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MSc Environmental Health

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Originality Statement

'I declare that this assessment is my own work and that I have correctly acknowledged the work of others using the Harvard referencing. This assessment is in accordance with University guidance on good academic conduct'.

Exploring the Risks and Complications associated with Non-Surgical Aesthetic Treatments (NSAT) - A Systematic Review and Analysis of the Perspectives of Environmental Health Officers on the Current State in the UK and Nottinghamshire.

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The completion of this dissertation would not have been done without the continued support of numerous people. I would like to take the time to express my gratitude for all of the help and support that I have received.

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Chapter One – Introduction and Background

1. Introduction

1.1 Background

Non-surgical aesthetic treatments (NSAT), including Botox, dermal fillers and the Brazilian Bum Lift (BBL), is one of the fastest growing healthcare sectors in the United Kingdom (UK). The industry was estimated to be worth £3 billion in 2022 (Ilsemann, 2022).

This sector is unregulated in England which means that there are no mandatory requirements to have appropriate training, adhere to ethical standards, have regard for product quality used on clients, or be a member of a regulatory organisation (Illsemann, 2022). Lack of regulation has led to the prevalence of mobile treatments that are being conducted in office spaces, hotel rooms, pop-up shops, homes and other unsuitable environments (appg, 2021).

Any procedure that punctures the skin carries the risk of transmission of blood borne viruses. Therefore, NSAT carried out incorrectly, in unsafe environments, by an incompetent and untrained practitioner with inappropriate infection control exacerbates the risk of serious injuries (CIEH, 2021) such as blood loss, bruising, infection, deep vein thrombosis (DVT), wound healing problems and even death (Latham, 2010).

The only legislation protecting consumers and the NSAT sector is The Local Government (Miscellaneous) Provisions Act 1982. This legislation gives Local Authorities (LA) Environmental Health Officers (EHO) the power to adopt a registration and licensing scheme and local byelaws for four 'special treatments' including acupuncture, tattooing, ear piercing and electrolysis (appg, 2021; CIEH 2022). However, new and future treatments available on the market are not covered by the current legislation or licensing scheme (CIEH, 2022). There is a fine line between regulation and EHO acting ultra vires.

There is an urgent call for new legislation to introduce a mandatory licensing scheme for all practitioners and premises providing NSAT.

1.2 Aims

The aim of the study is to critically examine the state of NSAT (with a specific focus on Nottinghamshire) drawing on evidence from LA EHO and Environmental Health Colleagues. It will systematically review and assess the risk and complications associated with NSAT and

discuss possible frameworks for more ethical and regulated practices, to enable the UK to align to global standards.

This dissertation will have a specific focus on Nottinghamshire LA since they have adopted their own version of the legislation Local Government (Miscellaneous Provisions) Act 1982 through the Nottingham County Council Act 195 for licensing of special treatments. (CIEH and Institute of Licensing, 2020). The researcher works as a Graduate Environmental Health Officer for one of the LA in Nottinghamshire.

1.3 Objectives

- Identify and critically assess the current state of NSAT in the United Kingdom (UK) / Nottinghamshire.

- Identify the risks and complications associated with NSAT (specifically dermal fillers) and the effect that this may have on public health and population health.

- Critically evaluate existing global frameworks and provide evidence-based recommendations that could be adopted in the UK / Nottinghamshire.

1.4 Research Question

The research question has been formed according to the PECO framework (population, exposure, comparison outcome) (Moola et al, 2015) (Table 1):

"What are risks and complications associated with dermal fillers and what effect does this have on public health?"

Table 1 – Research question using the PECO framework

Population	Exposure / Intervention	Comparison	Outcome
Any person who has undergone a treatment	Unregulated cosmetic treatments (Dermal Fillers)	Regulated cosmetic treatments	Risks and complications

1.5 Justification for the methodology

As an emerging topic of concern, there are a lack of systematic reviews with this research question. A systematic review of this type allows for a scoping type of study to gather all available evidence at this time on risks and complications associated with NSAT, which will highlight the risk to the public's health and fill the literature gap. Systematic reviews are viewed as the strongest form of evidence, it is at the top of the evidence hierarchy (Murad et al, 2016). They aim to synthesise all available evidence in a particular research area by combining, analysing and interrogating the findings to inform decision making (Menon et al, 2022). They have an explicit methodology, whereby each stage of the review is predefined, this requires rigorous planning, but it means that the review is transparent and reproducible. Systematic reviews are designed and conducted in a way that minimises bias (DistillerSR, 2024).

Gathering opinions from LA EHO in Nottinghamshire, via questionnaires, will further strengthen this dissertation as their professional opinion will be an asset to this research, and it will provide credibility to the evidence / data collected. Both the systematic review and primary data collection (questionnaires) will provide evidence-based recommendations that could be adopted in Nottinghamshire / UK.

Note: The terms unregulated cosmetic treatments and non-surgical aesthetic treatments are used interchangeably in this study.

Chapter Two – Literature Review

2. Literature Review

2.1 Dermal Fillers (Types, Composition, Uses and Risks)

Dermal fillers (DF), also known as facial fillers, are soft, gel-like substances injected beneath the skin (Colon et al, 2023). DF were first introduced in clinical practice for therapeutic use, specifically for resolution of facial spasm and lipoatrophy (Sinha et al, 2021). DF are now more readily used to soften nasolabial folds, smooth vertical lip lines and chin wrinkles, fill acne scars, plump the lips as well as a variety of other uses (Colon et al, 2023).

The International Society of Aesthetic Plastic Surgery (ISAPS) reported that the number of HA injection procedures performed globally between 2015 and 2021 doubled to 5 million per annum. However, with this increase there has been an increase in non-expert practitioners (Franzco, 2024).

Globally there are approximately 160 injectable fillers currently in circulation (BAAPS, 2025). They vary in their composition, duration of effect, palpability, ease of administration, potential complications and other factors, all of which effect their therapeutic results (Urdiales-Galvez et al, 2017). They can be derived from human, animal, bacterial, fermentation or synthesis processes, and are categorised as temporary (hyaluronic acid and collagen), semi-permanent (Poly-L-lactic acid) or permanent (silicone) (BAAPS, 2025).

HA is found naturally within most body tissues including this skin. As HA filler decomposes under the skin it undergoes volumetric changes attracting moisture into the skin, which helps restore a more youthful appearance (Li et al, 2022). In the event of overcorrection or complications, HA is dissolved with hyaluronidase, which offers practitioners with a level of safety and control that is not possible with other dermal fillers (Colon, 2023). Whilst this is positive hyaluronidase can migrate to other areas in the body, creating additional secondary risks (Wongprasert, 2022).

Save Face, a Government Approved Register (GAR) conducted a consumer complaints audit between 2017 and 2018, which revealed a total of 934 complaints in relation to NSAT. 616 complaints were regarding dermal fillers (Save Face, 2025). Some adverse effects include site reactions, including edema, pain, erythema, itching and ecchymosis, hypersensitivity reactions, infections (CIEH, 2021), Tyndall effect, surface irregularities, nodules and granulomas (Sinha, 2021). More serious complications can be permanent and

life-threatening (Sihna, 2021) these include vascular occlusion, blindness and skin necrosis (Colon, 2023).

Vascular complications are attributable to filler migration resulting in an inflammatory response obstructing blood supply. This can consequently lead to skin necrosis (Hong, 2024). Skin necrosis can occur immediately after the injection of the filler or develop at a later stage during swelling and expansion of the filler (Keogh, 2022).

Prompt and accurate diagnosis, followed by immediate intervention is essential to mitigate the adverse effects of vascular complications (Hong, 2024). Therefore, a practitioner must be suitably and sufficiently trained to recognise and intervene should adverse effects arise. A study found that those who experiences severe complications had not been adequately counselled on the risks and complications of the procedure (Shamil, 2022).

2.2 Liquid Brazilian Butt Lift (BBL) - Procedure, Safety Concerns and Regulation

The liquid BBL is an emerging NSAT of concern. Over the past five years it has become one of the most popular and controversial procedures in aesthetics surgery (JCCP, 2024).

This procedure involves a practitioner injecting large volumes of filler into the buttocks to change the shape, size, and contour of them without having to undergo surgery. This type of treatment should be conducted in a clinical environment by a fully trained practitioner. However recent media coverage of this procedure has reported it being carried out in hotel rooms and backstreet treatment rooms on the high street (Davies and Mundasad, 2024).

The liquid BBL is an alternative type of surgical Brazilian Butt Lift, involving a surgeon transferring fat from one part of the body into the buttock. The British Association of Plastic Surgeons (BAAPS) in 2018 advised its members to not conduct this procedure due to the severity of associated risks and complications associated with the treatments, as well as the high incidence of death rates. In 2022 BAPPS published new guidance and a new technique called superficial gluteal lipofilling (SGL) for the liquid BBL (Davies and Mundasad, 2024). However, many members of BAPS still do not carry out this procedure due to concerns of its fatal risks. One of the biggest risks is filler migration, which can cause a blockage in the blood vessels and in some cases blood clots can travel to the lungs (Davies and Mundasad, 2024). Other risks include (amongst others) pulmonary embolism, thrombotic ischaemic events,

sepsis, local anaesthetic toxicity and allergic responses present both possible and immediate risk to life (JCCP, 2024).

New guidance on the liquid BBL procedure was released in October 2024 following a consultation. The guidance was produced by different stakeholders including BAAPS, the Joint Council for Cosmetic Procedures (JCCP), the British Beauty Council and the British College of Aesthetic Medicine (BCAM) (JCCP, 2024). It was agreed that the liquid BBL and grafted autologous fat procedures are surgical procedures which should only be performed by an appropriately trained specialist who is GMC registered, has additional qualifications to undertake surgical procedures and can showcase ongoing competence in the performance of BBLs.

The consultation found that the competence and the facility to manage associated risks are prerequisite in improving survivability and these can only be found in a CQC regulated setting. Given the range of potential adverse incidents, and the comprehensive supply of emergency medicines necessary to mitigate these risks, the ad hoc supply of Prescription Only Medicines (POM) in an emergency would also be contrary to any legislation unless a medical practitioner was in attendance (JCCP, 2024).

The liquid BBL and its associated risks and complications is an example of the need for regulation within this sector especially in the event that unregistered practitioners conduct these complex and potentially deadly procedures (JCCP, 2024).

2.4 Regulation and Public Health Implications

Un-Clinical Environments

NSAT can cause serious harm to the consumer if they are not carried out correctly, and in safe and clinical environments, by a competent and trained practitioner. Any procedure that punctures the skin can carries the risk of blood-borne viruses; therefore, a lack of appropriate infection control can put the public at serious risk (CIEH, 2021). The Keogh Review found that the largest proportions of treatments that go wrong take place in a domestic setting (33%) (Keoghs, 2022). A more recent survey undertaken by the Royal College of Nursing found that 36% of nurses carrying out these procedures, performed them either from their homes, or within their clients' homes. Other venues used include temporary "pop-up" shops, hairdressing salons and hotel rooms. The nature of the locations used to perform treatments

and the fact that many practitioners are peripatetic leaves the local authorities largely unaware of the extent of practice in their areas (Department of Health, 2013).

Medical Tourism

Medical tourism is defined as patients travelling abroad to seek elective medical services such treatments include cardiac, dental orthopaedic and reproductive procedures. Medical tourism is increasingly popular due to lower procedural costs, enhanced personal attention, increased levels of privacy and leisure destinations. However, it has also been accompanied by growing concern of the quality of care and patient safety figure to lack of industry regulations (Raggio et al, 2020).

The rate of globalisation has fuelled endless possibilities for 'cosmetic tourism' for those seeking cheaper aesthetic treatments abroad. Nonetheless when things go wrong the patients often turn to the National Health Service (NHS) to rectify acute and chronic situation resulting in potentially difficult ethical and resource implications (Department of Health, 2013).

A BAAPS audit revealed that that the number of patients being treated for serious complications following treatments abroad as a major problem. 324 patients required surgery after returning to the UK between 2018 and 2022. The annual number rose by 44% from 2020 to 2021, this was also during the Covid-19 pandemic when people were advised against elective surgery and unnecessary travel. In 2021, 75 women and 7 men were treated for complications, including life threatening problems such as the need for emergency surgical removal (debridement) of dead skin tissue, which resulted in the admission to intensive care units for life support following infection. 100% of complications came from treatments conducted in Turkey (BAAPS, 2022).

Costs to the National Health Service

The growth of the cosmetic industry is causing a growing burden for the National Health Service (NHS). A study conducted by BAAPS in 2017 suggested that the average cost to the NHS per patient was £13,500, this is estimated to be closer to £15,000 (BAAPS, 2022). This highlights the real risk and additional unnecessary burden placed on NHS services.

With patients presenting with the complications of fillers to their local NHS services for help, advice and emergency treatment, the role of the NHS needs to be defined (Department of Health, 2013).

Online Access to Products

Individuals who wish to avoid the costs of professional treatment also have easy access to online marketplaces and unscrupulous suppliers to self-administrate these treatments, however most of the time the products advertised are not legitimate (Department of Health, 2013).

Self-administration is fraught with dangers, this is because usually there is limited to no information provided regarding the type, composition and sterility of the material for injection supplied. A 31-year-old patient presented to an Accident and Emergency (A and E) department 24-hour history of right facial pain and swelling associated with systemic malaise.

The patient reported as having self-injected with filler brought online from Brazil, approximately ten millilitres of filler material into the left and right nasolabial folds. The patient spent five nights in hospital and failed to attend the outpatient review. The total cost to the NHS was £4028. The filler substance used by the patient was identified a polydimethylsiloxane, which can lead to chronic long-term sequelae including severe granulomatous reactions which are very difficult to treat (Department of Health, 2013). This case highlights the real concern of a lack of regulation in this sector. Without regulation individuals can access unlicensed and illegit products putting them at increased risk of severe complications.

An emerging ethical concern is that in the future Commissioning Groups may refuse to cover the costs of medical treatments arising from complications of NSAT. This issue raises important questions about responsibility and fairness in healthcare coverage, especially when these complications have arisen form elective treatments. However, BAAPS attributed the complications of many of these treatments to the lack of strict regulations in the UK, which allow unproved substances to be used. Therefore, it could be argued that the government is accountable and must take action to protect the public and public services (Hachach-Haram, 2013).

Mental Health

Hidden public health implications include threats to mental health, pre and post treatment. A person may consider a NSAT to improve self-esteem and change the way that they look due to overwhelming societal pressures, this particularly effects women, however more recently men have begun to conform to beauty ideals portrayed in the media. A government report found that 36% of young people in the UK would do whatever they could to look good, and 10% of these said that they would consider a NSAT (Health and Social Care Committee, 2022).

The JCCP found that when procedures were performed appropriately, they could improve confidence, lessen the burden of mental health challenges and improve an individual's wellbeing. on the contrary a similar study found that NSAT may have a negative impact on someone who is struggling with their mental health and particularly a condition called Body Dysmorphic Disorder (BDD) (Health and Social Care Committee, 2022). Therefore, there needs to be a fine balance between access to these procedures and safeguarding against them.

The Nuffield Council of Bioethics pointed to international studies that suggested that between 5% and 15% of patients who present for NSAT meet the diagnostic criteria for BDD (Health and Social Care Committee, 2022). The NSAT sector exploits the most vulnerable in society (Acquisition Aesthetics, 2024).

Whilst this report highlights international concerns, the real state in the UK is difficult to obtain due to a lack of reporting.

Client Consultation

Understanding patient expectation of the treatment and establishing underlying health conditions is paramount to ensure that a patient's health is not compromised. A patient should sign a consultation form to illustrate that they have understood what has been discussed at consultation (Samizadeh and Boulle (2023). A study found that two thirds of dermal filler treatments carried out lacked an informed consent process (Coughlin et al, 2021). This highlights that some practitioners carrying out NSAT have little regard for professional standards, that they focus on profit and convenience over client care and that they are inexperienced and do not fully understand the importance of consultation.

Prescription Only Medicines (POM)

Most practitioners are not legally allowed to prescribe medications to patients. Only a qualified prescriber can do so. However, this is becoming increasingly more common practice, and it means that patients receive POM without any oversight from a prescriber (JCCP, 2019). Taking medication without oversight can be very dangerous to a person's health as it may not be suitable for them, thus risking additional adverse reactions (NHS, 2023).

