SEE THE GAP
A policy report on UK eye health inequalities

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This report summarises the evidence around uncorrected refractive error (URE) and inequalities associated with patient access in deprived areas. The main objective is to identify gaps in current policy and research, as well as to form a strategy to begin addressing the issues identified. The report notes the wider public health context and conveys the overarching climate of health inequalities in the UK.

Generally under-represented in campaign or policy activity, failing sight has major implications for public health.

Poor vision can increase isolation, limit physical activity, increase the risk of falls, and add to feelings of depression and loneliness\(^1\). VISION 2020 UK has detection and correction of URE as a key priority.

There are significant inequalities in the eye health of different UK populations with people in poor socio-economic groups and certain ethnic groups more likely to lose their sight and, to compound matters, less likely to access services, even if they are readily available.

Key messages

- Uncorrected refractive error (URE) can adversely affect quality of life, impair education and increase the risk of falling.
- URE is more likely if you live in a deprived population but mapping realistic prevalence levels is problematic.
- While there is a lack of evidence for an association between socio-economic status and patient access to eye services.
- Qualitative studies suggest that public perceptions of optometry and optical services are a key factor.
- More public health education targeting deprived populations on eye health and eye services is called for.
- Evidence from studies that have mapped practice location suggest General Ophthalmic Services (GOS) fee structures can affect viability of optometric businesses in deprived areas.
Objective

To summarise current evidence on URE in deprived areas and its association with patient access to eye care services in order to make practical recommendations for further action.

Target audience:

Methodology

- A review of current evidence, focussing on UK research, was conducted using key words: inequalities, deprivation, eye health, myopia, refractive error, myopic, presbyopia, mortality, access, astigmatism, prevalence, inverse care law.

- A systematic review (Knight and Lindfield) covering this subject was published in May 2015 – the conclusions of which are integral to this report.

- Discussions with a steering group whose members had relevant expertise to inform and guide the project. Members were David Lawrence, David Parkins FCOptom (Chair), Geoff Roberson FCOptom and Hal Rollason FCOptom.
Health inequalities in the UK: An overview

The causes and implications for health disparities are wide-ranging and complex. The World Health Organization (WHO) has a Social Determinants of Health Unit, the core function of which is to address “the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life”\(^2\). The unit has produced a number of papers and documents that explore and explain the macro-environment of health inequalities in almost exhaustive detail. The health gap in the UK can be attributed to (among other factors) fluctuating social policies, international fiscal climates, poor housing, cultural shifts, media reach and trends, availability of processed foods, smoking, and widespread unemployment due to a decline in certain UK industries\(^3,4,5\).

To explore these factors in any depth is not necessary for this report’s primary aim of a focus on eye health services. Therefore, this section features a succinct overview of how UK health inequalities have developed and interacted with social policy since the inception of the NHS.

The NHS was created out of the ideal that good healthcare should be available to all, regardless of wealth. When launched on 5 July 1948 by the then Minister of Health, Aneurin Bevan, it was based on three core principles:

- that it meet the needs of everyone
- that it be free at the point of delivery
- that it be based on clinical need, not ability to pay.

These fundamentals have guided the development of the NHS for nearly 70 years, and remain at its core. That said, the system’s functionality over the years has been affected by policy changes, global fiscal swings and public cultures. The stark UK health gap was first studied conceptually in the early 1970s when Julian Tudor-Hart generated the Inverse Care Law theory\(^6\).

Tudor Hart’s theory asserts that the availability of good medical care tends to vary inversely with the needs of the population served, due to the structure of the health service. In effect, this means that areas with high need, such as inner cities and deprived populations, tend to have fewer doctors working with higher caseloads and patients with more multiple-morbidities. This theory has been well documented, cited and explored through countless research projects and pilot initiatives since its publication in the early 1970s. The evidence gathered since this time has served to confirm that health outcomes are adversely affected by deprivation and lower socio-economic status, sometimes to a significant degree – reflected in higher mortality rates and lower life expectancy in areas where deprivation is most acute.

