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The Shadow Pandemic: Domestic Violence and Healthcare in the Wake of Covid-19

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Introduction

While the damage and incalculable losses of Covid-19 continue to be felt globally, many people have been left to struggle with an intimately related and urgent crisis: the soaring rates of domestic violence worldwide.1 Domestic Violence (DV) or Intimate Partner Violence (IPV) is defined as "physical, sexual, psychological, or economic violence that occurs between former or current intimate partners".[2] It is the most common cause of non-fatal injuries to women worldwide, with 1 in 3 women experiencing it in their lifetime. [2, 3] IRISi research states that for women attending general practice appointments in the UK, the rate of domestic violence can be as high as 41%.[4] The United Nations Secretary General has previously identified violence against women as a global pandemic.[5] Furthermore, a UN warning issued in March of 2020 cautioned that rates of domestic violence would increase drastically due to lockdown measures put in place to fight Covid-19, with member states urged to take steps in order to protect those affected and mitigate harm.[5] Now more than ever governments and medical professionals have a clear moral obligation to tackle domestic violence, which should ostensibly be framed as an issue of public health.[5-7, 8]

The Effect of Covid-19 on Domestic Violence

Rising domestic violence rates have been reported in countries worldwide including China, France, Spain, Italy, the United Kingdom, and the United States.[1, 2] Women's Aid, one of Ireland's leading national charities working to stop domestic violence, reported a 43% increase of contacts with their service in 2020, which is an unprecedented annual rise since their formation in 1974.[9] The measures put in place to address Covid-19 have contributed to significant increases in the rate of child abuse and domestic violence globally.[10] Lockdowns and quarantine measures provide a perfect breeding ground for domestic violence risk factors including increased relationship strain and stressors, social and geographical isolation, and an inability to access support services.[2]

There has been a 60% increase in calls to domestic violence services reported in the World Health Organization's EU member states during the Covid-19 pandemic, with online inquiries increasing fivefold in 2020.[6] Common phrases in the literature of late pertaining to domestic violence are "hidden" or "shadow" pandemic, just the "tip of the iceberg", and "paradox": the latter referring to the oxymoron of instructing people to stay home in order to save lives, something which may be tantamount to requesting at-risk individuals take shelter in a burning building, endangering themselves to protect others.[5] The United Nations Population Fund has warned that continued lockdowns could result in 31 million more cases of gender-based violence globally over the next decade due to the delayed and abortive rollouts of preventative and interventional programmes designed to tackle domestic violence.[6] Regardless of future predictions, it is already evident that the Covid-19 pandemic will have reaching ramifications in the coming years for millions of men, women, and children whose health, wellbeing, and lives will continue to be endangered in their homes.

The Cost of Domestic Violence

Domestic violence carries a high cost in lives, in physical and mental ill health, and in impaired childhood development. It strongly correlates with increased morbidity and mortality.[7, 8] "Women who experience domestic violence often suffer from chronic health problems including gynaecological issues, gastrointestinal disorders, neurological symptoms, chronic pain, cardiovascular conditions, and mental health difficulties".[11] Beyond this very salient human cost, intimate partner violence also carries a high economic price. Sonas, the leading Irish provider of refuge services for women in the greater Dublin area, estimates that domestic violence costs the Irish economy 2.2 billion euro annually. Despite this, less than 1% of the cost, approximately 20 million euro, is spent on responding to or preventing domestic abuse.[12] IRISi estimates that the annual cost of healthcare provision to domestic violence survivors in the UK, not including mental health treatment, is 1.7 billion pounds.[4]

The Role of Healthcare Providers

Healthcare professionals and general practitioners specifically are uniquely well-positioned to identify and address domestic abuse, which is an imperative when one considers the following statistic: 45% of women murdered by their partner will have presented to a healthcare professional for the treatment of a domestic violence related injury in the 2 years prior to their death.[3,8, 13] 80% of women in violent relationships seek help from health services, which are often their first, or only, point of contact.[4] In terms of clinical presentation, head, neck, and upper extremity injuries are the most common injuries in domestic violence survivors, however the responsibility of general practitioners and healthcare providers in identifying potential cases must go beyond critical appraisal of a patient's presenting complaint for potential warning signs.[3, 8] General practitioners must become comfortable asking about domestic violence and educating themselves continually about local resources.[10, 11]

Beyond screening, general practitioners can provide support around immediate patient safety and the creation of a safety or escape plan for affected patients, as well as referrals to social workers and local support organisations.[2, 3, 8] The cooperation of general practitioners with local and specialist services is vital for the success of interventions, and a multidisciplinary approach is preferred to ensure survivors are not lost along a referral pathway.[4, 5, 8, 14] Psychiatrists, emergency medicine physicians, GPs, radiologists, dentists, maxillofacial surgery teams, gynaecologists, and professionals working in sexual health clinics are all likely to encounter survivors of domestic violence and should receive appropriate training.[14] Indeed, sexual health and gynaecological problems are the most consistent and largest physical health difference between female abuse survivors and women in the general population.[15] Barriers to healthcare professionals in identifying domestic violence include insufficient training, fear of breaking confidentiality, the prioritization of Covid-19, and "the perception that this topic is not their responsibility."[5, 17] For some, domestic violence is a "family issue" that is not routinely discussed as part of a healthcare appointment, especially given the lack of resources, lack of consultation time, and the perceived or actual lack of effective support that can be given to patients at risk.[17] Despite this, women want healthcare professionals to have an active conscience, to be opened minded, to be unhurried, and to respect their confidentiality when it comes to issues around domestic abuse.[18]

The Need for Education

There is an urgent need for education and dialogue around domestic violence among healthcare professionals, students, survivors, and the general public. Public media campaigns are vital for raising awareness and sensitizing the public as well as empowering survivors to come forward.[2, 5] General practitioners and pharmacies can establish confidentiality codes or signals for survivors to indicate that they need help.[5] "Safe words" can be used in telemedicine appointments where the patient may be in the same building, or even the same room, as their abuser.[11] Midwives and clinic nurses in particular could receive training around the identification of domestic violence and the utilization of codes or safe words, as pregnancy is one of the most high-risk times for women who are being abused.[13] Unfortunately, while interventions involving "safe words" seem promising and cost-effective, they still rely on the initial education of both the general population and the healthcare team via public campaigns, informative leaflets, handouts, and training sessions, without which these interventions are liable to lead to miscommunication and missed opportunities.[5, 8] More costly interventions include standardized training programmes, such as those devised by IRISi, or the appointment of an Independent Domestic Violence Advisor (IDVA) within a hospital or general practice to provide support and education to staff and patients.[4, 14] One study in which IDVAs were appointed to five hospitals in England allowed for significantly earlier identification of survivors, as well as the contacting of survivors who otherwise would have been "hidden from society" beyond the reach of community-based organizations.[13]

With regards to medical education settings, one study demonstrated that medical students show poor clinical performance with simulated domestic violence patients, sometimes subjecting the domestic violence survivor to an "event orientated interview" more befitting of a law enforcement officer than the "patient centred communication" expected of a healthcare professional.[19] Of 25 medical schools surveyed in the UK, both staff and students, 75% of respondents felt that the training they received around domestic violence was inadequate or insufficient.[20] Similar to the barriers cited by physicians in clinical practice to addressing domestic violence with patients, the reasons cited in educational settings include a lack of time, a failure to consider domestic violence a medical problem, and an assumption that it will be covered elsewhere.[20] Unfortunately, quality education around domestic violence in healthcare settings is far from a guarantee.[13]

Conclusion

Domestic violence is a shadow pandemic that will continue to affect millions in the wake of the Covid-19. Healthcare does not respond adequately to violence against women in most settings.[8, 14] Multidisciplinary approaches and integration with community-based services to ensure direct referral pathways exist is vital for identifying and treating survivors of domestic violence in the healthcare environment. Healthcare providers are uniquely positioned to provide useful aid to survivors of domestic abuse. General practitioners in particular occupy a trusted societal role and are frequently exposed to populations who could benefit from guidance, intervention, and referral. This is both a moral and professional obligation, as the soaring rates of domestic violence worldwide constitute a global health emergency.

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Don’t Forget Your Mask If You Want to Go To Work

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As I put on my “Sunday best” on a crisp and cold mid-December morning in preparation for my first stint at a GP practice, a well-known song by Christy Moore was playing in my head, but I amended the lyrics. “Don’t forget your mask if you want to go to work, don’t forget your mask if you want to go to work, don’t forget your mask if you want to go to work, a-deedle-didle-doh”. It was 8:30 AM and I was marching up and down the hallway in my noisy brown brogues, checking my bedroom and living room to make sure that I wasn’t forgetting anything. I then made my way to the kitchen to rustle up a breakfast of hearty porridge sweetened with honey from a squeezy bottle which was washed down with the finest black coffee, courtesy of Dunnes Stores. “Don’t forget your coffee if you want to go to work, don’t forget your coffee if you want to go to work, don’t forget your coffee if you want to go to work, a-deedle-didle-doh”. My morning at the GP would start at 9:00 AM, so I threw the dishes into the sink, rinsed them, dried them, returned them to their cupboards; then I walked out the front door and got into my trusty white Seat Mii, a car that bears a striking resemblance to a washing machine. “Don’t forget your steth-o-scope if you want to go to work, don’t forget your steth-o-scope if you want to go to work, three syllables don’t really seem to work, a-deedle-didle-doh”.

Being a medical student in the early stages of my training means that I have to develop an unfaltering proclivity to following up-to-date health guidelines and in line with that ethos, I must adhere to mask-wearing during this pandemic when I am out and about in crowded areas indoors and outdoors. Many people worldwide have become facemask wearers and of course there are those that decline such a status. My personal gripe with facemasks (especially the run-of-the-mill blue surgical ones) is that apart from not being aesthetically pleasing, the elasticated strings which loop around my ears can cause considerable pain and irritation after an hour or so. I own a few non-surgical facemasks which have convenient adjustable elasticated loops which provide a more comfortable mask-wearing experience, however for the sake of professionalism, I decide not to wear them for my first day at the GP clinic. Besides the ear-loops being uncomfortable, glasses fog up, itching can ensue, the lower face can become sweaty, breathing difficulties may arise, and voices can be muffled. Like many people, I have asked myself: how effective are facemasks (worn correctly) at preventing infection with COVID-19?

SARS-CoV-2 (the agent responsible for COVID-19) is an enveloped positive-strand RNA virus of the family Coronaviridae which is primarily transmitted in the setting of poor ventilation via droplets and aerosols. It was first detected in Wuhan, China at the latter end of 2019. It has brought the world to its knees, killing millions worldwide and leaving many suffering from long-term illnesses collectively known as “long COVID”. According to the World Health Organisation (WHO), masks should be part of a ‘do it all!’ approach to ameliorating the spread of SARS-CoV-2 along with social distancing, adequate ventilation, good hand hygiene, and good cough/sneeze etiquette. For healthcare workers, it is recommended that they wear medical masks (also known as surgical masks) which can be either flat-fold or duck-bill. When choosing the right mask, the choice must be based on filtration, breathability, and fit. In regard to fabric masks, the masks must be made up of three layers of fabric: an innermost layer of absorbent material, a middle layer of non-woven non-absorbent material, and an outer layer of non-absorbent material (WHO, 2021).

In 2020, Bae (a name that will resonate with many millennials) and colleagues compared the efficacy of reusable cotton and disposable surgical facemasks in the filtration of SARS-CoV-2. Four participants infected with SARS-CoV-2 coughed onto a petri dish while not wearing a mask and repeated the procedure two more times, each wearing a cotton facemask and then surgical facemask, respectively. What they found was three out of four participants wearing the surgical facemask and two out of the same four wearing a cotton facemask ended up successfully transferring the virions onto the dish. It was concluded from this very small-time study that there was no difference in either facemask, even though it did seem to provide a sort of barrier. The limitations were that other types of facemasks, such as N95s were not included in study. N95 masks are so called because the ‘N’ stands for non-oil, and the ‘95’ refers to 95% efficacy. They also overlooked the role of air penetration around the borders of the mask. However, they noted from other literature that hand hygiene and use of N95 masks reduced prevalence of SARS-CoV-2 in the healthcare setting (Wang et al, 2020; Bae et al, 2020; Delgahi et al, 2020). If this was my only source of information on the effectiveness of surgical masks in the clinical setting, I would not be fully assured that my effort to reduce the likelihood of catching/spreading SARS-CoV-2 would be satisfactory. An N95 mask would be the better option. But where would I get one on my way to the GP practice? I hoped that they would have one available for me there while I was stuck in traffic on the way to the practice.

There was an article in the Irish Medical Times that delved into the use of face shields versus surgical masks. The author of the article mentions a study conducted at Philipps University in Marburg which compared the filtration efficacy of 32 types of masks in the hospital setting which included cloth and surgical masks, respirators, and face shields. Each type of mask was attached to an air-collecting tube in an airtight tank. The filtration efficacy was then tested by pumping in a chemical called di-ethyl-hexyl-sebacat and seeing how many particles penetrated the materials and into the collecting tube. It was found that cloth masks had the lowest efficacy at 28%, then non-certified surgical masks at 63%, followed by certified surgical masks at 70%. The most effective masks for particle filtration were the KN95 and FFP3 respirators with efficacy percentages of 94% and 98%, respectively. When the same collection of masks was tested when worn by people, it was found that cloth and non-certified surgical masks had filtration efficacies between 11% and 14%. Certified surgical masks had a filtration efficacy of 47%, KN95 respirators were at 41% and FFP2 respirators were at 65%. Some of the experiments prioritised particles of 0.5 µm in size, which is similar size to SARS-CoV-2 particles. It was concluded that face shields are a waste of time if someone wants to protect themselves and others from COVID-19 (Cosgrave, 2021).

You would expect that all good medical students would strictly adhere to mask-wearing in these times. A study was conducted by Szepietowska et al (2020) where they compared medical to non-medical students in Poland on proper mask-wearing. There were 1,173 participants in the study where 665 were medical students. Unsurprisingly (and thankfully), 85.7% of medical students and 75.2% of non-medical students were compliant with proper facemask wearing. It was reported that sensitive skin and facemask-induced itch predisposed students to reduced adherence to mask-wearing guidelines.

My contemplation on the subject of mask-wearing en route to the GP practice prompted me to think, despite the obvious benefit of mitigating the spread of COVID-19, what kind of effects are mask-wearing having on patients and practitioners in the general practice setting?

A study carried out by Wong et al investigated the negative effects facemasks have on communication in the setting of primary care. 514 patients were randomly assigned to doctor-mask wearing consultations and 516 patients to non-mask wearing consultations. The doctors who participated were also randomly assigned as mask-wearing and non-mask-wearing. The patients were attending clinics situated in the Shatin district of Hong Kong. The primary outcome of interest in this study was the Consultation and Relational Empathy (CARE) measure. Patients who knew their doctor relatively well gave a higher CARE score than those who did not. However, when the well-known doctors started wearing masks, the CARE score went down. The extent to which the CARE score went down was considered likely to be clinically significant. While doctors wearing facemasks had little to no effect on patient enablement and satisfaction, there was a significant negative effect on patients' perception of the doctor's empathy. These effects were probably due to physical obstruction of facial expressions (Wong et al, 2013). I think it is important to consider some of the lesser-known negative impacts of mask-wearing and for general practitioners to be conscious of them. Even though the overall care of the patient is not compromised, the patient's experience with a doctor may be not as satisfactory as before the pandemic. However, such factors will never outweigh the pragmatic goals of mask-wearing.

After having parked my washing machine in a carpark outside the town cathedral, I walk for about two minutes down the brick-paved footpath toward the blue door of the general practice, with the Christy Moore song still playing away in my head. The morning sun shone down beautifully, with my body casting a long shadow as I walked. After arriving a few minutes before 9:00 AM I was warmly greeted by the secretary. The mask-wearing GP who was taking me under his wing zoomed down the stairs and bumped elbows with me. “Hey, how’s it going? Ready to see a few patients?”
“Absolutely!” I replied enthusiastically.
It was a typical GP office. Bright and patterned linoleum flooring, examination bed nestled in the corner, child-friendly stickers of cartoon elephants and giraffes on the wall, and various apparatus for clinical examination and sample-taking. I sat on a chair about two metres away from the office door while the GP briefed me on the first patient of the day. “She’s an absolute delight! I’ll just go out and ask her in, she should be okay with you sitting in” he said as he suavely exited the room. As I waited, I started to think about the topic of mask-wearing again. I was thinking to myself, “what if the patient refuses to wear a mask?”

In a viewpoint article by Lehmann and Lehmann (2020), the response to patients refusing to wear facemasks during the pandemic in the US was discussed. It is mentioned that people have many reasons for deciding not to wear a mask. One common belief was that if you were not infected with SARS-CoV-2 or were infected and asymptomatic, you were not required to wear a facemask. Interestingly, others decided not to wear masks based on their political leaning. Apparently less than 50% of Republican American citizens chose to wear masks versus over 75% of Democratic American citizens. Part of the rationale was that anyone wearing a facemask would be considered ‘weak’, especially if they were male. It was acknowledged that states that mandated mask use in public had a substantially greater reduction in COVID-19 growth rates when compared with states that did not mandate mask use. Some patients may declare that their right to free choice is being undermined by the public health guidelines on mask-wearing.
A reference is made to John Stewart Mills, who was a nineteenth-century British philosopher. He argued that individuals are free to act as they desire, as long as their behaviour does not pose a threat to others. Anyone who chooses not to wear a mask in a GP practice is violating Mill’s Harm Principle as they would be potentially infecting healthcare workers and patients with SARS-CoV-2. If the patient refusing to wear a mask is causing a scene and starting to threaten staff, the healthcare professional is ethically obliged to end the patient-doctor relationship. Also, if the uncooperative patient is not in need of acute care, the healthcare professional is ethically allowed to discontinue the consultation. In cases where patients are refusing to wear a facemask,

efforts should be made to engage with the patient and to try and ascertain their reasoning while encouraging cooperation. This fulfils the role of the doctor where a considerable effort is made to care for the patient while protecting himself/herself and the staff and patients in the clinic (Lehmann and Lehmann, 2020).

I immediately snap out of my introspection as the GP and our first patient of the day burst through the door. The patient was a woman in her mid-fifties who was giggling away at some of the anecdotes the GP was telling her. To my relief, she was wearing a surgical mask. She came into the clinic because she was starting to have an increase in frequency of panic attacks while at home. I was prompted to ask her a few questions. One of the questions I asked her was about how she was coping through the pandemic. “It’s been really tough. I find that I’m getting claustrophobic with all that’s happening” she said. It was a sentiment that has been ubiquitous throughout the country since the pandemic started. Nonetheless, there are vulnerable people out there who are really struggling throughout what has been one of the most trying times in human history. After further discussion and assessment, the woman left the clinic seeming much more content with how to deal with her anxiety. I suppose the results would have become apparent at follow-up. Once that consult was finished, I continued to sit through a whirlwind of patient consults, each one as interesting as the last. I was totally absorbed, I truly felt like I was in my element. Thankfully, there were no patients from the no-mask brigade.

I finished my first day in the GP practice at 16:00 PM. It was one of the finest experiences in my life and I was filled to the brim with excitement considering that this is the career path ahead of me. “See you all tomorrow” I chirped to the GP and secretary as I strolled out of the clinic. The setting sun shone down beautifully on the town, my body casting a large shadow, but in a different direction this time. I sat back into my washing machine car, took off my facemask and turned on my Bluetooth car speaker. The tune I chose for my drive home was none other than ‘Don’t Forget Your Shovel’ by Christy Moore.

By Aidan Fahey

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A Move Towards a Planetary Health Approach: The Role of Primary Healthcare in Responding to the Climate Crisis

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Doctors, vow to “First, Do No Harm”. In the context of a climate catastrophe that is damaging health and costing lives, contributing to climate change must be seen as a violation of the Hippocratic Oath. It has been over a decade since The Lancet declared that “climate change is the biggest global health threat of the 21st century”1. While the clinical skills that underpin general practice have not changed in this time, the environmental context has shifted 2. The health professions therefore have a moral obligation to take action to mitigate and adapt to the effects of climate change on the healthcare system3.

A need for greater understanding of the link between planetary systems and human health has led to the emergence of “planetary health”. According to the Lancet Commission on Planetary Health: “Put simply, planetary health is the health of human civilisation and the state of the natural systems on which it depends”2. It is not possible to have a healthy population on an unhealthy planet, so it is becoming increasingly important to recognise the impact of damage to natural systems on human health. By embracing a planetary health approach, we can avert the worst impacts of climate change and safeguard a healthy and sustainable future2. More than anyone else in the healthcare system, community healthcare professionals such as GPs can make the link between people’s health and the environment they live in4, thus they play a key role in promoting planetary health. The COVID-19 pandemic has brought into focus the importance of planetary health and demonstrated how the public and the medical profession can adapt to make radical change in response to public health emergencies2. Climate change is a health emergency and GPs have a critical role in mitigation and adaptation2. This response must include education and research, promotion of “co-benefit” actions, managing the effects of climate change on human health, collective advocacy and building a more sustainable healthcare system.

Education and Research

GPs can work to protect the environment by ensuring that medical education, general practice training and continuing professional development programmes reflect a planetary health approach2. Environmental literacy is essential if practitioners are to work towards, and educate for, sustainable healthcare, but environmental concepts may not be familiar to all health professions educators5. Planetary health education across all levels and disciplines will equip and enable learners to protect and restore planetary health and achieve the United Nations Sustainable Development Goals6. This education should not only impart the relevant knowledge and skills, but also values3. For practitioners to be aware and responsive to planetary health issues, they must recognise the relevance of related fields such as health equity, human rights and respect for life and ecosystems3. Within the field of general practice, there is a great opportunity to develop and share educational opportunities and resources related to planetary health.

The importance of research in the area of planetary health cannot be understated. Relevant research is required to both better understand the health and health care system effects of climate change and develop an evidence-based approach for adaptation and health protection7. As with all facets of medicine, greater knowledge of how the climate crisis will affect general practice will empower data-driven decisions, enhance technologies and encourage collaborative action to improve and protect patient health7.

Promotion of “Co-benefit” Actions

GPs are well-respected professionals widely dispersed within Irish communities and have strong ties to the population with over 100,000 patient contacts a day8. Therefore, the delivery of a message from a trusted source such as a GP, to live more sustainably, has the potential to have a large cumulative effect on improving the health of the patient, health of the planet as well as fiscal and societal costs8. Routine promotion of healthy behaviours also aligns with some needed-and powerful-solutions to the climate crisis9. This allows GPs to promote ‘co-benefit’ actions that improve individual health as well as the health of the environment2,10. The World Organisation of Family Doctors (WONCA) Statement on Planetary Health supports this approach, saying:

As family doctors we are in a unique position to promote knowledge about Planetary Health and behaviour changes, which can improve both individual health and Planetary Health - the so called co-benefits, such as active transportation, low emission sources of energy and a more vegetable based diet in our patient communities10.