Concerns associated with a lack of regulation

A lack of regulation means that there are no defined training standards, meaning that anyone can set up a commercial NSAT training course and in doing so risk providing inaccurate knowledge and information onto their trainees. Some training courses allow practitioners to complete a training course in as little as one day before they begin to offer treatment with little or no practical observations. In response to these concerns an initiative was set up in the West Midlands to help to 'train the trainers' in correct methods of infection control and patient safety (JCCP, 2022). Whilst this is a good initiative and aimed at making improvements to this sector, it is difficult to measure the uptake of the initiative by the intended audience. It may be that those working within this industry are focussed more on monetary gain rather than improving their skill set and performing procedure in clinically approved environment. More must be done to set robust mandatory standards (JCCP, 2022).

Furthermore, a lack of regulation places no accountability on both the practitioners performing NSAT and enforcing bodies. Complaints regarding NSAT at too often passed around different enforcing bodies such as the Police and environmental health departments. However, until there is clearly defined legislation limited improvements can be made. However, in September 2024, the first person died in the UK after having undergone a liquid BBL. As a result of her death Save Face called for a new law banning liquid BBL from being carried out by anyone other than surgeons registered with the General Medical Council (GMC) (Elliott and Clegg, 2025).

2.4 Global Regulatory Perspectives

The cosmetic interventions sector is rapidly evolving, and global regulation differs vastly (Department of Health, 2013).

In England, as of 2024 cosmetic procedures such as Botox and dermal fillers can be legally performed by unmedically trained professionals. Dermal fillers are regulated as medical devices and must be UKCA or CE marked However there is no legal requirement for practitioners to have any medical training for the administration of non-prescription fillers (MRHA, 2024).

Unlike surgical treatment providers, who must be registered with the Care Quality Commission (CQC) NSAT practitioner do not have to register. This means that currently one of the only pieces of legislation that that covers this sector is the Health and Safety at Work etc Act 1974 (HSAWA) (Department of Health, 2013).

HASWA is enforced by local authority bodies such as Environmental Health Officers (EHO) and Trading Standards (TS). An EHO can inspect the premises to ensure that it complies with the requirements of HASWA, however a EHO does not have the training and expertise to determine if aesthetics practitioners are adequately trained and so must result following best practice guidance (Department of Health, 2013).

In 2021, the Botulinum Toxin and Cosmetic Fillers (Children) Act was introduced. This act made it a criminal offence to administer injectable toxins or filler for cosmetic purposes to a person under the age of 18, even if permission had been granted by someone over the age of 18 (Department of Health and Social Care, 2023). Whilst this is a positive move towards more regulation, more is required address wider concerns such as purchasing of products online for self-administration, as this is a clear loophole in this legislation (Department of Health, 2013).

In April 2022, under the Health and Care Act, the government proposed a new licensing scheme for NSAT in England. A public consultation was launched in 2024. The new licensing scheme would be enforced by EHO and NSAT would be categories based on risk and complications, the categories proposed were green (lowest risk), amber (medium risk) and red (highest risk). Non-health care professionals conducting amber and red category procedures would require a license (Department of Health and Social Care, 2023). However the government has not provided any update regarding the proposals.

On the contrary, in Wales, the Public Health (Wales) Act 2017 created a mandatory licensing scheme, whereby establishments require approval to trade. The Act adopted flexibility so that new practices could be added to keep up with trends and emerging evidence of treatments of concern. The government also introduced a central register of licensed practitioners and employed mandatory conditions such as requiring practitioners to be trained in infection control. This scheme allows consistent regulation across the country, improves public confidence in this sector and ensures that practitioners are accountable for any wrongdoing (CIEH, 2021).

Unlike the UK, the USA has an approved register produced by the Food and Drug Administration (FDA) of dermal fillers and they can only be administered to people over the age of 22. Botox and dermal fillers are regulated as medical devices and the FDA produces a list of uses that fillers are not to be used for (U.S. Food and Drug Administration, 2023). The FDA also plays an active role in educating healthcare providers and consumers about the safe use of injectables. This includes guidelines for proper administration, potential risks and the importance of choosing qualified practitioners (Top Body, 2024). Disseminating guidelines to help to educate both the public and practitioners is invaluable to ensure that both stakeholders are empowered to make informed choices. A similar approach would be beneficial if implemented in the UK, as it would help the public to make informed decisions. It could be orchestrated by the Medicines and Healthcare Products Regulatory Industry (MRHA) for example.

Regulations in Australia are more robust than those in the UK and the USA. The Australian government provides dedicated information under the Ahpra and National Boards for both practitioners and patients. They also have a dedicated register of approved practitioners. The Australian government also places stringent rules on advertisement of these treatments under the Therapeutic Goods Act 1989, the promotion of prescription-only medicines, such as Botox or dermal fillers are not permitted. This is done to reduce public vulnerability and stop the public from being influenced by misleading advertisements. Those that contravene these regulations and advertise health services or NSAT can be prosecuted by the Therapeutic Goods Administration (TGA) (Sydney Cosmetic and Plastic Surgery Clinic (2024).

The UK does have an approved register, which was introduced in 2011, however it is a voluntary register and public awareness of the register's existence is poor (Hachach-Haram

et al, 2013). This highlights the lack of urge from the government to regulate this industry, as more would have been done to promote initiatives already in place.

Chapter Three – Methodology

3. Methodology

The objective of this study was to measure officer opinions on the current state of the NSAT sector in both the UK and Nottinghamshire as well as to identify the risks and complications associated with NSAT. Independent variables (found in the results section) were explored to explore the effect that they had on officer opinions. This study allowed for exploration into a new and quickly evolving topic of concern and the addition officer opinions provides an insight into the urgency for regulation within this sector. Ethical approval was granted by the University of Derby (UoD) Ethics Committee (ETH2425-0869).

3.1 Part One – Quantitative Data Collection Method

Distribution of the Questionnaire

EHO or those of equivalent roles, such as Technical Officers (Table 2), were selected to take part in this study as officers were already working within the field of unregulated cosmetic treatments and regulated treatments through the use of licensing schemes. The questionnaire was designed and distributed using Google Forms on Microsoft 365 and emailed to the eight Local Authority Environmental Health Departments (Figure 1). A link to the questionnaire was circulated on through a licensing sub-group meeting by another member within the group to reduce potential bias.

Using convenience snowball sampling methods, by requesting participants to share the questionnaire with other officers in their Local Authority allowed greater exposure to EHOs, which increased the response rate as well as ensuring anonymity (JotForm, 2024).

The total number of participants were 36, which was reduced to 32 due to participant criteria and processing data error sets (Table 4).

Questionnaires were chosen and preferred over interviews, and it was hoped that this method would yield more results. This is because officers in this field work in a busy regulatory role, therefore it would have been very time consuming to conduct face-to-face interviews which could have hindered data collection.

A pilot questionnaire was conducted two weeks before by three individuals at the study investigators local authority, to test the duration and feasibility. Responses from the pilot study

revealed that the questionaries required to be split into sub-sections to allow better navigation and accessibility.

Figure 1: A map of the district of Nottinghamshire and to showcase which local authority districts received the questionnaire for this study (Nottinghamshire County Council, 2024).

Table 2: A table to illustrate the inclusion and exclusion criteria for participants taking part in the questionnaire.

Inclusion Criteria	Exclusion Criteria
• Officers working in environmental health departments • Officers that work for a local authority within Nottinghamshire • Environmental Health Officers, Technical Officers, those in a similar role	• Officers not working for an environmental health department • Officers that do not work for a local authority in Nottinghamshire.

Questionnaire Design

The questionnaire was designed as a knowledge and opinion measuring tool, to assess and explore the opinions of officers in relation to the current state nationally and locally, legislation, public awareness and regulatory improvements.

Questions were derived from the themes found in the literature in relation to the poor state of unregulated cosmetic treatments and to determine if that state was reflected locally and nationally. The use of legislative frameworks and enforcement options were used in the questions to test EHOs knowledge on the powers available to them to deal with poor standards. This allowed to measure both breadth and depth of opinions and knowledge of legislative frameworks and how that effects the state of NSAT.

A mixture of open and closed questions was used. Closed questions were multiple choice, Likert scaled questions, which ensure d that participants selected an answer before moving on or skipping a question, this ensured that an accurate and complete dataset was collected (Qualtrics, 2024). Likert scale questions also meant that responses could be easily quantifiable for statistical analysis, but this method also allowed for ease of survey completion. Open ended questions allowed participants to explain their answers and provide additional supporting evidence which contributed to further analysis (Qualtrics, 2023).

Screening questions were included at the beginning of the questionnaire.

Statistical Analysis

The dataset was inputted into SPSS and screened to check for errors via the comparing the frequencies of variables and any out-of-range values. All of the questions were recoded into different variables via SPSS. Some of the codes were ranked 5 as very good, and 1 for very poor. Transform and automatic recode options transformed the variables so that they could be assessed. Common themes were also identified from the open-ended questions and a code was developed for each of the responses.

Descriptive analysis through descriptive functions were conducted. The mean, standard deviation (SD) and variance values were extracted for all questions.

Statistical analysis was undertaken to determine accepting or rejecting the null hypotheses and determine if the results were statistically significant. A Pearsons Corelation Coefficient

test was used to test for correlation between officer opinions of the current state of NSAT in the UK and Nottinghamshire and legislative state, regulation and public awareness and knowledge levels.

Null hypothesis 1: There is no relationship between officer opinions, legislative state and regulatory powers.

Null hypothesis 2: There is no relationship between officer opinions, public awareness and knowledge of where to report concerns of malpractice to.

A Linear Regression analysis was also used to further explore these relationships and identify predictors in the data and determine how well they predict, in this case how well they predict the opinions of officers.

Ethical Considerations

The questionnaire was designed to ensure ethical considerations were accounted for by building the research project information and consent form into the beginning of the questionnaire, which allowed participants to exit if they did not consent (Kumar, 2019; Bell and Waters, 2018).

The questionnaire included the contact details of the researcher and the ethics number provided by the ethics board. This allowed the participants to consider implications and provide informed consent to take part in the study. The research provided full anonymity to the participants, it did this by not collecting any identifiable information, it also did not ask for any personal information. Collected data was only accessible by the researcher.

3.2 Part Two - Systematic Review Method

The second element of data collection for this study was the use of a systematic review to assess the risks and complications associated with NSAT.

Preliminary searches

Background research was conducted to ensure that more focused databased related to the topic area were selected. Some databases were excluded due to a lack of results. The study

investigator created a databased tracked on a Microsoft Word document to keep track of the search strategy development, a list of databases searched, and the total number of results yielded.

Databases

A total of four databases were used in the final search. These were CINHAL, Embase, Medline and PubMed.

Grey Literature

This study did not include any grey literature as the database searches yielded a substantial number of sources. Much of the grey literature available on this topic was also not peer reviewed which raised concerns regarding the article's quality, validity and reliability.

Snowballing

Manual searching of references lists (snowballing) of the most relevant studies was conducted after the final database search. However, this did not yield any records.

Search Terms

Before the final search strategy was run, a table was created to gather all possible search terms and related synonyms (Appendix 1). This helped in the design of the search strategy to ensure that the maximum number of records could be retrieved using the main terms in the literature.

Search Strategy

Search terms for population, exposure, comparison and outcome (PECO) were combined with Boolean operators ('AND' / 'OR') to form the search strategies. Truncations (*) were also used to help to identify records that were using different suffixes at the end of words.

Quotations marks were also used to highlight phrases to be searched together. For PubMed, MeSH terms were used. This is because this database uses controlled vocabulary.

The search query below was used across all of the databases, except for PubMed (where MeSH terms were used).

Search Query

The final search query can be found in Appendix 2.

Most of the searches were conducted in October and November 2024 and a final search was conducted on the 23rd December 2024. This was important to ensure that newly published records were found and included in this review.

Reference management

Zotero referencing software was used to manage the references for this review.

Screening

All of the records retrieved on the final database search in December 2024 were exported into Zotero. Separate collections were made for each of the databases searched. Duplicate records were removed and then the titles were screened against the inclusion and exclusion criteria and a separate collection was collected names ‘Screened Titles’. This process was repeated on the abstracts (‘Screened Abstracts’) and full text (‘Screened Full Text’). The screening process and the number of removed records at each stage can be found in Figure 2.

Some full texts required additional access requests; this was done through the University of Derby library. Requested articles were retrieved within 24 hours.

Exlcuded records were stored in their own separate collection. Screening the titles in stages made the screening process more manageable and sufficiently focussed.

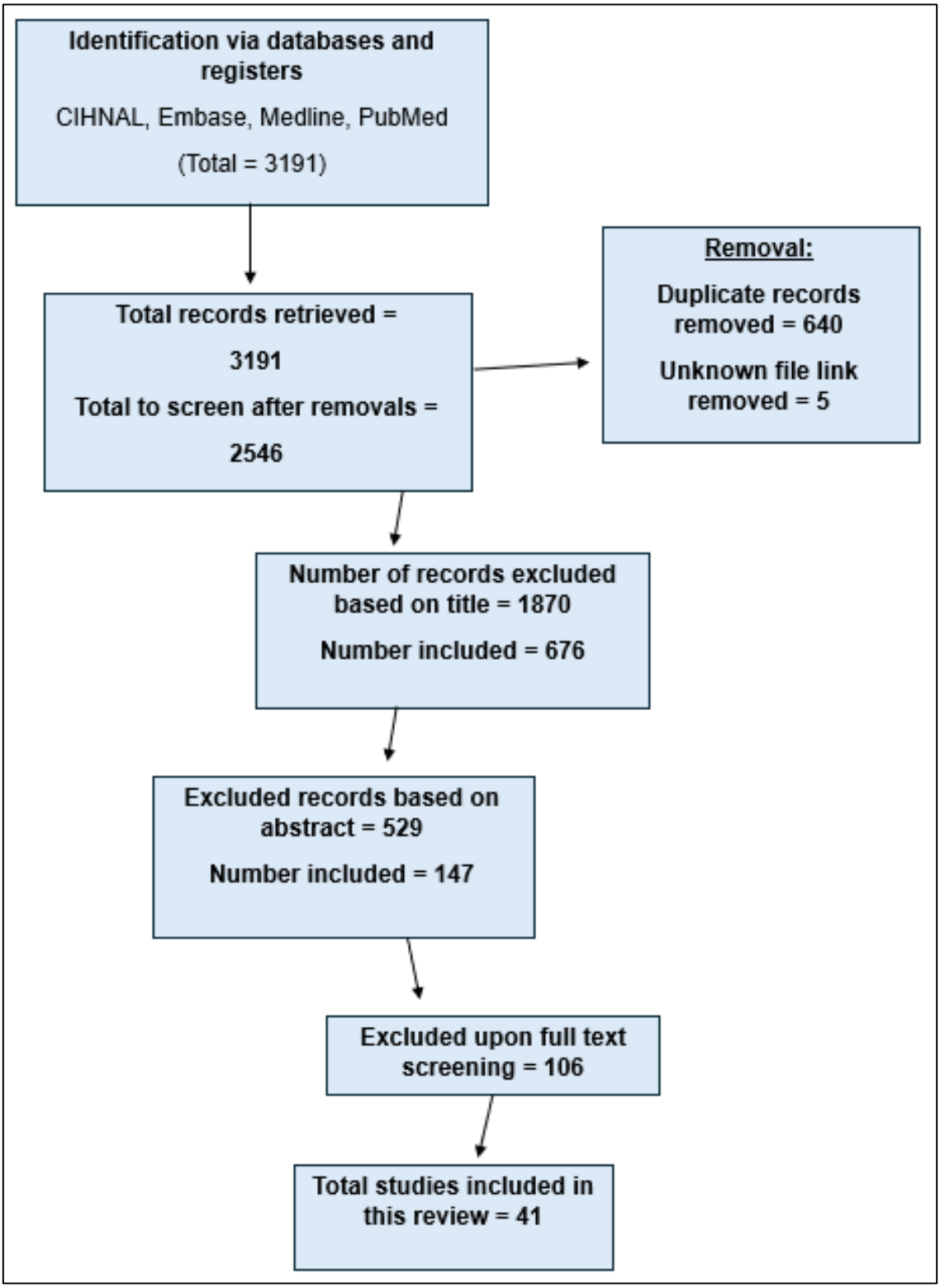

Figure 2: A flow chart of the screening process carried out in the systematic review.

Inclusion and Exclusion Criteria

The inclusion and exclusion criteria contained in Table 3 helped to determine the studies included in the final review. The criteria were set during the researching process of this review to ensure that any risk of bias was minimised.

Table 3: A table to illustrate the inclusion and exclusion criteria of records used in the systematic review.