During the 1980s, unemployment swelled to numbers unseen since the Great Depression of the 1930s and was concentrated in northern regions and inner cities of the UK. Mitchell, Shaw and Dorling’s report *Inequalities in life and death: What if Britain were more equal?* (2000) has shown that unemployment is the single largest risk factor to affect mortality rates in deprived areas (accepting that there are a multitude of inter-dependent factors that lead to premature mortality – obesity, smoking, long-term conditions and depression).

By mapping levels of premature mortality across the UK from the early 80s through to the early 90s, Mitchell et al. found that levels spiked in this time period in the areas where social change was most pronounced – for example, the effects of de-industrialisation in towns across the north of England caused a notable surge of early death. Child poverty also spiked, compounding to create a dependency culture in less affluent areas over generations.

See the gap 5
Marmot (2008) reported a direct correlation between socio-economic status and adverse health outcomes, with lower groups having an increased risk of morbidity and lower life expectancy. For example, a man living in certain deprived areas of Glasgow can only expect to live until the age of 54 compared to the national average of 79.

Possibly stemming directly from the effects of belonging to a low socio-economic status group, the reasons for poor health in deprived areas are complex and numerous – bad nutrition, depression, unhealthy lifestyles, disenfranchisement, unemployment, smoking, drug/alcohol abuse, ramshackle environments and community isolation all compound to generate alarmingly poor health outcomes and high levels of premature death.

Poor health outcomes and long-term conditions are a serious drain on NHS and social care resources.

Inequalities in health are generally recognised as a key public health concern but, despite this, social policies over the years have failed to close the gap to any significant degree. Governments have attempted various interventions. However, except for a few short periods to the contrary, health inequalities in the UK can be generally mapped to geographical areas of deprivation.

To illustrate the effect of government policies on population health, a Joseph Rowntree study from 2009 (Hills et al) Poverty, inequality and policy since 1997 examined the effects of social policy on populations over a decade. When considering health care, the report found that overall health outcomes generally improved in the period between 1996 and 2005, following a rapid growth in health spending and some waiting time targets that were introduced specifically to tackle inequalities. However, while the overall health of the nation seemed to improve, premature death mapped against area deprivation still displayed a widening gap across the UK.

Evidence suggests that targeted resource allocation to deprived areas can reduce absolute health inequalities. In the period 2001-2011 Bar et al, (2014) found that each additional £10m of resources allocated to deprived areas in this decade was associated with a reduction of four deaths in men per 100,000 and 1.8 deaths in women per 100,000.

In terms of other policy developments that are not solely based on resource allocation, the last Labour administration commissioned the widely publicised Marmot review of 2008 Fair society, healthy lives. The then Secretary of State for Health asked Marmot to identify and propose the most effective strategies for reducing the health gap in England, based on all the evidence gathered up to that point. Among the key recommendations were a focus on reducing child poverty, bolstering access to quality education, fair employment and a strengthening of the role of poor health prevention through raising public awareness. However, as often occurs, the change in office in 2010 meant that many of the recommendations have never actually been translated into workable social policies. That said, in July 2015, the current administration launched a drive to reduce child poverty. Using new legislation that will replace the Child Poverty Act 2010, the intention is to develop a range of measures and indicators that expose the root causes of child poverty before setting these out in a children’s life chances strategy.

Changeover in administration can inadvertently disrupt the closing of the gap as health inequality policy across the UK varies depending on other priorities and the overall state of the economy. To illustrate, local health budgets across England are currently allocated via a system of weighted capitation given to Clinical Commissioning Groups (CCGs) as the controllers of local health budgets. The budgets CCGs receive are partly dependent on their population deprivation levels. The evidence suggests that a more targeted, social approach is needed to bring about any real change, but resource allocation is essential to keep the health gap from widening further.

The World Health Organization (WHO) social determinants of health highlight the causes of health inequalities as a result of social, economic, cultural and political factors – asserting that policy solutions would need to encompass all these aspects in order to make any real impact. In short, we need to look beyond health policy and examine the wider cultural doctrines that are known to affect it. This is true for eye care as much as any other health service.
Uncorrected refractive error (URE) in the UK: An overview

Introduction

“Global estimates indicate that more than 2.3 billion people in the world suffer from poor vision due to refractive error; of which 670 million people are considered visually impaired because they do not have access to corrective treatment. Refractive error, if uncorrected, results in an impaired quality of life for millions of people worldwide, irrespective of their age, sex and ethnicity.” (Naidoo et al, 2012.)