An example of co-benefit activities that could be discussed in a consultation are sustainable diet and active transport methods. It is well established that using active transport and increasing consumption of plant-based foods not only reduces carbon-emissions but also improves health and decreases the burden of chronic disease through the benefits of greater exercise, healthier diets, and reduced air pollution2,9.

Despite the potential benefits, some practitioners may be reluctant to discuss climate change with patients. This may be due to time constraints, a lack of personal knowledge or training, perception that climate change is controversial, and the view that discussing it with patients would not make a difference9. Although the scope of the problem may seem daunting and the actions of any individual practice may appear small, general practitioners can have a large influence on how individual patients, families and communities understand climate change and the urgent need to combat it. In the course of daily practice, general practitioners are well-poised to reduce harms to patients and to promote health equity in responding to the climate crisis. This could be as simple as changing the phrasing of a conversation about diet and exercise to include a focus on planetary health:

“Getting more nutrients from plant sources is good for you and good for the planet.”

“Walking and cycling to school and for close errands helps keeps you fit, helps improve the air in your community, and helps address climate change”

“Playing outdoors, in nature and parks, has lots of benefits for children beyond just exercise”9

It is clear that one of the easiest, and most impactful ways that GPs can address the climate crisis is by promoting co-benefit activities to patients and empowering patients to live more sustainably.

Managing the Effects of Climate Change on Human Health

Altered planetary conditions combined with direct disruption to health infrastructure as a result of climate change would profoundly transform the practice of medicine, therefore GPs have a key role in supporting the adaptation of the health system to the impacts of climate change2. The health consequences of climate change are many and varied eg. increased infectious diseases alongside increasing antimicrobial resistance, air and water pollution, increasing frequency and severity of extreme weather events8. The effects on human health may be categorised as direct (eg. heat stroke), indirect (eg. mental illness after experiencing floods) or mediated through societal systems (eg. population displacement after drought or conflict)11,12. These effects are not shared equally among or between people, as they disproportionately affect the vulnerable: poorer communities and countries, those geographically vulnerable to extreme weather events, and those highly dependent on agriculture for their livelihood8,12.

Adaptation to the effects of climate change on healthcare are likely to include adaptation to increasing extreme weather events, adaptation to increasing infectious diseases, and education of patients about the potential effects of climate change on their health.

Extreme weather events are increasing in frequency and severity due to climate change8 and have a considerable effect on human health. GPs may need to adapt to provide support to reduce physical and mental health effects in affected individuals11. They also may play a key role in contributing to the development and implementation of emergency response plans that need to reflect the evolving threat of extreme weather events2.

Climate change is likely to cause an increase in infectious diseases8. As GPs are often the first to encounter infectious diseases, they serve an important surveillance function for these conditions11. Adaptation of Primary Healthcare to the potentially increasing burden of infectious diseases may include surveillance of risk factors (such as vector populations), vaccination programmes and increased collaboration with Public Health services4,12.

By applying a planetary health lens to clinical practice, GPs may find it necessary to educate vulnerable patients about the potential effects of climate change on their health. GPs can actively work to ensure vulnerable patients are aware of the dangers of extreme heat, support the adoption of protective behaviours and adjust medications to reduce risk2,11.

The effects of climate change on health are wide and varied and particularly affect the vulnerable in society. GPs can adapt to these changes by being prepared for extreme weather events, adapting to manage the increasing burden of infectious diseases, and educating patients about the effects of climate change on their health.

Collective Advocacy

Health professionals can drive social and policy change through collective advocacy. GPs are in a strong position to drive social and policy change because they are generally highly trusted, have influence at all levels of society and are widely distributed and connected to their communities3,11. This connection to the community also allows GPs to involve social and environmental determinants of health, instead of taking a purely biomedical approach11. With this trust comes responsibility to influence wisely and lead effectively, thus:

Health professionals will be called on to engage as humble, informed, and trusted partners in the collective, boundary-crossing effort of transforming practices and structures to better sustain the health and well-being of all life, including our own13.

Advocacy will allow GPs to have a larger and wider-reaching impact than they might otherwise have. This advocacy for adaptation and mitigation actions can occur on a local, national, and international level.

At a professional level, a number of prominent medical colleges and organisations, including the World Organisation of Family Doctors, have declared that climate change is a health emergency requiring urgent action and are leading the way in collective advocacy2,11. Collective advocacy within the professional sphere provides an opportunity to support larger-scale decarbonisation and transition towards an environmentally sustainable economic system. It can also increase capacity to prevent and manage climate-related health risks2. GPs can prompt governing bodies to take actions that affect the climate, highlight the health implications of the climate crisis and advocate for evidence-based interventions11.

At a local level, GPs can become engaged in civil society and health groups that promote actions addressing the health impacts of climate change2. This may include aiding in community intersectoral co-operation, advocating for structural changes to the built environment that promote equitable access to green space, or involvement in strategies to tackle anti-microbial resistance within a One Health approach4,9,11.

Collective advocacy allows GPs to use their links to the community, respect as a profession and understanding of planetary health to have a wider effect on mitigation of and adaptation to climate change. This can be carried out on a local, national, or international level.

Building a More Sustainable Healthcare System.

Health Care Without Harm have calculated that if global healthcare itself were a country, then it would be the fifth largest producers of greenhouse gas emissions8. In Ireland, healthcare is classed as a "major emitter", releasing 0.5-1 t per capita, approximately 4% of all of Ireland’s emissions8. In addition to advocating for a society-wide move towards sustainability, healthcare itself must be made more sustainable. GPs must become involved in reducing emissions in the healthcare system, decarbonising the healthcare supply chain, and increasing the resilience of healthcare to the effects of climate change.

The transition to a more sustainable healthcare system will require action on a local level, such as by adapting "green" technologies and managing prescriptions. On a national level, this will require policy changes, waste management changes and a clear roadmap to net-zero emissions.

Adapting "green" technologies in a practice can reduce harm to the environment and can also benefit a practice's bottom line9. Changing to LED bulbs, installing smart thermostats, and unplugging electronic devices that are not in use are practical first steps. For some practices, it may be feasible to use a renewable energy source, such as solar panels. The continued role out of telemedicine and other virtual processes may also benefit the environment, with the NHS finding that the provision of telehealth and telecare for people with long-term health conditions in the community could bring returns of £5.1M in healthcare savings, a reduction of 67,000 tons of CO2 and 5,671 quality adjusted life years8.

GPs have a unique role as a gatekeeper for tests, investigations, and prescription medications, so practices may find it beneficial to examine prescribing practices. Over-prescription of medication and non-adherence to prescribed regimens contribute to global carbon emissions and healthcare waste9. In the NHS 80% of all prescribing occurs in primary care and this makes up the largest proportion of the carbon footprint8. Examining prescribing practices in a GP Practice may highlight opportunities for a practice to reduce its carbon footprint.

As well as reducing the carbon emissions, there must be changes in the amount of waste produced by the healthcare system. One big part of tackling the waste produced by healthcare is reducing the use of plastic, which has become indispensable to clinical care. Hospitals are among the top consumers of single-use plastics in Europe, with approximately 25% of total waste being plastic14. It may not be feasible for one hospital or practice to change their procurement systems, but policy changes relating to procurement could put pressure on the Pharmaceutical and Medical Technologies industries to behave more sustainably14. The HSE’s climate action plan has ambitions to reduce the amount of waste sent to landfill to 10% by 2035 and recycle 70% of packaging waste and 55% of plastic packaging waste by 203514.

While managing waste and adapting "green" technologies will reduce the impact of the health system on the environment, the ultimate goal must be a net-zero emissions healthcare system. This would require a baseline estimation of Ireland’s healthcare emissions to identify priorities, a co-ordinated multi-health sectorial procurement strategy to substitute high carbon items, annual reporting, and ongoing review8.
Changes should be made to procurement policy so that production, packaging, and transportation, reusability and recycling must all be weighted along with price8. This health care decarbonization should be included in the Nationally Determined Contribution to the Paris Agreement15. It would require not only the co-operation of the entire healthcare system, but also the national governing bodies.

Although it is not entirely within the control of any individual health system, healthcare has the power to demand supply chain decarbonization, which may in turn encourage supply chain companies to take on the challenge of achieving zero emissions production, packaging, and transport8. For healthcare to achieve zero emissions, all healthcare institutions, suppliers, manufacturers, and all agencies involved distally will also need to achieve carbon neutrality. The health sector can only truly decarbonize in tandem with every other sector of the economy and society, so this fundemental transition will require collaboration, innovation, and investment at the highest levels to not only improve the existing quality of care but prevent disease upstream of primary and secondary healthcare.

As well as collaborating and co-operating with stakeholders to increase the sustainability of the healthcare system, GPs must contribute to increasing the resilience of the healthcare system to climate change3. The Intergovernmental Panel on Climate Change defines “resilience” as:

The capacity of a system to cope with a hazardous event or disturbance, responding or reorganizing in ways that maintain its essential function, while also maintaining the capacity for adaptation, learning and transformation7.

Resilient healthcare facilities must be equipped to anticipate, respond to, and adapt to climate impacts such as altered patterns of disease, threats to infrastructure due to changing weather patterns and psychological impacts3. This increased resilience will require increasing the health system’s ‘surge’ capacity to respond to emergencies4,12 and preparing facilities for possible disasters by assessing and planning for threats such as extreme heat, flooding, or storms3. This large-scale adaptation would require the input of the entire healthcare system, including Primary Healthcare providers.

Conclusion

Climate change is still “the biggest global health threat of the 21st century”1. Due to their position in the healthcare system, GPs will have an important role in mitigating and adapting to climate change. This must include education and research, promotion of co-benefit actions to patients, adaptation to the effects of climate change on health, collective advocacy and movement towards a more sustainable healthcare system. By adapting a planetary health approach, GPs can fulfil their moal obligation and vow to "First, Do No Harm".

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Title: The Symphony of Us: COVID-19 Vaccinations in Ireland

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What soundtrack would we give the COVID-19 pandemic? Would it be a thunderous, unrelenting rock anthem in the vein of “Helter Skelter” by the Beatles? Or possibly a more sombre refrain like the solitary bugle player in the military tradition of the “Taps”? Or perhaps an elegy which is a “piece of music in the form of a lament”[1]. There are many who did not live to hear the finale of this piece but were part of the collective harmony the country gave in battling the virus back.

I turned thirty in December 2020 and how differently the tune has changed since then. Radio voices gave reports of six thousand new confirmed cases a day. Footpaths were cold and empty. Yet hospital wards became flooded with bodies like crashing waves on the shore after an earthquake. In the UK, the NHS became the pioneer in delivering novel vaccines into millions of waiting arms. Vaccines brought into existence by many earnest and conscientious hands in laboratories and board rooms across the world merely nine months previously. Did we really know how the next part of the song was to go? There was no manuscript after all.

Yet, perform we did. The country assembled the technology, the expertise, the personnel, the locations and the vaccines into our own creation in order to write the lines of the next verse. Like the flourishing daffodil bulbs or the precious extra seconds and minutes of sunlight in the evenings, the spring unfolded into a new tempo. One that was a welcome change from the heavy cadence of the many days spent at home.

On a bright March morning not long before the 1 year anniversary of the pandemic, I was notified that I had been accepted to GP training. I felt honoured to be selected to become part of this medical community that had been so central to all our lives in the past year. I thought of how all of us had become accustomed to the habitual message playing on repeat over the last year to “phone your GP if you have symptoms” and only go out for “essential journeys”. These phrases were stuck on repeat. It seemed as though we weren’t able to turn them off.

I signed up to work as a COVID-19 vaccinator in the Kildare area that March. The days were spent traveling the county visiting nursing homes, convents and care facilities. The chime of cups on saucers, hissing kettles and crumbling biscuits usually announced our arrival to each place. Many happy smiles and fond farewells marked our exits. Each vaccination represented a new security, a safeness for many that was difficult to comprehend. For the few that yelped at the pinch of needles there were many more breathing long sighs of relief. But when would the time come for the rest of us patiently waiting at home? When would we get to hear the chatter of many voices coming together again?

The stands and concourses at Punchestown Racecourse lay quiet. This venue and many others like it were to be the setting for mass vaccination centres. An operation the likes of which have never been undertaken in this country. Crowds of a different sort were to soon arrive, not for the thrill of the race but for a chance to change the reality of the previous twelve months. On my first day on site, an eager army of doctors, nurses, volunteers hummed in unison into the bar area to await the morning briefing. There were announcements of fire safety, processes to follow for making up doses and the final ending chorus to take care and stay safe.

The dry buzzing of the walkies talkies fizzled in the air as volunteers steadily moved those arriving into the marked walkways for the registration desk. Each person had a story about how they had come to be affected by the pandemic. Yet there was an ephemeral collective understanding of what we all shared in. At the coffee break, some of the volunteers recounted how they had been in the perfect position to help when the time came for the vaccination rollout. Recently retired, still healthy and having some time on their hands, they were only too glad to join the effort. Others were in different situations where they had lost their jobs, had to give up working to look after a loved one or were in education. All of them came without looking for recognition or reward. The only thing they brought with them was a stoic sense of community and commitment.

Shimmering plastic screens covered the registration desks at the entrance to the vaccination centre. Dozens of young people in their late teens and early twenties sat neatly at each window. Black microphones and speakers were used to communicate with the next waiting person as the que flowed steadily. Patience and courtesy never dipped as the fuzzy microphones sometimes smothered the requests for photo ID and proof of appointment. Despite only entering my 4th decade of life and only a few years difference in age between us I thought about how the immediate generation behind me had been changed irrevocably by the events of 2020. I was lucky enough to be embarking on a new chapter of my career. For many there, working in a vaccination centre was only the beginning of trying to make sense of the chaotic events of the past year.

With the onset of April, the pace of the rollout quickened. The high ceilings and plastic cubicle walls reflected the sounds of voices up into the air as crowds gathered. Chat and murmur floated all around as the click on and click off of the green and red traffic light signalled for the next to come. As Irish people do, many talked to their neighbours in the que and to the volunteers that guided them on their way. ‘What a set up!’, ‘It’s actually flowing quite well isn’t it?’ and ‘how long have you been working here?’ were some of the common phrases. I memorised a familiar script as well, telling patients to remember to take paracetamol if needed and to wait for ding of the text message for the second appointment. All of us neatly fit into our sections, like an orchestra, our high-vis vested shift leader acting as our conductor. It was a real joy to move through those days and try to take in some of the atmosphere amongst the surreal nature of our work.

There were times when the record seemed to skip however. When the busy wall of sound around would fade to a low rumble. I remember the lady who cried as she sat down in the chair for her first dose. She was pleasant and chatty up until I started to read the pre-injection questionnaire. She started to remember her husband who had passed away from COVID-19 not 3 months ago. He was in his fifties. He was weeks away from sitting in a similar cubicle to where she was now. She thought about the cruel timing of his passing. If only we were quicker than the virus.

Ireland is in the top ten countries in the world in terms of the amount of the population fully vaccinated [2]. Our vaccine uptake rate has been described as “the envy of Europe”[3]. While the numbers tell one story, individuals moving through the many community halls, GP clinics, nursing homes and hospitals of Ireland tell another. Each person may have differed in their underlying reasoning for getting their jab. Some may say that they did it for loved ones, but don’t believe the science. Others more passionately embrace the data and trust what the rest of the world is doing. But do the headline figures speak to something deeper? How can we can express what we have all been through?

The ‘’key” of a piece of music is the instructions to musicians at the start of a piece about how each of the notes and chords will relate to each other. As the music develops, the musicians play around a central anchor, a root on which the variation of the notes creates the beauty of the melody. Can the same be said for us? Meeting the many faces of the Irish public moving through the halls of the vaccination centres, there was a familiarity amongst complete strangers. A shared consciousness that we had travelled the same road together. While the burden of this virus was undoubtedly felt by the older and sicker in our population, no one was left unaffected. How will we write this chapter in the history books?

As we come towards a beginning of a new phase of this saga, I hope that we will be able to retain the central themes of the collective melody that sustained us over the past eighteen months. Will we be able to continuously rewrite it again and again for ourselves? Perhaps change the key altogether for the new challenges of the future? There has never been a shortage of music on the island of Ireland. Let us hope that we may continue to listen and enjoy each other’s song for many days and nights to come.

Word Count: 1534

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The Efficacy of Probiotic Supplementation in the Treatment of Urinary Tract Infections: A Systematic Review of the Current Literature

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Keywords: probiotics, Lactobacillus, urinary tract infection, urogenital health, systematic review

Abstract

Urinary tract infections (UTIs) are one of the most commonly diagnosed medical conditions worldwide. With the up rise of antibiotic resistance in the past number of decades, alternative methods to avoid over-prescription of said antibiotics, especially in the GP setting, is warranted. Probiotics have been gaining popularity amongst the scientific community and general population alike for their broad range of health benefits. The literature suggesting probiotics have the potential to efficaciously treat UTIs has been mixed thus far, often due to large variations between the methodology of the studies. In order to assess the evidence provided by recent literature, a systematic review of randomized controlled trials (RCTs) assessing probiotic efficacy in the treatment of UTIs was undertaken. MEDLINE, Embase, and Scopus were searched using the terms "probiotic", "urinary tract infection", "UTI", "treatment", and "supplementation", and all possible results were assessed for relevancy. Articles that met the inclusion criteria were analyzed at full-length, data was extracted from each study, and the quality of the paper was scored. Inclusion criteria included: RCTs, published dates between 2000-2021, papers published in English, participants of any age and gender, treatment group consisting of probiotic supplementation, and control group consisting of antibiotics or a placebo. All trials not meeting these criteria were excluded. Due to the heterogeneous nature of the data, a qualitative assessment was undertaken to reach an overall consensus regarding probiotic efficacy in UTI treatment. Though there were limitations regarding the strength of data extracted due to lack of blinding in some of the studies, the evidence does suggest with optimization of methodology for future studies, the true potential for probiotics to be applied to UTI treatment could be unlocked.

1. Introduction

Probiotics have been gaining popularity over the past decade for their ubiquitous efficacy in the treatment of numerous medical conditions. With their ease of administration and generally high safety profile1, probiotics provide more than just a promising field of research. Probiotics have been defined as “live microorganisms which, when administered in adequate amounts, confer a health benefit on the host”2. By gaining both consumer and scientific popularity over the past decade3, research of these symbionts has grown exponentially. Studies have shown efficacious use of probiotics for the treatment of bacterial vaginosis4-5, inflammatory bowel disease (IBD)6-7, irritable bowel syndrome (IBS)8-10, depression11, and eczema12-13, among many others. The mechanisms behind which probiotics are able to confer their health benefits has been diligently studied, with numerous proposed theories depending on the condition.

For example, proposed mechanisms for probiotic treatment of IBD include modulation of the host immune system, production of short chain fatty acids, up-regulation of tight junction expression, and reducing apoptosis of intestinal epithelial cells6. It is proposed that probiotics can play a role in the treatment of depression through modulation of the gut-brain axis via stimulation of the enteric nervous system, and through the production of cytokines and neurotransmitters14. Other studies have shown how probiotic supplementation can help restore the natural vaginal flora present in women with bacterial vaginosis. The vaginal flora of women with BV have been shown to contain a large number of pathogenic bacteria, in contrast to the lactobacillus species that reside in women without BV4. It is thought that this depletion in lactobacilli drives the formation of BV15. Probiotic supplementation has been suggested to treat BV through Lactobacillus-induced H2O2 production16, Lactobacillus displacement of pathogenic bacteria17, and through the production of bacteriocins18.

With probiotics yielding such promising results in the field of urogenital health, proposing that probiotic supplementation could be efficacious in the treatment of urinary tract infections (UTIs) is a justified supposition. This is especially applicable to the General Practice (GP) setting where UTIs are a very common presentation. The data, however, have been mixed thus far with much yet to be uncovered. Disparities between studies may exist due to use of different probiotic strains, with some shown to be more effective than others in UTI treatment19. Inconsistencies in length and route of supplementation between studies may also provide a conduit for mixed results. Thus, with the ever-growing knowledge surrounding probiotics and their potential health benefits, a review of the most current literature investigating their use in the treatment of UTIs is warranted.

2. Methods

2.1 Selection Criteria

Randomized controlled trials (RCTs) assessing probiotic supplementation in the treatment of UTIs in humans were included in the review. All studies were published in English between 2000-2021 to assess the most current literature. Patient populations included individuals of any age and gender who were experiencing confirmed UTIs. The treatment group was defined as those administered probiotics, with the strain and dose of probiotic stated. The control group was those administered either antibiotics or a placebo. Outcomes reported included occurrence of UTIs after initiation of the treatment or control, with or without measurement of antibiotic resistance.

2.2 Search Strategy

Databases used included MEDLINE, Embase, and Scopus. Search terms for each database included probiotic(s), supplementation, treatment, urinary tract infection, and/or UTI (Table 2). All studies identified through database searching were imported to EndNote X920. Duplicates were subsequently deleted, and paper titles were scanned for relevancy. Studies identified as potential candidates were examined via full-text analysis. Those that did not fit the inclusion criteria were excluded from the review.

2.3 Data Extraction and Quality Assessment

Data extracted from each study included: publication date; study design; length of study; age and gender of the study participants; occurrence of UTIs as the main outcome measured; strain, dose, and route of administration of the probiotic group; sample size; statistical analysis of the data including p-values; any sub-outcomes reported by the authors including antibiotic resistance; conclusions made by the authors regarding efficacy of treatment. Quality assessment of the included studies was performed with the Critical Appraisal Skills Program (CASP) RCT checklist21, and risk of bias was subsequently assessed with the Cochrane Risk of Bias Tool22. Due to the heterogeneous nature of the studies, a qualitative analysis of the evidence was undertaken. An overall consensus was reported based on the quality of the papers and risk of bias from each study.

3. Results

3.1 Selection of Appropriate Literature

Studies identified through database searching yielded 4244 potential results. After duplicates were eliminated (n = 21), 4223 results were screened for potential relevancy. Records excluded consisted of 4204 results, with 19 papers reaching full-text analysis. Studies included in the final qualitative synthesis comprised of 9 papers, with 10 studies being excluded due to not meeting eligibility criteria (Figure 1).

3.2 Characteristics of Included Studies

A total of 1,316 participants were assessed over 9 randomized controlled trials (514 children, 802 adults). One study included postmenopausal women, 3 studies included adult women, 4 studies included children, and one study included both men and women in their patient population. Five studies included antibiotics as the control group and 4 studies included identically matched placebos. The primary outcome assessed in all studies was incidence of UTI upon initiation of the treatment or control. A positive UTI ranged from 1x102 to 1x105 colony forming units (CFU) per mid-stream clean catch urine (Table 1). Four RCTs included antibiotic resistance as a secondary outcome measurement.

