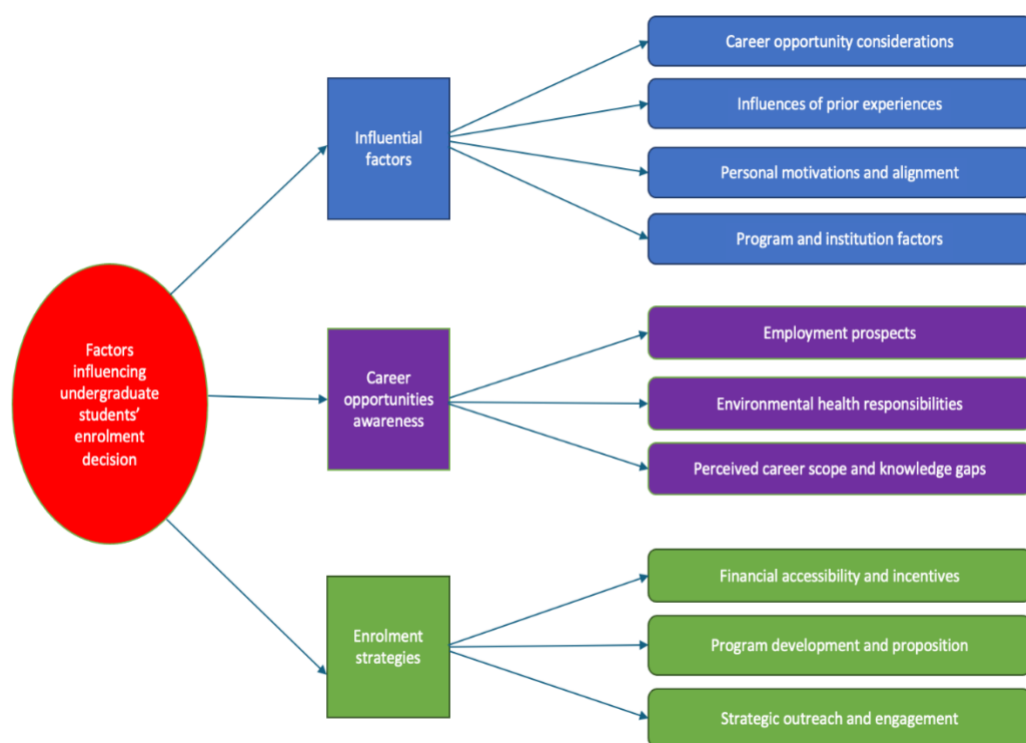


Figure 1: Thematic mapping of themes.

Influential Factors

The semi-structured interview questions aimed towards identifying influences towards student's program selection decisions. Personal motivations and alignment, influences of prior experiences, career and opportunity considerations and programs and institution factors were identified to address the influences on students' program selection decision. Both cohorts displayed an understanding of personal reasons for applying to university. These have been categorised as influential factors.

Personal Motivations and Alignment

Student career choices were identified as self-motivated. Participants expressed deep sense of gratification as an important factor by emphasising on internal factors which foster intrinsic rewards, psychological benefits from societal impacts and personal interests, as motivators aligning with career choice. Participants expressed emotional satisfaction and altruistic impact from their role, contributing to society. This was a reflection made by both cohorts.

“good opportunity to feel good. You know, you're actually making a difference, ... feel actually like you're making a difference.” P1 (EH).

“...rewards of it are...improving people's lifespan.” P7 (FS).

“It might be quite rewarding, just in the sense that it makes you feel good about yourself. If you're making a difference towards the world...” P9 (FS).

Others highlighted the importance of tangible societal impacts within community to improve public health.

“...I was in housing and like, you know, I made a landlord fix issues in a house. It changes, somebody's life changes.” P8 (EH).

“...a healthier nation and more. And yeah, sort of just healthier nation.” P7 (FS).

“helping the Community be safe, whether that's environmental, food or housing.” P6 (EH).

Similarly, personal interests were highlighted as important to sustained career engagement.

“In all honesty it's interesting, it's uh. It's not a topic that you get bored with.” P3 (EH).

“I mean, of course, like my interests and what I'm good at...” P9 (FS).

The analysis highlighted varied internal factors to be impactful in student career choice.