Inclusion Criteria	Exclusion Criteria
Records: • Peer reviewed journal articles • Filler treatments conducted on the face and neck • Any study design • Published between 2018 and 2024	Records: • Not related to the filler treatments in the facial area • Case reports for those that have underlying health conditions • Comparison of products or techniques • Not published in English

Critical Appraisal

To assess the methodological quality of the included studies the Jonna Briggs Institute (JBI) Critical Appraisal Tools were utilised. Each of the studies were appraised independently using the appropriate checklist based on the study design (JBI, 2024) (Appendix 5 and 6).

Data Extraction

Data from the articles was extracted into an Excel spreadsheet (Appendix 3). The data extracted included the author (s), year of publication, population / participants, methodology / intervention, the URL or DOI and the key findings related to any identified risks and complications of unregulated cosmetic treatments.

Thematic Analysis

Reflexive thematic analysis was utilised in this review. This type of thematic analysis is considered as a reflection of the researcher's interpretive analysis of the collected data (Byrne, 2022).

The thematic analysis was conducted in line with Braun and Clarke's (2012) six-phase process as outlined in Figure 3.

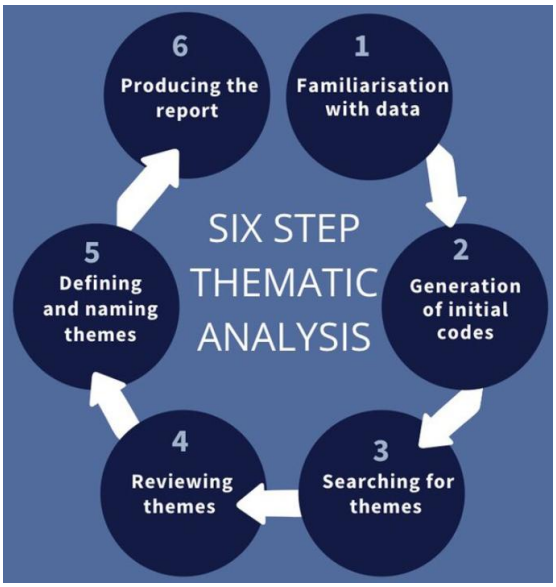

Figure 3: A flowchart to show the process of Braun and Clarke's six-phase process to thematic analysis (McInerney et al, 2022).

The data was examined numerous times to ensure collected data was understood, then it was worked through systematically to generate initial codes. Iterations of the codes was initially conducted in Microsoft Word, utilising the highlighting tool, but was later transferred into Excel. This made it easier to filter and navigate through the results. Documented progression through the codes was documented to allow transparency throughout the process.

The final themes were then selected and derived via utilising existing literature, especially when classifying the risks and complications given that the researcher does not have a medical background (Samizadeh and Boulle, 2023).

Chapter Four – Results

4. Results

Section Overview

The results section consists of two parts. The first part reports the findings from the questionnaire used to establish the opinions of EHO in line with the research objectives, the second part reports on the findings of the systematic review and subsequent thematic analysis.

4.1 Part One - EHO Questionnaires

Descriptive Statistics

Below, Figure 4 illustrates the total number of responses to the questionnaire and those that did and did not consent to taking part in the study. Figure 5 denotes the number of respondents that work within the environmental health department or the local authority that they work for the district of Nottinghamshire. Figure 6 is used to illustrate the number of participants who have adopted byelaws under the Local Government (Miscellaneous Provisions) Act 1982.

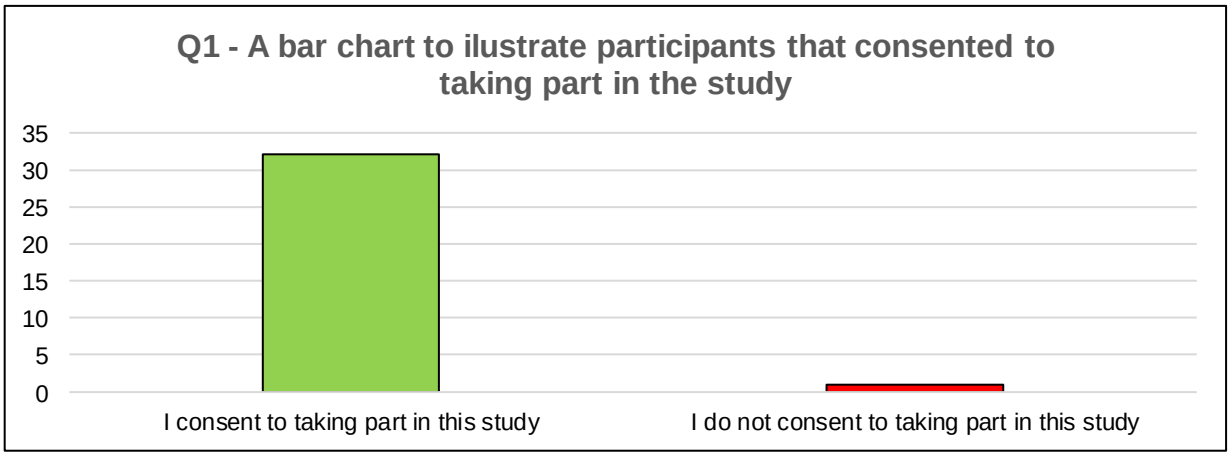

Figure 4: A bar chart to illustrate the number of participants that consented or did not consent to taking part in this study.

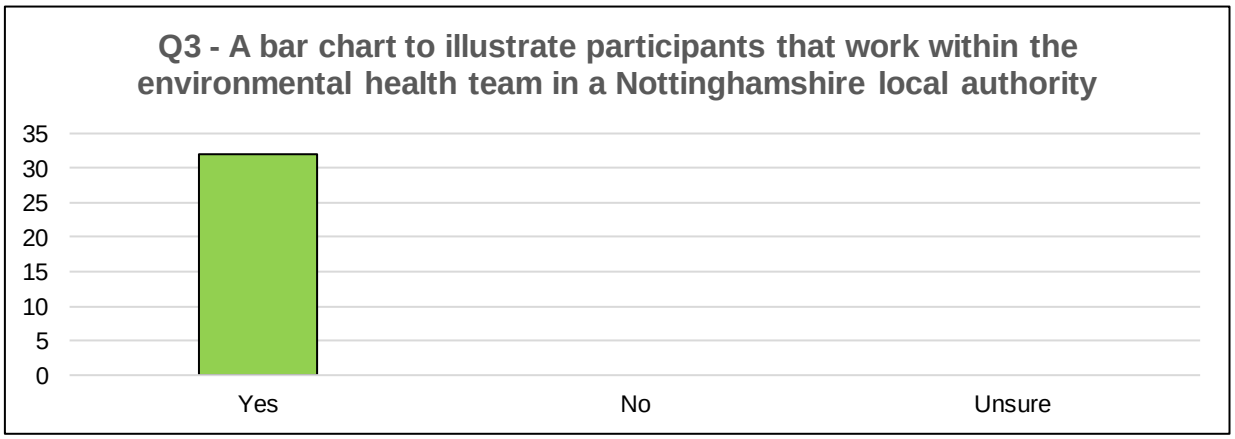

Figure 5: A bar chart to illustrate the number of participants that work within the environmental health team for a Nottinghamshire local authority.

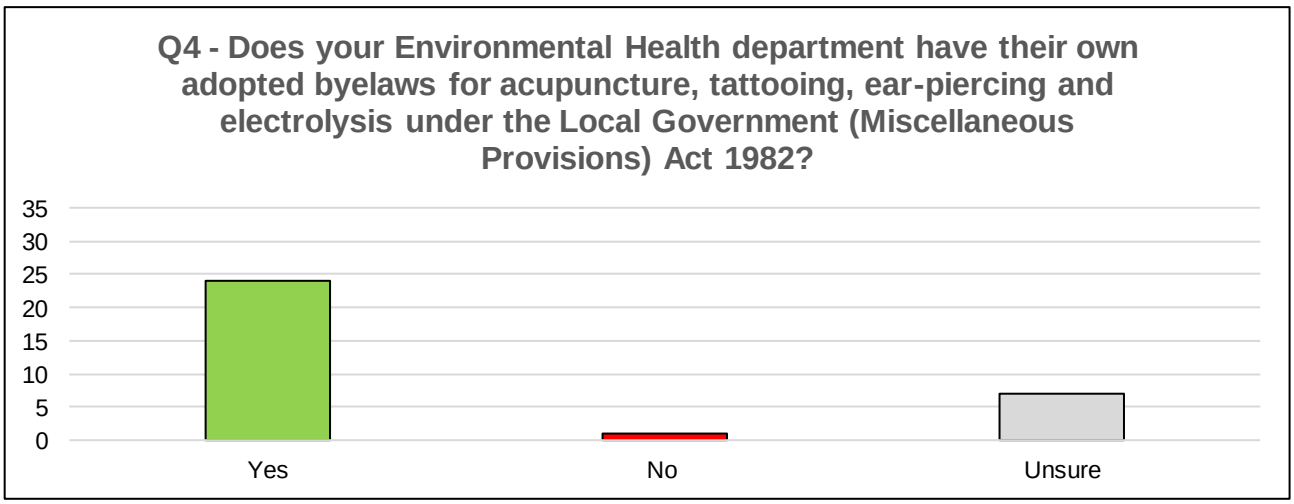

Figure 6: A bar chart to illustrate the number of participants that have adopted byelaws under the Local Government (Miscellaneous) Provisions Act 1982.

Below figure 7 is used to illustrate EHO opinions of the current states of UCT in both the UK and Nottinghamshire. The bar chart depicts that EHO opinions of the state in both the UK and Nottinghamshire is poor. 15 participants reported that the state in the UK is poor, whereas 14 reported that the state is poor in Nottinghamshire. EHO opinions of the UK state tend to be worse than in Nottinghamshire.

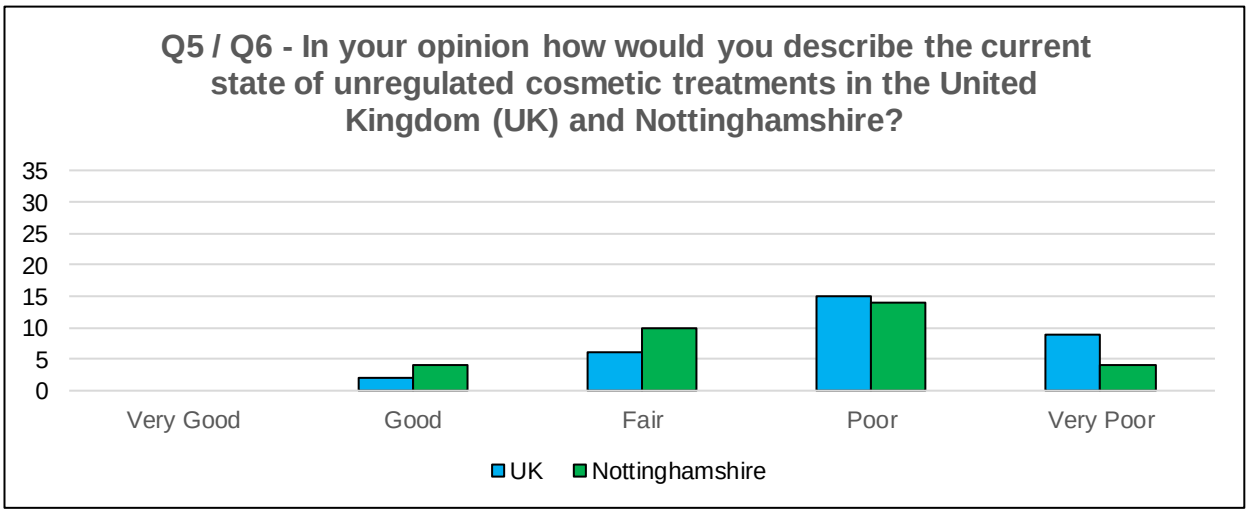

Figure 7: A bar chart to compare the opinions of EHO of the state of unregulated cosmetic treatments in the UK and Nottinghamshire.

Figure 8 is used to explore EHO opinions of the current legislative state and regulatory powers available to EHO who receive and investigate complaints regarding UCT. This bar chart highlights those 6 participants said that available legislation is very poor, 17 said poor, 6 have said that it is fair and 3 as good. Therefore, overall opinions on the current state are poor (M= 2.03, SD =0.86) (Table 4). The SD is close to 1 and the variance value is low (0.74) (Table 4) meaning that there is very little variability in the dataset, therefore most of the EHO are of the same opinion.

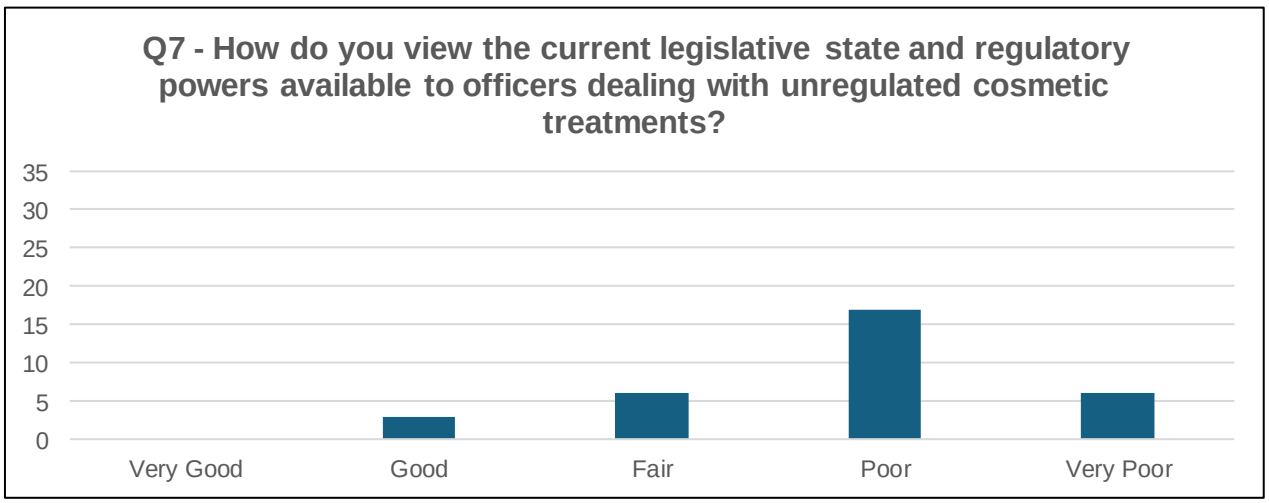

Figure 8 - A bar chart to showcase opinions regarding the current legislative state and powers available to officers.

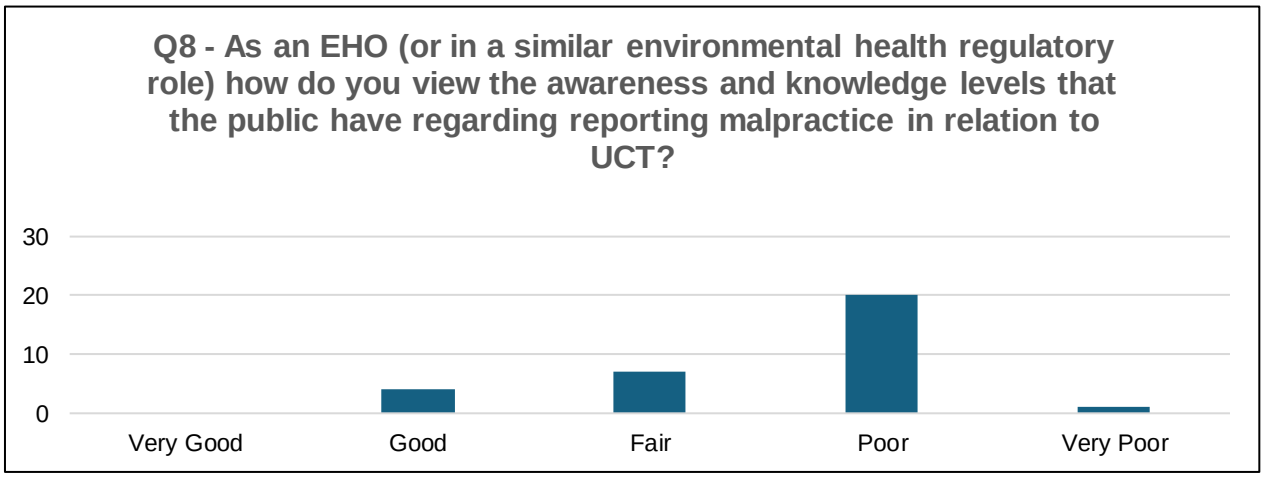

Figure 9: A bar chart to illustrate participant opinions of public awareness and knowledge of reporting malpractice in relation to UCT.