3.3 Selection of Treatment and Control Groups

Patients in each study were randomized to receive either probiotics as the treatment group, or a control containing antibiotics or an identically-matched placebo. Strains of probiotic used included: Bifidobacterium bifidum, Bifidobacterium breve, Bifidobacterium lactis, Bifidobacterium longum, Lactobacillus acidophilus, Lactobacillus bulgaricus, Lactobacillus casei, Lactobacillus crispatus, Lactobacillus reuteri, Lactobacillus plantarum, Lactobacillus rhamnosus, and/or Streptococcus thermophilus. Concentrations of probiotic ranged from 1x107 CFU to 4x1010 CFU, and routes of supplementation included capsules, yogurt, or suppositories. Antibiotics chosen for the control group included either trimethoprim-sulfamethoxazole (TMP/SMX) or nitrofurantoin (Table 1).

3.4 Assessing Risk of Bias

Each study included in the final qualitative synthesis underwent a quality assessment via the CASP RCT checklist. Four studies were considered of high quality, 1 study was of moderate quality due to lack of accountability of participants lost to follow-up, and 4 studies were considered low quality due to lack of blinding (Figure 2). All studies were subsequently assessed for risk of bias using the Cochrane Risk of Bias Assessment Tool22, with 3 studies containing low risk of bias, 4 studies with high risk of bias due to lack of blinding, and 2 studies with an uncertain level of bias (Figure 3).

3.5 Summary of Treatment versus Control Group

The incidence of UTI upon commencement of the RCT was reduced in the probiotic group compared to the control group in 4 studies, with 3 of these studies comparing probiotics to a placebo control, and 1 study comparing a probiotic-antibiotic combination to antibiotics alone. The incidence of UTI was as common in the probiotic group compared to the control group in 4 RCTs, with all 4 of these studies comparing probiotic efficacy to antibiotic efficacy. One study showed no benefit to probiotic supplementation in the treatment of UTIs when compared to an identically-matched placebo (Table 1). Antibiotic resistance was measured as a secondary outcome in 4 studies, with all 4 RCT reporting increased resistance to antibiotics in the control group compared to the probiotic group.

Of the 4 studies that demonstrated probiotic efficacy in the treatment of UTIs, 2 of the studies were of high quality, 1 study was of moderate quality, and 1 study was of low quality due to lack of blinding. Of the 4 RCTs that demonstrated no difference in the efficacy of probiotics compared to antibiotics, 3 of the studies were of low quality due to lack of blinding, and 1 study was of high quality. The RCT that demonstrated no benefit to probiotic supplementation in the treatment of UTIs was of high quality.

4. Discussion

4.1 Quality of Data Reviewed

This systemic review of recent literature on the efficacy of probiotic supplementation in the treatment of UTIs combined a group of datasets, with the goal of determining the strength of evidence in supporting the use of probiotics for said treatment. Due to the heterogeneous nature of the data, each study was examined individually and then considered alongside its counterparts as a whole. The authors' final conclusions were documented during the data extraction process, however, an alternate viewpoint can be noted for some of the evidence that the original authors may have overlooked. For example, both Mohseni, et al and Beerepoot, et al concluded that no significant difference in probiotics versus antibiotics in the treatment of UTIs was evidence against the use of probiotics, and that the original hypothesis was not supported (Table 1). However, an alternative view of this evidence is that probiotics were just as effective as antibiotics in reducing the occurrence of UTIs. Probiotics did not perform worse than antibiotics, but instead performed just as well as antibiotics, all the while preventing the onset of antibiotic resistance in these studies.

All data considered as low-quality was done so due to lack of blinding in their respective trials. This includes the studies conducted by Heidari, et al, Mohseni, et al, and both studies conducted by Lee, et al (Figure 3). The rationale for why the authors chose not to blind the participants is not known. It may be arguable that participants being aware of which group they are allocated to may not dramatically change the objective measurement of their UTI. However, one undeniable conclusion of who should be blinded is the individuals collecting and assessing the data. All studies considered of low-quality evidence also did not blind their data collectors and assessors, and thus their low quality status remains.

The study conducted by Stapleton, et al received a moderate-quality rating due to the fact that there was some uncertainty regarding the handling of unreported data in individuals who dropped out of the study. On the other hand, though the authors of the paper conducted by Sadeghi-bojd, et al noted the possibility of ascertainment bias present in their study, this paper still received a high quality rating due to the presence of blinding and accountability of all data obtained.

4.2 Efficacy of Probiotic Supplementation

It has been documented by Falagas, et al that not all probiotics have equal efficacy in the treatment of UTIs. Lactobacillus rhamnosus and Lactobacillus reuteri have shown benefit in the treatment of this urogenital infection while Lactobacillus GG has shown to be less efficacious. Lactobacillus casei and Lactobacillus crispatus have also shown to be possible candidates for treatment in some studies19. Thus, careful and justified choice of probiotic is essential in gaining accurate and precise evidence for the use of probiotics in the treatment of UTIs. Such careful selection is highlighted in the study by Toh, et al. Initial statistical evidence showed no benefit to using probiotics for the treatment of UTIs, however post hoc analysis isolating the effects of Lactobacillus rhamnosus and Lactobacillus reuteri did provide statistically significant results favouring the use of these probiotics for UTI treatment.

When examining the data as a whole, there does appear to be some promising results. Though not all data was of high quality due to lack of blinding in some studies, the overall consensus showed probiotics to be either more effective than identically-matched placebos, or just as effective as antibiotics in reducing incidence of UTIs. The one study that did not support probiotic use by Toh, et al eventually did conclude that there is evidence suggesting certain probiotics do show efficacy. Optimization of the RCT via double blinding, using an evidence-based choice of probiotic, assessing probiotic colonization in the urogenital region of participants, standardizing the most effective route of probiotic administration, and comparing probiotics against antibiotics are all components of study design that should be implemented moving forward. Doing so will allow investigators to ascertain robust and accurate data regarding this area of research, so as to allow a proper consideration of probiotics for clinical use in the GP setting.

4.3 Proposed Mechanisms of Treatment in the Literature

There have been many studies performed to investigate the possible mechanisms of probiotic use for UTI treatment. These include colonization of the vaginal flora thereby eradicating pathogenic bacteria, inhibition of Escherichia coli adhesion via blockage of type 1 fimbriae, and inhibition of pathogenic bacterial growth through H2O2 production23. Other metabolites produced by probiotics to inhibit bacterial growth include lactic acid, acetic acid, bacteriocins, and antifungal peptides24. Probiotics have also been shown to compete with uropathogens for nutrients, modify cell signaling via NF-Kβ and TNF- α, enhance production of IgA and cytokines, as well as increase the barrier efficacy of the local mucosa by stimulating proliferation. Actions of specific bacteria have also been elucidated via in vitro studies. Lactobacillus acidophilus and Lactobacillus reuteri produce H2O2 and biosurfactant to prevent uropathogen adhesion, while Lactobacillus rhamnosus GR-1 attaches directly to the urothepithelium to achieve the same. Lactobacillus casei increases the activity of natural killer cells and enhances the response of the immune system in order to eradicate pathogens24. It is clear by the elucidation of how probiotics eradicate uropathogens that there is a great potential for them to be efficacious in UTI treatment.

4.4 Adverse Events

There are ever-increasing incidences of antibiotic resistance since their discovery in 192825. With UTIs being one of the world's most commonly diagnosed conditions26, it is no surprise that prescription of antibiotics for their treatment would be a large source of breeding resistance27. Thus, finding effective alternative solutions to treating UTIs without the use of antibiotics is a highly warranted field of study. With the 4 RCTs that assessed this outcome, all 4 trials showed resistance to antibiotics by the end of the study. On the other hand, the probiotic group in each of these RCTs did not display such resistance. Probiotics may actually confer a protective effect against acquiring resistance. Mohseni, et al showed decreased resistance in their probiotic plus antibiotic group when compared to their antibiotic group alone. This phenomenon has been displayed elsewhere, when probiotics administered with antibiotics produced less superinfections, lowered the bacterial load, and increased the immune response of the local mucosa28. Further examining the relationship between probiotic supplementation as a protective mechanism for antibiotic resistance is another avenue of research that would be much warranted.

4.5 Limitations

Though there are a number of promising avenues presented, there are limitations to this systemic review. The quality of many studies included could certainly be improved due to lack of blinding. The interpretation of their extracted data must thus be weighted lightly as bias can easily be found. There are also a number of high quality studies currently being conducted that could not be included in this review due to lack of extractable data, and thus though the most current literature was attempted to be included, there will soon be a host of new data ready to be reviewed.

5. Conclusion

Despite the heterogeneous nature of the studies reviewed and lack of unanimously high quality data, there are important findings within this review that suggest probiotic use in treatment of UTIs is not without benefit. It was found that some studies initially viewed probiotics as not useful due to their inability to produce statistically significant results compared to antibiotics. However, another interpretation is that probiotics were just as efficacious as antibiotics when preventing occurrence of UTIs, with the added benefit of not producing antibiotic resistance. Another study found that probiotics used in combination with antibiotics helps mitigate some of this resistance, thus perhaps a combination treatment of antibiotics plus probiotics should be the focus of further research. Probiotics have been extensively studied in recent years as they gained popularity, and even more so due to their ability to treat a multitude of medical conditions. With their high safety profile, general lack of side effects, ease of administration, and diverse applicability, rigorous and high quality research my one day bring widespread clinical prescribing of probiotics for the treatment of UTIs to the horizon.

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Treatment burden: Causes, solutions and obstacles for the future GP and patient

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The role of the general practice physician is unique among the medical sciences. Like an infant taking their inchoate motions, I am only beginning my ascent up the Aesculapian tree, but it is already evident that general practice holds a singular place under the medical canopy. It holds a pivotal role in primary prevention and the care of disease and illness among the population. Elements of the general practitioner branch are cross-pollinated with varied flora spanning many fields; operational management, staff organisation and budgeting, etc; this all before any patient enters the clinic. Among the innumerable pedagogic events I have attended during my medical schooling, one lecture has remained foremost in my mind. Quite in contradiction to my previously established assumptions, we were informed by a somewhat mischievous microbiologist that the hospital environment was among the worse settings a sick, vulnerable person could be placed in; surrounded by other convalescents, where the risk of illness transmission was at its greatest. Since that 9 a.m. Monday morning, luminescent in an otherwise cloudy recollection of lectures, I hold great admiration for the role a GP plays in managing illness and decreasing the need for hospital admissions.

In recent times, more is expected of the GP. TILDA reports that an estimated one million people in Ireland suffer with diabetes, asthma, COPD or cardiovascular disease and approximately 65% of those over 65 years of age live with co-morbidity.1

Modern medicine has brought impressive benefits to the world, including improved clinical outcomes of acute disease and increases in expected lifespans.2 However, the rod of Asclepius carries a double-edge, with this prolonged survival bringing about a rise in the prevalence of chronic conditions and multi-morbidity. This exacts pressure upon the physician, as the need for provision of continued and effective care increases, but ultimately it is the patient who must confront the increased workload, responsibilities and challenges that their chronic disease, multi-morbidity and its treatment exacts.

Each patient exists at a crossroads between their social, personal and clinical circumstances.3

Each of these pathways presents challenges of their own. These vary between individuals and, even when two different patients find themselves at similar “crossroads”, their reactions and responses to such difficulties will differ. Obstacles that the modern patient must overcome on their path of chronic disease management amount to more than the manifestations of the pathological processes of the disease itself.4

When patients are recruited as active partners or ‘co-workers’ in the delivery of their healthcare, the liminality between their personal, social, occupational and environmental circumstances from their clinical circumstances become ever friable.

The invasion into patient’s lives and the hurdles that accompany it are beginning to take a seminal role in recent medical literature under the umbrella term of “burden of treatment”. This is a “multi-dimensional phenomenon (that) describes the… workload (i.e. requirements and demands) for patients in order for them to adhere to recommendations made by their clinicians to manage their morbidity and wellbeing.”5 The term ‘workload’ is used to encompass the everyday tasks that patients must confront as they self-manage their illness; these vary from undergoing therapeutic interventions (prescriptions, procedures), collecting and assimilating relevant information, extensive interaction with healthcare services, suffering adverse reactions to treatment measures to mundanities including the organising of transport and attending appointments. These factors are often unavoidable and are in a constant melee with a person’s ‘capacity’.

In this context, capacity refers to the varied skills and strengths that enable a patient to overcome the demands exacted by a physician, healthcare service or life in general .6 Capacity and workload are weighted against each other on a scale that determines the ‘burden of treatment’ a patient carries. Assets that compound one’s capacity include financial security, support from family and friends, education and literacy but also intangible faculties such as personality and resilience.6 There are significant variations in the degree of capacity found in patients. Some patients persevere despite tremendous workloads; others falter even when relatively unencumbered. Capacity is a dynamic entity, that possesses a fluidity related to the patient’s environment and current circumstances; capacity and health are interdependent. Symptoms can erode one’s inner-strength, tipping the delicate balance of the burden of treatment against the patient as their self-capacity dissolves. Healthcare workload and care deficiencies can influence and be influenced by patient capacity. The dichotomy between workload and capacity is an ever-changing battleground in this war of attrition, as the patient engages with their burden of treatment. Unfortunately, capacity seems to be an exhaustible resource; one is never overcome by a surplus of capacity. In contrast, many patients are overwhelmed by their workload and burden of treatment. A patient's reservoir for capacity must be accurately plumed and utilised.

There are a number of factions and 'dramatis personae' involved in the burden of treatment. In this essay, I hope to elucidate the roles of the major triadic influences involved in a patient's management and treatment; namely, the pharmaceutical industry and major guideline producers, the physician and the patient themselves. I will consider the policies and actions of the institutions that compose the world's major medical guidelines and the pharmaceutical industry together, as both parties exist outside of the patient-physician relationship, yet their exploits carry major repercussions for this partnership.

We have already addressed that the medical domain of the GP is quite distinct from that of secondary care. Yet the same clinical guidelines developed for the latter are forced upon GPs. Their application in primary care is questionable, considering the complexities and uncertainties that are the norm in general practice. This creates a kind of 'Procrustean bed' where both physician and patient are forced to comply with ill-fitting principles of care. The pitfalls that can be encountered as physicians are pressured into following evidence-based guidelines is comprehensively examined by Hughes et al 2013. The authors in this study describe how such guidelines are insipid in their acknowledgement of co-morbidity and adherence in the care of older patients; major factors that add to the burden of treatment and can impede the provision of care in the primary setting. In fact, this paper found that close adherence to guideline recommendations when managing the treatment of "an older person with multi-morbidity would often lead to complex and… contradictory drug and self-care regimes",7 unintentionally encouraging polypharmacy if applied to a realistic patient.

The guidelines reviewed in the mentioned study did address the importance of tailoring treatment to each unique patient and their multi-morbidity; but the advice was repetitive and facile, failing to offer effective guidance for achieving patient-centered care and reducing burden of treatment;7 such efforts would help make such criterion more useful and appropriate for both the GP and patient.

The quagmire of definitions and infatuation with semantics is a problem the GP often encounters when deciphering modern guidelines and disease classification systems. This desire to categorise and condense disease into a few words, snug in a box to be carefully filed away extends as far back as the fifth century BC, when Hippocrates tried to systematically explain human behaviour in his description of the four "humours".

Guidelines and their insular fastidiousness and the over-zealous adherence to nosology that they promote can be counter-productive, even dangerous, when applied to patients if suitable clinical judgement is not applied by the physician.

Such guidelines are composed with the purpose of managing the disease entity; but the GP is more often faced with the idea of “illness”; that which embodies both the underlying pathological malfunctioning of the body along with the accompanying unwell state of mind or body that the patient subjectively experiences. Primary care typically requires an illness-focused, holistic view of the patient, acknowledging the subtleties and intangibles of the patient’s life.8 These intangibles are nigh impossible to account for in objective disease-focused guidelines that target whole populations. Their production relies on the scientific method, whose linear algorithms cannot function in such a minefield of relativism.

An apparent result of adhering to guidelines is the phenomenon of “over-diagnosis”. WONCA Europe defines over-diagnosis as the unnecessary identifying of people as patients, through the recognition and treatment of problems that were never going to cause harm, or “by medicalising ordinary life experiences through expanded definitions of disease.”9 Expanding definitions of disease come from both the broadening of guidelines and the over-reliance of GPs on such recommendations, rather than adapting them to patients with appropriate clinical judgement. Currently, diagnostic definitions label 10% of the adult population as having chronic kidney disease, the number of pregnant women defined as having gestational diabetes has tripled with the latest criteria and the margins that define ADHD continue to grow, “meaning more children and adults will be diagnosed”.10There is always a grey area in clinical diagnosis that GPs struggle against, but such attempts to do away with diagnostic uncertainty may cause as much harm as good.

Many forms of the medicalisation of ordinary life can be further defined as ‘diagnostic-creep’ or the even more sinister “disease-mongering”. These terms describe the increased labelling of healthy individuals as ill so as to widen the diagnostic limits of illness. Juxtaposed with promoting public awareness of same, pharmaceutical companies, insurance companies, medical equipment manufacturers and other groups involved in the selling of medicine are able to widen their potential markets and increase their monetary gain and power.10,11

This promotion of pseudo-diseases creates a conflict of interest between the citizen and those who sell and distribute medicines; 13 such a conflict should not exist.

Unfortunately, "Big-Pharma" does not seem to be bound by the same Hippocratic oath as doctors, instead dedicating themselves to increasing market share rather than, the less-profitable, sharing of health. Many pharmaceutical companies employ more staff working on marketing than research.12

Many of the panels charged with the responsibility of composing guidelines have conflicting bias that can have insidious effects on how medical care is provided across population; in some cases, up to 75% of panellists have financial ties with multiple pharmaceutical companies, commissioned for "speaking, consulting, advising or researching."10 Such blatant abuse of the public trust has and will lead to dire consequences into the future. Take for example the negligent marketing of opioids by pharmaceutical powers and the resulting addiction crisis in the USA.14 Such abuse of physicians and patients trust ultimately leads to increases in patient's treatment burden and such perfidious modes of operating will ultimately disintegrate public trust in healthcare. It is no longer such an audacious example of intellectual antagonism to agree with Dr. Heath's advice: 'Whenever I see the sort of guidelines that are, right now, driving overdiagnosis and overtreatment, I think of this: our responsibility not to follow the rules."10

Despite these external powers and their influence, at the heart of general practice is the relationship between GP and patient; both of these parties can reduce or augment the burden of treatment. It is difficult for the GP to avoid becoming like Sisyphus, entrammelled and forced to continually promulgate the belief that modern medicine has encouraged (through its impressive success) that more medicine is better, irrespective of context. Exponents of pharmacology offer patients the latest panacea for all ailments; Hic Rhodus, hic salta!

In fact, studies have shown that the contrary is more often true, with increased number of consultations and prescriptions associated with increased risk of iatrogenic harm, threatening the individual's capacity and compounding the burden of treatment.14

GPs play a pivotal role in educating patients that a life of no medical risks (a medical "zero-vision") is both unhelpful and potentially harmful.9 We can be removed from the routine of our life by illness, but we cannot remove the threat of illness from our lives. Efforts must be made to facilitate and encourage the patient's self-empowerment and self-capacity when bearing the burden of both disease and treatment; dispossessing them of this capacity leaves them vulnerable to treatment fatigue and non-adherence.

The GP and patient are not altogether powerless against treatment burden or its root causes. There are many tools available that allow the physician to operate their care deductively, incorporating all aspects of the patient's life in a setting of holism, rather than the inductive sophistry that guidelines can promote. There has been a pivotal shift in the relevant literature towards "patient-centered care" rather than the traditional disease-centered one. This is focused on strengthening the patient-caregiver relationship by means of establishing holistic focused treatment. It utilises the bio-psychosocial complex, shared decision-making and is founded upon an enduring personal relationship.15 However, other than these central pillars, it is difficult to find a widely accepted definition of patient-centered care that is distinct and carries general agreement. Unfortunately, the use of the term is often merely insincere rhetoric.

This has led to the development of adjuncts that aim to evolve these principles to effectively combat the complex interplay between disease, treatment and the associated burdens patients carry. Appreciating the importance of a holistic perspective when considering patients living with illness, 'minimally disruptive medicine' asks "what is the situation that demands medicine and what is the medicine that the situation demands?"6

It acknowledges guidelines as useful resources for treatment, but highlights the need for the physician to challenge its application to the individual patient. It views a patient's capacity as a valuable resource to be mobilised and supported, complementing the provision of 'thoughtful care' that aims to minimise treatment burden for patients.

A key role that the modern-day GP has inherited is "protecting people from the unnecessary diagnosis of disease".10 A "minimally-disruptive" outlook provides a novel armoury to help interpret the benefits and potential harm of shifting diagnostic thresholds; a guideline for guidelines.

Furthermore, as the GP of the future looks for support to unburden their patients from the workload of both disease and the corollary pressure exerted by treatment, they may find it in the teaching of 'Interpretative Medicine'. J. Reeve describes this model of care as "the critical, thoughtful, professional use…of knowledges in the dynamic, shared exploration and interpretation of individual illness experience, in order to support the creative capacity of individuals in maintaining their daily lives".8 The emphasis placed on a specialist model in the setting of secondary care may provide positive clinical outcomes in that environment, but in primary care, it only results in a stifling of the creative bond that physician and patient share. In contrast, general practice demands for "the provision of personal, holistic, lifelong, generalist care" in response to the illness-experience of its community of patients.8

Interpretative medicine tries to accommodate the ongoing "dance" between physician and patient. It subsumes the biological manifestations of disease, the biographical incarnation of the illness in the patient's lived reality and the specific nosopoetic factors that precipitate and perpetuate sickness. By following the guidance provided by interpretative medicine, customised interventions to reduce burden from multi-morbid syndemics can restore patient determined goals of treatment. The patient who is allowed to interpret their own illness experience and treatment goals engages and takes a more active role in their therapy. This increases their self-capacity and the likelihood that they will achieve success in the pursuit of whole-person wellbeing or "dynamic continuity of embodied consciousness"8, rather than simply averting death or disability.

Thus far, I have outlined some of the contributors to treatment burden and the resulting deleterious effects on the patient and their care; the solutions that the GP of the future requires are not so easy to predict. Although one should be wary of kalopsia when considering the future, neither should the GP of today and tomorrow be without hope. The ideals of patient-centered care, minimally disruptive medicine and interpretative medicine will continue to grow and develop alongside other therapy modalities to create a syncretism that will expand patient's capacity and support the general public in the attainment of their health needs. The GP is not some dilettante; rather they are the vanguard protecting both the individual's and the public's health. In accordance with such demands, they require the latest developments in healthcare theories to be able to offer successful medical care.