Influences of Prior Experiences

Career decision-making can be influenced by personal and professional exposure. Participants alluded to prior experiences in specific industries were significant in shaping academic and career pathways. Professional work exposure and inspirational interactions and familial relationships inspired self-directed research. Participants from both cohorts highlighted professional role in specific industries provided work experiences that shaped individual career choices.

“I want to get back into the military...the course would offer me, like an entry back in...” P4 (EH).

“I approached psychology initially because...I've worked in mental health care...also supporting...young lady...brain injury...” P5 (FS).

“I've had a career in food...butchery for 10 years...” P6 (EH).

Others highlighted interest were created during interactions with professionals knowledgeable about career.

“...had interaction with an environmental health officer...led to further research” P1 (EH).

“...they [teachers] talking about environmental health officers...responsibilities...intrigued me” P2 (EH).

Both cohorts highlighted family influences as a contributing factor in career choice.

“...my dad...housing...career...amazing stories...I’d love to go out and experience that... stuff” P4 (EH).

“...obviously my brother with autism...inspired me to go for that” P7 (FS).

Similarly, inquisitiveness of participants from both cohorts prompted independent research into academic opportunities.

“...I feel like people...like researching things...” P7 (FS).

“School...doesn’t come into it. It was...my own research...Google...course page.” P8 (EH).

External factors highlighted as experiences impacting career decision-making.

Programs and Institution Factors

The emerging theme correlates with factors influencing higher education program and institution selection. Academic factors comprised of specific entry requirements and program quality and reputation, and institutional characteristics were significant elements considered in the decision-making process. Participants discussed academic qualifications for chosen programs, program recognition through accreditation by professional bodies and locality of institution to permanent residence were considered.

Both cohort awareness of the entry requirements to university course mentioned the importance of obtaining relevant academic qualification requirements such as GCSE's and A-Levels for prospective students to enrol on university programmes.

"I had the grades to go on to the course..." P3 (EH).

"What I did in my A levels what I did in GCSEs..." P9 (FS).

Others highlighted accreditation by recognised professional bodies and reputation influences perception and credibility by citing specific universities.

"...only a few universities are accredited...by Chartered Institute I think... obviously...Middlesex, Cardiff Met...one up Liverpool and obviously further." P2 (EH).

The geographical proximity and accessibility play an important role in decision-making, as a participant highlighted the manageable commute from Devon to Cardiff impacted their choice.

"Obviously Cardiff was the closest for me because obviously I'm from Devon, so obviously it's only like 2 1/2 hours commute sort of thing obviously, but so it's not too far away," P2 (EH).

Whereas another participant highlighted the challenge of recruiting students from distant locations, which emphasised an importance in accessibility.

"...One person from 5 hours away on our course. And it's just a bit like, that's the only person we grabbed." P8 (EH).

Program and institution selection factors collectively influenced student's university program decision.

Career and Opportunity considerations

The diverse and appealing opportunities of an environmental health career emerged during this theme; predominantly by EH cohorts. Participants noted careers that offer varied professional experiences and emphasized financial considerations as influences, especially university graduates career choice. Participants highlighted the importance of programs leading to multifaceted professions offering varied work experience, combining office tasks, fieldwork and interpersonal engagement responsibilities.

“You get a mixture of a bit of everything. You're out in the field, but you also sat down [desk work] doing work.” P1 (EH).

“...you can actually go out...do stuff rather than sitting down writing report...the ability to go and sort of meet new people.” P4 (EH).

“It was kind of perfect...you can be doing this, you can be doing that...you'd be out one day, in the office the next...speaking to people and potentially ending up in court.” P8 (EH).

Also, career aspiration was emphasised as an opportunity for rapid progression.

“...progression within your career...is a big reward.” P6 (EH).

Additionally, financial considerations were highlighted as an influence in program selection.

“the money on the other side is pretty good...Environmental health students earn more money than a lot of people in the health sector.” P3 (EH).

Importantly, the difference in regional cost of living was mentioned.

“...obviously London...it'd be much more expensive” P2 (EH).

Career Opportunity Awareness

Multiple questions were designed to determine students' awareness of career opportunities in Environmental Health. The approach aims to provide a comprehensive understanding of students' perspectives on the sector's professional pathways. Employment prospects, environmental health responsibilities and perceived career scope and knowledge gaps were derived from the analysis.