This quote reflects the situation in the UK. Poor vision can increase isolation, limit physical activity, increase the risk of falls in older people, and add to feelings of depression and loneliness. URE has been shown to impede quality of life, can hinder job performance, inhibit educational achievement, and potentially mask or increase the risk of more serious vision-threatening pathologies. Far more disability adjusted life years are lost to refractive error in the UK than to glaucoma (a disability-adjusted life year is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death). Despite this, the prevalence levels of URE in the UK remain largely unknown.

Definition

The term refractive error encompasses the common ocular conditions myopia, hyperopia, astigmatism and presbyopia. These impact on the optical performance of the eye and can result in unfocussed or distorted vision. Mostly, this can be easily corrected with prescription lenses following a sight test. Levels of refractive error are rarely constant throughout a person’s life, which is the reason for regular sight tests.

Evidence tells us that refractive error is primarily caused by a complex combination of genetics and environmental factors and not as a direct consequence of deprivation or socio-economic status.

Prevalence and impact

The 2012 study Worldwide prevalence and risk factors for myopia notes that prevalence levels of myopia vary across populations of different regions and ethnicities. Further to this, population-based studies on children found myopia to be higher in urban areas.

In an analysis combining the amount of time spent doing outdoor activity and near work, children with low outdoor time and high near work were two to three times more likely to be myopic compared to those performing low near work and high outdoor activities. However, the regional and racial difference is not so obvious in adult populations aged over 40 years.

As for the UK, it is estimated that almost two million people are living with sight loss, but this figure does not tell us the prevalence of refractive error. The study Sampling and measurement methods for a study of childhood refractive error in a UK population asserts that, while numerous studies estimate the problem of URE worldwide, there still remains a lack of data for the UK. Mapping individual prevalence of URE is difficult due to various factors: differing definitions of what constitutes myopia and refractive error; lack of standardised or easily collectable data; fragmented screening provisions; and difficulty engaging with the necessary population samples.

However, a handful of studies have provided indicators of prevalence. For example, a scoping exercise from NICE (2014) estimated that there are approximately 200,000 people in the UK with pathological myopia – but this only forms part of the overall picture. An ongoing study that will significantly contribute to the evidence base on UK refractive error levels is the Northern Ireland Childhood Errors of Refraction (NICER) project, funded by the College of Optometrists and Ulster University. Commencing in 2006, the study is exploring the causes and prevalence of refractive error.
error in the younger population of Northern Ireland over time. Initial data from the project sample found that 17.7% of 661 white children aged 12-13 years were myopic. Interestingly, the study has found no significant association between deprived areas and prevalence.

Visual Impairment due to undiagnosed refractive error in working age adults in Britain (Rahi et al 2008) used data from 9,271 members of the 1958 British birth cohort, assessing their visual acuity at age 44/45. The authors compared test subjects who had visual acuity problems but had not sought optical treatment to those who had. They also applied a vision-related quality of life (VRQOL) questionnaire that comprised 10 items assessing concerns and feelings of embarrassment, isolation and frustration brought about by visual impairment when related to their everyday lives. Results suggested that almost two out of every hundred adults of working age in the UK have undiagnosed refractive error considered strong enough to inhibit their quality of life. This report found a definite association between being socially isolated, living in a deprived area and having URE. However, as this finding is not consistent with other studies mentioned or explored in this report, it is clear that more robust data is required if any solutions are to be found.
“Identification of inequalities in access is important as there is potential for system and service redesign to improve access for people from lower socio-economic groups.” (Knight & Lindfield 2015.)

To clarify from the outset, ‘access’ in the context of this report refers to the exploration of uptake of eye services in deprived areas and the reasons why they may or may not visit an optometrist. Factors include availability of high street practices, cultural behaviours and public perceptions on the role of optometry.