I wish to describe such practices using a term developed by the Norwegian physician and humanitarian activist, Mads Gilbert; 'Evidence-based Solidarity'. Although used in a different context, I believe the term encapsulates the use of new treatment methodologies to transcend evidence-based medicine and tailor it to the individual needs of the patient. Hitherto, the patient was forced to adopt a diagnostic label and the assigned disease models were often inadequate to reflect patient’s individual experience of illness.

Albeit slowly, classifications evolve to incorporate new discoveries, guidelines become shibboleth and recommendations obsolete. However, the role of the GP remains consistent throughout this melee of conditionality and we must question any conventional classification’s ability to apply stultifying and determinate definitions to a patient’s individuality. We must avoid becoming like the “Country Doctor” that Franz Kafka (an epitome of the hardship that results when the burden of treatment overwhelms one’s capacity) illustrated in the eponymous short story; begrudging the people as they are “demanding the impossible from their doctor.”16 As Kafka adumbrates, “filling prescriptions is easy, but getting on with people is much harder”.16

The philosophical teachings of Scholasticism suggest that the human being is formed from three principles; substance, form and ‘virtu’. But as Karl Marx declared, “The philosophers have only interpreted the world... The point, however, is to change it.” GPs are placed in a unique position of responsibility as they have the power to respond to and alter the social, political and economic influences13 affecting the health and well-being of their patients.

Ernesto ‘Che’ Guevara declaimed in a speech to newly qualified medical students in 1960 that “The battle against disease should be based on the principle of creating a robust body- not through a doctor’s artistic work on a weak organism- but… through the work of… the whole social collectivity.”17 The physician must remain close to a patient, familiar with both their personal psychology and pathology. By dynamically interpreting their needs, both physical and metaphysical, they will remain at the fore of effective community healthcare by giving value to a patient’s capacity to pursue their personal aspirations.

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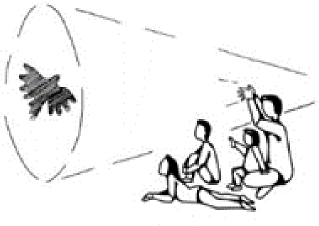
Transgender Health and Disproportionate Health Outcomes: A Sociological Approach to Health as a Direct Marker of Marginalization

Author: Harry Cabalan, 4th year Undergraduate, National University of Galway



The issue of disproportionate health outcomes facing transgender people in Ireland, particularly from an epidemiological standpoint, is one that demands urgent study and action; this scope offers a challenge in education and delivery methods for those who provide health services, as well as those who require these services. Transgender healthcare spans a broad range of services providing for the care of transgender people, whose needs can be widely different. This can include services related to gender transition, where individuals seek to access hormones or surgical procedures to affirm the gender they identify with (Vincent, 2018). However, most of the existing literature and current practice only considers gender transition. It is also important to consider the treatment of transgender people in cases where their trans status is indirectly related or perhaps not relevant at all. While current practice focuses on the biochemical components of health, including etiology and varying surgical techniques, there needs to be a shift in emphasis to recognize the limitations of a strictly biomedical framework, and embrace a more sensitive, holistic approach that creates a space of inclusivity for transgender people in medicine.

Who treats the health concerns of transgender people? At the time of writing, it varies throughout Ireland. For reasons that are predominantly historic, transgender health happens within Gender Identity and Psychosexual clinics, but most of the treatment and management of hormones begins in GP clinics. This has become an increasingly common presentation in the GP setting with greater mainstream discussion and trans individuals becoming aware of their options and presenting earlier. However, there exists a clinical deficit about the spectrum of trans health, and the best practice in initiating as well as managing services. It has been reported that GPs, "too often lack an understanding of:

trans identities; the spectrum of care…and their own role in prescribing hormone treatment" (Vincent, 2018). Therefore, it is understandable that a GP who is faced with a transgender patient, particularly their first, might feel out of their depth, being that trans healthcare most likely was a mere footnote in their medical education or perhaps, it was completely sidelined.

It is important to recognize that the ignorance or perhaps undermined information and knowledge about transgender health, especially from a primary care outlook, is not merely a flaw in education; it is rather a cultivated ignorance that is rooted in political, historical, and socio-economic contexts. Therefore, this essay employs the 4 dimensions of the sociological imagination framework – historical, cultural, structural, and critical – to see how underlying notions of discrimination and exclusion contribute to the lower aggregate health outcomes experienced by transgender people. In doing so, it reveals how a lack of adequate trans healthcare services is not simply a medical administrative flaw, but a complex issue constructed by the intersectionality of various social and oppressive factors, which then influence health and well-being.

The underpinning social issues that drive poorer health outcomes for transgender people are complex. Although specific epidemiological data does not yet exist for transgender health outcomes in Ireland, we can extrapolate data from other countries, as anecdotal evidence from trans health services in Ireland report similar experiences. For example, transgender individuals are at greater risk for HIV and for poorer physical and mental health outcomes (Camilleri, 2017). In fact, the US National Transgender Discrimination Survey Report on Health and Health Care (NTDS) reported that transgender individuals in the United States experience over four times the national average of HIV infection and are over 25 times more likely to have attempted suicide (Camilleri, 2017). Across the board, and especially in mental health status, transgender people report having lower health standings across all sectors of healthcare.

It is worth noting that these poorer health outcomes are not due to being inherently trans, but rather the result of a society that is exclusionary and is conditioned to ignore the needs of certain minority groups, namely trans people. Therefore, health outcomes become shaped by social inequities, rather than medical ineptness. For example, data collected shows that 19% of transgender individuals in Ireland report having been homeless at some point in their lives (Transgender Equality Network Ireland (TENI), 2019). Furthermore, another 34% of respondents report they were living in poverty, and over 50% reported facing rates of unemployment. On a macro level, trans people face some of the highest rates of stigmatisation, discrimination, and marginalisation in Ireland. They are highly vulnerable to incidents of extreme physical violence, assaults, damage against property, and incidents of threats and physical violence (TENI, 2013). Despite these experiences, trans people are not expressly protected under any equality or hate crime legislation in Ireland (TENI, 2013). This then continues a cycle of violence and hate, that leads to poorer health outcomes. Moreover, it further perpetuates the societal norm of marginalizing minority groups.

Accordingly, we can see that trans health is more than limited to transition related care. This essay is truly democratic, and above all, practical. It reflects on the importance of primary health care workers, namely GPs, to gain a wider based understanding of trans health services and needs. Trans health is not an esoteric little micro-speciality, but a field that is growing, complex, and shaped by various social factors beyond clinical medicine. Trans healthcare belongs to all of us and is the duty and responsibility of every medical practitioner to educate themselves, and more importantly, advocate for political and social reform in managing gender-related health issues effectively. This issue highlights the future of medicine, which is universal, inclusive, and in need of a timely step towards a holistic approach.

History

Gender Binary

*Taken from the sign outside of a restaurant bathroom

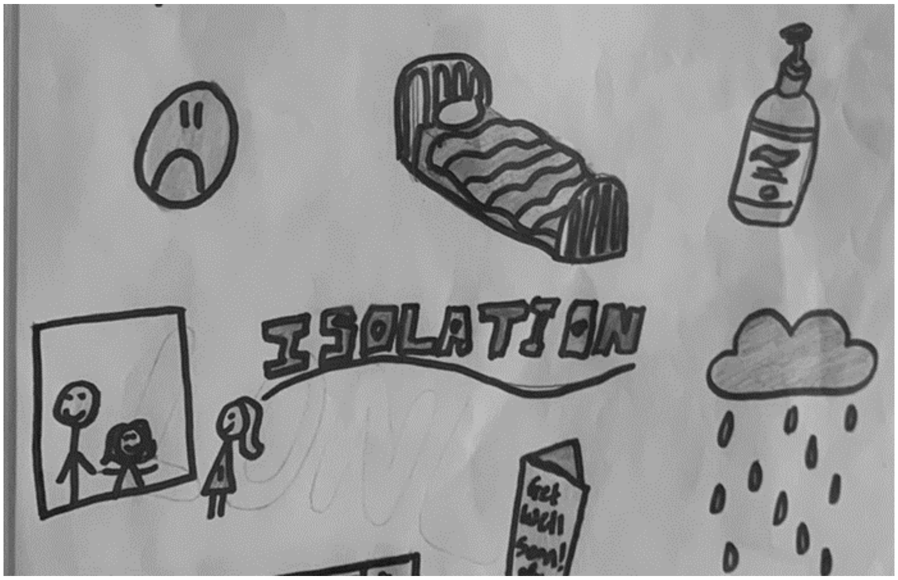
The gender binary is a picture I took from outside the bathroom of a restaurant in Athlone. It represents the normative male-female binary that society has held about gender, which ignores the existence of other genders. Elements in Irish society have historically been hostile to queer identities and these factors have cultivated the heteronormativity upon which a patriarchal society is built (Price, 2013). Therefore, we have become accustomed to living in a social world that only views itself as having two genders. This then displaces people who identify with other genders, as society is systematically designed to ignore their existence.

Then over time, the constraint of gender expression has cultivated a societal norm of transphobia. Talia Mae Bettcher, a professor of philosophy at California State University, defines transphobia as an uncontroversial and ubiquitous global occurrence which manifests differently in different cultures. She notes that while transphobia exists, based on documented evidence of sexual violence, physical violence, and verbal harassment of trans people, it is far from evident what transphobia exactly is (Bettcher, 2015). Derived from homophobia, transphobia carries a similar broad interpretation, but Bettcher provisionally uses the word to mean any negative attitudes (hate, contempt, disapproval) directed toward trans people because of their being trans. Transphobia is then the hostile response to perceived violations of heteronormative gender norms and/or to challenges to the gender binary (Bettcher, 2015).

She reinforces the notion that transphobia is not correlated to the general phobia which implies an irrational fear of some sorts, but instead is a part of a broader social context that systematically disadvantages trans people and promotes and rewards anti-trans sentiment (Bettcher, 2015). Therefore, it carries a rationality that is based in heteronormative social contexts. Such an ideology- which is heterosexual and patriarchal- is pervasive with Irish historical narratives as legislation, social standards, religion, and infrastructures have been gendered and heterosexual (Million, 2012). Accordingly, transphobia exists because we live in a society that legislates and morally polices a heterosexual norm.

Culture

Isolation



*Taken from a pediatric ward showing the emotional toll of being in hospital from a patient's perspective

Isolation is a picture that shows the emotional toll of being a patient, particularly from a patient's perspective. Beyond the sick role and the emotional manifestation of illness, it represents the bigger picture of how medicine and the experience of medicine itself can impact the patient experience. Medicine has had a long-standing culture of dominance, by using a strictly biomedical model, where an illness is always explained with one or more physical malfunctions (Rocca, 2020). However, this model is reductive because it has the tendency to treat existential issues and life events as medical ones, and then exclusively as biomedical problems; it then objectifies the patient and reduces them to a passive target of therapy, rather than seen as an active actor in healing (Rocca, 2020).

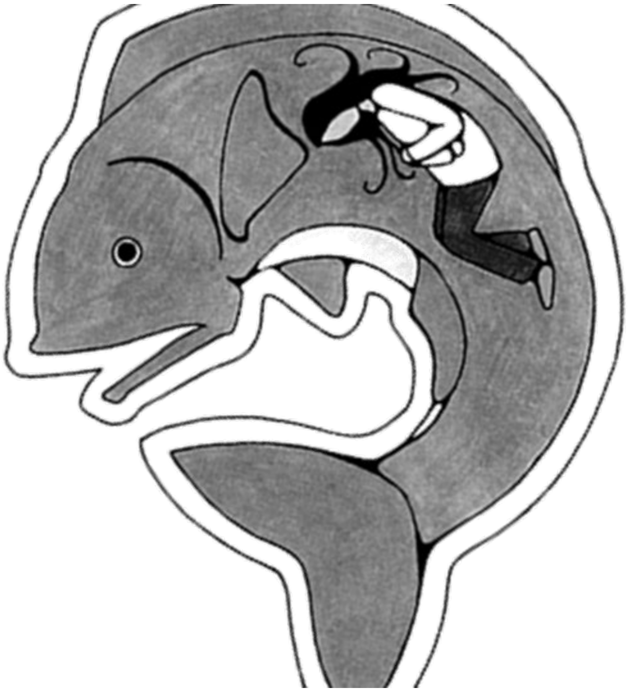
This model has then been applied to trans healthcare, which has been a long-standing issue for transgender people in accessing quality care, especially at the primary level. The current relationship between transgendered people and the medical community is contentious. There certainly appears to be a deep conflict among transsexuals and general practitioners which reinforces the institutional exclusion of transgendered people (Barnes, 2001). A general lack of awareness and sensitivity to transgenders in the health community is evident by many personal case stories of maltreatment at the hands of professional health care providers (Barnes, 2001). In addition, care is centered around the over-medicalization of trans bodies, with many trans people reporting a lack of social and psychological support at the primary care level.

The purpose of the public health system is to improve aggregate health outcomes while focusing on the needs of the most disadvantaged (Gostin & Powers, 2006). Therefore, our public health care system is the causes of the disproportionate rates of health problems facing trans people because it disregards the needs of this marginalized group. Primary health care services for transgender individuals are the same as those for the general population. However, they need to be able to find a culturally competent health care provider and gain access to screening, prevention, and diagnosis and treatment services, including referrals to specialists (Taylor, Jantzen, & Clow, 2013). The primary healthcare needs of transgender people are particularly acute because like all sexual minority populations, they face undue health disparities and inequities that should be addressed (Mollen, 2012). Yet, the transgender community has had difficulties with access not only to care related to the gender issues, but to primary health care in general (Taylor, Jantzen, & Clow, 2013). Access to primary healthcare for transgender individuals is never as simple as making an appointment because of the highly specialized and often stigmatizing issues facing trans people. Transgender experiences with primary health care include avoidance of health care, refusal of care, difficulties getting referrals, lack of provider information on transgender issues, and uncomfortable or problematic interpersonal interactions (Taylor, Jantzen, & Clow, 2013).

Our medical system also limits and regulates how practitioners focus narrowly on transition related care and gender issues, rather than primary care (Feldman and

Goldberg 2006). Stigma and discrimination lead to negative encounters of trans people with the health care system that seems to ignore issues pertinent them and instead focuses on the overmedicalization of their pathology. When a marginalized group feel the need to avoid health services, not only does their health and well-being suffer, but the ignorance about their health also persists.

Structure



Institutional Paradox

*Picture of a GP examination bed taken from hospital training room

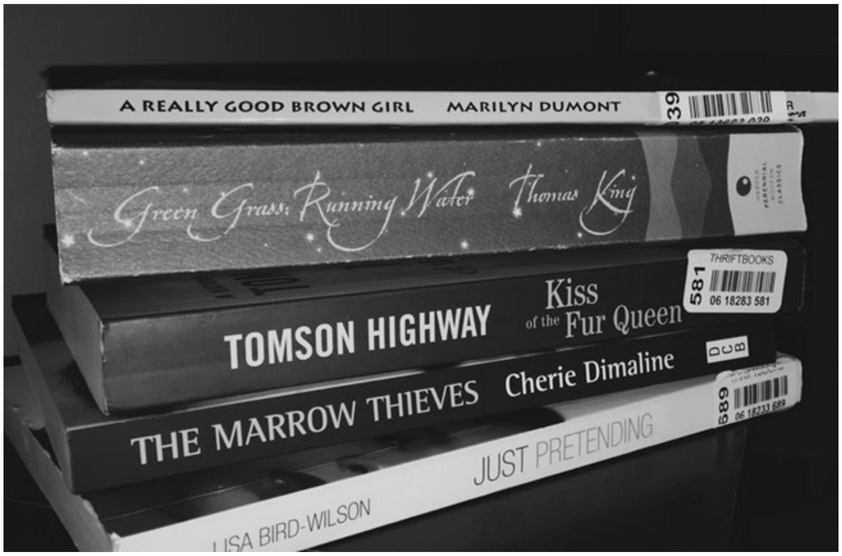
Institutional paradox is a picture of an examination bed which is common to all GP clinics. It is meant to represent the structural ineptness of primary care centers in meeting the health needs of transgender people. Beyond the lack of knowledge on the part of family doctors in Ireland, specific trans related healthcare services for both adults and adolescents, are severely lacking (TENI, 2021). Specifically, we see that trans healthcare delivery for young persons in Ireland is essentially non-existent and contributes to unnecessary risk to young people's mental health. In fact, the average young person must wait up to 5 years to have their first appointment in relation to their gender identify, and when one considers the data on mental health conditions experienced by trans people, this delay is a cause for concern (TENI, 2021).

When trans people eventually get access to health services in Ireland, the administrative process is complicated, unofficial, and very difficult to maneuver. Trans people report an extensive process of meetings with designated psychologists who are only located in certain parts of the country and with very limited availability. Without confirmation of a trans identity from these psychologists, treatment cannot be started. In addition, this identification needs to be verified by a second psychologist, which adds to the duration to access treatment (TENI, 2021). When treatment can eventually begin, that is when many trans people face primary care providers who do not have the knowledge to prescribe a hormone regimen and many trans people find themselves without access to treatment. There are also very few designated general practitioners who are experts in this field.

All these barriers to access have forced some trans people to manipulate different areas of the medical community to circumvent some of these regulations, but most transgender people must adhere to the criteria set forth by the medical institutions governing their transition (TENI, 2021). Therefore, a lot of people are left without treatment. In addition, many people are not able to afford the extremely high costs of sex re-assignment surgery, which is not available in Ireland at the time of writing. Therefore, many people are forced to raise the money to travel and have procedures completed abroad. Unfortunately, many transgender individuals under-utilize or avoid health care services altogether. A study conducted in 2013, 29% of transgender individuals who needed emergency services were unable to access them (Camilleri, 2017). Understanding what prevents transgender individuals from accessing health care, including environmental, social, and legal barriers, is crucial for improving the overall health and wellbeing of this population.

Critical

Trans Inclusion



*Collection of books by authors covering a range of topics such as queer identity and gender

Trans inclusion is an important concept because it gives power and a voice to transgender people, about issues that pertain to them. This picture attempts to fix the critical thinking issue of cultivated ignorance, which is the root of inequity faced by transgender people. In healthcare, for too long has the trans perspective been clinical, unknowledgeable, misinformed, and told from the perspective of clinicians with little insight into the needs of the community. What this picture symbolizes is that if marginalized groups, especially trans people, are given the opportunity to tell their own stories and explain their needs, steps can be taken, especially at the primary care level, to improve quality care delivery as well as access.

The little information about trans health is often disconnected from the inner workings of the trans community. By listening to advocates of trans health and trans alliances, we can see that transition-related health care should be included under the rubric of primary health care because it is apparent that there are many barriers limiting access to these services. Without public health insurance coverage for surgery, hormones and other therapies, the costs of transitioning may be crippling for some while making them entirely inaccessible to others. Economic constraints are of particular concern for transgender populations because they are at high risk of poverty, job insecurity and homelessness (Taylor, Jantzen, & Clow, 2013). This becomes an issue of equity because a marginalized group that already faces economic disadvantages is further deprived since their health is determined by their ability to pay, rather than a basic human right.

There is a need for trans people to feel a sense of connectedness and to have a safe place to belong and have their needs addressed. It is past time to develop inclusive and positive approaches to health research, policy, and practice for transgender populations.

A promising new initiative to learn from is the Canada Trans Health Project, which is a community-based research project that is investigating the impact of social exclusion and discrimination on the health of trans people in an Ontario population (Gapka & Raj, 2003). Their position paper and resolution adopted by the Ontario Public Health Association outlines a series of recommendations to improve the standards of trans health services. In relation to medical, health, and clinical support, they recommend an educational protocol for combined health and community centre for trans people. To be an effective example of a community health model, it will incorporate an anti-oppression framework and a harm-reduction approach in a non-forensic environment; a repository of a diverse range of relevant resources and supports. They aim to train trans positive, trans-inclusive and trans responsive medical care professionals, who are knowledgeable in all aspects of transgendered health care needs. There should also be advocacy from a medico-political point for comprehensive medical and clinical services which include primary health, sex-reassignment therapies, mental health and addiction treatment, and sexual health advocacy (Gapka & Raj, 2003).

The effectiveness of this protocol is that it focuses directly on the needs of transgender people. It eliminates the stigma and lack of awareness in the primary system which acts a barrier for many trans people. In addition, it advocates for increased public funding and resources for trans services, which are often left out of health policy.

The 4 Photos Together

Together

The photos work together to highlight the concept that disproportionate health outcomes facing trans people in an intersectional issue which is quite complex. Ireland should establish more comprehensive transgender health centers and services since our current public system is not effective at meeting the specialized needs of the trans community. As the trans community grows in visibility, our public system will grow more incapable of addressing issues specific to trans people. This group is highly marginalized and faces undue social discrimination, hence a social justice framework requires our public system to pay more attention to their needs. Because of the current lack in specialized trans-positive services, trans people in Ireland face disproportionate health issues and barriers to access care. The recommendations of more inclusive education, centers, and services by trans advocacy groups and allies will improve the goal of our public system in ensuring at every Irish person has access to appropriate and capable health care.

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Exercise q.d.

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As I'm writing to you, we are amidst the lifting of the final COVID-19 restrictions. The cautious prospect of the COVID-19 pandemic coming to an end is on all our minds. Though we are not in the clear yet, we can look to the future and agree that the world we left in March 2020 was different to the one we will be returning too. COVID-19 has left us with many new issues to add to our unresolved problems. Before and throughout the pandemic the subject of non-communicable diseases remained a topic of discussion (1-7). The COVID-19 pandemic highlighted the vulnerability of people who live with one or multiple chronic diseases (1, 7). The prevalence of non-communicable diseases and their growth within the Irish population was concerning before the pandemic (8, 9). Cardiovascular diseases, chronic respiratory diseases, diabetes, and malignancy are the leading causes of death and disability in Ireland (8, 9). Moreover, the rising proportion of adults and children who are overweight or obese is extremely worrying as a high BMI is one of the major risk factors for non-communicable diseases (1, 7). Prevention and control of non-communicable diseases remained crucial during this pandemic as they are a major risk factors for COVID-19 patients (1, 5, 7). However, the restrictive measures like social distancing, travel limitations and lockdowns implemented to diminish the spread of infection in Ireland unfortunately impacted people living with non-communicable diseases by hampering their activity, capacity to eat healthily and access to preventive/health promotion facilities (1, 7). I speak from experience on this point as during my first two years of medical school I was involved in a rehabilitation service where patients with cardiovascular disease came twice weekly to a prescribed exercise class.