Employment Prospects

The data analysis revealed EH cohorts highlighting employment preferences and considerations between public and private sectors opportunities for Environmental Health graduates. Evidently, personal values such as serving the public and practical motivations such as financial incentives were discussed. Participants mentioned aspirations to work in the public sector, particularly local councils; however, private sector was acknowledged to have more financial advantage, which is considered a significant factor in career decision-making.

Participants expressed varying preferences working in public or private sector by considering financial motivation which impacts personal preference and recruitment rates.

“I know private sector has a lot more money, which is a big factor,” P1 (EH).

“A lot of them go private...for the money.” P8 (EH).

Despite the financial benefits in private sector, participant expressed desire towards public sector employment, particularly in local councils.

“I would like to go into the public sector...work with my local council.” P1 (EH).

The diverse employment opportunities within both sectors were acknowledged by participants.

“...work for...specific companies...like Tesco or...like corporate companies sort of thing.” P2 (EH).

“Go into the public sector and probably work...re-enlist in the military as a paratrooper...” P4 (EH).

The complex decision-making approach is evident in shaping participant preferences between public and private sector employment.

Environmental Health Responsibilities

The analysed quotes provided a recurring theme on the multifaceted responsibilities and scope of environmental health roles, emphasising the varied specialisms of the profession. Legislative enforcement, food hygiene inspections and addressing housing conditions were identified to promote public health. Food safety specialism appeared to dominate the other field; however, each field is reflected as measures to safeguard individual and environmental health.

The role of environmental health professionals in creating sustainable environments and ensuring public safety was apparent to EH participants.

“...better the environment and create a sustainable environment for the future as well... thought it was about like pollution. And global warming...” P3 (EH).

The knowledge of food safety highlighted as a primary responsibility was developed through personal experiences and visible indicators of food safety regulations reinforced the importance of this responsibility to participants from both cohorts.

“...obviously, you know, food safety, I've met a few of them before.” P7 (FS).

“...you know the food hygiene rating you see on the doors? Yeah, we're involved with that...food safety was definitely one of the biggest ones that I was aware of.” P8 (EH).

Participants recognised workplace health and safety as another key responsibility, particularly in relation to machinery operations and overall workplace safety.

“Health and Safety at Work pathway... health and safety in the workplace... Knowledge of how machinery works,” P3 (EH).

“I was obviously aware of, like health and safety officers...” P6 (EH).

The varied responsibilities highlighted by participants are a result of general awareness, personal experiences and visible indicators of the profession.

Perceived Career Scope and Knowledge Gaps

The theme revealed that initially participants perception of environmental health was limited, particularly the interdisciplinary scope. The profession was mostly associated with ecological concerns instead of public health by ‘FS’ cohorts. The significant lack of awareness and understanding about environmental health and associated career pathways among participants, reflected systematic gaps in foundational EH education and public awareness, whilst highlighting the need for better education and outreach in the field.

The ‘FS’ cohort consistently expressed a lack of knowledge about environmental health, its definition and potential career pathways.

“I'm not sure what environmental health is... I don't know too much about it...what you could be in environmental health...” P7 (FS)

“I don't really know the definition or anything... never been something I've really thought about...” P9 (FS)

“I didn't know that environmental health was an actual aspect of which people went into like, personally.” P10 (FS)

The ‘EH’ cohort mentioned often having held misconceptions about the scope of environmental health, initially believing it was limited only to environmental issues.

“...don't understand like the health and safety aspects, the food aspects or the housing aspects. They just think it's strictly the environment and like how that yes, impacts health.” P2 (EH).

“I didn't know a food inspection and public health was part of our environmental health as well.” P4 (EH).

Also, participants were astonished at the diverse career options and interdisciplinary nature of the profession, which became apparent through academic involvement with the program.

“I didn't expect us to work with other professions as such, but it's been quite an eye good eye opener on that behalf... workplace safety, I wouldn't consider or didn't consider environmental health.” P1 (EH).

Misunderstanding of environmental health was recognised in both cohorts which highlighted the need for more effective communication and educational strategies to address knowledge gaps to redefine perceptions and increase interest of the discipline.

Enrolment Strategies

The analysed data synthesised the following themes: financial accessibility and incentives, program development and proposition and strategic outreach and engagement, to provide actionable strategies for improving enrolment rates.