Most of the participants said that public and awareness and knowledge of this sector is poor (20 answered as poor), M= 2.44, SD = 0.76 (Table 4). This is a concerning figure given then worrying nature of associated treatments in this sector. 6 participants said that they would think a member of the public would know where to report their concerns to (Figure 10).

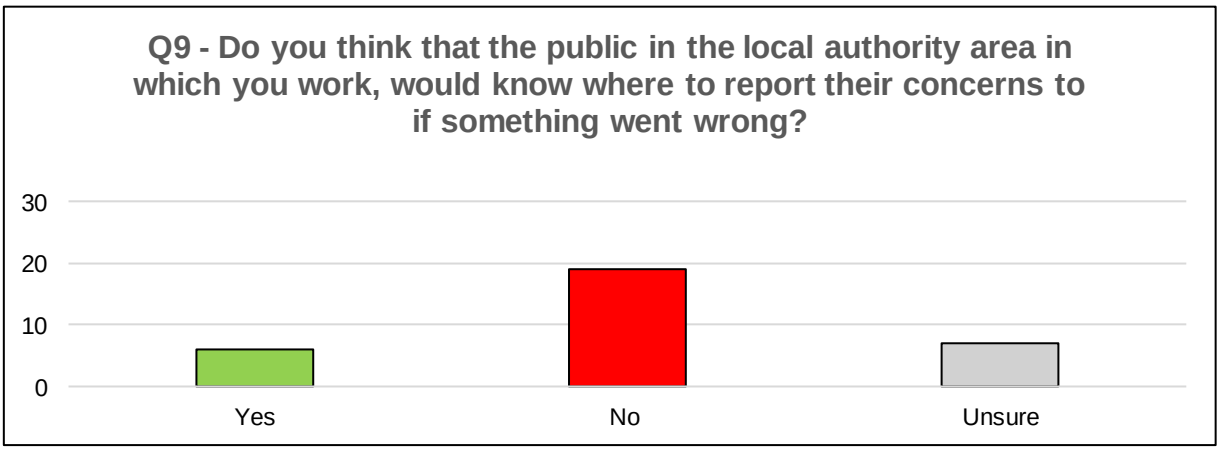

Figure 10: A bar chart to illustrate participant responses to whether the public would know where to report concerns of malpractice to.

Figure 11 highlights environmental health departments in Nottinghamshire that currently receive complaints regarding malpractice in relation to UCT. Only 15 participants said that

their environmental health department currently receives complaints. Whilst this is a surprising result it could be that this is only for one or two local authorities within Nottinghamshire so it may be that issues regarding UCT are focussed to one area of the county.

For those that said their environmental health departments receive complaints regarding UCT, 13 of those said that in the average month they receive 1 to 5 complaints. This is quite a surprising result.

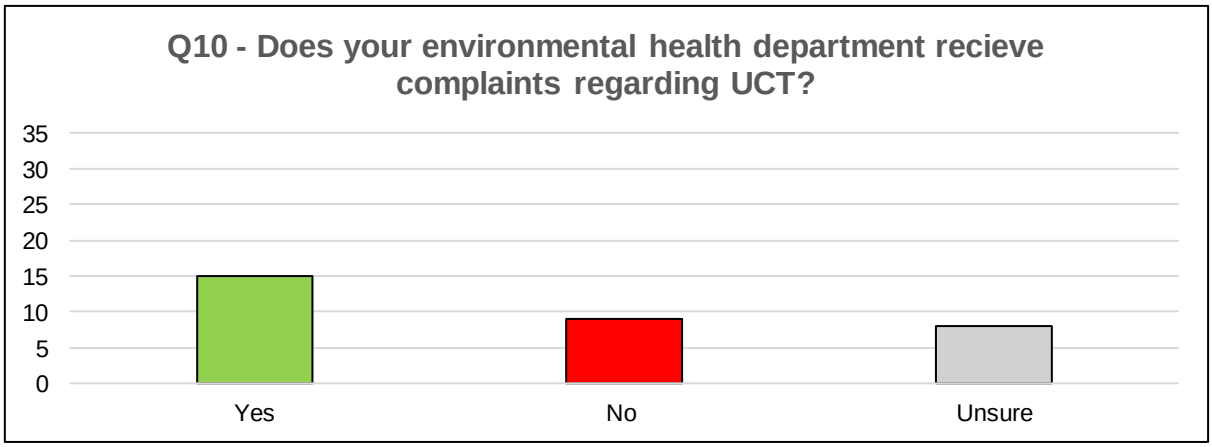

Figure 10: A bar chart to illustrate if environmental health departments within Nottinghamshire receive complaints regarding UCT.

The majority of participants (40%) said that their environmental health department receives complaints about UCT regarding poor hygiene practices (Figure 11) (M=3.97, SD = 3.08) (Table 4), the second most selected option for this question was 'Other' (34%). Responses in this category included 'lack of licence / registration' and 'all of the above'. There were only 15 responses to this question.

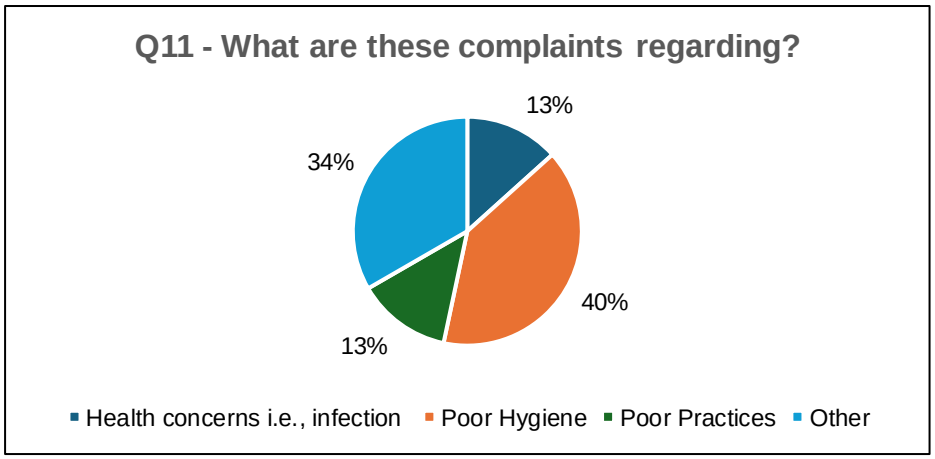

Figure 11: A pie chart to illustrate the nature of complaints regarding UCT received by environmental health departments in Nottinghamshire.

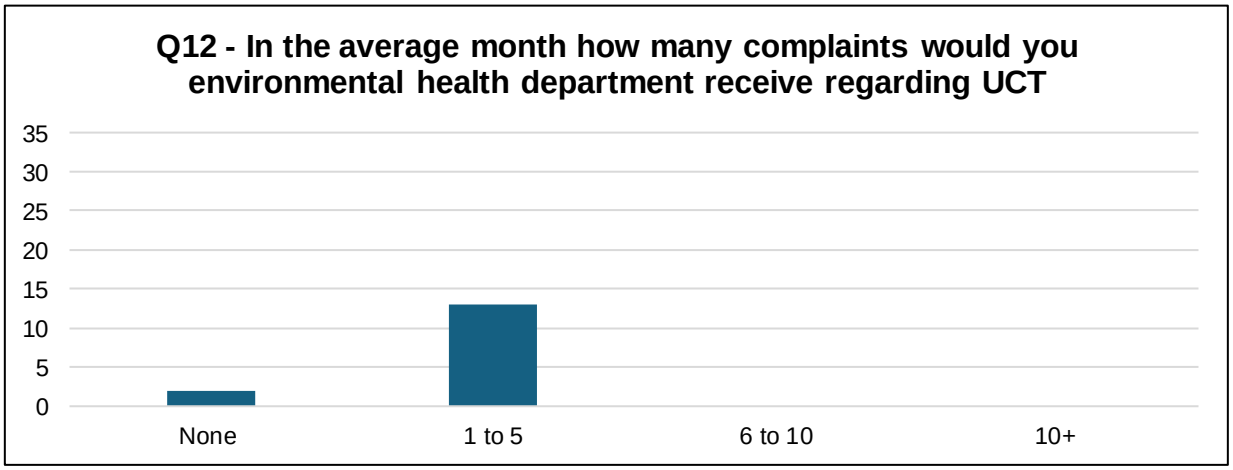

Figure 12: A bar chart to show on average how many complaints environmental health departments in Nottinghamshire receive in relation to UCT.

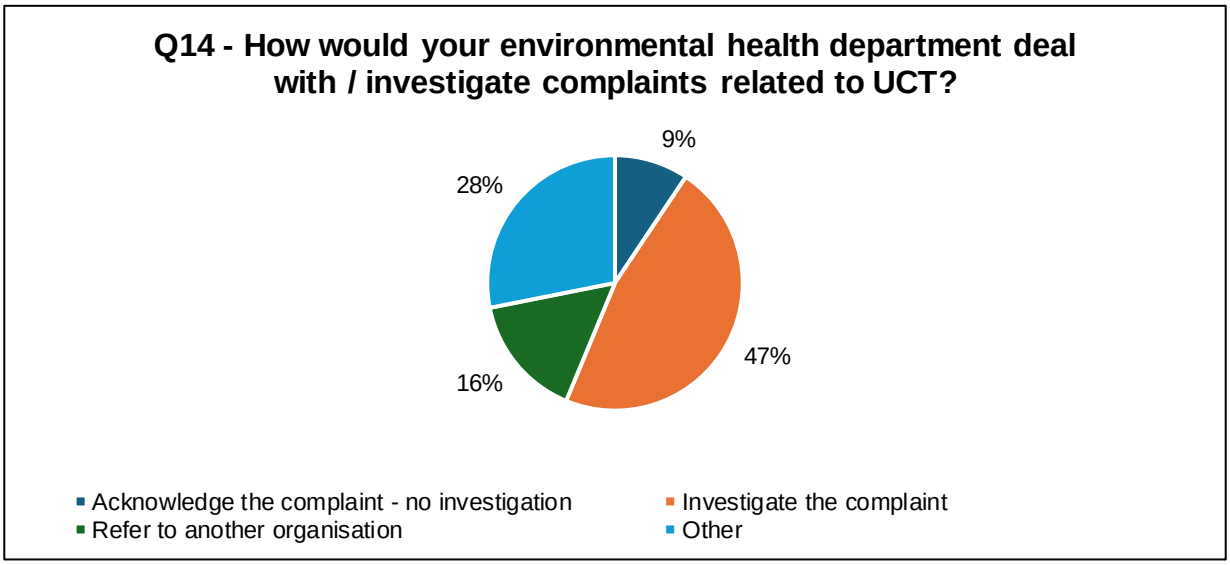

Figure 13: A pie chart to illustrate how environmental health departments would deal with / investigate malpractice related to UCT.

If all of the environmental health departments received complaints regarding UCT, 47% said that they would investigate the complaint (M= 3.75, SD = 3.08) (Table 4), 28% said that they would dealt with / investigate the complaint via another method such as, “refer to another agency such as Trading Standards” or that they were “unsure” (Figure 14). The responses to this question were mixed and there was some uncertainty in the responses, this is also reflected in the variance value of 9.48, this indicates high variability in the responses (Table 4). If environmental departments were to investigate the complaints (Figure 14), the majority of complainants would use a combination of different powers and legislation (47%), 31% said that they would use the Health and Safety at Work etc Act 197, 13% said that they would use other powers / legislation and 9% said that they could not use legislative powers, this was a surprising and intriguing result. However, the majority of EHO believe that the legislation available to them to investigate and enforce within this sector is poor (M=2.19, SD= 0.87) (Table 4).

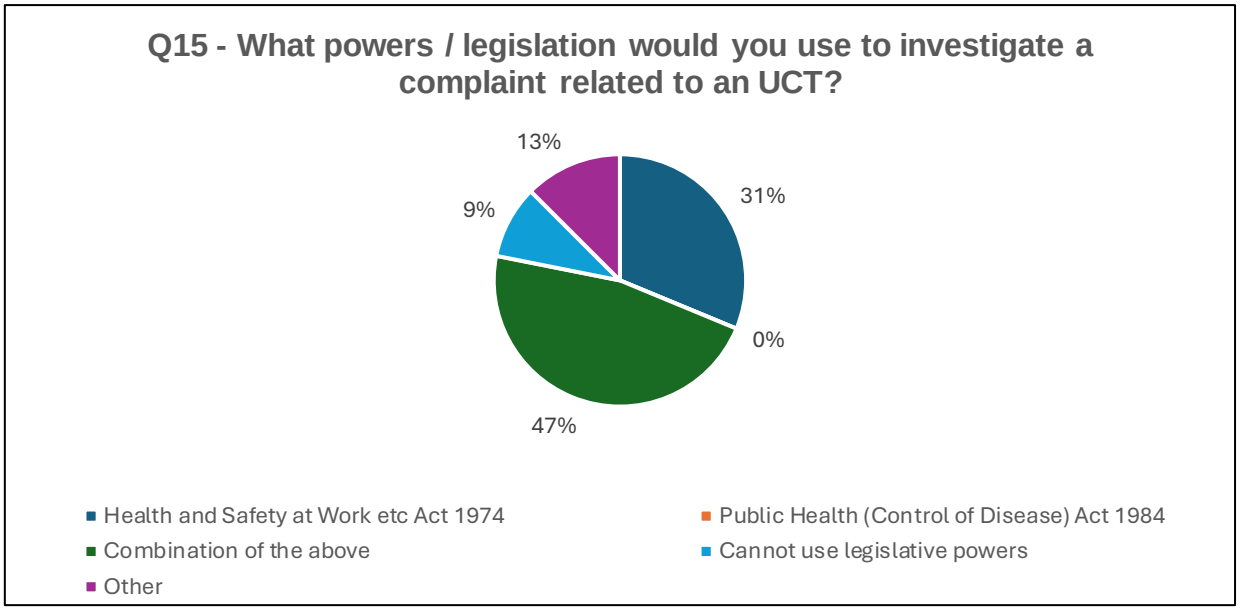

Figure 14: A pie chart to illustrate which powers / legislation environmental health departments would utilise to investigate complaints related to UCT.

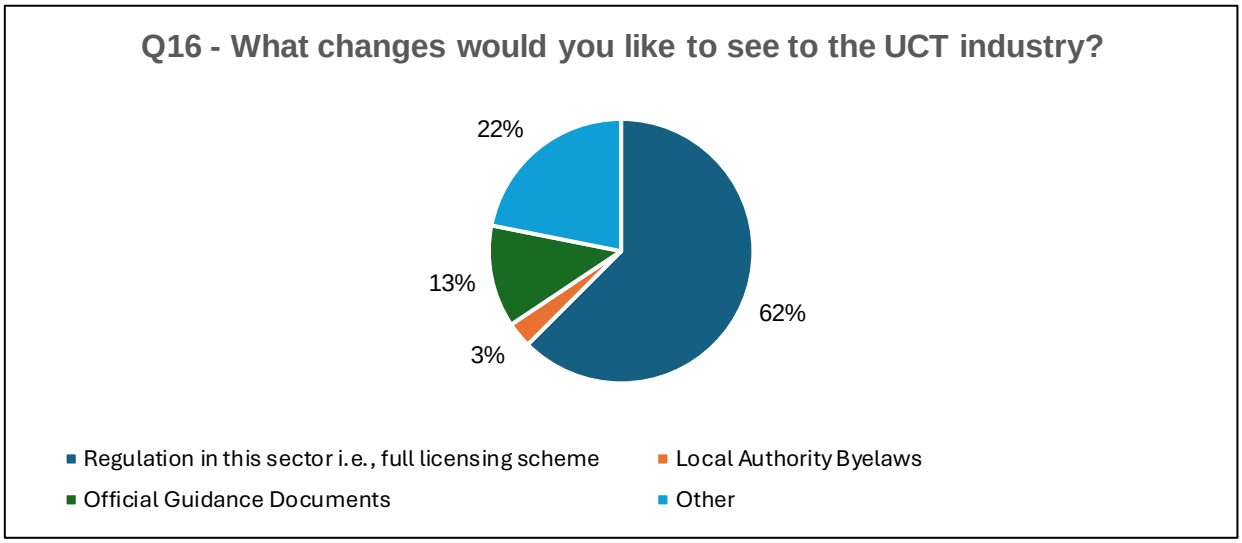

Figure 15: A pie chart to illustrate the changes that environmental health departments would like to see to the UCT industry.