During my involvement with MedEx UL, I observed a system that functioned extremely well. As we will discuss later the idea of prescribing exercise as medication is concept with a spectrum of views associated with it (9, 10). Every medical student learns that the 1st line treatment for cardiovascular disease is lifestyle changes – increase physical activity, dietary modification, and smoking cessation (2-6, 9, 11-13). Most of the population are familiar with the phrase ‘eat less, move more’ (9, 10). However, this blanket statement is open to interpretation by the recipient if not adequately explained by the care provider (9). MedEx UL is a community-based rehabilitation programme where patients with cardiovascular disease received exercise as a form of medication (13). Referrals were accepted from general practitioners and hospitals (13). The service provides aerobic exercise classes supervised by health professionals as well as educational workshops about nutrition and peer-support through social gatherings after class (13). As a medical student I was partnered with a patient where I learnt about his medical journey up to this point. I was greatly surprised how remarkably positive he reflected on his medical history now. He admitted that even though he did not live the healthiest up until his diagnosis of cardiovascular disease, his diagnosis and enrolment into the MedEx programme had given him a new lease on life. I realised through my time with him and his friends on the MedEx that exercise is an outstanding way to improve one’s health while simultaneously boosting self-confidence. Exercise has many obvious health benefits both physical and mentally with almost no side effects (13). I found it awe-inspiring to observe the remarkable progress the MedEx patients had made in bettering their health. It prompted me to research further the extensive list of benefits that exercise can offer everyone.

Firstly, let us take a whistle stop tour through the history of exercise and medicine. Exercise in the ancient civilisations of China and Greek was seen as essential element for good health (3, 14). Physical activity has historically always been a component of human life through labour and remains so in many regions of the world today (3, 14). However, this theory was not enduring and by the early 20th century, opinions about exercise were now entirely the opposite (3, 14). Our grandparents would have been warned that exercise was dangerous and treatment for many illnesses such as ischaemic heart disease was complete bed rest (3, 14). Medical professors at Cambridge and Oxford, even did studies analysing the relative risks of exercise by contrasting their rowing athletes to scholars as recently as the 1950s (3). Thankfully by the midpoint of the 20th century opinions began to sway back to thinking of exercise as healthy (3, 14). Thorough epidemiologic studies have been conducted researching the link between physical inactivity and chronic disease (3). In 2007 the American College of Sports Medicine, introduced an international programme prompting all healthcare professionals to encourage their patients to exercise as a way of preventing, controlling, or treating their non-communicable diseases (3). From this initiative, the term ‘Exercise is Medicine’ was born (3). The current guidelines recommended by the American College of Sport Medicine is that an adult should participate in at least 150 minutes of moderate aerobic activity per week (1-7, 9, 11, 12, 15-19).

From 2007 to present there has been thousands of studies furthering the evidence that physical inactivity is responsible for a percentage of coronary artery disease, type 2 diabetes and malignancies like colon and breast cancer (1-6, 9, 11, 12, 17-19). Physical inactivity is characterized as a risk factor as dangerous as smoking or obesity to personal health (2, 3). A fascinating action I saw when researching these facts was that if everyone embraced the recommend guidelines of exercising for just 30 minutes every weekday, we could increase our global life expectancy by 8 months (3). Unfortunately, despite all our knowledge about exercise and its positive effects on health, the 2025 global physical activity target won't be achieved (2, 3). This means that up to 1.4 billion people will be at risk of developing new or exacerbating existing non-communicable diseases (3). So, looking at all the risk associated with physical inactivity, how can we change our current situation? Millions of people are developing these non-communicable diseases because of risk factors such as physical inactivity (2, 3, 6, 18). This could read, exercise is preventing millions of people from developing coronary heart disease, type 2 diabetes, and some cancers (2, 3). Or even, exercise is helping millions of people dealing with ischaemic heart disease, type 2 diabetes, and certain cancers (9). Many people believe when they begin taking medications for their chronic illnesses that they have gone beyond the point where exercise can help them (9). I see it on clinical placement every day, the doctor will be speaking about exercise and weight loss while the patient is looking down at their prescription - the most important object in the room, the main objective of their visit. Perhaps effectively prescribing exercise as medication through exercise classes or wearable technology physical fitness monitors could shift the public perception of exercise being a recommendation to a treatment (9). Additionally, self-directed exercise is free, even my suggestion of prescribe exercise through classes or monitors would be cheaper to the health system than the billions the Irish government spends on non-communicable disease medications each year (8). Furthermore, exercise has far fewer side effects than those of their pharmacological counterparts (3, 9, 10). Two of those side-effects are increased self-esteem and improved quality of life (9, 10, 13).

It's not just cardiovascular diseases, chronic respiratory diseases, diabetes, and malignancy that exercise can help heal (1-6, 9, 11, 12, 17-19). How many of us go for a run to clear our head? Exercise has clear connections with mental health and stress but remarkable it also revives brain function (17, 20-22). The theory most of us have come to believe is that as a child you are creating new neurons constantly but this ceases in adulthood when the brain is fully matured (15, 22). Some of you may laugh at the though of an 18-year-old being fully mature, and you'd be right. An adult brain still has the capability to generate new neurons (15, 22). In the 1990s mice studies showed that running can create new neurons within the brain's hippocampus, an area associated with memory (22). So, we've seen how exercise is an effective treatment for coronary artery disease, type 2 diabetes and certain cancers but can we add Alzheimer's to the list? It appears we can (15). It is simple to understand how exercise aids your cardiovascular system (21, 22). As you exercise, your body's muscles demand more oxygen which your cardiovascular system must supply, so over time your heart and blood vessels increase in size and strength to support this (21, 22). Some of you may argue that you do you best thinking while jogging; however, the mechanism is a bit more complex to figure out (22). One thing is certain though, we do not ‘run’ on autopilot (22). Exercise seems to be both a cognitive and physical activity (10, 15, 21, 22). If we can understand this balance, it’s possible exercise could enhance people’s cognition as they age (10, 15, 21, 22). Studies on hospitalised dementia patients have already shown the benefits of adding small amounts of exercise into their treatment plan greatly improved their neuropsychiatric symptoms and signs (15). Astonishingly positive results were seen in this study after just two weeks of exercise classes and these participants were in moderate stages of dementia (15). So, to add to my point, perhaps exercise has a preventive and therapeutic effect on major neurocognitive disorders (15).

Obliviously we couldn’t overlook the enormous implications that exercise has on mental health (10, 17, 20, 21, 23, 24). A sensitive subject but a very important one, especially during the COVID-19 pandemic when we were all forced into lockdown for our own health and everyone else’s (10, 21, 23, 24). Many of us grappled with the social isolation and the uncertainty of living in a global pandemic (23, 24). Many people struggle with both these anxieties and cardiovascular disease (20). The link has been well documented, that there is a direct relationship between high anxiety levels and worse cardiac outcomes (20). Anxiety disorders are the most diagnosed mental illness and account for a huge portion of the national healthcare expenditure (8, 20). This can be because, as many of us know, anxiety can manifest as physical illness (20, 23, 24). Where cardiovascular disease and anxiety have a positive correlation, exercise and anxiety are suggested to have an inverse relationship (20, 24). It appears that exercising on a regular basis decreases your chance of being diagnosed with generalised anxiety disorder (20, 24). Could it be that less anxious people tend to partake in physical activity or that by engaging in exercise, you are literally burning calories and anxiety (20, 24). The true facts remain vague (20), but I believe that exercise is worth trying for anyone during this stressful time and I intend to keep running off my worries or burning them off in the Irish sea.

Depression is another risk factor for cardiovascular disease (17). Depressive disorders are common with tens of millions of people suffering with them (17, 23, 24). As the personal and societal burden of depression is so immense tactics for combating these disorders are hastily required (17). One risk factor for depression is low physical activity (17, 23, 24). Half of people dealing with a depressive disorder do not meet their recommended weekly exercise quota (17, 24). Furthermore, structured exercise programmes have been shown to reduce depressive symptoms in those with depressive disorders (17, 24). I can tell you with confidence having looked up the literature for you, that exercise is considered a protective agent against the onset of depression in individuals regardless of their age, gender, or geographical location (17). Therefore, I think this is a significant reason for us to all try to be more activity, as mental illnesses can affect any of us. Though some people are more genetically suspectable to depressive disorders than others (17), I feel the last year and a half has been extremely testing on all of us.

The COVID-19 pandemic has been especially hard on our elderly population (10, 21, 23). Generally, they are less familiar with technology, something we used to bring us all closer when we needed to be apart (23). They were also classified as one of the high-risk groups (10, 21, 23). Elderly people with multiple comorbidities like hypertension, diabetes, cardiovascular disease, or respiratory conditions were asked to cocoon, cutting themselves off from the world beyond their front door (10, 21, 23). Though this was the best option to keep them safe, this quarantine may have had secondary impacts on secluded people's health (10, 21, 23). When Ireland's first lockdown was announced people had to quickly react to a new way of living and people's activity dropped (24). These sudden changes were especially felt by people with non-communicable diseases who require a certain level of physical active to maintain decent health (1, 7). In recent times, older people haven't been able to lead an active lifestyle, which they need to slow the effects of aging and its complimentary diseases (10, 15, 21, 23). Exercise in advanced age prevents frailty, risk of falls and cognitive decline which will inversely raise their self-esteem and allow them to continue living their independent lives (10, 15, 21). When asked about the stress factors contributing to their low moods many elderlies reported their fears of extended lockdowns, infection, boredom, frustration, and loneliness (10, 21, 23). I remember in January I was working in my local pharmacy when we entered our 3rd lockdown. One elderly resident came in to read the paper on the pharmacy's chairs designated for people waiting on prescription. When I approached him to ask was, he seen to, he replied that he was only here for company. He lived alone and used to walk up to the café to meet neighbours every Saturday for two hours. He explained that the pharmacy was the only place left open in our village, so he came here as an escape from his relentless loneliness. He continued that as time passed, he became less worries about COVID-19 but feared the merciless loneliness which was consuming him. Now that the world is reopening, I often think of that gentleman sitting in our village café. I imagine that many elderly people are akin to him. I feel exercise programmes like MedEx which I attended before the pandemic have become even more valuable now as exercise has a double therapeutic effect of directly treating non-communicable diseases and the mental stressors (10, 21, 23). One of MedEx's biggest draws was the sense of community it had (13), which elderly people are craving after a year and a half of solitude (10, 21, 23).

Although during the pandemic outdoor activities were still available (24). I would know being from Co. Wicklow, day-trippers swarmed our hiking trails and beaches for sea-swimming. However, incidences and severity of obesity and non-communicable diseases increased (1, 7). Therefore, it's clear that some people need a bit of extra support when it comes to remaining active (9). The benefits of MedEx, routine and encouragement; were proven when unfortunately, the service was suspended during the Covid-19 pandemic. My patient who was thriving, is now struggling; he is regressing into old habits, and he is gaining weight from being constantly at home. Although he is happy being surrounded by his family; he is frustrated at his inability to motivate himself to exercise. He admits that he needs an external influence to push him. I sympathise with him as he was jubilant last year when I attended MedEx with him. MedEx helped to dismantle barriers patients had and encouraged them to become healthier versions of themselves (13).

We all know that doing any exercise is better than nothing, but perhaps doctors should prescribe exercise with clear cut instructions, for instance prescribing an exercise programme (21). The importance of exercise is to enhance physical fitness components like cardiorespiratory fitness, coordination-agility and muscular strength which relate to physiological functions of the prime organ systems – respiratory, circulatory, nervous, muscular and skeletal systems; but it also improves the functioning of other systems like endocrine, gastro-intestinal, immune, and renal systems (21, 22). These relationships between our body's organ systems and exercise prevent against frailty and improve functional reserve (10, 21). Therefore, exercise is exceptionally important for older people during the pandemic because preserving physiological function and conserving the organ systems could aid the fight against the severity and mental and physical complications of COVID-19 (10, 21).

I believe a multicomponent exercise programme like MedEx which incorporates circuit training and gym machines under trainer supervision, would be most appropriate for older people (10, 13, 21). The programme could be tailored to suit elderly living independently or in a community setting (10, 21). The multicomponent curriculum should include aerobic, balance, coordination, mobility, and resistance training exercise, as well as cognitive training potentially, for maximum benefit (10, 21).

If patients do not feel comfortable returning to a world where COVID-19 is still as large GPs should accommodate them (21). Therefore, other options are available. The COVID-19 pandemic has shown us how limitless the potential of technology can be. There were friendly 5km challenges, exercise classes over video chat and marathons being run remotely. I participated in two of the three, I never manged to run a marathon. If you partook in any of these activities, you may be familiar with the technology I'm talking about. The use of activity trackers may be more accessible to both general practitioners and patients instead of attending affiliated exercise classes (9, 21). In this case, a GP could prescribe certain exercises like walking inside or outside of the house for aerobic exercise as well as squatting holding a chair, stepping up and down off a step, lifting objects of moderate weight like vegetables or rice for resistance training (21). The GP can set fitness targets with patients and the wearable physical fitness monitors will recorded the exercise done at home (9). Technological advances like this are rapidly progressing in conjunction with diabetes management where smartphone applications, glucose monitors, wearable physical fitness monitor and closed-loop systems all work to help people achieve the exercise goals needed to control their diabetes (16). The technology aids the challenges related to exercise frequency, duration, mode, and intensity (16).

Finally, I think the COVID-19 pandemic has been difficult for us all, especially the higher risk populations (10, 21, 23). Involving patients in supervised exercise classes would be safest and most beneficial as they are provided with a social outlet (10, 13, 21). However, if they would prefer not to attend, technology has advanced so that in collaboration with their GP and wearable fitness monitor, a patient can ensure that their daily exercise requirement is being met (9, 21). Prescribing exercise has proven preventive and therapeutic benefits for many diseases both physical and mental (2, 3, 9, 10, 15, 21, 23). Physical activity could be considered a polypill to work as a first line treatment or in conjunction with medication (9, 21). When I am qualified, I hope that I can emulate the positive mindset that MedEx has, to inspire my future patients to pursue exercise as a form of medication.

Word Count: 2997 (excl. references).

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Finding meaning in a modern world and renewing our purpose in General Practice

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Cheltenham: noun; a city in north Gloucestershire host to horse racing festivals; a style of print.

Cheltenham-ing: adj; to mass socialize with reckless abandon directly contravening overwhelming scientific consensus to the contrary.

2020 started as the year to be remembered for the Australian wildfires that destroyed unimaginable swathes of natural habitats, with human efforts to contain it humbled. A matter of weeks later a novel coronavirus originating from Wuhan, China entered the fray altering life events for the global population in its wake. One of the lasting images of 2020 was of the masses attending the Cheltenham racing festival while the first COVID wave had begun in earnest. While this event appeared in real-time, and more so retrospectively, as reckless it was in fact endorsed by government approval despite overwhelming scientific evidence to the contrary. If those who attended had a chance to do so again with the benefit of hindsight, would they still make that journey? Since March 2020 COVID-19 has dominated print, television and social media, as well as water cooler conversations (the virtual version of course). What has been striking however is how few column inches or commentary is devoted to why this pandemic has come to pass. Perhaps the reason that conspiracy theories have gained such traction is because of the startling void left in explaining how this pandemic was born.

A non-peer reviewed back of the envelope analysis of the literature

Continual medical education, webinars, grand rounds and journal clubs are how most healthcare professionals stay up to date. However, it has been noticeable how little is written about why COVID happened and how we should act to prevent the next pandemic. A cursory search in the BMJ, Lancet, New England Medical Journal and JAMA for "COVID" and "cause" in 2020 resulted in 248, 274, 170 and 323 results respectively. On perusal of these entries there were only 7 that addressed the root cause of the pandemic or how we may prevent the next one. There was no shortage of studies examining the efficacy of hydroxychloroquine, all cause mortalities, the benefits of lying patients prone, the nuances of cloth versus respirator masks and the synergistic effects of non-communicable diseases and COVID. This is consistent with our disease-care model of healthcare which is reactive rather than protective in nature. Only the Lancet had exclusively published on the connection between climate change and zoonotic causes of the COVID pandemic. There was a notable shortage of editorials or opinions about the issues of the global food system. One May 2020 Lancet article, by respected author on nutrition Marion Nestle, did expressly call for a change on the global food system, citing issues with its "abundance of cheap food at the expense of health and environmental sustainability". A July 2020 BMJ article by editor in chief Fiona Godlee entitled "COVID 19: what we eat matters all the more now" did address the syndemic effect of COVID-19 with chronic disease, the major driver of which is what we eat. But overall there was a paucity of analysis advising us how we may prevent the next pandemic.

COVID-19 is not a Black Swan event

COVID-19 is frequently described as something that could not have been predicted or a freak occurrence event, yet the infectious disease literature differs. Outbreaks arrive with surprising cadence, and if anything, we are now seeing them more frequently. As recently as December 2019 an issue of Infectious Disease Clinics of North America warned that "novel highly pathogenic viruses crossing the animal-human barrier remain a major threat to global health security." At time of publication, Wuhan had already gone into lock down. Nomenclature matters, and that COVID-19 is rarely named as a zoonotic disease allows its existence to appear a random occurrence. The 2009 swine flu pandemic was rebranded as H1N1 and thereby distanced from its zoonotic origin. It is estimated that 60% of emerging infectious diseases are of animal origin1. Explanations include how our globally consumptive way of living has invaded and eroded wildlife habitats, markedly reducing biodiversity and natural barriers and the ever greater intensification and stressing of farmed animals. Yet the vast majority of global meat consumption comes from factory farmed food. The wet markets in Wuhan allow us to feel like COVID-19 is an exotic outlier, but why couldn't the next outbreak be Irish? The H1N1 outbreak started in Mexico, but with over one million pigs in Ireland (half of which in only 40 farms), why not the next outbreak in Monaghan? With the current Chinese outbreak of African swine flu, our order book has conversely swollen to meet Eastern demand.

Diet is the denominator

Anthnoy Fauci has stated "it boggles my mind how when we have so many diseases that emanate out of unusual human-animal interface that we don't just shut it down". If the next pandemic is predicted to be avian H5N1 or H7N9, should we act differently now to prevent it occurring? Is the annual factory farming of 70 billion chickens in cramped conditions every year conducive to zoonotic transmission of the next avian flu? Our food choices don't just affect global health from carbon emissions, antibiotic resistance and future pandemic risk, but of course our personal health. Transitioning to healthier plant based choices will not only mediate the risk of the next pandemic, they will also decrease the rates of chronic disease that have shown to be synergistic with SARS, MERS and COVID-19. That is to say the same diet that can protect us from the worst effects of COVID-19 can also help prevent the next outbreak. This is planetary health in a nutshell; living within our planet's natural boundaries, not as a concession, but to live a healthier and happier life.

Normal is what got us here

UN Secretary General Antonio Guterres recently stated that "Humanity is waging a war on nature". A retrospective analysis of how we have dealt with the climate crisis in the coming decades will de damning. We will no longer be able to say we were uninformed. Unless the conversation in the news cycle, medical meetings and journals changes and begins to address the root cause of not only COVID-19 but also the next pandemic threat, then are we as a profession and as a society akin to the masses at Cheltenham in 2020? The major geological event of our planet's history, the human driven melting of polar ice, is happening in our lifetime yet collectively we are not acting in accordance with the overwhelming scientific advice to stop and act. Is the Cheltenham festival a microcosm of our global response to climate and biodiversity breakdown? As the summer approaches and the clamor for a reprieve in restrictions so that we may again enjoy a cheap flight to the sun, ask if we are behaving any differently? The COVID-19 vaccines will undoubtedly be remembered as one of our greatest achievements, but if they are used to accelerate a return to business as usual then business as usual is what we can expect i.e., wildfires and pandemics.

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The media are responsible for eating disorders

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Introduction

In a study from the Medical Anthropology Journal, adolescent girls described the ideal women as 5'7, size 5, 45 kgs with blonde hair and blue eyes (1). This idealisation of a woman's bodily features may seem harmless. However, when females do not and cannot achieve these slender beauty standards, problems ensue (2). The internalization of such extreme and unattainable standards of beauty can lead to increased levels of body dissatisfaction, low esteem or even eating disorders (3, 4). Furthermore, eating disorders increase the risk of onset of obesity, substance abuse and depression (5).

Out of the features described above, idealisation of the thin body feature has been society's focus, especially in women, since the early 1920s (6). Adolescent girls from a very young age are subjected to the societal pressure of the ideal body image and when females do not fit the ideal body standards, they agonize about the shape of their bodies (7). The body dissatisfaction associated with this encourages many girls and women to diet in order to manipulate their size and shape (2). Girls and women take up dangerous dieting habits which often induces eating disorders like anorexia nervosa and bulimia nervosa (8).

Most of the research that is available on eating disorders focuses on the two most prevalent eating disorders - anorexia nervosa and bulimia nervosa. Anorexia nervosa is a potentially life-threatening disorder characterized by the refusal to eat enough to maintain body weight below the norm for the person's age and weight (6). Bulimia nervosa is a related disorder characterized by patterns of bingeing (eating large quantities of food in a short period of time) followed by purging (inducing vomiting, abusing laxatives and diuretics and, severe fasting and exercising) (6). Epidemiological evidence from Morris et al. (9) outlines that the incidence of eating disorders among adolescent girls has increased drastically over the past 50 years. Clinical eating disorders are prevalent in about 2-3% of adolescent girls and adult females of the Western population (10). Although eating disorders are prevalent in both males and females, the incidence of eating disorders in females against males is 3:1 (11). Hence, this review will focus on the eating disorders of females.

In terms of understanding the factors that contribute to the high incidence of anorexia and bulimia, there are four major risk factors as outlined by Harrison et al. (6) – biological, psychological, familial and sociocultural. Out of the four, the sociocultural factor is paramount in promoting and maintaining eating disorders (12). Many researchers have suspected that mass media, an important component of the sociocultural risk factor, plays a significant role in the rise in incidence of eating disorders (13-15). Although several studies present a compelling argument, they do not provide a conclusive evidence of the causal role of media on eating disorders and thus media's influence on people's disordered eating behaviour is not well understood. This review attempts to present the current research that is available on why media is responsible for the high prevalence of eating disorders.

Furthermore, since the causality of the eating disorders is multi-factorial as evidenced by Harrison et al. (6) and Irving (16), this review also presents the counterargument of why factors other than media play a role in the increased incidence of eating pathology. Although the other contributing factors are multiple, I will focus on peer and family influence, childhood trauma and, the value of thinness.

Discussion

Social learning and comparison theory

Before we dive into the argument of whether and to what extent the media is responsible in fostering eating disorder patterns, it is important to understand the theoretical framework of how media's influence of spreading the idealised thin body image motivates people to adopt extreme dieting habits. An important term that is often used to explain this theoretical framework is 'modelling' which occurs when individuals copy behaviours they see others perform (17).

The concept of 'prevalence' from Bandura's (18) social learning theory provides an explanation to this theoretical principle (6). The more prevalent an event is, the more likely the behaviour associated with that event is modelled (6). Similarly, in the context of media, as images of the thin idealised body image prevails, modelling of eating disorder behaviours should also prevail. This theory is evident in the statistic reported by Boskind-White and White (19), "the highest reported prevalence of disordered eating occurred during the 1920s and 1980s, the two periods during which the 'ideal woman' was thinnest in US history".