Area studies in Norfolk and Leeds found higher levels of low vision amongst financially disadvantaged groups due to URE\(^{29,30}\). Also evidence from an area study conducted in South Wales found that people who live in deprived socio-economic populations have a higher incidence of undiagnosed refractive error, yet do not access optometry services to have it corrected\(^{31}\). NHS funded sight tests are available to many patients in England, Northern Ireland and Wales, and NHS funded eye examinations are available to all in Scotland. Despite this, lower socio-economic groups remain less likely to access eye services than people in more affluent groups\(^{32}\). In most cases, refractive error is easily correctable with spectacles or contact lenses, yet the number of deprived people with undiagnosed refractive error remains high.

### Prevalence and access

While there is an abundance of studies that show a correlation between socio-economic status, area deprivation and likelihood of visual impairment, sparse information exists on the effects of this correlation when considered against patient ability/willingness to access eye services. This lack of evidence is strongly illustrated by a review published in the journal Public Health in May 2015. The relationship between socio-economic status and access to eye health services in the UK: A systematic review (Knight & Lindfield, 2015)\(^{33}\) found and examined 32 papers of relevance with study quality being assessed according to statistical significance, primary research question and size of effect.

Various effects of deprivation and its relationship to eye service uptake were touched upon in the studies reviewed by Knight and Lindfield. The main themes explored include poor education leading to a lack of awareness of eye health, availability of eye health screening and the differentiation between access for an individual with low socio-economic status and access gauged against a geographically deprived postcode area. Area-specific studies on optometric and optical practice prevalence in deprived areas are explored in more detail later in this section.

Essentially, the systematic review found there to be a dearth of cohesive evidence to adequately confirm a relationship, although the authors assert that this can be largely attributed to the studies using incomparable research methods. Interestingly, the higher quality studies from the review commonly found that lower socio-economic status groups had more limited access to eye services, whereas the comparable number of studies that found no association scored poorly on the quality scale applied. Although this implies that there is a relationship, prevailing was a lack of consensus. The review’s overriding conclusion was a strong recommendation for further research using consistent measures.

### The effect of location of optical practices

One aspect that has been explored through geographically specific studies is the effect of optometric and optical practice location. As before, there exists conflicting evidence about the effects of practice proximity in relation to patient uptake of services. For example, studies in Leeds\(^{34}\) and Tower Hamlets\(^{35}\) found there to be a scarcity of services available in deprived areas.

Shickle et al. (2014)\(^{36}\) also used practice mapping in
the deprived areas of Leeds to look beyond merely the numbers of practices, and found that proximity played a part. The mapping suggested that, if an optometry or optical practice was more than 800 yards from a person’s home, the chances of that patient attending an eye examination were found to be drastically reduced, irrespective of symptoms. Conversely, a countrywide study conducted in Wales and early results from an ongoing scoping project in Scotland (commissioned by Optometry Scotland and the Practitioner Services Division, Scotland) suggest that there is no shortage of practices in deprived areas and their location had no discernible effect on uptake.

Reasons for this geographical disparity in practice prevalence, location, and uptake remain uncertain without better quality data, but the current evidence suggests that it could be due to optometry funding structures. To illustrate, the NHS eye examination fee paid to optometrists in Scotland is up to £45 per primary examination and in Wales the Welsh Eye Care Service (WECS) funds optometrists via an enhanced banded fee structure. WECS is an enhanced service offering a more comprehensive eye examination for people in selected groups, including high risk patients - such as those who only have one eye. It also pays for the optometrist to examine patients with acute eye problems. The NHS sight test fee for optometrists in England is only £21.31 (2015). The difference between the prevalence of practices in deprived areas in England compared to that in Wales and Scotland might suggest that levels of NHS funding available to optometrists can influence the viability of maintaining an optometric business that serves deprived populations. Clearly, this is a complex issue that goes beyond funding, but further research is warranted.

Shickle et al, (2015) explored this further in the article Addressing inequalities in eye health with subsidies and increased fees for General Ophthalmic Services in socio-economically deprived communities: a sensitivity analysis. This report suggests that GOS fees can hinder uptake of services in deprived areas and goes further to recommend that separating the dispensing of corrective lenses and the clinical aspects of optometry completely could help address eye health inequalities. By integrating optometrists into the NHS as primary care professionals, Shickle et al argue that patients are more likely to attend for regular eye examinations. However, we must remain mindful that removing the commercial aspect of the current optometry model may go against the current business interests of many optical practices, and any centralised investment in such a fundamental change of service is unlikely to happen in the near future due to the austere financial climate facing the NHS. Instead, a more realistic way forward would be to explore practical ways within current parameters to raise the profile of the clinical aspects of the eye examination, in relation to the sale of spectacles and lenses, to see if it encouraged uptake among deprived groups.