More than half of the participants (Figure 15) said that they would like to see full regulation i.e., a full licensing scheme implemented into the cosmetic treatment industry and 75% said that this would be beneficial (Figure 16). 22% of participants suggested that they would prefer to see "Other" changes in this industry, suggestions included, "all of the above" and one

person was of the opinion that local authority environmental health departments “should not be the ones overseeing the work of practitioners that is deemed as medical/clinical”. 13% said that official guidance documents would be needed within this industry.

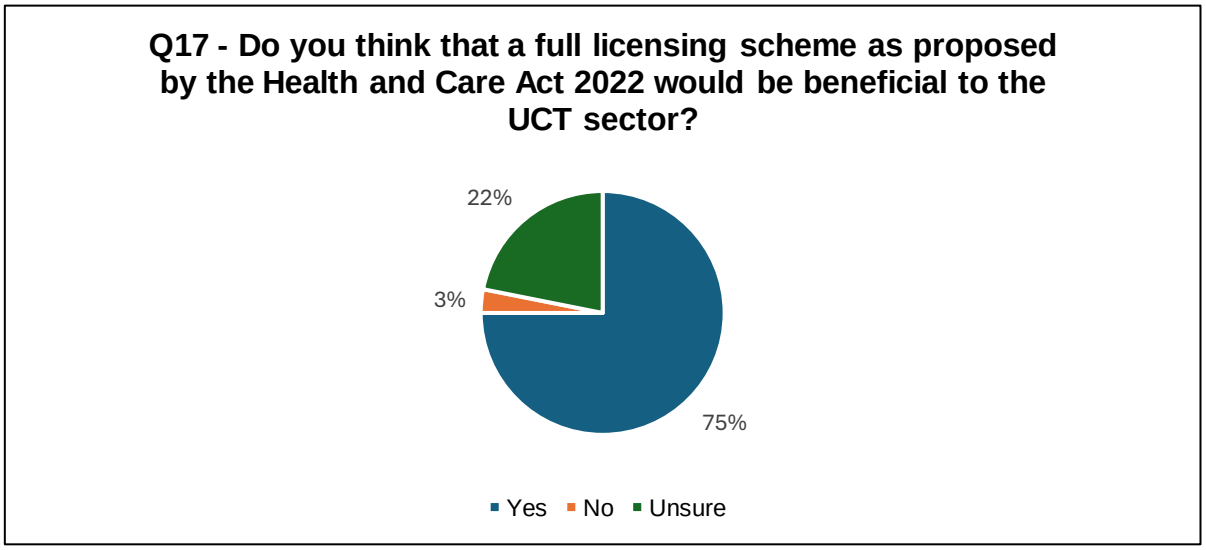

Figure 16: A pie chart to show the percentage of participants that think that a full licensing scheme would be beneficial to the UCT industry.

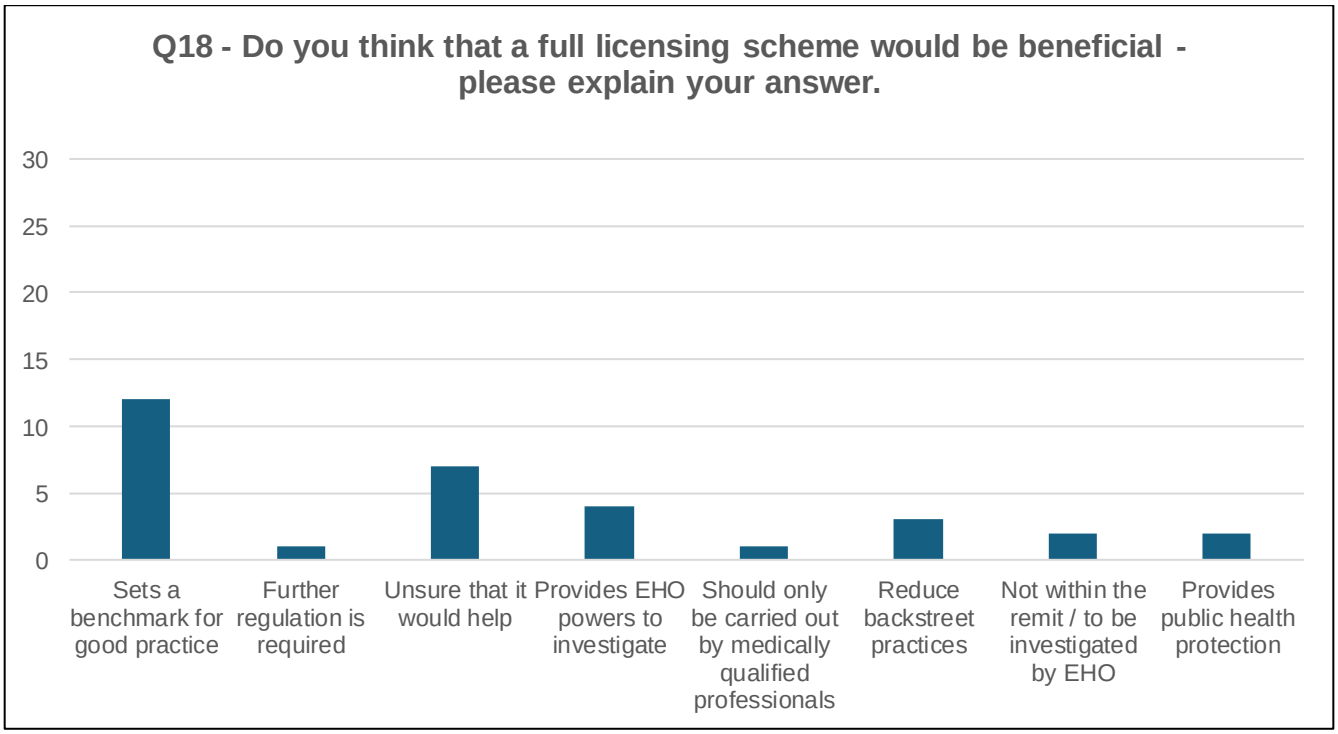

Figure 17: A bar chart to show the opinions of participants based on the introduction of a full licensing scheme.

12 people said that a full licensing scheme would be beneficial because it ‘sets a benchmark for good practice’ and 4 people said that it ‘provides EHO with powers to investigate’ and will help to ‘reduce backstreet practices’ (3) and protect public health (2). For those that said that a full licensing scheme would not be beneficial said that they were ‘unsure that it would help’ (7) and that these treatments should only be carried out by ‘medically qualified professionals’ (2) and that is should not be ‘within the remit or investigated by EHO’ (2).

Table 4: A table to highlight descriptive statistics results for select questions in the questionnaire. The full table can be found in Appendix 7.

Question (Q)	N	Minimum Value	Maximum Value	Mean	Standard Deviation	Variance
Q6 – In your opinion, how would you describe the current state of unregulated cosmetic treatments in your local authority area?	32	1	5	2.44	0.878	0.770
Q7 – How do you view the current legislative state and regulatory powers available to officers dealing with unregulated cosmetic treatments?	32	1	5	2.19	0.859	0.738
Q8 – As an Environmental Health Practitioner / Environmental Health Officer (EHO) (or in a similar environmental health regulatory role), how do you view the awareness and knowledge levels that the public have regarding reporting malpractice in relation to unregulated cosmetic treatments?	32	1	5	2.44	0.759	0.577
Q9 – Do you think that people living in your local authority area who have undergone an unregulated cosmetic treatment would know who to report their concerns to if something went wrong?	32	1	3	2.00	0.672	0.452
Q10 – Does your environmental health department receive complaints regarding unregulated cosmetic treatments?	32	1	3	2.22	0.832	0.693
Q11 – What are these complaints regarding?	32	1	4	3.97	3.685	13.580
Q14 – How would your environmental health department deal with / investigate complaints related to unregulated cosmetic treatments?	32	1	4	3.75	3.080	9.484
Q15 – What powers / legislation would you use to investigate a complaint related to an unregulated cosmetic treatment?	32	1	5	1.94	0.801	0.641
Q16 – What changes would you like to see to the unregulated cosmetic treatment industry?	32	1	4	2.59	2.638	6.959
Q17 – Do you think that a full licensing scheme as proposed by the Health and Care Act 2022 would be beneficial to the current unregulated cosmetic treatment sector?	32	1	3	2.53	0.842	0.709

Statistical Analysis

A Pearson's correlation analysis was conducted to examine the relationship between Environmental Health Officers' (EHOs') perceptions of the current state of unregulated cosmetic treatments (UCT) in the United Kingdom (Q5) and in Nottinghamshire (Q6), and their views on the current legislative/regulatory powers (Q7) and public awareness (Q8). The results of the analysis can be found in Table 5.

The results revealed a strong and statistically significant positive correlation between perceptions of the UCT sector in the UK and in Nottinghamshire ($r = 0.622$, $p < 0.001$), indicating that EHOs who view the national situation as problematic tend to hold similar views at the local level. Significant positive correlations were also observed between national UCT perceptions and perceptions of both legislative powers ($r = 0.603$, $p < 0.001$) and public awareness ($r = 0.571$, $p < 0.001$), suggesting that negative views of regulation and awareness are associated with poorer overall perceptions of the sector.

Local perceptions of UCT (Q6) were moderately correlated with perceptions of legislative powers ($r = 0.358$, $p = 0.044$), though the relationship with public awareness was weak and not statistically significant ($r = 0.236$, $p = 0.194$). Finally, a moderate, significant positive correlation was found between perceptions of legislative powers and public awareness ($r = 0.464$, $p = 0.008$), suggesting some alignment between these two dimensions.

Overall, the findings indicate that EHOs' opinions on the state of the UCT sector are meaningfully associated with their views on regulatory effectiveness and public knowledge, particularly at the national level (rejecting the null hypothesis).

Table 5: A table to show the results of the Pearson's Correlation in SPSS.

	Current state of UCT in the UK (Q5)		Current state of UCT in Nottinghamshire (Q6)		Legislative state and regulatory powers available to Officers (Q7)		Public awareness/ knowledge levels of reporting malpractice (Q8)	
	Pearson Correlation	**Sig. (2 tailed)**	**Pearson Correlation**	**Sig. (2 tailed)**	**Pearson Correlation**	**Sig. (2 tailed)**	**Pearson Correlation**	**Sig. (2 tailed)**
Current state of UCT in the UK (Q5)			0.62	<0.001	0.60	<0.001	0.57	<0.001
Current state of UCT in Nottinghamshire (Q6)	0.62	<0.001			0.36	0.04	0.24	0.19
Legislative state and regulatory powers available to Officers (Q7)	0.60	<0.001	0.36	0.04			0.46	0.008
Public awareness/ knowledge levels of reporting malpractice (Q8)	0.57	<0.001	0.24	0.194	0.46	0.008		

Linear Regression Analysis

A multiple linear regression analysis was conducted to determine whether Environmental Health Officers' (EHOs') perceptions of the current state of unregulated cosmetic treatments (UCT) in the United Kingdom and Nottinghamshire (Q5 and Q6) could be predicted by their views on the current legislative and regulatory powers available (Q7) and public awareness of malpractice reporting (Q8). The results of this analysis can be found in Table 4.

The overall model was not statistically significant, F (2, 29) = 2.256, p = 0.123, indicating that the combined influence of public awareness and legislative powers did not significantly predict EHO opinions on the state of the UCT sector. Individually, neither Q7 (B = 0.324, p = 0.115) nor Q8 (B = 0.103, p = 0.652) significantly predicted the dependent variable, suggesting that EHOs' perceptions remain largely unchanged regardless of variations in public awareness or the strength of existing regulation (Table 6 and 7).

However, the model for the current state within the UK was statistically significant indicating that the combined influence of public awareness and legislative powers does significantly impact EHO opinions on national state F (12.92) =>0.001 (Table 6 and 7).

Table 6: A table to show the results from an ANOVA regression analysis

	Current state of UCT in the UK (Q5)	**Current state of UCT in Nottinghamshire (Q6)**
F	12.92	2.26
Sig	<0.001	0.12

Table 7: A table to display coefficients results from the linear regression analysis for both the current state in the UK and Nottinghamshire.

	Current state of UCT in the UK (Q5)		**Current state of UCT in Nottinghamshire (Q6)**	
(Constant)	**0.6**		**1.48**	
	B	**Sig.**	**B**	**Sig.**
Current legislative state and regulatory powers available to officers (Q7)	0.43	0.008	1.63	0.115
Awareness and knowledge levels of the public in reporting malpractice (Q8)	0.42	0.021	0.10	0.652

Principle Component Analysis (PCA)

A PCA was conducted to reduce the dimensionality of the data and identify the underlying components, the results can be found in Table 4. The current state in the UK and Nottinghamshire yielded the same eigenvalues, 2.87, 0.07 and 0.04 (Table 8). The result for dimension 1 was greater than 1, as this value is less than 5 it illustrates that no multicollinearity was detected, therefore there was no linear relationship between the explanatory variables. Dimension 2 and 3 both indicate moderate collinearity.

Variance proportions for legislative state and regulatory powers were 0.07, 0.94 and 0.05, two of these values were greater than 0.05 which suggested that there is multicollinearity between legislative state and opinions of the participants in the UK and Nottinghamshire, denoting a somewhat linear relationship between the two.

The variance proportions for public awareness and knowledge are 0.01, 0.07, 0.92, two of these values are greater than 0.05 indicating some multicollinearity. However, it is difficult to determine which as to whether legislative state and regulatory powers or perceived public awareness and knowledge has a greater impact on participants opinions of UCT.

Table 8: A table to illustrate the results of the PC analysis for both the UK and Nottinghamshire.

				Variance Proportions	
Dimension	Eigenvalue	Condition Index	(Constant)	Q7	Q8
1	2.88	1.00	0.01	0.01	0.01
2	0.07	6.40	0.30	0.30	0.07
3	0.04	8.18	0.70	0.70	0.92

Dependent Variables: Q5 and Q6.

Histograms

Histograms were generated to assess the normality of the standardised residuals from the regression models, specifically examining EHOs' opinions on the current state of UCT in Nottinghamshire and the UK. The histogram for Q6 (Nottinghamshire) revealed an approximately normal distribution with minor deviations, and no outliers were detected. The mean of the residuals was -2.13E-16, which is effectively zero, suggesting no systematic bias in the model's predictions. The standard deviation of

the residuals (SD = 0.967) indicates moderate variability, suggesting that while some variance remains unexplained, the model still captures meaningful trends in the data.

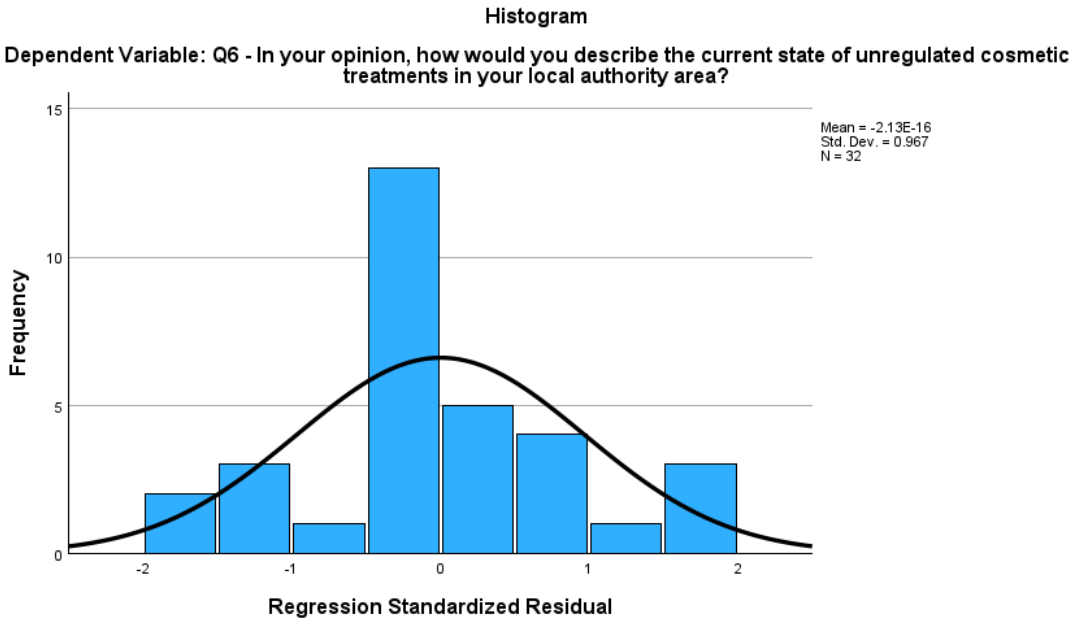

Figure 18: A histogram to illustrate the regression of standardised residuals for Nottinghamshire (Q6).