Social comparison is another concept that explains media's effect on people's disordered eating behaviours. To put it simply, social comparison refers to a person's tendency to compare themselves to other people, this includes a person in real life or in the media like a celebrity. Festinger (20) theorized in his theory of social comparison that people have a natural drive to compare themselves and they often compare themselves to people with similar abilities or opinions. However, in the absence of people with similar social standards, people tend to make inaccurate self-evaluations of themselves (20). Models are portrayed in magazines and televisions and when women compare themselves to these models, who have prepared painstakingly to appear attractive, they are likely to make distorted evaluations of their own attractiveness (21). Irving's (16) finding supports Festinger's theory (20) - when subjects are shown images of thinner models, they reported a lower level of body satisfaction and self-esteem than when they were shown images of larger models.

Hence, there are compelling theoretical reasons to expect a relation between media and eating disorders.

Influence of Media

The increase in incidence of eating disorders over the past 50 years has been a major cause for concern. It has stimulated an extensive amount of research on the causation of the high prevalence of eating disorders. Many researchers have long suspected that media play a significant role in transmitting the societal norms and values of thinness (6). Transmission of the idealised thin body image by the media has been thought to promote and maintain eating disorders. With the theoretical basis of Bandura's social learning theory (18) and Festinger's social comparison theory (20) illustrating media's influence on people's disordered eating behaviour, several studies have investigated the link between eating disorders and media exposure.

Irving (16), Richins (21) and Stice et al. (13) documented an increase in eating disorder symptomatology in women following exposure of a variety of media-generated images. Stice et al. (13) went a step further in investigating the link between eating disorders and media exposure. Their study not only found a significant direct link between media exposure and eating disorders, they discovered endorsement of gender roles as a mediating factor for media's influence on eating disorder (13). The media bombards the audience with social norms of masculinity and femininity which results in increased stereotypes of social roles of both genders (13). For example, large, muscular women are often oppressed in the society as a bulky, muscular body type is stereotyped to be a masculine feature. Gender role endorsement's mediating effect on eating disorders is evidenced in Lampis et al. study (22) which documented that adolescents who endorsed a gender role that is socially considered inconsistent from their biological sex (girls with higher levels of masculinity and boys with higher levels of femininity) are likely to show higher level of bulimia and drive of thinness.

Several studies like the Hamilton and Waller study (23) showed only anorexic and bulimic women demonstrated increased body overestimation in response to exposure of media generated images. While Hamilton and Waller (23) presented a convincing argument, their study was riddled with multiple limitations like the use of only one type of media and the use of a small cohort of subjects with eating disorders in their study. Further research on anorexic and bulimic subjects should involve other types of media like television to obtain a more standardised result.

Furthermore, a handful of studies like Cusumano and Thompson's study (24) found no significant correlation between media exposure and eating disorder when subjects were exposed to a range of body shape images from popular magazines. Cusumano and Thompson (24) outlined rationalisations for their failure in finding a correlation. This included the effect of desensitization of the subjects due to constant bombardment of the idealised thin body images. The 'perfect figure' has become a common sight for numerous avid readers of these popular magazines that their body satisfaction is no longer affected by the exposure of such images. Another possible reason for failure is the age groups of the female participants in the study (age 18-49) (24). It is possible that exposure to media may be an important risk factor for eating disorders at certain stages of a woman's life (24). Grogan, Williams, and Connor's study (25) portrayed that out of female participants from age group 10-70, adolescent girls and college women are most affected by poor body image and are more likely to diet. These points depict that while media might play a role in eating disorders, discrepancies in the results of studies investigating the link between media and eating disorders might occur due to these factors.

Overall, these studies do not provide the required qualitative and empirical data to apprehend the link between media exposure and eating disorders. Thus, although it is widely believed that media plays a significant role in transmitting the social norms of thinness and in turn influencing the society to adopt eating disorders, the causal role of media on eating disorder is inconclusive. Further research needs to be carried in larger case-cohort studies, with the prospect of nullifying the limitations associated with most of the current studies like using a wider range of media and abolishing the influence of other factors like peer groups and gender endorsement on eating disorders.

Influence of other factors

Although the influence of media on eating disorders has not been confirmed, it is possible that eating disorders are to some extent fostered by the media, and to some extent by other factors like peer and family influence. Several studies have been carried out to investigate the role of moderators other than media in fostering eating disorders in the society.

Quiles Marcos et al.’s meta-analysis (17) determined that both peers and family influence not only dieting behaviour but also body dissatisfaction and bulimic symptoms in adolescents. An important finding of this study was the variability in the magnitude of eating disorder patterns in certain cases which was thought to occur due to factors like gender, sample country and the type of influence (17). In terms of influence type, out of teasing, modelling of peer groups and encouragement to diet, modelling of peer groups was the strongest influencer. This argument was backed by Crandall’s study (26) which argued that modelling of peer groups was the most important factor responsible for bulimic behaviours. Peer groups influence eating disorder behaviours through modelling of excess dietary restraint, binge behaviour and even vomiting for weight control (17).

While peer and family influence are an important factor, childhood adversity is also thought to contribute to the development of eating disorders. Johnson et al.’s (27) study found that a wide range of childhood adversities tend to be associated with elevated risks for problems with weight and eating during adolescences and early adulthood. The adversities include low paternal affection and care and high paternal unfriendliness, overprotectiveness and seductiveness (27). Furthermore, Johnson et al.’s (27) study portrayed a very interesting finding – maladaptive paternal role plays a more important role than maladaptive maternal role in the development of eating disorders in offspring. Although the findings of this study provide a detailed and methodological basis for the influence of childhood adversity, the findings are based on prospective longitudinal data. Thus, the findings provide compelling support for the hypothesis of childhood adversity’s influence on eating disorders.

Lastly, the value of what thinness symbolises in the sociocultural context is also thought to be a factor responsible for eating disorders. Thinness in the current sociocultural platform symbolises a sign of moral integrity that centres around willpower and self-control (28). Giordano et al. (28) backs this argument with a common western philosophy ‘the Official Doctrine’ (29) that states that one’s ability to master their body and mind is associated with their ability to control their passions and impulses. In the context of thinness, the impulse is hunger - one of the most powerful physiological impulses of the human body (28). This is perhaps why the longer a person with an eating disorder endures the suffering associated with it, the more powerful they feel (28). Ultimately, Giordano et al. (28) suggests that it is this core value of what thinness symbolises in the society that needs to be addressed if we are serious about resolving eating disorders.

Conclusion

To conclude, media’s presentation of the ‘idealised body shape’ is not likely to be the primary cause of all eating disorders. In fact, continuing to blame media risks eclipsing other important factors that are responsible for eating disorders. That includes peer and family influence, childhood adversity and the valuation of thinness as discussed earlier in this review. However, this is not to deny that media’s effect on eating disorders is substantial enough to suggest that media may have practical relevance. Further research on this topic is essential to understand the cause of this highly prevalent disorder and thus devise pertinent treatment programs such as cognitive behavioural therapy that is modulated in tandem to the various aetiological factors of eating disorders to effectively resolve this issue.

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Shopping for Sleeves

Winner of the Sheppard Memorial essay competition 2021, Postgraduate category

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‘Is there something you want to tell me?’, my partner asked incredulously across the breakfast table. I spied my phone in her hand and suddenly developed a pit in my stomach. ‘O no’, I thought, has she finally discovered how much I spent on that last amazon order, I knew I should have deleted the email confirmation! I mumble something incoherent and non-committal back. She turns the phone with a swift flourish to reveal a pop up ad for gastric sleeves - now 25% off and hotel included if you book today! My cornflakes catch in my throat as I breathe a small sigh that she still doesn’t know the extent of my online shopping.....Phewwwww. Swiftly I explain that it’s for work. I’m not entirely sure she believes me but she doesn’t ask any more questions and I take my phone back hastily, casually deleting the incriminating email receipts.

What Facebook advertising and my partner do not realise is that gastric sleeve surgery is by far one of the most popular elective surgeries I have come across since I commenced working in Dublin’s North City Centre. Unfortunately, when patients ring in with questions and complications, all I can offer is a somewhat more refined google search than they themselves can conduct. How does it work? What are the complications? What are the outcomes? And how does it compare to traditional lifestyle measures for weight loss. These are the questions that I hope to answer for you, so that when confronted with a patient contemplating or having had such surgeries, you will at least have a better understanding of the procedure, require less googling and hopefully avoid unwanted Facebook ads on your phone!

It is common knowledge that most westernized countries are struggling to grapple with the obesity epidemic that is plaguing their societies. Over the last two decades we have become increasingly sedentary with little over a third of the Irish population meeting the recommended physical activity levels on a weekly basis. At the same time, we have seen an increasing dependance on convenience foods and sweetened beverages, with over 60% of Irish people consuming at least one portion on a daily basis. Given these facts, there is little surprise that in Ireland now only 37% of our population is considered to have a normal weight, 37% is considered overweight, and 23% of our population is considered obese. This has resulted in a myriad of weight loss solutions becoming available to the Irish public. (1) Surgical options are one such solution. Increasingly popular every year, it is estimated that in 2020 there were over 685,000 bariatric weight loss surgeries conducted worldwide. Gastric sleeves accounted for nearly 50% of these procedures. (2) Most gastric sleeve surgeries are conducted laparoscopically. The anaesthetist passes a boogie, akin to a silicon tube, into the stomach. The surgical team then staples the fundus and greater curvature in a manner parallel to the boogie, removes the rest of the stomach and thus leaves the patient with a much smaller tube like stomach that cannot tolerate as much food. (3)

Most national guidelines still follow the criteria agreed at the 1991 ‘National Institutes of Health’ Consensus Conference, that such weight loss surgery is appropriate for all those with a BMI greater than 40kg/m2 or for those with a BMI greater than 35kg/m2 but who have a serious comorbidity. These patients should also be committed to long term lifestyle changes and have a psychological assessment deeming them fit to undergo the surgery and engage with weight management post operatively. (4) Indeed the HSE referral form for bariatric surgery specifically mentions the criteria of BMI and also asks that the patients have tried a community weight based management programme and are interested in attending such a programme in the future. (5) However, a google search of the private options quickly shows that not all facilities are following this guidance, with some simply requiring a BMI less than 45. Another selling point listed on many websites is that a GP referral is not required. Therefore, unfortunately, often the first we will hear about these procedures is when a patient books in with post-op complications or questions.

So what do we need to be on the lookout for? There is no doubt that most of this patient cohort is at significant risk of anaesthetic and intraoperative complications. Thankfully most patients are managed in hospital for a minimum of 3-5 days to ensure any acute risks such as bleeding (which occurs at the site of anastomosis in 2%) or infection, is identified early. Once discharged these patients are subject to the common post-operative complications such as VTE and pneumonia. However in the ten day post-operative period, those who have undergone gastric sleeve surgery specifically, may also present with peritonitis secondary to anastomotic fistula. This occurs in up to 7% of those who have had a gastric sleeve operation. It is really important that we are aware that the classical signs of peritoneal irritation, such as guarding and rigidity, are often not present in obese patients. Therefore, one of the most important red flags we may see will be a post-operative tachycardia. However, other symptoms noted include fevers, abdominal heaviness and hiccups. Hiccups can also be a symptom of a more chronic fistula at the upper end of stapling, which usually presents in the first three months following surgery. Traditionally patients complain of dysphagia and pain often localized to the left hypochondria or shoulder region. Rarer complications include herniation, small bowel obstruction, gallstones, gastric ulcers, dumping syndrome (characterized by abdominal pain, vomiting and vasomotor symptoms), mesenteric or portal vein thrombosis and neurological complications secondary to thiamine deficiency. (6).

Although nutritional complications such as malnutrition are rare with the gastric sleeve procedure, patients are usually given a progressive meal plan which begins with a liquid diet of around 600 calories a day, 60% of which should be protein, progressing to solid foods with similar protein requirements. Early eating is encouraged to ensure better optimization of bowel function. (6,7) Also it is worth noting that any woman, post gastric sleeve, considering getting pregnant should have vitamin profiles run to ensure no deficiencies in folate or B1.

The most significant long term complication that these patients experience seems to be gastroesophageal reflux. At five years post-op, 31.8% of people experienced a worsening of gastro reflux symptoms and 31.6 percent who had none pre op developed the condition. Overall 14.9% of those who underwent a gastric sleeve required additional surgical or endoscope interventions up to 5 years later (8). A systematic review published in JAMA reported a longterm reoperative rate of 7% due to treatment failure and a 4% rate of incisional hernia development. (9)

So why would our patients undertake such risks to their health? Well firstly for the obvious weight loss. After 1 year the gastric sleeve, akin to other bariatric surgeries such as the roux-en-y, results in an average weight loss of 72.4%. At 5 years this was maintained at a 61.1% decrease in weight from baseline before the surgery. (8) There are few studies evaluating the hormonal impacts of gastric sleeves but it has been shown that in the 6 months following the surgery, ghrelin, also known as the hunger hormone, is decreased. This hormone is usually upregulated one year post dietary weight loss. It accounts for one of the reasons why people regain the weight they have lost. The fact that the gastric sleeve reduces this, indicates it may be easier for people to maintain the weight loss they have experienced at 1 year, although the levels were only measured up to 6 months. (10) The impact on weight related comorbidities is also quite stark , with remission rates in those with type two diabetes recorded at over 60% at 5 years. Those patients with high cholesterol saw a complete remission in 42.6% of cases at 5 years. Hypertension was reduced in 40% of people. Obstructive sleep apnea resolved in 45.8% of people and back or joint pain was resolved in 55% of people and improved in a further 38.3%. A majority of patients also reported a significant improvement in their overall quality of life. (8)

How does this then compare to traditional weight loss through lifestyle measures alone? It is difficult to estimate as there are very few direct comparisons made in the literature. Most surgical papers report weight loss as a percentage and do not provide the absolute weights whilst most lifestyle papers only describe the difference in absolute weight outcomes further confusing the issue. Indeed there are also very few papers comparing the outcomes of the diets commonly subscribed to, such as Weight Watchers or the Atkins Diet. One meta analysis showed that after 12 months of engagement with a prescriptive diet i.e Weight Watchers, most participants lost between 6.3kg and 6.5kg. Low carbohydrate or low fat diets had the most significant effect on weight loss and the authors concluded that it didn't matter which diet a patient ascribed to so long as they adhered to it. (11) Similarly to gastric sleeve surgery, weight loss achieved through diet, positively impacts type 2 diabetes. Up to 80% of patients can achieve remission with sufficient weight loss although the weight loss required can be up to 15kg. (12) Weight loss through diet and exercise also positively impacts cholesterol. The 'Portfolio Study' compared a low cholesterol diet with a statin and showed that over 2 weeks a low cholesterol diet with plant sterols and viscous fibers lowered their LDL cholesterol by 28.5%. (13) The DASH diet has also been proven to reduce systolic blood pressure by 11mmHg over eight weeks (14). There are few to no risks associated with positive lifestyle measures like dietary change and exercise. None of the measures are irreversible and so can be tailored and augmented to the individual patient. Why then are gastric sleeves becoming so popular?

I once read that the majority of people become overweight by eating just 150 extra calories a day, that's the equivalent of 2 digestive biscuits, over 10 years. That's how weight gain creeps up on us, it is insidious and for the most part asks us to forgo the little pleasures in life, like a biscuit with our tea, which never seems that harmful when we are biting into it. Despite often gaining weight over a number of years, we rarely give ourselves that same time to lose the weight. Facebook and social media platforms can inundate us with quick dietary fixes that promise to get us back in shape within six months or less. The adherence rate for most prescribed diets is 25% (15). So when these measures fail we look for alternates and the internet is awash with success stories of gastric sleeve surgeries. The idea that we have to maintain lifestyle changes for a lifetime seems like an incredible ask when weighed against the simplicity of undergoing a gastric sleeve surgery which promises incredible results in an immensely quick period. Therefore, as doctors we may see more and more patients opting for surgical management of their weight. Rather than fear this proactive patient approach to weight management, I hope this article provides a better understanding of the procedure, alerts us to the complications we need to be aware of and enables us to accompany patients along their weight loss journey, whilst of course avoiding any further unwanted Facebook ads for gastric sleeve surgery.

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Combating The Iron Overload In Patients With Hereditary Hemochromatosis

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Abstract

Audit Question

Are patients in Clanmaurice Medical Practice who are undergoing venesections for hereditary haemochromatosis achieving the desired target of ferritin <50 ng/ml as per recent ICGP guidelines?

Aims and objectives

The audit aimed to investigate and evaluate our current adherence according to the most up to date ICGP guidelines and to improve our practice. It is hoped that a minimum standard of 80% compliance with said guidelines is evidenced.

Background and rationale

Elevated iron stores in patients with hereditary hemochromatosis have been linked with a multitude of issues such as excess morbidity, negative effects on health-related quality of life, serious complications i.e., diabetes, liver cirrhosis, congestive heart failure and even a 5-fold relative increase in death.

Methodology

A retrospective audit was performed on HealthOne of all patients who had been diagnosed with hereditary haemochromatosis and were undergoing venesections. A novel audit tool on Microsoft Excel recorded the diagnosis specifying the genetic mutation, current ferritin levels result and further management plan. Following on from Phase 1, results were discussed at a practice meeting, along with dissemination of the recent ICGP guidelines. A prospective re-audit carried was out after the intervention. Standards were set at 80% adherence. No ethical approval was required and data was collected and stored per General Data Protection Regulation

Results

In total 40 patients were included in this audit. The first cycle revealed compliance of around 22% with the ICGP guidelines and that men were more likely to be at risk of iron overload. After the intervention, there was a significant improvement in compliance of approximately 62%.

Conclusion

GPs should be aware of the serious complications of iron overload in patients with hereditary haemochromatosis. It is imperative to monitor and improve our current practice as per the latest ICGP guidelines to avoid serious complications in our patients.

Introduction

Hereditary haemochromatosis is a common autosomal recessive disease accounting for approximately 1 in 83 people in Ireland[1]. It is associated with a defect in hepcidin, an iron regulating hormone, resulting in increased intestinal absorption of iron and subsequent deposition in the liver, pancreas, heart, skin, joints, and gonads leading to organ damage. Up to 85% is because of a mutation in the human haemochromatosis protein (HFE) gene being expressed through C282Y homozygosity, though other genes are also implicated. [2]

Hereditary Haemochromatosis (HH) can be classified into the following; [3][4]

Haemochromatosis HFE (High Iron Fe) gene related, including:

- C282Y/homozygous
- C282Y/H63D compound heterozygous
- Other mutations e.g. S65C

Haemochromatosis non–HFE gene related, including:

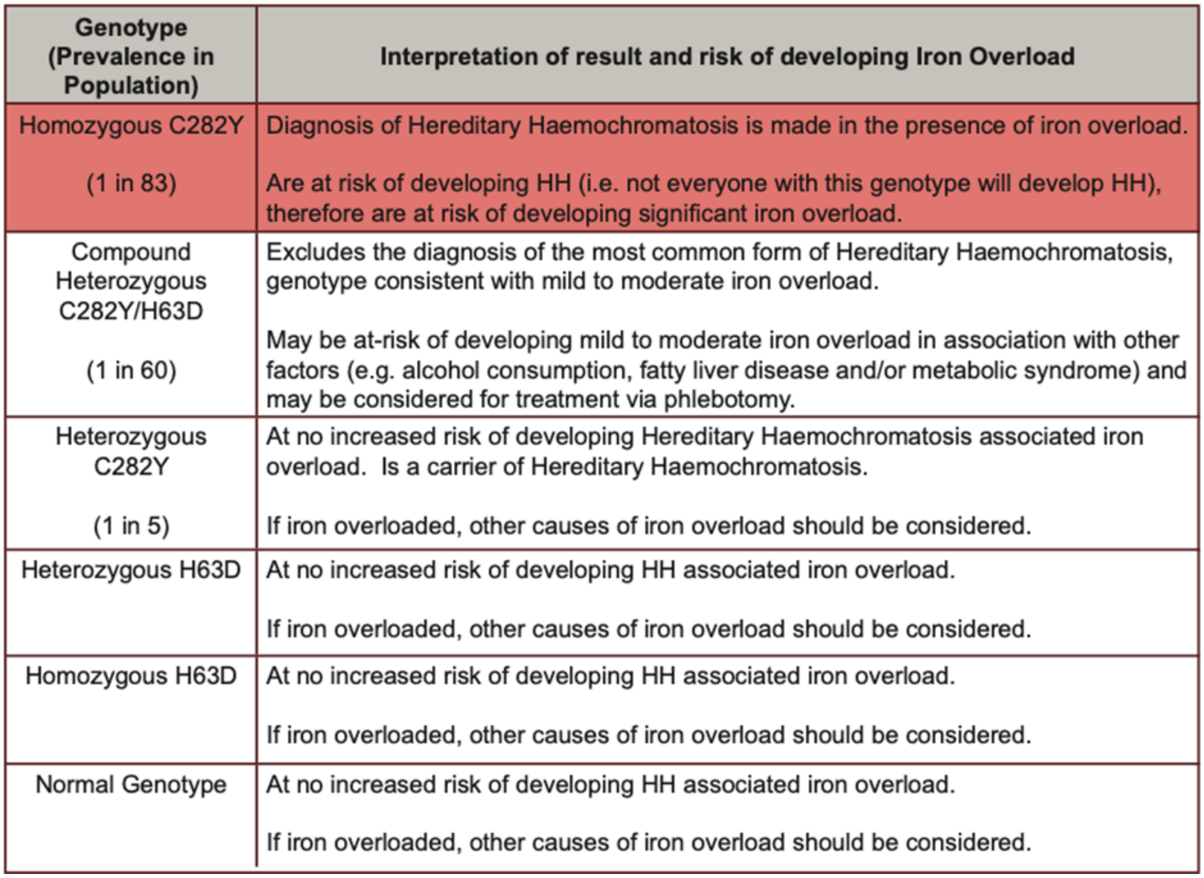
- Juvenile Haemochromatosis

- “Autosomal Dominant Haemochromatosis”

- Other

Over 93% of Irish hereditary haemochromatosis patients are homozygous for the HFE gene C282Y. Not all patients homozygous for C282Y or compound heterozygous (C282Y / H63D) develop iron overload[5]. Some patients who are heterozygous carriers for C282Y can develop iron overload. The factors that affect penetrance are gender, age, physiological and pathological blood loss, blood donation, dietary intake of iron, alcohol, infection with hepatitis C and B, obesity and the use of dietary supplements (iron and vitamin C).