Case study 1
Gale Leslie has worked as the sole optometrist in an independent practice located in Bridgeton, Glasgow for over 20 years. The practice falls within one of the 10% most deprived areas of Scotland (SIMD 2013). Gale has the Independent Prescribing qualification and is accredited to provide low vision assessments free of charge, as well as being registered as a contact lenses fitter. The treatments available through the NHS under the GOS contract are comprehensive and the local population views the practice as a primary care provider as a result. The majority of the practice’s patient base will use NHS optical vouchers, with an average of one non-voucher dispense per week.

Gale says:
“I love working in a deprived area, a lot more interesting than a bunch of young myopes and some healthy presbyopia. I see lots of pathology, people are the salt of the earth and a great laugh even with all their problems. In my experience, people across Scotland are getting more aware of optometry as the first port of call for eyes.

“In terms of NHS voucher uptake, I tend to find that people are very aware of their benefits. Perhaps due to a lifetime of being entitled to benefits, they’re also aware of the replacement scheme. I pass the HC1 form to those that don’t know what they’re entitled to.”
Public perception

Various focus groups have been conducted in deprived areas across the UK\textsuperscript{39,40,41,42}. These combine to generate a picture of the reasons why patients routinely fail to have their eyes examined. Unlike other more quantitative studies cited throughout this report, clear themes do emerge from the qualitative data. These include a lack of trust of optometrists and opticians, fear of having to spend large amounts of money with every visit, and a lack of public awareness around NHS optical vouchers.

Primary eye health differs from other health services in that delivery is based mainly in commercial premises. The funding of NHS sight tests, especially in England, is such that they have to be subsidised by the sale of products (i.e. spectacles and contact lenses) for the business to survive. Add the fact that optic and optical practices often have the appearance of a shop or showroom, it is no surprise to find that patients have the perception that buying spectacles is mandatory, especially as the clinical service is provided at low, or no cost.

NHS vouchers are available to people who are on low income to help cover the cost of spectacles or contact lenses. Some optometric and optical practices provide spectacles for the cost of the voucher. This means there is no cost to the patient. Focus groups have found a lack of patient knowledge on the existence, value of, and eligibility for NHS vouchers.

In June 2015, the General Optical Council published the report \textit{Public perceptions of the optical professions} which garnered a general representative sample of the UK population as a whole, rather than just those in deprived areas. Key findings from the report show that those patients who have used optometry and optical services have high levels of confidence in the standards of care offered. While confidence is high, there remains a lack of knowledge of the optometrist’s role in detecting eye disease – only 19% of respondents said that they would go to their optometrist if they woke up with an eye problem, whereas more than half would automatically go to their GP. This could suggest that much of the public views optometrists as vision testers only, and not necessarily as health professionals. It could also be a rational decision based around cost – patients know that a visit to their GP will not incur expense. Questions on visiting frequency produced some interesting results. Around three quarters of respondents claim to have been to see their optometrist within the last two years – and 80% were aware that they should go regularly. However, the reasons given for booking a visit suggest that it is often symptom-led and not purely because a certain amount of time has elapsed. Optometry Scotland has commissioned further research in the area of access and public perception in deprived areas. This will comprise a series of targeted focus groups examining deeper attitudes and perceptions towards optometry – leading to more robust evidence in this area.

It is clear that there is some awareness-raising work to be done if any effective change in perceptions held by deprived populations is to be realised, especially when interventions to encourage people to have a sight test have previously failed to change behaviour, even where they successfully raised awareness of the need for sight tests\textsuperscript{43}. With this in mind, outcomes of the recently launched public eye health campaign in Wales\textsuperscript{44} will be watched with keen interest.

Effects of dataflow

“It is impossible to deliver patient-centred care without data and information on health and social care. Ophthalmic public health data, as collected by optometrists, ophthalmologists and other clinicians have a key role to improving care and ensuring that care is appropriate for the population and is good value.”\textsuperscript{45} (The College of Optometrists, 2013.)