Strategic Outreach and Engagement

The interview responses highlighted the necessity for early intervention, strategic collaborative partnerships and diverse methods of communication are essential to address awareness gaps among target demographics. Participants emphasised targeting younger audiences at educational institution and utilising various techniques to develop foundational interest in career paths to reduce knowledge gaps and foster interest in underrepresented discipline.

Participants from both cohorts suggested universities and related organisations need to adopt diverse, targeted strategies to improve awareness and attract students to environmental health programs by targeting younger demographics.

“...probably tackling younger people so they know more about it... tackling people at the high school, A and college level.” P1 (EH).

The younger generation, I think... A-level students, I want to say, or year Elevens who, at the moment are still trying to figure out what they want to go into, what they might want to study in A-levels.” P10 (FS).

Hybrid engagement combining in-person experience and digital platforms emerged as pivotal for promotion techniques and leveraging social media platforms to influence potential students, especially younger generations that frequently exploit technology.

“I reckon... fun interactive way...like a PowerPoint, maybe...practical like talks... promotional video...mainly...getting people like the understanding of what it is.” P2 (EH).

“...social media cause a lot of students are on social media... most likely...people are going to see it...on Instagram and Snapchat, maybe even on like television and that” P3 (EH).

Participant highlighted foundation and 1st year courses, should implement program specific lectures that are linked to other pathways to stimulate interest and provide options for students that are indecisive of their career choice.

“I think... coming to our lessons...shouldn't just keep it to foundation... go make a session... with other different courses. You might find that most students... at foundation... was quite... eye- opening to us... we never thought that... there was some like that... sometimes we... chosen a pathway and then... the first year of that pathway... we want to change... go in... some people might want to change and look at different pathways.” P5 (FS).

Collaboration with various organisations and professionals was emphasised by both cohorts as a strategy to enhance visibility and credibility of environmental health programs.

work with probably like public organisations like maybe the Council so promote themselves that way. That'll be a good idea,” P4 (EH).

“...maybe collaborating with, like, Health and Safety Executives... even, like public health, with the NHS,” P8 (EH).

“...the World Health Organisation have them give speak, speeches, potentially... University students go into schools and give lectures on what they could experience, what they could learn.” P10 (FS).

Heterogeneous approach was highlighted by participants from both cohorts to address the challenge of increasing awareness and interest in disciplines among younger generations.

Program Development and Proposition

This theme highlighted participants desire for the integration of more practical, hands-on experience into academic programs through extended programs and apprenticeships to gain effective exposure to environmental practices. Additionally, highlighting the demand for

better awareness and communication to minimise gaps in public understanding and to create more extensive and engaging education experiences that connects theoretical and practical elements.

Participants implied early exposure introducing prospective students to the discipline through guest speaker initiatives by utilising current students as ambassadors provide a more relatable perspective to high school students and will potentially influence their career choice.

“...the management side of things like I think there could be utilisation of students more... doing the course... there's no harm in sending us out... with the lectures... To go and give presentations to local schools.” P6 (EH).

“...we get loads of guest speakers in our lectures and it's great...I'm thinking if I had those guest speakers...in high school... I would have known what I wanted to do just from hearing the experience...” P8 (EH).

The introduction of apprenticeship schemes emerged as a crucial strategy for program enhancement as it illustrates the attractiveness of earning while learning; a competitive advantage to potentially attract more students including rural areas to the program, as it addresses the financial concerns of students living away from home whilst creating an opportunity to gain practical experience.

“I know other universities offer...apprenticeship scheme... I was looking at Weston University and they offer an apprenticeship with Bristol... but you get paid whilst you do your studies’, and it was quite enticing.” P1 (EH).

“Some sort of apprenticeship scheme... with different council not limited to just a massive city, more of a rural council as well. It gives people a chance to work, to work and earn and then it’s not so bad to try and live away from...” P8 (EH).

Participants proposed several curriculum enhancements to improve the appeal and effectiveness of the program such as combining theoretical study with an extended practical

work placements [sandwich degree] to provide more substantial practical experience and offer variety within the program.

“Maybe it's just a longer placement because I think we only do a week in year 2. Could be like a summer programme they could implement.” P1 (EH).

“I think...like a sandwich degree or something like that.” P2 (EH).