The following figure shows the estimated risk of iron overload in patients with HFE mutations.[6]



Genotype (Prevalence in Population)	Interpretation of result and risk of developing Iron Overload
Homozygous C282Y (1 in 83)	Diagnosis of Hereditary Haemochromatosis is made in the presence of iron overload. Are at risk of developing HH (i.e. not everyone with this genotype will develop HH), therefore are at risk of developing significant iron overload.
Compound Heterozygous C282Y/H63D (1 in 60)	Excludes the diagnosis of the most common form of Hereditary Haemochromatosis, genotype consistent with mild to moderate iron overload. May be at-risk of developing mild to moderate iron overload in association with other factors (e.g. alcohol consumption, fatty liver disease and/or metabolic syndrome) and may be considered for treatment via phlebotomy.
Heterozygous C282Y (1 in 5)	At no increased risk of developing Hereditary Haemochromatosis associated iron overload. Is a carrier of Hereditary Haemochromatosis. If iron overloaded, other causes of iron overload should be considered.
Heterozygous H63D	At no increased risk of developing HH associated iron overload. If iron overloaded, other causes of iron overload should be considered.
Homozygous H63D	At no increased risk of developing HH associated iron overload. If iron overloaded, other causes of iron overload should be considered.
Normal Genotype	At no increased risk of developing HH associated iron overload. If iron overloaded, other causes of iron overload should be considered.

Figure 1 Genotype and risk of iron overload

Presentation

The “Classical presentation” due to end-organ damage such as liver cirrhosis, diabetes, skin pigmentation (bronze tan) is only seen in 10% of cases. The most common avenue to diagnosis in primary care is abnormal LFTs (liver function tests).[2]

Around 30% of patients may be asymptomatic throughout life, especially women where blood loss through menstruation and childbirth is protective. Symptoms usually start during the fourth or fifth decade of life. Patients would present with vague complaints such as lethargy, weakness, somnolence, arthralgia, vague abdominal complaints. Physical findings can include arthropathy, chondrocalcinosis, heart failure, erectile dysfunction and porphyria cutanea tarda.[7][2]

Diagnosis

As per ICGP guidelines[3], a fasting ferritin >300ng/ml in men and post-menopausal women or >200ng/ml in pre-menopausal women with normal inflammatory markers + a fasting transferrin saturation levels over 45% suggest hereditary haemochromatosis. However, they do not necessarily indicate a need for treatment unless the ferritin threshold is exceeded. If iron studies are positive, then genetic testing for C282Y and H63D mutations should be performed.

Management

Patients with hereditary haemochromatosis and evidence of iron overload should undergo venesection. 400-500ml of blood should be removed at a time. Each 500ml of blood contains 200-250mg of iron. The frequency of venesection varies depending on the patient. However, it is preferable, in the initial phase, to reduce the patient’s iron as quickly as possible and normalise iron levels (ferritin <50ng/ml). Venesection should take place weekly until ferritin is less than 250 ng/ml and then monthly until ferritin is less than 50 ng/ml.[3]

Patients with hereditary haemochromatosis need regular monitoring of their renal function, liver function, glycaemic control, and lipid profile with consideration of ECG, chest x-ray, joint x-ray and DEXA scanning as appropriate. They should also be referred for specialist assessment if there is a concern regarding organ damage. [3]

Rationale

Iron overload in hereditary haemochromatosis has been suggested to cause most complications leading to end organ failure. The guidelines recommend keeping the ferritin levels <50 ng/ml, which is one measure of iron levels in the body. Early detection and treatment prevent organ damage and allows a normal life expectance.

A recent study comprising around >450,000 volunteers of European descent aged 40 – 70 years was undertaken where homozygous patients were compared to controls. It showed HFE p.C282Y homozygosity (High risk of iron overload) was associated with excess morbidity in both men and women[5]. Several studies have shown a negative effect of haemochromatosis on health-related quality of life (HRQOL). Elevated iron stores, particularly transferrin saturation and serum ferritin levels and comorbidities contribute to reduced HRQOL [4]. Another study concluded that in hereditary haemochromatosis patients homozygous for HFE C282Y, serum levels of ferritin greater than 1000 µg/L at diagnosis were positively associated with cirrhosis and they carried a 5-fold increased relative risk of death even with the treatment.[8]

Given the evidence surrounding raised iron levels and future complications in patients with hereditary haemochromatosis, I felt it was of utmost importance that these patients are managed according to the best practice. Hence, after discussion with my trainer and other staff, I undertook this audit to evaluate our current practice and improve it.

The treatment of this condition involves venesections, which is a simple procedure carried out by most primary care practices across Ireland. If patients are managed according to the most recent guidelines. It can prevent complications that can have an enormous impact on the lives of our patients and decrease the burden on the healthcare system. It is a good source of revenue for the practices and can be an added benefit in the long term.

Methodology

The audit was carried out in Clanmaurice Medical Centre, Co. Kerry between October 2020, and March 2021. The first stage of the audit involved identifying the patients in our practice who were diagnosed with hereditary haemochromatosis and receiving venesections. Using a searching tool in the HealthOne Patient Management Software System, I identified our haemochromatosis patients and set up a patient register.

A novel audit tool on Microsoft Excel recorded the diagnosis specifying the genetic mutation, current ferritin levels result and further management plan. For this audit, I excluded any patients who were not homozygous for the C282y gene, as they are less likely to be affected by iron overload and further complications.

Following on from Phase 1, results were discussed at a practice meeting, along with dissemination of the recent ICGP guidelines. All hereditary haemochromatosis patients were also booked for an abdominal ultrasound to screen for liver associated complications. Each of the patients had a reminder put on their file depending on whether they were actively venesected or not showing their genetic status, a reminder of genetic counselling, plus education regarding diet and the disease.

There was a reminder put in place for all patients not undergoing venesections for yearly blood to assess for iron overload.

Timeline

Date 2020/2021	**Action**
August	Discussion with trainer
August/September	Audit planning and summary submission
October	The first round of data collection and analysis
November/December/January/February	Action plan, intervention, and implementation
March	Re-audit and analysis
March	Written report
March	Audit presentation

Table 1 Timeline of the audit

Guidelines

ICGP Haemochromatosis Quick Reference Guide – January 2020 Edition “Hereditary Haemochromatosis – Diagnosis and Management in primary care”[3]

Standards

Greater than 80% compliance with the latest ICGP GuidelinesEthical Consideration

This audit solely investigated analysis of data, no personal identifiers were included, or demographic information was included in the audit statistics. For this reason, ethical approval was not a requisite for the completion of this audit.

Data Protection

All data was collected, recorded, and stored per General Data Protection Regulation Legislation. Data were anonymised and stored on a password-protected computer.

Results

Audit Cycle 1

	Patient with Ferritin <50ng/ml		
Sex	No	Yes	Grand Total
Female	10	3	13
Male	21	6	27
Grand Total	31	9	40

Table 2 Demographics and results from Audit cycle 1

I identified 45 patients as having a diagnosis of haemochromatosis. Three patients did not fulfil the criteria of having homozygous c282y gene defect, one patient was not fit for venesection because of multiple comorbidities and one patient was attending a private hospital for disease management. The final number of patients included in this audit was 40, and this number remained the same between the initial audit and re-audit.

The initial audit showed compliance of only 22.50 % with guidelines of keeping the ferritin levels below <50ng/ml. It also showed that male patients were less likely to adhere to the treatment and follow up appointments. As a result, men were also at a higher risk of complications. It also highlighted three patients who had ferritin levels >500 and therefore needed urgent management and screening for complications.

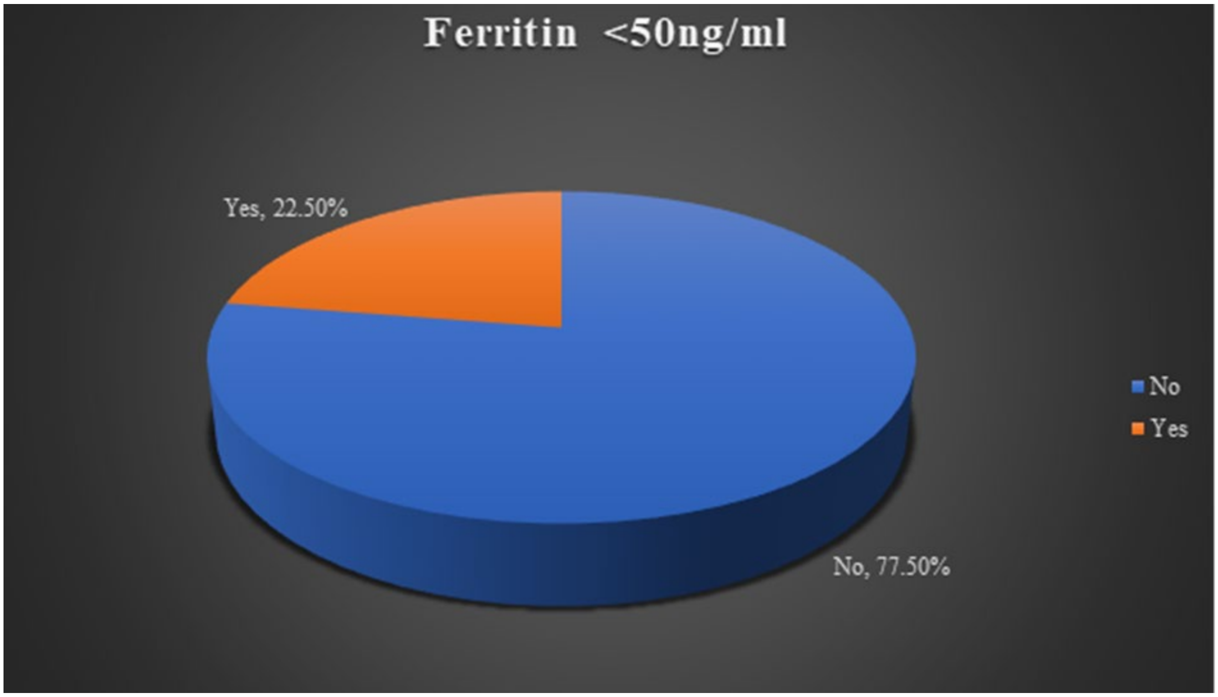


Figure 2 Percentage of compliance from Audit cycle

Audit Cycle 2

	Patient With Ferritin <50ng/Ml		
Sex	No	Yes	Grand Total
Female	5	8	13
Male	10	17	27
Grand Total	15	25	40

Table 3 Demographics and results from Audit cycle 2

I undertook Audit cycle 2 in March 2021 after 4 months of interventions. The results showed an immense improvement in compliance of 62.50% from 22.50% in October. All patients had also undergone a screening abdominal ultrasound which highlighted five patients who had Non-Alcoholic fatty liver disease(NAFLD).

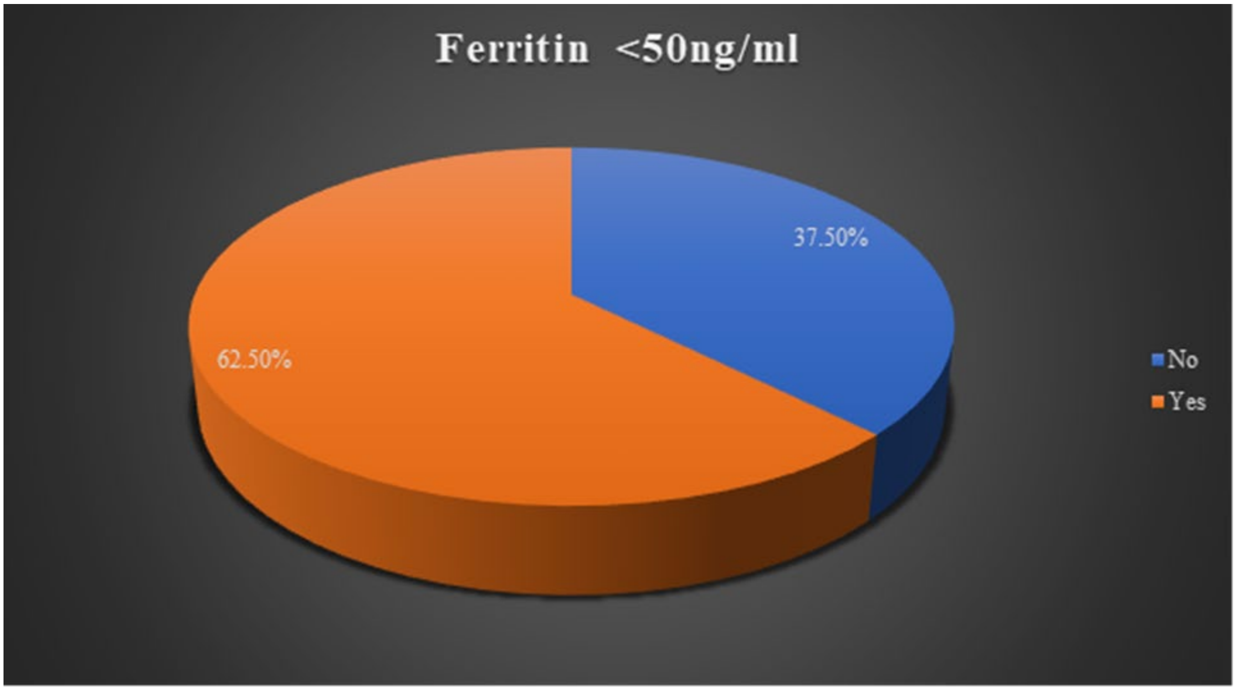


Figure 3 Percentage of compliance from Audit cycle 1

Discussion

The audit proved very effective in highlighting key deficiencies in our practice and enabled us to significantly improve our practice. The target of 80% compliance was not reached, however, it is important to point out that all the patients who have a ferritin >50ng/ml are still undergoing venesections. We estimate that within six months we will achieve greater than 80% compliance.

As discussed earlier, haemochromatosis has a higher incidence in Ireland as opposed to other countries. Over 93% of Irish hereditary haemochromatosis patients are homozygous for the HFE gene C282Y which puts them at a higher risk of iron overload.

Tighter monitoring of patients and regular venesections can minimise the complications of iron overload.

This audit resulted in a register for patients with hereditary haemochromatosis which will be used to monitor the overall iron overload, recalls for bloods and yearly investigations to rule out any secondary complications. All the patients with the diagnosis have been coded in HealthOne for easy identification. Also, a reminder system has been put in place for all patients not undergoing venesections for yearly blood to assess for iron overload.

After the 1st audit cycle, it was decided to book all patients for an abdominal ultrasound to screen for any liver associated abnormalities. This proved to be hugely beneficial as it highlighted five patients who were identified with Non-alcoholic fatty liver disease(NAFLD) that can progress to cirrhosis, hepatocellular carcinoma (HCC), and death[9][10]. We then started these patients on management plans to prevent further deterioration.

The study also shed light on another potential incentive for practices to perform regular venesections as it is a good source of revenue for the practice. At present venesection for a GMS patient is reimbursed at approximately € 100 and most patients on average undergo at least 3 venesections. This is an added benefit and might lead to further compliance.

This audit has several limitations.

- A time interval of only 4 months coupled with Covid-19 restrictions proved to be the biggest limitation of this audit. As a practice policy, we had to minimise our face-to-face interactions, and this limited our initial plan of undertaking regular venesections to achieve the desired ferritin levels. Our patients were also not comfortable with attending the practice, and this resulted in fewer venesections.

- The primary way in which we identified our patients with hereditary haemochromatosis was using multiple search terms in our Health One database, hospital letters, genetic studies, and abnormal iron studies. However, it is a possibility that some patients might have been missed who have no recorded diagnosis or genetic testing. After discussion at the practice meeting, we have introduced proactive measures like dedicated staff to handle all blood results and investigations to identify any missed patients.

- The guidelines recommend fasting ferritin levels to assess for accurate results, however, there was no documentation whether the patient was indeed fasting at the time of measurement. This would introduce systematic error when calculating overall compliance with guidelines and future steps should be taken to properly document the patients fasting status at the time of measurement.

Conclusion

Iron overload in hereditary haemochromatosis patients has been proven to be linked with serious complications and below standard management can cause tremendous clinical and economic burden and poor patient-reported outcomes.

This audit has highlighted key areas of improvement and has led to multiple initiatives to further enhance our duty of care to our patients. I would recommend repeating this audit in a year to ensure continued compliance with guidelines to uphold the excellent quality of care.

This audit is based on ICGP guidelines and would be recommended for all practices to undertake due to its vast benefits for patients, practices and the healthcare system.

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2022

Should Studying Medicine Hurt This Much?

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I first read Adam Kay's 'This is going to hurt' as a passionate, inspired and enthusiastic student who dreamed of studying medicine. I was in fifth year of secondary school, and at the time of reading, it didn't deter me from my dream job but rather spurred me on. By the time it had been adapted to TV, I was a third year medical student. I had finished episode two and was discussing it with my friend during a study break the following day. He told me not to continue watching it. He had been on the phone to his older brother, a doctor himself who was now living in Australia who had finished the series. He warned that it might be too upsetting for us to finish it due to "everything that has happened recently". I was confused. I had read the whole book, it was an incredibly upsetting experience that Kay had described at the end of the book; however I didn't understand why it would be specifically too upsetting for us.

"The TV show ends differently to the book," he explained, "In the last episode, the junior doctor dies by suicide". In the previous 2 weeks, a fellow student in the year above had taken his own life. This was not the first time this had happened since we began college.

I was in my first week of my first year when I was told of a Trinity medical student who had taken their own life in the previous year. Only months later as the first Covid-lockdown hit did I hear of the second, and only months after that, of the third. It became clear that a pattern was emerging. It was February 2022, when the fourth Trinity medical student in five years took his own life in the Ussher library, on Trinity campus.

Throughout this time, conversations began, and it became clear that change was needed. Each time the death of a classmate was announced, we would be reminded to reach out for support when we were struggling, and to avail of the student counselling service. Each time such emails would enter my inbox, angry conversations broke out between myself and my peers. While mental health supports are needed and appreciated, we did not want extra supports to help deal with the stress of our course. We wanted a course that did not require us to seek mental health support.

We had four months of non-covid medical school. Once Covid hit, we went online for a year and a half. Through our screens, we watched as the health service we are training to be the future of, become overrun and the professionals we aspired to be, declaring their own burn out.

Physician burnout has been a massive and vital conversation in the media since the beginning of the pandemic. It is an issue that requires a specific and targeted management. However as with many areas of medicine, it seems there is little emphasis on prevention. What happens in the five or six years that causes students to go from driven and passionate to cynical and uninspired? Is the structure and exam process of our medical schools creating highly qualified doctors or is it feeding into the burn out rates and emigration of young medical professionals?

In the aftermath of a student suicide within the School of Medicine, I have overheard and been a part of a number of conversations. Some of these have been with my non-medical student friends. Others, amongst medical students or at home with my family. Many of my peers outside of medicine believed that suicides amongst medical students were likely due to their “type A personalities” or “the pressure their families must have placed on them” to perform academically. Amongst my peers, we felt it must be due to the immense workload, the long hours required to pass our exams and the incessant, never-ending cycle of exam, after exam. The precise cause of such an incident will never be known, and whilst this makes it very easy to ignore the issue, this is not a helpful approach. It isn’t helpful to current medical students, it isn’t helpful to qualified doctors and it isn’t helpful to the Irish health service as a whole. So, let’s focus on what we do know.

Burnout syndrome is defined as emotional exhaustion, depression, and impaired personal accomplishment, following repeated exposure to workplace stressors (1). Within a student population burnout is considered to be a triad of exhaustion, cynicism and the feelings of inefficiency (2). A systematic review that looked at learning environment interventions and medical student well-being in the setting of US medical schools (3) found that medical students began their training with lower rates of depression and burnout in comparison to their non-medical student peers. Their reported well-being then decreased during the undergraduate medical education (UME) years. Rates of moderate to severe depression were reported as high as 14% and burnout symptoms at 52%. Suicidal ideation was reported at a rate of 1 in 10 students.

In recent years there have been calls for Universities Mental Health services and indicators of student mental well-being to be included as a part of the University World Rankings. Ben West, a mental health campaigner in the UK, is one of the drivers of this campaign which is calling for universities to be rated on their ability to support student mental health. The aspect of mental health is not currently included in the QS world rankings which has placed Trinity as No. 1 in Ireland and 98th in the world for 2023. I wonder if this would be the same if mental health supports were to be considered. Encouragingly, at present Trinity is carrying out an online anonymous survey: the SHAPE Study survey (Suicide Help-Seeking and Prevention in Trinity), to help to better understand these issues and how to best support student’s needs.

While this all may seem to be an issue for medical students and their medical schools to work through, this couldn’t be further from the truth. On the 26th of January 2022, the Irish College of General Practitioners (ICGP) appeared in front of the Oireachtas Joint committee to discuss urgent measures to address GP shortages (4). Over the next decade it is estimated that Ireland will need over 2,000 new GPs to meet the needs of our growing population and the increasing number of people over 65. At present the ICGP is increasing its training numbers with the aim to train 350 new GPs annually by 2023.

One of the issues compounding the GP shortage crisis is the emigration of young Irish Doctors. While this is not a new occurrence, it is increasingly impacting the stability and staffing levels of the Irish Health Service. The top destinations for young Irish doctors were Australia, New Zealand, the UK and the USA (5). Reasons for emigrating included: reduced working hours, improved work-life balance, increased income and more certain career pathways.

While much of the focus in determining reasons for emigration is on the time spent as an overworked non-consultant hospital doctor (NCHD), I believe the years spent in medical school are over-looked as a contributing factor. In many cases, the young doctors deciding to emigrate do so just after the completion of their intern year. This means that they emigrate after 5/6 years in medical school followed by a single year working as a doctor. In 2021 the number of visa application granted to Irish doctors was 391, this represents a 44% increase in 3 years (6). Perhaps if rates of burnout were lower and college-work -life balance was better during our years as medical students, there would be less newly qualified doctors emigrating in search of a less stressful working environment.

A study to identify the factors associated with the migration of newly qualified Irish doctors, found that only 36% of Irish interns intended on remaining in Ireland following their intern year. Again this study predominantly focused on the time spent working as an intern (1 year) and their perception of the health service during this time (7). From my point of view as a fourth year medical student, it seems that the decision to emigrate after intern year, is not one that is made during intern year. So many of us medical students speak of Australia as if it is the light at the end of the tunnel, perhaps this would not be the case if the tunnel were not so dark.

I do not have to do much research to know that poor mental health, burnout and suicidal ideation is not an issue isolated to medical students. It permeates through all levels of training in Medicine, and indeed all levels of society. I know this from the endless news coverage on such topics throughout the Covid pandemic, from conversations with colleagues in the hospital and by the fact that the majority of media (fiction or otherwise) based on the life of a doctor, portrays it in a very grim light. The novel I just finished, ‘The night interns’ written by Dr Austin Duffy, follows three doctors through a series of night shifts during their intern year. Within the space of this short novel, there is reference to two suicides, both doctors working at the hospital. While this is a fictional story, at no point in reading did it feel unrealistic. In fact, had I not been told by a friend that it was a work of fiction, I would have thought it was memoir.