A 2006 pilot in Fife, Scotland, enabled optometrists to make direct electronic referrals to the hospital eye service with appropriate images attached. Optometrists and ophthalmologists found it was “safe, speedy, efficient, and clinically accurate given some limitations and avoided unnecessary consultation in 37% of referrals”\textsuperscript{46}. In the wake of that study, the Scottish Government has committed to ensuring all eye care referrals are electronic. This project is ongoing but expected to have achieved full connectivity by the end of 2016.
There are a number of eye health practitioners attempting innovative modes of service delivery that could potentially hold positive outcomes for the sight of deprived populations. With the dual goal of increased service availability and positive patient perceptions of optometry and optical services, the schemes are exploring methods of care that include:

- changing the public face of practices to enhance the clinical aspects of optometry (downplaying the dispensing of corrective lenses) as a business model,
- mobile services,
- GP practice affiliation and outreach workers.

In reference to finding practical ways for high street practices to enhance the profile of the more clinical aspects of the eye examination, reducing the emphasis on the sale of spectacles (such as community optometry clinics do), a letter in the BMJ asserted that the current method of GOS delivery is actually counter-productive to public health. The letter entitled Containing escalating referrals by bringing optometrists into the NHS stated: “The prescribing and dispensing of drugs are financially separated for good reasons, but the same logic is not applied to lenses. If the government wants to contain escalating referrals, it should bring optometrists into the NHS culturally (with shared clinical protocols) and financially (with budgetary responsibility), divorcing the sale of spectacles from the aim of optimising eye health with finite resources”. This could warrant further exploration.

Alternative optical business models

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Another example of a potentially useful method of alternative service delivery that could help with access is domiciliary eye care. Though not aimed at deprived areas, but rather at individuals who are unable to access a community practice, this has obvious implications for deprived populations where there is a higher prevalence of long-term conditions and vulnerable and isolated people. Also, while a domiciliary eye examination is not an ideal replacement for a full eye examination conducted in practice, due to basic logistics of equipment, exploring ways to adapt and harness this service to address access disparity could be beneficial and needs further attention.

At the time of writing, complete data is unavailable for a number of these initiatives. We need more data in order to draw conclusions about which models of innovative care produce a decrease in eye health inequalities. Consolidation and analysis of these at the right time could help to identify good practice and hopefully suggest replicable business models that actively reduce disparities in access across the UK. This analysis could be an essential step towards closing the gap.

### Case study 3

Located within Grays, Essex (an area in the 28% most deprived in England), Euin Steele & Partners responded to the population’s potential low uptake of regular eye examinations by highlighting the clinical aspects of optometry through the internal geography of the practice and by having a comprehensive suite of eye health services, including work with posterior and anterior segment schemes, IOP referral refinement and glaucoma shared care with Southend/Orsett Hospitals. Having the spectacle dispensing area as a secondary room to be visited after consultation, emphasises the practice as a giver of health rather than a hard seller of spectacle frames (which, research shows, is a very common concern from deprived populations).

The practice is contracted with both Thurrock Clinical Commissioning Group and Basildon and Brentwood Clinical Commissioning Group to provide NHS community optometric care for non-emergency eye referrals. This service is designed to assess and treat patients within the community setting quickly and efficiently via an NHS triage system – this helps with capacity issues in the local hospital eye departments. In addition, they offer glaucoma screening, enhanced macular examinations and operate a dry eye clinic. On top of this, they offer ‘eyeplan schemes’ so that any costs incurred can be spread.

Kevin Lewis is the owner and senior optometrist and, through this comprehensive suite of community eye services, customer financing and non-commercial premises setup, has improved access to eye care in the deprived population served by the practice.

He says “I offer optomap and OCT to all my patients and the practice is thriving. I have a waiting area in reception with the dispensing suite in another room away from reception. We now have a reputation within Grays with all the GPs and pharmacists as being the ‘GP for eyes’ and we regularly get patients referred from these sources. The practice has been going for 80 years (celebrated last year) and this last 12 months we have embraced the internet and social media”.