Participant suggested program enhancement through international collaboration and expansion to enrich the program, increase enrolment, and provide global approach in environmental health education.

“Maybe more of an international approach as well... in Australia and New Zealand... trying to like level out the teachings... maybe increasing uptake from over there...I think that would be great to get more people...in the UK.” P8 (EH).

Collectively, the suggested strategies aim to enhance program's appeal, improve student experience, and increase enrolment by managing elements of program development and delivery.

Financial Accessibility and Incentives

This analysed data highlighted financial considerations such as starting salary and funding opportunities as a significant factor in motivating students and professionals, attracting individuals to pursue and retaining careers in environmental health. Nevertheless, participants noted concerns between the desire for financial incentives and the reality of limited resources, especially in the public sector roles within local councils. The personal financial motivations and the broader economic constraints were highlighted as a challenge within the discipline, and participants suggested financial incentive strategies as attractors.

Participants from both cohorts highlighted financial incentives play a crucial role influencing students' decision to pursue environmental health degree and related careers whilst

highlighting strategies promoting monetary benefits could effectively increase interest, particularly among young people prioritising financial stability.

“...could always talk about the financial awards as well... people...go into degrees for the money, and I know environmental health is one of those jobs where has money in.” P1 (EH).

“...the jobs...salary is quite a big thing...definitely young ones who just want to get out into the working world. So, I feel like maybe like talking about the salary.” P7 (FS).

Despite the potential financial rewards, participant conveyed environmental health sector faces significant funding challenges that impact various elements within the profession such recruitment difficulties and essential functions like inspections, which raises concerns on the long-term sustainability and effectiveness within the field.

“Cardiff Council's very limited with who they'll hire because they just don't have the money to hire people... had to cut funds. You're not going to be able to do that inspection... I know again funding is an issue and obviously coming from overseas, you might not get the funding that you need to study here because you'd have to live here as well.” P8 (EH).

However, participant suggested potential solutions to address the financial challenges and increase recognition of the discipline by proposing historical practices of council sponsorship to alleviate students' financial burdens and providing early exposure to increase awareness of the profession.

“...you couldn't get on to an environmental health course years ago unless you were sponsored by a Council... should still be a thing because...a lot of people don't know anything about the course until they start learning about it...” P8 (EH).

The theme revealed challenges between profession's financial benefits and resources limitations that impact its' essential functions.

The thematic analysis has highlighted themes to represent the objectives of the study. It has provided influential factors for student career choice, highlighted their awareness of Environmental Health programme and identified strategies to improve Environmental Health programs enrolment rates by effectively engaging underrepresented groups to address awareness gaps.

Discussion

Declining enrolment trends in Environmental Health Science programs impact the sustainability of academic programs and professional recruitment capabilities (Nicholls & Parkinson, 2002; Coyne, 2021). The study conducted evaluate factors influencing undergraduate enrolment in EHS programmes at Cardiff Metropolitan University. The purpose of the research results provided valuable insights into factors influencing student program selection, career opportunity awareness and effective enrolment strategies in higher education, particularly for EHS programmes. The discussion will analyse these findings, drawing connections to existing literature and highlighting implications for educational institutions and policymakers.

The first research question identified key influences on students' programme selection decision, was answered by the theme 'Influential Factors'. Data analysis highlighted influences as internal and external factors impacting student's career decision-making (Wiseman et al., 2017). The second research question assessed prospective student's awareness regarding EHS associated career pathways. The theme 'Career Opportunity Awareness' answered and revealed varying levels of career awareness and knowledge gaps in employment prospects among students from the different cohorts about career opportunities in Environmental Health (Nicholls and Parkinson, 2002; Ratnapradipa et al., 2011). Thirdly, the research question gathered suggestions for improving enrolment rates in Environmental Health. This was answered by the theme 'Enrolment Strategies' as suggestions to utilise varied communication media were primarily discussed (Finn and Fallon, 2015).

Influential Factors

The finding highlighted personal interests to be an important factor in career decision-making. The findings align with existing research on factors influencing student programme decision, particularly intrinsic motivation of adolescent and desire to improve societal, impacts often prioritise altruistic goals (Thomaes et al., 2023; Dunn et al., 2024).