Similarly, the histogram of regression standardised residuals for Q5 (UK) demonstrated a slightly stronger approximation to a normal distribution. The mean residual was 1.42E-16, again indicating no evidence of bias, and the standard deviation was also 0.967. The consistency of these results across both models confirms that the assumption of normality is reasonably met. Taken together, these findings support the validity of the regression models used in this study and suggest that the residuals behave as expected under linear regression assumptions.

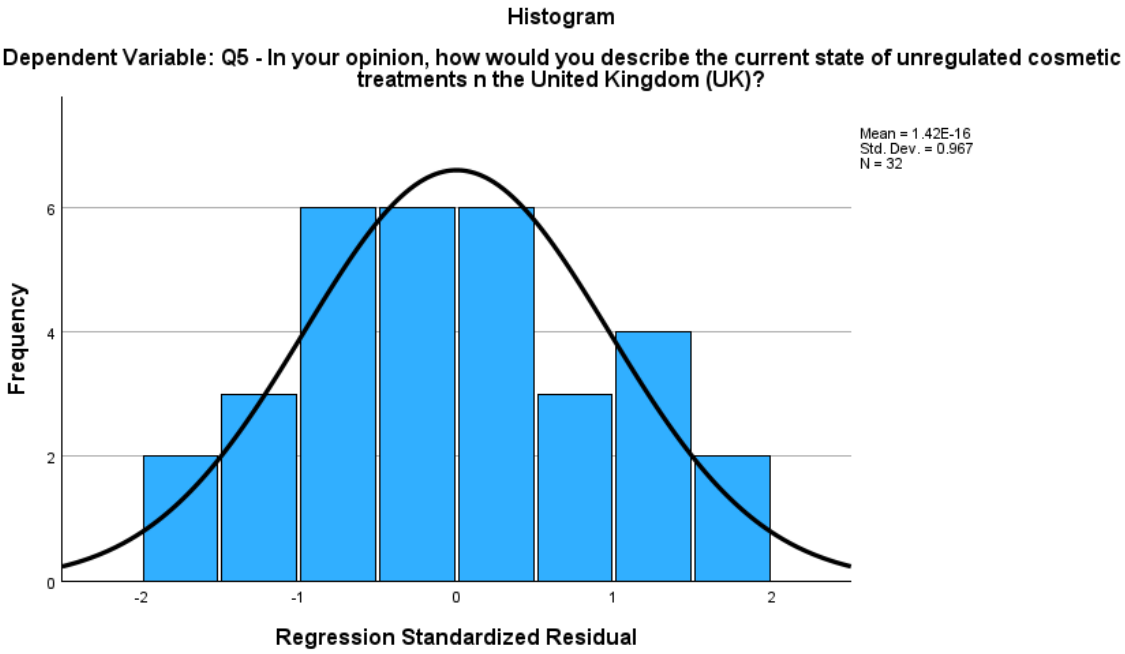

Figure 19: A histogram to illustrate the regression of standardised residuals for the UK (Q5).

Residual Scatter Plots

A scatterplot of standardised predicted values against the actual responses for Q5 was generated to evaluate whether the assumptions of linearity and homoscedasticity were met. As shown in Figure 17, the data points are randomly distributed with no discernible pattern, suggesting that the assumption of linearity is satisfied. Additionally, the spread of residuals appears consistent across the range of predicted values, indicating that the assumption of homoscedasticity (constant variance) is also reasonably met. No extreme outliers or influential observations were observed. These findings support the validity of the linear regression model used to analyse perceptions of the current state of unregulated cosmetic treatments in the UK.

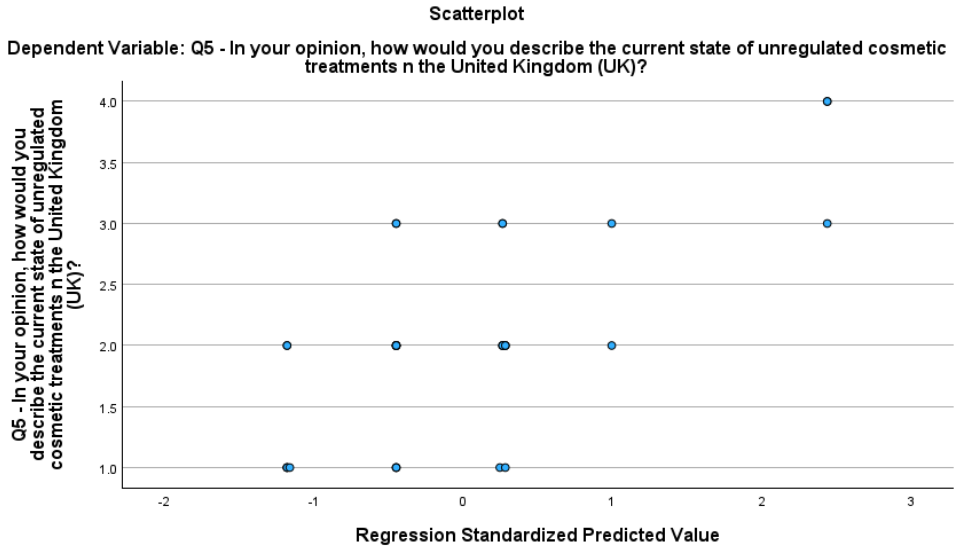

Figure 20: A scatterplot of standardised predicted values against the actual responses for UK (Q5)

The histogram for Q6 was also generated to evaluate whether the assumptions of linearity and homoscedasticity were met. As shown in Figure 20, the data points illustrate a positive linear relationship, this suggests that the assumption of linearity is not satisfied. These findings do not support the validity of the linear regression model used to analyse the perceptions of the current state in Nottinghamshire.

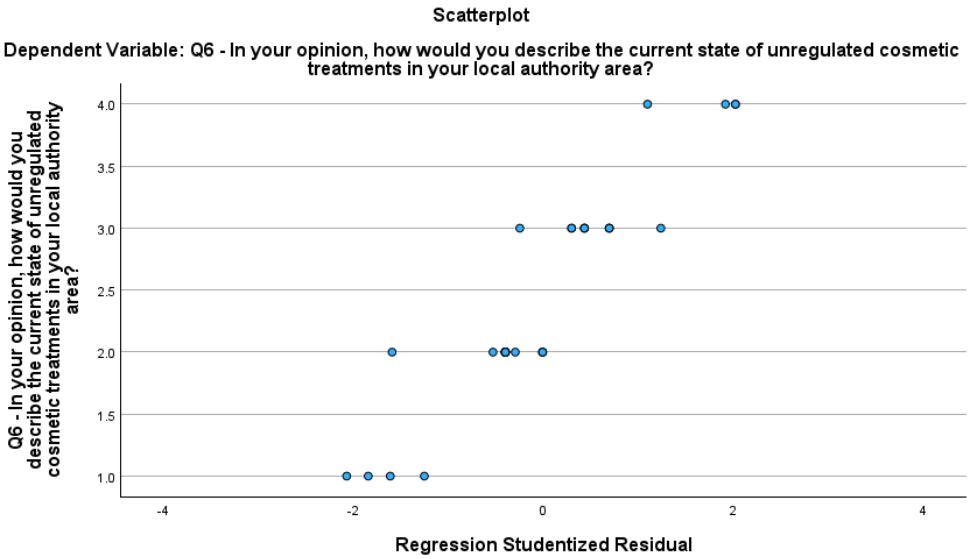

Figure 21: A scatterplot of standardised predicted values against the actual responses for Nottinghamshire (Q6).

4.2 Part Two – Systematic Review and Thematic Analysis

A total of six themes (Table 9) and six sub-themes (Table 10) emerged from the thematic analysis and were identified using Braun and Clarke's (2006) six step framework (Appendix 3).

Table 9: A table to show the total number of papers coded to each of the themes.

Theme	Number of Papers
Early Adverse Reaction	33
Delayed Adverse Reaction	32
Lack of Regulation	4
Poor Client Consultation	2
Poor Client Aftercare	2
Poor Standard of Practitioner Training	8

Table 10: A table to show the total number of papers that were coded to each of the sub-themes.

Sub-Theme	Number of Papers
Injection Site Reaction	23
Infection	10
Hypersensitivity	15
Technical and Placement Errors	14
Skin Discolouration	13
Vascular Compromise	32

Theme One and Two: - Early Adverse Reactions (EAR) and Delayed Adverse Reactions (DAR)

EAR and DAR are based on the onset times of the risks and complications of dermal fillers. EAR onset times can occur up to hours or seven days after the person has received the treatment. Whereas DAR may occur one week to years after the treatment.

This theme relates to the research question as it directly pinpoints the associated medical risks and complications of dermal fillers no matter the education and training level of the practitioner. Some of the associated risks and complications are extreme

reactions and some are common side effects of the treatment these can include anything from bleeding, bruising, redness, pain, numbness, headache and skin discolouration.

Theme Three: - Lack of Regulation

The third theme is Lack of Regulation this theme is centred around a lack of standards and guidance within this sector which puts the public at unnecessary risk. This theme explores the threats of unlicensed products, unpublished data concerning the risks and complications, leading enforcement officers being unable to act on intelligence, and that enforcing bodies do not have a clear path of enforcement should that become necessary.

Theme Four: - Poor Client Consultation

The fourth theme is Poor Client Consultation, this theme focusses on thorough client health screening and assessment of contraindicatory factors before any treatment is carried out. This can have negative effects on both the physical and mental health of a client.

Theme Five: - Poor Client Aftercare

The fifth theme is Poor Client Aftercare. This theme links to a lack of post customer care. Aftercare may include providing the client with specific advice related to the treatment to ensure that they do not develop any further adverse reactions. This links to the research question as it highlights the complexity of the issues with these types of treatments and the required level of competency that the practitioner must display. It illustrates that these kinds of treatments are also not a money-making conveyor belt, rather the fact that there are actual people at risk of malpractice.

Theme Six: - Poor Standard of Practitioner Training

The sixth theme is Poor Standard of Practitioner Training. This theme is critical and a major cause of concern as this may directly lead to severe list of risks and complications associated with dermal fillers. This theme also links to the competency of the practitioners, and their understanding of the anatomy, how to react in the event of an emergency for example.

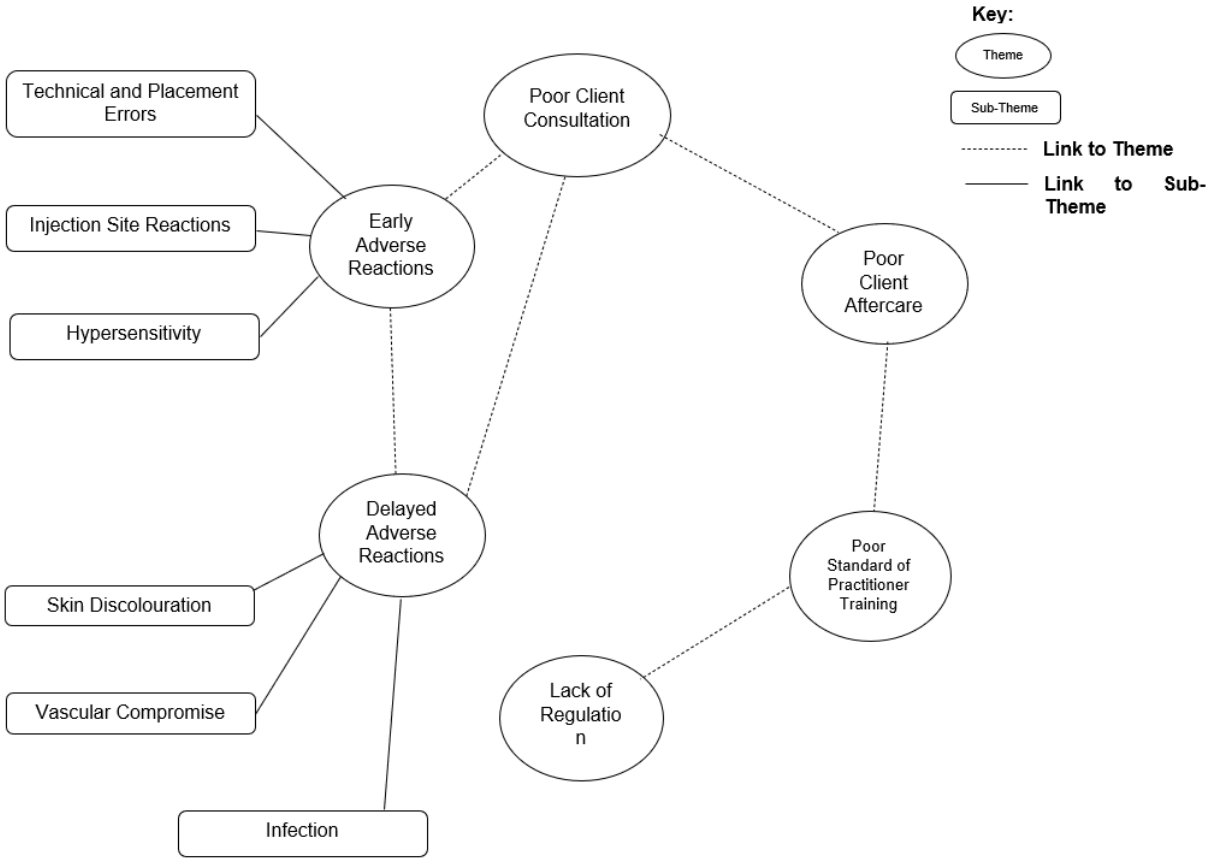

Figure 22: A thematic analysis map to indicate the themes and sub-themes to unregulated cosmetic treatments.

Chapter Five – Discussion

5. Discussion

The NSAT sector is still evolving, and new treatments continue to be introduced onto the market. As a result, there are limited literature sources and studies. Media reports and exposure in this sector have increase recently, to report events occurring in real time.

The results of this study highlight the significant concerns amongst environmental health departments regarding the current state of the NSAT sector in both the UK and Nottinghamshire. Most officers rated the current state as poor, but there were slightly more negative perceptions at a national level. The main issue raised was a lack of regulation and this seemed to be an overarching theme. This result was reflected both in the descriptive analysis, which indicated a low lean score, showing that most officers were of the same opinion and this result was also highlighted in the thematic analysis.

Potentially due to a lack of regulation, there was variance in the responses regarding whether officers would investigate a complaint related to NSAT. A reason for this result may have been that officers could be concerned about acting ultra vires or not having adequate legislation to support their enforcement decisions. A report conducted by the Chartered Institute of Environmental Health (CIEH), also concluded a similar result in that in the absence of powers, environmental health departments are adapting existing powers and legislation for them to cover some of the newer invasive treatments (Institute of Licensing and CIEH, 2020). This not only demonstrates a lack of consistency between local authorities, by way in which they interpret existing legislation but also that the NSAT is currently being governed by a patchwork of regulatory mechanisms with no control (PHIN, 2024).

On the contrary, local perceptions of the NSAT sector were moderately correlated with views on legislation ($r=0.36$, $p=0.04$) and the relationship between local NSAT perceptions and public awareness was weaker and not statistically significant ($r =0.24$, $p=0.19$). This may be attributed to the fact that given that Nottinghamshire already has adopted byelaws, so officers believe that locally perceptions are better as there are some standards which govern similar treatments such as tattooing, electrolysis and acupuncture.

The linear regression model was not statistically significant indicating that both factors combined do not predict the opinions of officer this may be because there are other unmeasured factors such as practitioner training, social media exposure, and local policy differences. This links to the literature as study conducted by (Hermans et al, 2022) found that passive and active use of highly visual social media sites such as Instagram, which propagates appearance focus content, plays a significant role in attitudes towards NSAT, this could have impacted the opinions of the officers. For example, social media allows practitioners to oversimplify procedures, highlight their most successful outcomes and upload edited or filtered photographs to exaggerate results of the procedures. This coupled with some practitioners utilising celebrity fanbases exacerbates the issue and falsely advertises and deceives the public on the risks and complications which could allude to the reasoning as to why officers' perception is poor (Sharma et al, 2024).

However, an opposing study conducted by Hopkins et al, (2020) found that social media can be used as a tool to improve the state. For example, Physicians posting online can help to disseminate accurate and education information regarding NSAT. This could empower the public to make informed decisions (Hopkins et al, 2020). This may be difficult to roll out however as some Physicians may be sceptical to post online due to the negative societal impact that social media can have, and maintaining a strong online presence could lead to Physicians neglecting their core professional responsibilities (Sharma et al, 2024).