### Further points for discussion

Other available routes for reaching deprived patients could include Eye Care Liaison Officers (ECLOs). Normally situated in Hospital Eye Services and employed upon diagnosis of glaucoma or AMD, ECLOs could also be based in GP practices in deprived areas to help explain and direct patients to appropriate services. In addition, outreach workers and clinical liaison teams based in deprived communities could be beneficial for eye service uptake. Additionally, when considering URE in isolation from eye disease, we must remain mindful that although a sight test or eye examination is required to prescribe for refractive error, screening for a problem can be done by a non-clinical professional measuring the patient’s vision with an appropriate tool. Further technological advances could mean that a patient could measure their own vision via phone software or similar. These technologies could be used positively to help guide
patients towards optometry services, if harnessed in the right way. However, extreme caution must be employed if we are to avoid patients assuming that a self-performed visual acuity test means that their eyes are healthy – only a qualified optometrist can detect disease.

Stronger evidence is needed about the extent to which GOS vouchers actually meet the cost of spectacles, and how the cost of eye examinations and spectacles affects those in deprived communities who do not qualify for GOS support. Research in this area would help us understand the extent to which the fear about the cost of treatment is accurate and rational, or if it is misplaced based on unfounded perceptions.

Lastly, URE has been shown to adversely impact on quality of life but we still do not know the extent of its impact economically – either on individuals or on the national, social or health economies. We also know it hinders educational attainment and can potentially increase the risk of falls, but generating a consolidated figure of cost that illustrates the problem to policy makers and commissioners, and persuades them to take action, will require extensive research.
Conclusion

Studies suggest that URE is an underestimated public health concern that can adversely affect quality of life, impair educational attainment and increase the risk of falling in older people. While we know there is a lack of cohesive evidence for an association between socio-economic status and how patients access eye services, studies do imply that you are more likely to be living with URE if you live in a deprived area.

Mapping accurate numbers about the prevalence of URE is difficult due to differing definitions of what constitutes significant refractive error and a lack of standardised or easily collectable optometric data. This was highlighted in the systematic review from Knight & Lindfield (2015) where they found that studies rarely used the same definition. Further research and targeted social policy – for example agreement across the UK on standardised optometric datasets when referrals and payments go electronic – could ease the path to gathering this much needed dataset.

Refractive error is usually easily correctable with spectacles or contact lenses following a sight test, yet fully funded NHS sight tests or eye examinations that are available to many members of the public retain a low uptake among deprived communities\(^\text{49}\). Indeed, contradictions in the evidence around deprivation at postcode level, individual socio-economic status and availability of services, indicate that the patient access problem is complex and more about patient attitudes and social culture than location of practices.

As for the studies that map practice location in deprived areas, the evidence suggests that GOS fee structures can affect the viability of optometric and optical businesses in areas of most acute need, especially in England where the GOS fee for a sight test is below actual cost.

Considering all these studies, it is clear that solutions cannot be a ‘one size fits all’. In order to find these solutions, firstly we need a stronger evidence base for mapping URE prevalence, which will have positive implications across all of eye care. Secondly, a cost/benefit analysis of the alternative models of care that actively increase access where there is a dearth of optometric provision is a crucial component. Lastly, ways in which to nurture positive perceptions of optometry must be researched.

In short, the impact and solutions to eye health problems linked to deprivation may vary geographically, and there remains a lack of evidence to identify a universal solution. Leadership from the optical sector is required for this underestimated public health problem.
Recommendations

- Map UK-wide prevalence of URE with uniform methodology.
- Review current initiatives and pilots that are attempting to address these issues (including ECLOs and outreach services), including a cost/benefit analysis.
- Raise public awareness, changing the negative perceptions of optometry held by many deprived patients.
- Encourage national public eye health campaigns.
- Assess the value and the public’s awareness of eligibility for NHS optical vouchers.
- Explore ways of enhancing the clinical aspects of optometry in deprived areas (e.g., community optometry clinics).
- Make the case for enhanced GOS provisions in deprived areas where there are a lack of available services.
- Study domiciliary eye care services and their effect on inequalities.
- Assess effectiveness of screening provisions for tackling adults’ and children’s URE in deprived areas.
- Identify and promote the benefits of operating a practice in deprived areas to practice owners.
References


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