Intrinsic rewards such as the desire to benefit society, led to high career satisfaction. This satisfaction derived from making a positive societal impact, significantly influenced career decisions as supported by Akosah-Twumasi et al., (2018).

Prior experiences including professional exposure and family influences, played an important role in shaping career choices, particularly interactions with industry professional and family members in related fields inspired students' interest to explore. Akosah-Twumasi et al., (2018) stated, familial, peer and social interactions strongly impact career decision-making in youths (Dun et al., 2024). Oosthuizen et al., (2024) highlighted influences of prior experiences and family relationships coincide with social constructivist theory would actively engage student in career pathways.

Additionally, career and opportunity considerations focused on diverse role within a profession, offering mix of office work, fieldwork and interpersonal engagement reflect the importance of job market versatility and the trend towards multifaceted professional roles (Nicholls and Parkinson, 2002). Rapid career progression and financial remuneration on completion of university were suggested as significant aspects that contribute to student evaluation of career pathways (Akosah-Twumasi et al., 2018; Poole et al., 2023).

Program and Institutional factors including course accreditation (Hemsley-Brown and Oplatka, 2015), reputation and credibility were identified as significant aspects that contribute to student evaluation of career pathways, highlighting quality assurance in higher education as supported by Funeka et al., (2022). Zarandi et al., (2022) supported this claim by stating positive institutional reputation impact students' emotional bonds that foster close involvement and enhances longer business relationships. This factor is relevant in EHS as accreditation significantly impacts future career prospects (AGCAS, 2023).

Career Opportunity awareness

The study suggested several important insights into student's awareness of Environmental Health (EH) career opportunities. The analysis highlighted relationship between employment prospects, professional responsibilities and knowledge gaps influencing students' understanding and interest in EH programs.

Awareness of diverse employment opportunities were highlighted throughout; however, desire to serve the public compared to the financial incentives offered within the private sector suggested a significant impact on student career choices. This is supported by the constant recruitment efforts and significant reliance on temporary agency staff within local authorities (Nicholls and Parkinson, 2002; CIEH, 2021; CIEH 2024).

Environmental health responsibilities highlighted was primarily focused on food safety which may be attributed to the visible presence in ensuring public safety (Elliott, 2024). The limited perception of the profession scope has highlighted the ongoing need to address comprehensive education about the multifaceted roles, mentioned by Nicholls and Parkinson (2002) and supported by Ratnapradipa, (2011). Significant knowledge gap was identified among the foundation cohorts, displaying lack of awareness and misconceptions through initial association of the profession with ecological concerns rather than broader public health implications. This misunderstanding potentially creates recruitment barriers and highlights improved outreach and education about EH careers (Nicholls and Parkinson, 2002; Elliott, 2024).

Additionally, the results indicated EH programmes exposure through academic involvement increase students' appreciation of the diverse career options, which suggests practical experience and comprehensive educational information potentially attracts and retain students (Funeka et al., 2023). The analysis highlighted the importance of targeting career education and outreach of EH careers to improve the awareness and understanding among prospective students (Knechtges, 2015; Martin, 2023).

Enrolment strategies

During the analysis, several key strategies were suggested to improve student enrolment in EHS programme at Cardiff Metropolitan University. Strategic outreach and engagement, programme development and financial accessibility and incentives were sub-themes used to categorise the main findings.

Strategic engagement emerged as crucial in attracting students to EHS programmes, particularly targeting younger demographics attending high-school and A-level, to create early interest towards the discipline. This coincides with previous research suggesting early exposure to career options significantly influences students' educational choices (Ratnapradipa, 2011; Thomaes et al., 2023). Diverse communication methods proposed were social media and interactive presentations to adapt recruitment strategies to the technological era (Wiseman et al., 2017; Houghton, 2019).

Improving collaborations campaigning with professionals and organisations was stated to enhance prominence of EH programmes (ASPHER, 2020). Funeka et al., (2023) supported this claim by stating institution relationship with key industry stakeholders is considered important in attracting students to university. Additionally, curriculum enhancement through mix practical experience, extended placements and apprenticeship schemes were suggested to improve student enrolment and address recruitment, as evident by Elliott, 2024 and Oosthuizen, 2024.