Considering this, it may be more suitable for there to be more restrictions placed on the advertising of NSAT due to the negativity that surrounds this topic. This idea has been explored in the literature and is in already in practice within Australia, whereby the TGA under the Therapeutic Goods Act 1989, banned the promotion of POM such as dermal fillers and Botox (TGA, 2024). By restricting advertisement and promotion of these treatments, it would encourage the public to assess the risks and complications before undertaking these treatments, this could help to protect public health and protect the most vulnerable on influenced individuals.

Perceptions of the current state at a national level were statistically significant suggesting that public awareness and legislative state and regulation does impact the national state according to officers. This may be because not all local authorities have

adopted byelaws, therefore when officers were assessing the state that they considered their own direct experiences during inspections and implementation of their local authority byelaws (Nottinghamshire County Council Act, 1985). This result may infer that Nottinghamshire officers have some confidence in the level of understanding of the public and of the legislation available and that consequently if there were to be malpractice they would know how to act. An example of this is a case study from Epping Forest District Council (EFDC), who also has adopted byelaws. EFDC received a complaint from the Joint Council for Cosmetic Practitioners (JCCP) regarding a practitioner who was conducing liquid BBL's in hotel function rooms and clients were attracted by low prices. As a result of this complaint EFDC investigated the practitioner, an Improvement Notice, under HASWA was served for training, infection control, consultation, aftercare, safe systems of work and administration of POM. A Prohibition Notice was also served on the practitioner, prohibiting them from trading within the Epping Forest District. Whilst this investigation was successful in this district the practitioner went on to trade in other areas (Stalabrass, 2024). This case study highlights that those that have adopted byelaws may be more familiar with the available legislation that can be used to investigate NSAT. However, yet again it does emphasise that there is no specific legislation for these therefore, officers must adapt existing legislation which may not always be effective. This highlights the need for a broader coordinated national framework that aligns all local authorities and national regulatory efforts, whilst equipping officers with the tools and authority to act effectively.

The themes identified through thematic analysis such as 'Lack of Regulation', 'Poor Standard of Training' and 'Poor Client Aftercare' strongly reflect officer concerns raised in the questionnaire and subsequent correlation and regression analysis. A total of eight papers reported on 'Poor Standard of Training', which highlighted that practitioners would lack or have questionable understanding of the anatomy of the body, physiology, pharmacology, complication prevention and patient management (Samizadeh and Boulle, 2023). A lack of understanding of these factors exacerbates the risks and complications associated with these treatments (Pulumatia et al, 2022). This is also a real concern as the training courses that are available in this sector are not quality assured (Samizadeh and Boulle, 2023) this means that training providers

take advantage of the lack of regulation within this field, therefore they effectively use this as an excuse to train anyone.

Furthermore ‘Poor Standard of Training’ could mean that the practitioner has a poor understanding or is inadequately trained on the client consultation and aftercare process. Client consultation is imperative to protect public health (Bawa, 2022). Similar issues in thorough client consultant have been identified in the literature and support the ideas raised in the systematic review in that poor client consultation can lead to a patient undergoing unnecessary risk. It is imperative that clients have access to clear, and evidence information to help them make informed decisions. The JCCP reported that of those seeking NSAT, 22% of them did not have a pre-treatment consultation, 70% did have a consultation, but it lasted for less than 20 minutes and almost one in four clients were not asked any questions relevant to their medical history (Health and Social Care Committee, 2022).

A study also found that psychological assessment is extremely important especially as it can help practitioners to identify underlying mental health conditions such as Body Dysmorphic Disorder (BDD) (Department of Health, 2013) which is a distressing psychological condition where a person becomes preoccupied with one or more features in their physical appearance, it can seriously affect a person’s daily life, including work, education, social life and relationships (CIEH, 2025). If conditions such as this are not assessed at consultation, it suggests that the practitioner is not solely interested and invested in the client’s health, rather the monetary gain of the treatment (Bawa, 2022) Practitioners should say no to conducting procedures where contraindicators are present (Bawa, 2022). These findings highlight that some practitioners may exploit patient vulnerability. Therefore stringent guidelines must be imposed to ensure that patients are not exploited by illegitimate practitioners.

In contrast the themes EAR and DAR highlight that medical risks whether regarded as common or serious are not exclusive to poor practice, this suggests that they may occur even if the practitioner is competent and have received extensive training (Coughlin, 2021). An example explore in the literature is the surgical and liquid BBL. In 2018 the British Association of Aesthetic Plastic Surgeons (BAAPS) campaigned for increased safety regulations due to the severe risks associated with the procedure. They found that it was one of the riskiest procedures that could be performed, even

for those as experienced practitioners. Therefore, BAAPS recommended to their members that they do not carry out the procedure. It was not until 2022, that BAAPS released updated guidance on the liquid and surgical BBL for its members after international research and safety improvements were identified (BAAPS, 2024).

This shows the inherent fact that both the government and public must clearly understand the risks and complications associated with NSAT as even the most experienced of professional's experience EAR and DAR.

Furthermore, a lack of aftercare has been increasingly associated with backstreet pop-up clinics and shops (Tailor, 2025; Save Face, 2024). Poor client aftercare is a real risk and can lead to serious and life-threatening complications for the public, the results of the systematic review highlighted that regular follow up and monitoring is key to ensure that the client undertake a smooth recovery process (Pulumati, 2024). However, a lack of adequate advice can lead to patients requiring urgent medical attention, and emergency post-procedural care (Pulumati, 2024). A report issued by the BBC highlighted a case whereby a patient had undertaken a liquid BBL procedure without any consultation or aftercare advice. The patient was simply given POM, which were prescribed illegally. The patient required urgent medical attention after contracting sepsis. The patient contacted the practitioner who subsequently blocked them on social media and cut off all communication with them (Elliott and Clegg, 2025). Whilst this case study was produced by the BBC, so there may have been reporting bias, it does highlight real issues unfolding in real time.

Nevertheless, uptake of aftercare is the responsibility of the client, this is something that cannot be managed by the practitioner only advised. A study found that patients are more likely to adhere to medication regimens than to behaviour changes such as aftercare advice. The uptake of aftercare advice is likely to be influenced by demographic factors, education level and socioeconomic status (Day, 2010).

The overall findings of this study reveal a complex picture of how officers perceive the NSAT sector and the factors that shape those views. Whilst strengthening regulation and raising public awareness in the view of officers is necessary, these factors may not independently shift professional perceptions unless accompanied by tangible changes in legislation and regulatory powers. This is reflected in the results by way

that 62% of officers would welcome more regulation and 75% of officers would welcome and think that a full licensing scheme would be beneficial.

5.1 Recommendations

Further research could expand upon these findings by exploring the perspectives of other stakeholders, such as practitioners and their experiences of working within the field and well as members of the public who have undergone NSAT. It may also be beneficial to conduct a comparative study across different regions in the UK, those that have adopted byelaws and those that do not. This could help to identify best practices, or it could further highlight discrepancies and gaps in regulation and public awareness.

There needs to be more research conducted into the legislative powers available to officers and more support for local authorities currently investigating these complaints.

It would also be beneficial for there to be a centralised reporting system whereby the public and practitioners can raise concerns, this would also help government to obtain data on the current state to inform decision making.

It could be beneficial to review advertisement laws surround the advertisement of NSAT and implement similar restrictions as seen in Australia.

Public awareness campaigns may be useful to educate the public good and poor practices so that they know what is to be expected if they consider having a NSAT.

5.2 Limitations

Whilst this study provides valuable insights, there are several limitations and considerations to improve the study design that must be addressed.

The questionnaire was circulated via an independent member of a Nottinghamshire licensing focus group. Not all Nottinghamshire officers may have been included in the mailing list if the independent member did not have their email addresses. Therefore, I may have relied to heavily on the questionnaire reaching all officer by way of other forwarding the email onto others. This could have affected the reliability of the results.

The questionnaire focussed solely on the opinions of officers and their perceptions of public awareness. Officer opinions could be completely different to actual public awareness and opinions of this sector. It may be that the public has greater understanding that expected. If I was to replicate the study, I would be sure to consider sending out the questionnaire to other stakeholders.

The study could have been improved by carrying out primary research on those that have undergone NSAT to obtain real life accounts. This would have added additional depth to the study but recruiting participants would have been difficult given the emotive nature of the topic and some participants may not have wanted to share their accounts, this could then affect data collection. This would have also been ethically challenging.

If I was to repeat this study again, I would also create a table that includes all of the EAR and DAR to highlight the sheer number of risks and complications associated with these treatments.

Finally systematic reviews only provide a snapshot of research at a specific point, this means that new studies could have been published on this topic since the research was carried out. The systematic review also only focussed on defined terms therefore not all the risks and complications may have been explored, potentially leaving out valuable information for decision making.

Chapter Six – Conclusion

6.0 Conclusion

In conclusion officer perceptions of the current state of NSAT in both the UK and Nottinghamshire are poor, however perceptions in Nottinghamshire are slightly better but this may be due to existing licensing schemes employed in the district.

Public awareness and legislative state together do not solely predict officer opinions, however unmeasured factors such as practitioner training, social media exposure and local policy differences may have more of an impact.

A lack of regulation sees themes such a Poor Standard of Practitoner Training, Poor Client Consultation and Poor Client Aftercare as emerging themes in the literature, all of which exacerbate the risk to public health. Whilst risks and complications are inherent to NSAT, regardless of practitioner training, the concerning practices and lack of client care observed in these seemingly incompetent practitioners raises significant concerns and consequently EHO would welcome a full licensing scheme or more regulation in this sector.

Therefore, a holistic approach to produce tangible regulation and guidance is required as a matter of urgency to protect public health from any unnecessary risk and complications.

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Appendix

Appendix 1 – PECO Framework used in Systematic Review

	Concept / Keyword	Alternative words / Synonyms for each concept	Truncation / Wildcard Use
Population	(Individuals undergoing) Unregulated cosmetic treatments	non-medical aesthetic procedures OR cosmetic procedures without regulation OR dermal fillers without certification OR dermal fillers unlicensed OR illegal cosmetic surgery OR non-surgical cosmetic treatments OR cosmetic procedures black market OR Cosmetic procedures safety OR Fillers without certification OR Fillers unlicensed	Treatment* Procedure* Filler*
AND			
Intervention	Unregulated cosmetic treatments	Unregulated cosmetic treatments OR Non-medical aesthetic procedures	Treatment* Procedure* Unregulat* Injection* Filler Surger*

		OR Cosmetic treatments with no regulation OR Cosmetic surgery without certification OR Botox treatments unregulated OR Illegal dermal filler injections OR Unlicensed liposuction OR Black market plastic surgery OR Illegal facial filler	
AND			
Comparison	Regulated treatments or no treatment	Regulated cosmetic treatments OR Certified aesthetic procedures OR Licenced cosmetic surgery OR Cosmetic procedures with professional oversight OR Safe cosmetic surgery OR	Treatment* Procedure*

		Standard cosmetic treatments OR Legal aesthetic treatments OR Cosmetic surgery OR Plastic surgery	
AND			
Outcome	Risks, outcomes and public health	Health risks OR Health Policy OR Public health surveillance OR Patient Safety OR Surgical complications OR Illegal drugs	Risk* Polic* Complication* Drug*

Appendix 2 – Systematic Review Search Strategy

Search Query for CIHNAL Ultimate and MedLine

"unregulated cosmetic treatment*" OR "uncontrolled cosmetic treatment*" OR "unchecked cosmetic treatment*" OR "non-medical aesthetic procedure*" OR "cosmetic procedure* without regulation*" OR "cosmetic procedure* without control*" OR "cosmetic procedure* without governance" OR "cosmetic procedure* without management" OR "dermal filler* OR "dermal filler* unlicensed" OR illegal cosmetic surger* OR banned cosmetic surger* OR criminal OR illegitimate OR "illicit cosmetic surgery" OR "prohibited cosmetic surger*" OR unlawful cosmetic surger* OR superficial OR "cosmetic procedures safety" AND ("unregulated cosmetic procedure*" OR "non-medical aesthetic procedure*" OR "cosmetic treatment* without regulation" OR "cosmetic surgery without certification" OR dermal filler* unregulated" OR illegal dermal filler injections OR filler*OR cosmetic filler* OR facial filler*) AND “Unregulated OR uncontrolled OR unchecked OR cosmetic OR “cosmetic procedure*” OR “without regulation" OR “without governance” OR “dermal filler” or “facial filler* OR filler* OR illegal filler injections OR cosmetic filler* OR illegal OR regulated” NOT (regulated cosmetic treatments OR certified aesthetic procedures OR licensed OR licensed cosmetic treatment OR cosmetic procedures with professional oversight OR safe cosmetic treatments OR safe OR standard cosmetic treatments OR legal aesthetic treatments cosmetic surgery OR “Surgery, Plastic” OR cosmetic surgery OR “Plastic Surgery Procedures” AND (health risk* OR danger OR exposure OR liability OR "health polic*" OR scheme* OR practice* OR public health OR public health surveillance OR community health surveillance OR vulnerabil* OR "patient safety" OR "patient security" OR surgical complication* OR problem OR difficulty OR "illegal drugs" OR “Long Term Adverse Effects”

Search Query for Web of Science and PubMed

(unregulated cosmetic procedure* OR non-medical aesthetic procedure* OR cosmetic treatment* without regulation OR cosmetic surgery without certification OR “Dermal fillers” [Mesh] unregulated OR illegal dermal filler injections OR filler* OR cosmetic filler* OR facial filler*)

(Unregulated OR uncontrolled OR unchecked OR cosmetic OR cosmetic procedure* OR without regulation OR without governance OR “Dermal filler” [Mesh] or facial filler* OR filler* OR illegal filler injections OR cosmetic filler* OR illegal OR regulated)

(health risk* OR danger OR exposure OR liability OR health polic* OR scheme* OR practice* OR Public Health [Mesh] OR “Public Health Surveillance” [Mesh] OR community health surveillance OR vulnerabil* OR "Patient Safety" [Mesh] OR "patient security" OR surgical complication* OR problem OR difficulty OR illegal filler*)

(unregulated cosmetic procedure* OR non-medical aesthetic procedure* OR "cosmetic treatment* without regulation" OR cosmetic surgery without certification OR “Dermal filler

[Mesh] OR unregulated OR illegal dermal filler injections OR filler* OR cosmetic filler* OR facial filler*)

Appendix 3 – SR Data Extraction Table and Thematic Analysis Coding

The full data extraction tables was 210 pages long, therefore only a sippet of the table has been included in the appendix.

Data Extraction and Thematic Analysis

Title of Paper	Author (s)	Year of Publication	Population / Participants	Methodology / Intervention	The Joanna Briggs Institute (JBI) Critical Appraisal Tool Selection	DOI / Hyperlink	Key Findings	Primary Co	Secondary Code	Tertiary Code	Theme
Dermal filler induced alopecia: a case report and literature review	Salma Albargawi, Khalid Nabil Nagshabandi, Asem Shadid	2024	21 year old female	Case Study / Case Report	Case Report	https://doi.org/10.1111/jocd.16684	Post filler induced hair loss has been reported. Clinical examination revealed a well-defined erythematous eroded and partially ulcerated plaque in a reticulated patter over left temporal and a few tenders well defined erythematous plaques over the scalp.	Hair loss / alopecia	Hair Loss	Injection Site Reaction (DAR)	DAR
Dermal filler induced alopecia: a case report and literature review	Salma Albargawi, Khalid Nabil Nagshabandi, Asem Shadid	2024	21 year old female	Case Study / Case Report	Case Report	https://doi.org/10.1111/jocd.16684	Skin necrosis four days post filler injection in the temples, tear troughs and eyebrow glabella.	Skin necrosis	Skin Necrosis	Vascular Compromise (DAR)	DAR
Complications associated with needle-based medical aesthetic procedures: clinical and medico-legal aspects from the Polish perspective.	Katarzyna Beutler, Szymon Rzepczyk, Bartosz Bijata, Jędrzej Lewandowski, Beata Bożek, Paweł Świderski	2024		Case Study / Case Report	Case Report	https://journals.viamedica.pl/forum_dermatologicum/article/view/100842	Pain, swelling despite the injection technique.	Pain	Pain	Injection Site Reaction (EAR) - Infection (EAR) - Hypersensitivity (EAR)	EAR
Complications associated with needle-based medical aesthetic procedures: clinical and medico-legal aspects from the Polish perspective.	Katarzyna Beutler, Szymon Rzepczyk, Bartosz Bijata, Jędrzej Lewandowski, Beata Bożek, Paweł Świderski	2024		Case Study / Case Report	Case Report	https://journals.viamedica.pl/forum_dermatologicum/article/view/100843	Swelling	Swelling	Swelling	Injection Site Reaction (EAR)	EAR
Complications associated with needle-based medical aesthetic procedures: clinical and medico-legal aspects from the Polish perspective.	Katarzyna Beutler, Szymon Rzepczyk, Bartosz Bijata, Jędrzej Lewandowski, Beata Bożek, Paweł Świderski	2024		Case Study / Case Report	Case Report	https://journals.viamedica.pl/forum_dermatologicum/article/view/100844	Bleeding	Bleeding	Bleeding	Injection Site Reaction (EAR)	EAR
Complications associated with needle-based medical aesthetic procedures: clinical and medico-legal aspects from the Polish perspective.	Katarzyna Beutler, Szymon Rzepczyk, Bartosz Bijata, Jędrzej Lewandowski, Beata Bożek, Paweł Świderski	2024		Case Study / Case Report	Case Report	https://journals.viamedica.pl/forum_dermatologicum/article/view/100843	Bleeding or bruising despite the injection technique.	Bruising	Bruising	Injection Site Reaction (EAR)	EAR
Complications associated with needle-based medical aesthetic procedures: clinical and medico-legal aspects from the Polish perspective.	Katarzyna Beutler, Szymon Rzepczyk, Bartosz Bijata, Jędrzej Lewandowski, Beata Bożek, Paweł Świderski	2024		Case Study / Case Report	Case Report	https://journals.viamedica.pl/forum_dermatologicum/article/view/100842	Too shallow injection of the filler may result in the appearance of palpable and visible lumps	Injection technique resulting in lumps	Superficial Placement	Technical and Placement Errors (EAR / DAR) - *Training	EAR
Complications associated with needle-based medical aesthetic procedures: clinical and medico-legal aspects from the Polish perspective.	Katarzyna Beutler, Szymon Rzepczyk, Bartosz Bijata, Jędrzej Lewandowski, Beata Bożek, Paweł Świderski	2024		Case Study / Case Report	Case Report	https://journals.viamedica.pl/forum_dermatologicum/article/view/100842	To superficial administration of hyaluronic acid can also cuase the Tyndall Effect (a blue shadow is then visible on the skin). Mostly arises in areas where the skin is thin such as under the eye.	Tyndall Effect	Superficial Placement	Technical and Placement Errors (EAR / DAR) - *Training	EAR
Complications associated with needle-based medical	Katarzyna Beutler, Szymon Rzepczyk, Bartosz						Central retinal artery occlusion and blindness. This is caused by incorrect adminstration of the filler into the vessel most often around the forehead, nose				

Appendix 4: - Questionnaire

Unregulated Cosmetic Treatments - Public Health Risks and Legislation

My name is April Baskill, and I am conducting research into the current state of unregulated cosmetic treatments (such as Botox, dermal fillers and the Brazilian Bum Lift (BBL)) at the University of Derby in partial fulfilment of a MSc in Environmental Health. I am also working as a Graduate Environmental Health Officer for a Local Authority in Nottinghamshire.

The aim of this study is to critically examine the state of unregulated cosmetic treatments (with a specific focus on Nottinghamshire) drawing on evidence from Local Authority Environmental Health Officers / Environmental Health colleagues. This study will also systematically review and assess the risk and complications associated with unregulated cosmetic treatments and discuss possible frameworks for more ethical and regulated practices to enable the UK to align to global standards.
The research is therefore seeking your comments and perspectives on the current state of unregulated cosmetic treatments in your Local Authority area.

This questionnaire consists of 17 questions and should only take about 20 minutes to complete. Please note that your responses and identifying information would be kept confidential and anonymous.

Should you have any queries or questions regarding this study, please do not hesitate to contact me via my university email address; 100623910@unimail.derby.ac.uk.

Thank you in advance for your time and consideration.

* Required

CONSENT

1. I have read the participant information and overview and understand that I have agreed to participate in this research which involves discussing the current state of unregulated cosmetic treatments.

   I understand that my participation in this study is voluntary, and that if I no longer wish to participate, I can withdraw my data up to two weeks after conducting the questionnaire. I do not have to give any reasons or explanations for doing so. I have been provided with details of whom I should contact if I wish to withdraw.

   I understand that all data I provide will be kept confidential and store securely.

   I understand that my data will always remain anonymous.
   *

   ◯ I have read and understood this information and **I consent** to take part in this study.

   ◯ I have read and understood this information and **I do not consent** to take part in this study.

2. Do you work for a local authority within Nottinghamshire? *

- ◯ Yes
- ◯ No
- ◯ Unsure

3. Do you work in the Environmental Health department for a local authority in Nottinghamshire? *

- ◯ Yes
- ◯ No
- ◯ Unsure

4. Does your Environmental Health department have their own adopted byelaws for acupuncture, tattooing, ear-piercing and electrolysis under the Local Government (Miscellaneous Provisions) Act 1982? *

- ◯ Yes
- ◯ No
- ◯ Unsure

5. In your opinion, how would you describe the current state of unregulated cosmetic treatments in the United Kingdom (UK)? *

- ◯ Very Good
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ Very Poor

6. In your opinion, how would you describe the current state of unregulated cosmetics treatments in your local authority area? *

- ◯ Very Good
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ Very Poor

7. How do you view the current legislative state and regulatory powers available to officers dealing with unregulated cosmetic treatments? *

- ◯ Very Good
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ Very Poor

Public Awareness

8. As an Environmental Health Practitioner (or in a similar environmental health regulatory role), how do you view the awareness and knowledge levels that the public health have regarding reporting malpractice in relation to unregulated cosmetic treatments? *

- ◯ Very Good
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ Very Poor

9. Do you think that people living in your local authority area who have undergone an unregulated cosmetic treatment would know who to report their concerns to if something went wrong? *

- ◯ Yes
- ◯ No
- ◯ Unsure

10. Does your environmental health department receive complaints regarding unregulated cosmetic treatments? *

- ◯ Yes
- ◯ No
- ◯ Unsure

11. What are these complaints regarding? *

- ◯ Health concerns i.e., infection
- ◯ Poor Hygiene
- ◯ Poor Practices
- ◯ Other

12. In the average month how many complaints would your environmental health department receive regarding unregulated cosmetic treatments? *

- ◯ None
- ◯ 1-5
- ◯ 6-10
- ◯ 10+

13. How well do you believe that your local authority deals with complaints relating to unregulated cosmetic procedures? *

- ◯ Very Good
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ Very Poor

Investigation of complaints regarding unregulated cosmetic treatments

14. How would your environmental health department deal with / investigate complaints related to unregulated cosmetic treatments? *

- ◯ Acknowledge the complaint but do not carry out an investigation
- ◯ Investigate the complaint
- ◯ Refer to another organisation
- ◯ Other

15. What powers / legislation would you use to investigate a complaint related to an unregulated cosmetic treatment? *

- ◯ Health and Safety at Work etc Act 1974
- ◯ Public Health (Control of Disease) Act 1984
- ◯ Combination of the above
- ◯ Cannot use legislative powers
- ◯ Other

Moving forward...

16. What changes would you like to see to the unregulated cosmetic treatment industry? *

- ◯ Regulation in this sector (i.e., full licensing scheme)
- ◯ Local Authority Byelaws
- ◯ Official guidance documents to set a standard for all cosmetic treatments including qualifications and product standards
- ◯ Other

17. Do you think that a full licensing scheme as proposed by the Health and Care Act 2022 would be beneficial to the the current unregulated cosmetic treatment sector? *

- ◯ Yes
- ◯ No
- ◯ Unsure

18. Please explain your answer. *

19. If there were changes to the requirements of the local authority for regulating these currently unregulated cosmetic treatments, how well equipped would your local authority be to adapt their workload in order to enforce appropriately? *

- ◯ Very Good
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ Very Poor

Appendix 5: JBI Critical Appraisal Tools

JBI CRITICAL APPRAISAL CHECKLIST FOR CASE REPORTS

Reviewer_____ Date_____

Author_____ Year_____ Record Number_____

	Yes	No	Unclear	Not applicable
1. Were patient's demographic characteristics clearly described?	☐	☐	☐	☐
2. Was the patient's history clearly described and presented as a timeline?	☐	☐	☐	☐
3. Was the current clinical condition of the patient on presentation clearly described?	☐	☐	☐	☐
4. Were diagnostic tests or assessment methods and the results clearly described?	☐	☐	☐	☐
5. Was the intervention(s) or treatment procedure(s) clearly described?	☐	☐	☐	☐
6. Was the post-intervention clinical condition clearly described?	☐	☐	☐	☐
7. Were adverse events (harms) or unanticipated events identified and described?	☐	☐	☐	☐
8. Does the case report provide takeaway lessons?	☐	☐	☐	☐

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Comments (Including reason for exclusion)

_____

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JBI CRITICAL APPRAISAL CHECKLIST FOR COHORT STUDIES

Reviewer_____Date_____

Author_____Year_____Record Number_____

	Yes	No	Unclear	Not applicable
1. Were the two groups similar and recruited from the same population?	☐	☐	☐	☐
2. Were the exposures measured similarly to assign people to both exposed and unexposed groups?	☐	☐	☐	☐
3. Was the exposure measured in a valid and reliable way?	☐	☐	☐	☐
4. Were confounding factors identified?	☐	☐	☐	☐
5. Were strategies to deal with confounding factors stated?	☐	☐	☐	☐
6. Were the groups/participants free of the outcome at the start of the study (or at the moment of exposure)?	☐	☐	☐	☐
7. Were the outcomes measured in a valid and reliable way?	☐	☐	☐	☐
8. Was the follow up time reported and sufficient to be long enough for outcomes to occur?	☐	☐	☐	☐
9. Was follow up complete, and if not, were the reasons to loss to follow up described and explored?	☐	☐	☐	☐
10. Were strategies to address incomplete follow up utilized?	☐	☐	☐	☐
11. Was appropriate statistical analysis used?	☐	☐	☐	☐

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Comments (Including reason for exclusion)

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JBI CRITICAL APPRAISAL CHECKLIST FOR QUALITATIVE RESEARCH

Reviewer_____ Date_____

Author_____ Year_____ Record Number_____

		Yes	No	Unclear	Not applicable
1.	Is there congruity between the stated philosophical perspective and the research methodology?	☐	☐	☐	☐
2.	Is there congruity between the research methodology and the research question or objectives?	☐	☐	☐	☐
3.	Is there congruity between the research methodology and the methods used to collect data?	☐	☐	☐	☐
4.	Is there congruity between the research methodology and the representation and analysis of data?	☐	☐	☐	☐
5.	Is there congruity between the research methodology and the interpretation of results?	☐	☐	☐	☐
6.	Is there a statement locating the researcher culturally or theoretically?	☐	☐	☐	☐
7.	Is the influence of the researcher on the research, and vice- versa, addressed?	☐	☐	☐	☐
8.	Are participants, and their voices, adequately represented?	☐	☐	☐	☐
9.	Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	☐	☐	☐	☐
10.	Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	☐	☐	☐	☐

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Comments (Including reason for exclusion)

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JBI CRITICAL APPRAISAL CHECKLIST FOR SYSTEMATIC REVIEWS AND RESEARCH SYNTHESES

Reviewer_____ Date_____

Author_____ Year_____ Record Number_____

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	☐	☐	☐	☐
2.	Were the inclusion criteria appropriate for the review question?	☐	☐	☐	☐
3.	Was the search strategy appropriate?	☐	☐	☐	☐
4.	Were the sources and resources used to search for studies adequate?	☐	☐	☐	☐
5.	Were the criteria for appraising studies appropriate?	☐	☐	☐	☐
6.	Was critical appraisal conducted by two or more reviewers independently?	☐	☐	☐	☐
7.	Were there methods to minimize errors in data extraction?	☐	☐	☐	☐
8.	Were the methods used to combine studies appropriate?	☐	☐	☐	☐
9.	Was the likelihood of publication bias assessed?	☐	☐	☐	☐
10.	Were recommendations for policy and/or practice supported by the reported data?	☐	☐	☐	☐
11.	Were the specific directives for new research appropriate?	☐	☐	☐	☐

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Comments (Including reason for exclusion)

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Appendix 6: Assessment of Methodological Quality for the Cohort Papers using the JBI Critical Appraisal Tool.

Author and Year of Publiction	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8	Percentage Yes?
Salma Albargawi, Khalid Nabil Nagshabandi, Asem Shadid (2024)	Y	Y	Y	Y	Y	Y	Y	Y	100
Katarzyna Beutler, Szymon Rzepczyk, Bartosz Bijata, Jędrzej Lewandowski, Beata Bożek, Paweł Świderski (2024)	N	N	N	N	Y	Y	Y	Y	43
Daniel Cassiano, Tatiana Miyuki Iida, Ana Lúcia Recio, Samira Yarak (2020)	Y	Y	Y	Y	Y	Y	Y	Y	100
Caroline W. Chung a, Eric J. Shiuey b, César A. Briceño a, Vivian Lee (2023)	Y	Y	Y	Y	Y	Y	Y	Y	100
Arielle Coughlin, Mingyang L. Gray, William H. Westra, Marita S. Teng, Joshua D. Rosenberg (2020)	Y	Y	Y	Y	Y	Y	Y	Y	100
Petra Davidova, Michael Müller, Yaroslava Wenner, Clara König, Ninel Kenikstul, Thomas Kohnen (2022)	Y	Y	Y	Y	Y	Y	Y	Y	100
Biana Dubinsky-									

Appendix 7: Full Descriptive Statistics Table

Question (Q)	N	Minimum Value	Maximum Value	Mean	Standard Deviation	Variance
Q2 – Do you work for a local authority within Nottinghamshire?	32	1	3	1.97	0.177	0.031
Q3 - Do you work in the Environmental Health department for a local authority within Nottinghamshire?	32	1	3	1.88	0.336	0.113
Q4 – Does your Environmental Health department have their own adopted byelaws for acupuncture, tattooing, ear-piercing and electrolysis under the Local Government (Miscellaneous Provisions) Act 1982?	32	1	3	2.53	0.842	0.709
Q5 – In your opinion, how would you describe the current state of unregulated cosmetic treatments in the United Kingdom?	32	1	5	2.03	0.861	0.741
Q6 – In your opinion, how would you describe the current state of unregulated cosmetic treatments in your local authority area?	32	1	5	2.44	0.878	0.770
Q7 – How do you view the current legislative state and regulatory powers available to officers dealing with unregulated cosmetic treatments?	32	1	5	2.19	0.859	0.738
Q8 – As an Environmental Health Practitioner / Environmental Health Officer (EHO) (or in a similar environmental health regulatory role), how do you view the awareness and knowledge levels that the public have regarding reporting malpractice in relation to unregulated cosmetic treatments?	32	1	5	2.44	0.759	0.577
Q9 – Do you think that people living in your local authority area who have undergone an unregulated cosmetic treatment would know who to report their concerns to if something went wrong?	32	1	3	2.00	0.672	0.452
Q10 – Does your environmental health department receive complaints regarding unregulated cosmetic treatments?	32	1	3	2.22	0.832	0.693
Q11 – What are these complaints regarding?	32	1	4	3.97	3.685	13.580
Q12 – In the average month how many complaints would your environmental health department receive regarding unregulated cosmetic treatments?	32	1	4	1.87	0.352	0.124
Q13 – How well do you believe that your local authority deals with complaints relating to unregulated cosmetic treatments?	15	1	5	1.73	0.594	0.352
Q14 – How would your environmental health department deal with / investigate complaints related to unregulated cosmetic treatments?	32	1	4	3.75	3.080	9.484
Q15 – What powers / legislation would you use to investigate a complaint related to an unregulated cosmetic treatment?	32	1	5	1.94	0.801	0.641

Q16 – What changes would you like to see to the unregulated cosmetic treatment industry?	32	1	4	2.59	2.638	6.959
Q17 – Do you think that a full licensing scheme as proposed by the Health and Care Act 2022 would be beneficial to the current unregulated cosmetic treatment sector?	32	1	3	2.53	0.842	0.709
Q18 – Please explain your answer						
Q19 – If there were changes to the requirements of the local authority for regulating these currently unregulated cosmetic treatments, how well equipped would your local authority be to adapt their workload in order to enforce appropriately?	32	1	5	3.25	0.950	0.903