Financial accessibility and incentives were highlighted through the study as significant motivators by communicating the rewards to potential students; however, comparisons highlighted limited fundings within local councils. Dyjack et al., (2021) stated connection between environmental health and public health funding and proceeded to highlight public health funding significant decline in most developed countries. Also, Elliott (2024) supported this by alluding to extensive funding challenges in environmental health sector which requires governmental financial assistance to encourage the next generations of environmental health professionals. Addressing resource allocation and awareness gaps whilst implementing early intervention, diverse methods of engagement, and enhanced practical components alignment with current higher education recruitment and retention strategies (Martin, 2023; Poole et al., 2023; Elliott, 2024).

Implications of the research

The study has potential to significantly impact EHS programme at Cardiff Metropolitan University along with other higher education institutions, by providing evidence-based insights for student recruitment strategies and programme improvement. The research has provided theoretical, practical and future implications.

Theoretical

The study highlighted the importance of intrinsic motivations, such as personal satisfaction and societal impact, in career decisions. The findings align with existing theories on personal and professional experiences shaping academic and career pathways. Furthermore, it highlights institutional factors like programme accreditation and geographical proximity in students' higher education choices.

Practical

The findings highlighted that universities could increase recruitment for EHS programmes by improving outreach to younger students (high school and A-levels) and addressing knowledge gaps and misconceptions about environmental health through education and awareness campaigns. Highlighting career prospects and financial incentives were also suggested, as financial factors significantly influence students' decision.

Future

The study reveals need for more research on effective communication strategies to promote unfamiliar disciplines like EHS. Future research could explore long-term effects of early intervention programmes on student enrolment in EHS and related disciplines. Additionally, aligning research with job market trends for EHS graduates could help universities enhance programme and recruitment strategies to meet industry demands.

Limitations

The study discipline-specific programme focus at Cardiff Metropolitan University, small sample size of 10 participants and limited integration of quantitative data reduce generalisation of findings to other institutions, populations, or fields. Additionally, utilising

semi-structured interviews may introduce biases based on participants' willingness to share experiences (Braun and Clarke, 2013). Time constraints and researcher's inexperience may also restrict the depth of data collection and analysis (Creswell and Creswell, 2023). Nonetheless, the study aims to offer valuable insights into an underexplored area.

Validity and Reliability

Participants received copies of the transcription for verification, ensuring data authenticity and accurate representation of their views through member checking (Creswell and Creswell, 2023). Additionally, transcripts were reviewed for errors, and the supervisor cross-checked independently developed codes, to confirm the reliability of the methods (Creswell and Creswell, 2023).

Conclusion

The multidisciplinary Environmental Health profession crucial in safeguarding public health, faced recruitment and retention challenges attributable to EHS undergraduate enrolment declination. This research provides enlightenment into factors influencing enrolment in EHS undergraduate programmes at Cardiff Metropolitan University. Primary findings highlight the importance of career prospects, programme reputation, and awareness of EHS discipline in shaping student decisions. Misconceptions about EHS careers and knowledge gaps among prospective students, especially foundation cohorts, were notable. Strategic outreach utilising varied communication methods, and early interventions are recommended to improve awareness and enrolment. Aligning educational opportunities, student motivations and career aspirations, whilst addressing broader societal environmental health impacts, potentially increase undergraduate enrolment rates. Future research could expand to other United Kingdom universities offering EHS programmes for comparative analysis, include mixed-methods approaches, expanding sample size to include alumni and third-year students, and including longitudinal data to identify trends.

Recommendations

The recommendations aim to address key study findings to improve enrolment in EHS by targeting influential factors, increase career awareness and implement strategic outreach initiatives. Firstly, more qualitative studies are needed to explore students' career influences, as existing literature is predominantly quantitative. Secondly, implement early outreach strategic school programmes (high schools/A-levels) using mixed communication methods (digital/in-person) to introduce EHS careers early, mirroring Scotland's school initiative (Royal Environmental Health Institute of Scotland, 2021). Thirdly, remedy misconceptions by promoting EHS careers' multidisciplinary roles, prospects, and financial benefits through campaigns to improve public awareness (CIEH, 2020). Furthermore, university can implement work-integrated learning by developing Welsh Government funded apprenticeships under Section 5 of the Well-being of Future Generations Act (2015), an alternative proposal for course viability (CIEH, 2021) or sandwich placement programmes, to enhance graduate experience and programme relevance.

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