As mentioned previously, the rates of burnout within medical students are reported as high as 52% (3), this appears to be the beginning of a career long issue. Studies conducted amongst American physicians suggest that this increases to 76% in medical residents (8). Rates of suicide are just as stark. A systematic-review and meta-analysis conducted in 2019 calculated an overall mortality rate of 1.44 for suicide amongst physicians (9). In the UK the suicide rate for UK doctors is estimated to be somewhere between 2 and 5 times higher when compared to the general population (10,11). Therefore this problem is not one that is confined to medical students, or any other sub-group within this community for that matter. It is a widespread problem, within all levels of medicine, across universities, hospitals and countries. The problem begins long before we start as practicing doctors and it is time that we look at our medical school as a starting point for prevention.

Solutions to complex problems such as this, do not come in the form of a simple quick fix. However, this is no excuse to ignore the problem. To make meaningful changes in order to prevent such bleak mental health outcomes among medical students and doctors alike we must make sustainable and lasting changes to the system. An editorial published in The JAMA; Medical Student Mental Health: Culture, Environment and the Need for change (12) found that several aspects in the culture of medical education has influenced the delay in response to the problem of poor mental health in medical students. Some important aspects included: that being a doctor is a demanding profession and therefore so should being a medical student. Students should be able to handle the stress, if they wish to becomes a doctor. Such thinking is representative of the negative belief that more pressure and demands must means better education and more highly qualified doctors. Another aspect of the culture listed was the “relative indifference and concerns held by the medical school administration relating to student mental health” as well as the “lack of accountability that deans are generally held to for the mental health outcomes of their students”. A third aspect included was the tendency of medical schools to focus on teaching self-care and emotional resilience instead of addressing problems within the learning environment. While this may satisfy educators that change is being made, it is most likely to be a distraction from the root of the problem. This editorial identified problematic features in the culture of Medical Schools as found by Rotenstein et al (13) in meta-analysis that included studies carried out across 43 countries and Wasson et al (3) in a systematic review across US Medical schools. While these studies were not carried out across the Medical Schools in Ireland, it highlights areas that perhaps we should be putting more focus on.

The study conducted by Wasson et al (3) provided some evidence for possible approaches to improve mental health among medical students. Those that related to curricular and environmental changes included Pass/Fail exams in the preclinical years and increased clinical time. The study found that using a pass/fail grading system improves medical student well-being. It also suggests a structured curriculum that balances clinical and non-clinical learning environments. Less burnout and stress was reported among medical students when clinical time was increased.

Interestingly, Trinity School of Medicine recently introduced pass/fail grading system for third year. I am not aware of any official survey conducted to measure improvements in student mental health between groups with regular exam grading in comparison to the year groups who were graded using the pass/fail system. However, as someone who sat my first and second year exams with the typical grading system I did not find any change in my perception of stress leading up to my third year exams with pass/fail grading. This does not appear to have been uncommon within my peers. With many of us feeling that with our exams being so difficult to pass and the pass mark being 50%, changing the grading system didn't change our levels of stress or improve mental well-being. It did however make us feel that we had been left without feedback. However I believe pass/fail grading has the potential to have a positive impact, particularly if used for first year exams, allowing students to adjust to college exams without any additional pressures.

While this is just a personal anecdote and perhaps does not ring true for the majority of my peer group, what is important is that changes such as this should be measured. Surveys should be performed before and after such changes and analysis of the structural change observed. So much of our time as medical students is dominated by learning about the newest treatment and how it compares to our current options. If a patient was on a medication that was producing harmful side-effects their doctor would look to change to the next best (evidenced based) option. However when it comes to student mental health and even mental health of qualified doctors, it seems that evidenced based practice is not a priority. I struggled to find a single study that looked at medical student mental health in Ireland and ways to improve it. It is time that we start to analyse what areas within Medical Schools in this country serve the students, their education and their well-being and what areas are detrimental. Perhaps these vary across the six medical school in the Republic of Ireland, but research done across all six would allow us to look at the differences between the culture and environment within each. Allowing each school to learn from the different curriculum formats, clinical hours and grading systems of its fellow medical schools to determine what would reduce burnout rates, improve mental well-being and continue produce highly qualified doctors.

The purpose of this essay was not to participate in the blame game or as a means for a rant. It is a call for change. Change so that losing a classmate or colleague to suicide is not considered the norm.

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Porous Barricades: The Pharmaceutical Industry’s Infiltration of General Practice

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Introduction

One morning last spring, I arrived at the hospital to join my assigned team on clinical placement. That day was due to start with journal club, so I went to the conference room on the ward. However, at the front of the room was not the usual registrar or SHO in their scrubs frantically setting up a slideshow on the computer in front of several consultants. Instead, it was a tall, slight and well-groomed man in a dark suit. He proudly announced that breakfast was on the table for everyone to enjoy, on him no less! The other medical students and I made a beeline for the free coffee, pastries and fruit. The doctors and assorted healthcare professionals also tucked into the free alimentation. Then, without me having given any more thought to who this man-in-black was, he began espousing the merits of his company's new inhaler. I examined everyone's facial expressions in the room. Blank. It was 8am - the coffee hadn't yet kicked in. This man, an alien in the hospital environment, excised people's remaining scepticism with the instrument of free food and then bombarded the weary brains with promotional information about his new product. Some of the material must have sunk in, even a little. I was introduced, unexpectedly early in my medical career, to the siren-like pharmaceutical industry that was possibly already trying to lure me onto rocks.

This experience during my clinical placement made me wonder about the relationship between "Pharma" and general practitioners. Drug expenditure in the community accounts for around 85% of the state's spending on medicines1. Therefore, general practitioners represent a gateway to huge dividends from drug sales. Indeed, the absolute worst case scenario for industry encroachment on general practice was dramatized in a recent television series about the opioid crisis in the United States. The prescribing landscape had undoubtedly changed since then, so this essay intends to explore the current state of affairs in Ireland regarding the pharmaceutical industry's relationship with general practitioners.

Regulation of the Pharmaceutical Industry - the State of Play

Medical and pharmaceutical products make up a massive part of Ireland's industry and exports; exports between July 2021 and July 2022 of these products were valued at €5.737 billion2. The economic value of the pharmaceutical industry to Ireland is such that regulation is a fine line to tread - the state will always want to keep pharmaceutical industry in the country as it generates economic growth, creates jobs and promotes innovation. However, while fostering these opportunities, the state must legislate and regulate to ensure that medicines remain affordable and accessible, that unmet medical needs are researched and that the most cost-effective medicines are primarily used. The European Union's Pharmaceutical Strategy for Europe exemplifies this quandary very well, citing the need for enforcement of supranational competition rules while needing to nurture the valuable sector3.

In France in 2013, Janssen-Cilag, whose parent company is Johnson & Johnson, was fined for blocking entry to and growth within the market of a generic form of a potent opioid analgesic produced by a rival company3. Market obstruction was achieved with a two-pronged tactic, part of which involved disparaging the generic form of the drug among hospital doctors and general practitioners. This was done with newsletters and press briefings but also by training 300 sales representatives called 'commandos' to convince medical practitioners that the generic drug was less effective and safe. This is a blatant example of Pharma targeting general practitioners to boost sales of an originator drug, thereby costing the taxpayer more money, also entailing an opportunity cost. In spite of all of this, the fine was a mere €25 million! That amount is but a drop in the ocean of J&J's $71.3 billion worldwide sales in 20134. This again underlines the difficulty countries have in regulating Pharma; the sector’s economic significance means that any regulation or enforcement thereof tends to be limited.

Current Regulations in Ireland

While regulation is of Pharma is a difficult, there are certainly legal restrictions and industry guidelines in Ireland that govern the practices of companies in their interactions with medical practitioners. The Irish Pharmaceutical Healthcare Association (IPHA) is a representative organisation of which most major pharmaceutical companies are members. IPHA published a code of conduct document in 2019 with "a view to securing [...] adoption of high standards of conduct in the interactions with healthcare professionals [...] and the marketing of medicinal products to healthcare professionals"5. This is based on and acts alongside the Medicinal Products (Control of Advertising) Regulations 20076. Doctors also have guidelines from the Irish Medical Council to follow7.

The code and regulations set out fairly stringent rules that definitely help to rein in the industry in its advertising activities, but some wiggle room persists. The code mentions "restraint" that should be exercised in the frequency and volume of promotional material distributed; 'restraint' is a word open to interpretation. Other relative terms in both the code of conduct and regulations like 'inexpensive' and 'relevant to the practice of medicine' are used in relation to promotional materials distributed to professionals. Companies are legally permitted to cover travel, meal, accommodation costs for doctors who attend conferences and meetings - some might call this an all-expenses-paid holiday. Moreover, the rules do not prohibit the provision of samples of medicines to prescribers. These are just a few examples of avenues that Pharma could exploit with the aim of influencing the independent judgment of general practitioners when it comes to prescription. The medical council guidelines state the doctors 'should not' accept gifts or hospitality from the pharmaceutical industry of any value, but the document does not constitute a legal code, but simply the organisation’s principles.

Pharma's current activity in Ireland

Pharmaceutical companies spend a lot of money on promotion and advertisement of their therapies. A significant amount of money is spent by companies giving direct or indirect financial support to healthcare professionals and organisations, information which has been made publicly available in Ireland since 2016 – a reasonably progressive measure. At a glance, one can see that IPHA member companies transfer substantial amounts of money to healthcare professionals. For example, Janssen spent €243,363 on fees and paid expenses to healthcare professionals in 20218. Other well-known companies like Pfizer and AbbVie spent €166,511 and €212,970 respectively8. Payments between 2015 and 2019 amounted to €33.6 million9. Patently, this is evidence of Pharma's intent to influence medical practice and prescription.

Although the intent behind the GP payments database is a step in the right direction, the Irish Medical Independent10 did highlight its inaccessibility due to the lack of a “search” feature for individual doctors and the lack of clarity as to the services provided to and by doctors. The IPHA transfer of value database also allows recipients of financial support to remain anonymous, with only 59.9% of doctors disclosing identities, even further reducing transparency9. Furthermore, significant errors were revealed9 in data reported to transferofvalue.ie as well as significant variation between companies in their methodologies for disclosing payments to the database. Some exclusions of payments by companies were in clear breach of the IPHA code of practice. This reveals that, on top of some fairly ambiguous regulations, the companies' activities are not always in accordance with the clear-cut rules governing pharmaceutical promotion. Alarmingly, inaccessibility, errors and rule breaches could indicate that Pharma's influence in general practice could be larger than reported and that we probably underestimate the extent of the industry's reach.

On top of financial transactions, a recent study11 showed that Pharma also visits Irish GPs in their practices, either one-on-one or in groups. These meetings would range in frequency from daily to three-monthly and there were beliefs among some GPs that pharma representatives were profiling their prescribing behaviour. The industry was also determined by GPs to be 'intrinsically linked' to continued medical education (CME) and conferences. Notably, companies would often hire consultants or GPs to talk on their behalf to promote the product. Despite gift giving and receiving being against all codes and regulations, food and smaller items were still brought by representatives. Larger gifts were raffled off at certain conferences for those who supplied their names and contact details to Pharma companies.

Prescribing habits - is there an effect?

The long history of pharmaceutical industry investment into GP interactions implies that there is a significant effect on prescribing habits following contact with drug companies.

The medical council guidelines7 also acknowledge the effect promotion of medicines can have on doctors' prescribing habits. A 2017 meta-analysis12 found moderate quality evidence that there was indeed an association between promotion of a medication, inappropriately increased prescribing rates and increased prescription costs. A review in the UK13 found that GPs that prescribed a lot of new drugs generally saw pharmaceutical representatives several times per week, while 'lower' prescribers of novel drugs saw representatives less and consulted colleagues afterwards more often. Perhaps this uncovers an idiosyncratic component of the effect of pharmaceutical promotion on GPs, but nonetheless demonstrates the effect of industry activity on prescription rates. An older study in Ireland14 also showed a certain reliance on Pharma for information; in 2001 in 42% of cases of a new drug being prescribed by a GP, the evidence informing the decision was acquired solely from a pharmaceutical representative. These influences are reluctantly recognised by GPs in Ireland who also tend to lack knowledge regarding regulations governing interactions with Pharma11.

In Ireland, expenditure on drugs has risen sharply since the 1990s, reaching a peak of €2.7 billion in 20191. The HSE tried to counteract this upsurge with the Medicines Management Programme (MMP) in 2013 as well as other cost-containment schemes. Measures like MMP have the aim of making budgetary room for expensive novel therapies by reducing spending on drugs for chronic or common issues, which are often highly profitable for Pharma. Preferred drugs for the MMP are decided by factors such as efficacy, dosing and administration, interactions, side effects, cost and international guidelines; choices are then disseminated to GPs via meetings and publications15, 16. Despite the introduction of the MMP, it has been demonstrated15 that the HSE's preferred drugs didn't rise in prescription rate very dramatically. Between introduction of the MMP and 2016, there was only a small rise in prescription of preferred PPI, statin and SNRI but there was little to no impact in preferred ARB, ACE, SSRI and urology drugs15. Consequently, the state saved merely €2.67 million in that three year period. To contrast, the HSE spent €123 million on new drug Humira (adalimumab) in 201617. This shows that the ‘soft’ measures of the MMP brought in by the HSE to highlight the most cost-effective drug were likely entirely ineffective against years of Pharma influence.

Atorvastatin is the most prescribed medicine in Ireland1. While it is indeed the preferred drug according to MMP, there have been suggestions that statins are overused. A study in 2019 suggested that statins only provide net benefits at cardiovascular risk scores higher than the current guidelines18, which implies that statins have been overprescribed. Another study in Ireland suggested that the expansion of eligibility for statins in the last 30 years has been an example of "pharmaceuticalisation"19. The paper posited that hypercholesterolaemia may have metamorphosed from a risk factor for a cardiovascular disease into a disease in of itself to benefit pharmaceutical companies. This could potentially highlight a second method by which Pharma influences GP prescriptions – by altering treatment guidelines through lobbying at higher levels. GPs are then left at risk of legal exposure if something happens when they prescribe or fail to prescribe an item in a manner out of step with guidelines.

Yet another pertinent example of Pharma's influence on general practitioners is over-prescription of proton pump inhibitors. PPIs are started without a clear indication in 40% of cases and are continued inappropriately in 81% of cases20. Around 4 million prescriptions for PPIs are written every year, amounting to €45 million spent by the State. Despite pantoprazole being the preferred drug according to the MMP, only 21% of patients are on it versus 39% on esomeprazole (Nexium). Esomeprazole costs more than double what pantoprazole costs per prescription1. Moreover, an inappropriately large number of patients are on high dose therapy (93%) compared to low dose therapy (7%)20. This is a prime example of the insidious effect of marketing on general practitioners' prescribing habits which results in a serious yet perfectly avoidable financial burden on the state1.

A final example of the effect of Pharma's activity is the strong preference among Irish clinicians for originator drugs, especially biologics, with biosimilars and generics being perceived as less effective. Only 40% of medications prescribed in Ireland are generics, compared to 85% in the UK and 52% across the OECD21. This incurs a massive cost for the state and entails a significant opportunity cost.

How do we reduce Pharma's influence on General Practitioners?

The pharmaceutical industry has always made marketing a priority and has evident regulatory latitude to market its drugs to GPs; it is clear across the literature too that the marketing to GPs is effective. One must also recall that many GPs in Ireland reluctantly admit that they are probably unconsciously influenced by Pharma representatives11. Thus, a strategy for limiting the influence of Pharma is necessary to reduce the financial burden of medicines on the state and to ensure optimal evidence-based treatment for patients.

An glaringly obvious aspect of marketing to tackle is Pharma's involvement in CME of GPs. GPs in Ireland are acutely aware of being vulnerable to Pharma influence when they control the discourse at CME events11. In addition, it has been demonstrated22 that CME events that are financially supported by industry tend to cover a narrower range of topics, with a focus on new therapies developed by the benefactors, than if the CME is organised by the medical profession. Therefore, it would be logical to ban or severely limit pharmaceutical involvement in CME of practising clinicians, so that it cannot be used as a platform for promotion of a drug that may not be the optimal therapeutic or financial option. Alternatively, there could be some mechanism for screening of material provided by Pharma for CME, but this would likely be a much more costly scheme for the state than a simple ban.

GPs in Ireland are of the opinion that two of the major ways in which Pharma influences their prescribing behaviour are 'biased information' and gifts and contributions11. Biased information and gifts are blatant violations of the IPHA code of ethics and the 2007 government regulations. Hence, the option could be explored of creating a system through which GPs could report marketing behaviour violating industry regulations. IPHA already has a complaints procedure for breaches of their codes but complaints are reviewed by a board composed primarily of members from the pharmaceutical industry, who are likely far from impartial5. Healthcare professionals are also prohibited from making a complaint anonymously, which may deter complaints. It would be desirable, therefore, to create a complaints procedure independent of industry. However, there could be several issues with setting up such a system. A significant cost would likely be involved in creating a new office to deal with complaints, and if such a system were set up, there would likely be industry and political pushback. Therefore, while more oversight is desirable, there would be budgetary and political factors to negotiate.

Another way to reduce Pharma influence in prescribing behaviours is to regulate prescription more tightly. Regarding generics and originators, a HSE report outlines two potential ways in which increased generic prescription could be achieved21. Firstly, mandatory generic drug substitution could be introduced where pharmacists are required to replace branded drugs with generics when dispensing. The other proposed measure would be 'chemical-based prescribing' where clinicians prescribe by pharmacological and not brand name, encouraging dispensing of a generic drug. These measures would be expected to be very controversial as they would undermine prescriber autonomy and could impact patient safety.

The generic versus originator dilemma in Ireland produced another means of reducing Pharma marketing effects. A policy of a gainshare for clinicians' practices when they prescribe a generic over an originator has proven to be effective and produced €50 million in savings21. This demonstrates that incentivising doctors to prescribe in certain ways could be hugely effective in negating the effects of Pharma; beating industry at its own game. However, a review23 of effectiveness of pay-for-performance schemes shows that they may not be that efficacious, and that they only produce a modest improvement in prescribing behaviours, though the review conceded that there was low certainty for these findings. Therefore, while incentivisation is anecdotally effective in Ireland, there is little research to go off for determining whether big differences can be achieved.

Conclusions

Pharmaceutical industry regulation is a politically contentious issue given the value of the sector to modern Western countries. A consequence of this is that there is clear regulatory room for marketing manoeuvres in the industry, whose code of ethics is overseen by an industry body. It is also abundantly clear that the Pharma is very active in Ireland in its promotion of drugs, which leads to evident prescribing habits that defy fiscal and, occasionally, clinical logic. This essay explored various ways of correcting these bad habits, such as more stringent industry marketing oversight, incentivisation, prescribing rules and barring of industry from CME.

2885 words

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The New Assisted Decision-Making Framework and its Implications for General Practice

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It has certainly been a long time coming, but it now appears that the new assisted decision-making framework as set out in the Assisted Decision Making Capacity Act 2015i ("the Act") is about to go live. Advocates for the new framework have trumpeted its flexible and functional approach to capacity and the positive effect this will have on a wide range of persons with disabilities and cognitive impairments. Critics however point to the uncertainty that still exists around how this functional approach will operate in day-to-day practice. Perhaps many of the Act's effects will not truly be known until the initial dust has settled and all of its provisions are fully up and running. However, whilst many of the conversations have been around its implications both for hospitals as well as mental health and disability support services, what likely problems and benefits could this new legislation herald for general practitioners as they deliver care to their patients?

Before we delve into some of the implications for general practice, it would be useful to give a brief summary of what exactly is changing in the area of decision making in Ireland. Until now in Ireland the only recognised legal mechanisms for making decisions on behalf of another person in Ireland were either through the Power of Attorney Act 1996 (the legislation underpinning enduring powers of attorney) or the Lunacy Regulation Ireland Act 1871 (the legislation underpinning wards of court). Whilst they have functioned reasonably well in practice, enduring powers of attorney are only useful where a person has both the foresight and the capacity to put them in place in advance of losing capacity, thus avoiding the possibility of them having to be made a Ward of Court in future. Wards of court, being based on legislation which pre-dates the foundation of the Irish State by some fifty years, are wholly inconsistent with any sort of modern approach to assisted decision making. They are inflexible by their nature (allowing no room for those who may have partial decision-making capacity) and demeaning towards the persons whom they seek to protect – orders are still made to this day declaring that someone has been found by inquisition 'idiot, lunatic or of unsound mind'.

The Act attempts to overhaul and modernise Ireland's capacity and decision-making landscape. Its primary purpose, as stated in its preamble, is to maximize a person's right to make their own decisions (with legally recognized supports) wherever possible, either immediately or in the future. One of its central tenets is the winding up of the ward of court system and its replacement with a tiered approach to decision making. Practically speaking, this entails providing a graduated level of assistance to persons depending on their level of disability or cognitive impairment. Of course, some may still require maximal support akin to wards of court, but many may be able to function and make decisions with a lower and less intrusive level of assistance. In addition, and regardless of the level of assistance, there is a far greater level of oversight of those persons making decisions and new periodic reporting requirements – with the ultimate aim of minimising the potential for abuse. The enduring power of attorney system meanwhile will largely remain unchanged, with the exception of some increased oversight and reporting requirements around its operation. So undoubtably the overall aim of the legislation is certainly commendable, but what should Ireland's general practice community be aware of with its implementation looming?

The new system allows for a person to appoint decision making assistants or co-decision makers to assist them with decisions (as well as allowing for the Circuit Court to appoint decision making representatives for persons with greater incapacity / cognitive impairment). These represent a new cohort of person and terms whom general practitioners may start to encounter in day-to-day practice – alongside the already existing attorneys under the enduring power of attorney system. One of the benefits of the new system for all of the above persons is the increased reporting and oversight of these persons by the newly appointed Decision Making Support Service ("DSS"). Whilst both society and the law expect all such persons to act in the best interest of the person whom they are representing (and indeed the vast majority will do this) – human nature dictates that there will always be exceptions to this general rule. Under the current system for both enduring powers of attorney and wards of court the powers there are very limited oversight and reporting requirements. It is not clear to whom or what body a general practitioner should refer to if they have concerns that a patient's attorney or representative may not be acting in their best interests. With the new system, general practitioners may report any such concerns directly to the DSS, who will then arrange for a 'visitor' to check in on the arrangement and ensure that the patient's best interests are indeed being protected.

A further positive for general practice, as well as the wider healthcare community, will be the inclusion of 'healthcare decisions' within the remit of the new system. Under the current system, all healthcare decisions pertaining to a ward of court need to be made by order of the High Court. This of course presents huge procedural obstacles to any practitioner looking to provide care of his or her patient. Whilst there has always existed a 'best interests' exception in the case of emergencies, any routine procedures and so forth would by the letter of the law require High Court approval. It is unclear how low the threshold would be set for which approval may be required – for example would the commencement of a new medication also require such approval? As such, and in addition to the procedural obstacles, this places a general practitioner on very uncertain grounds legally speaking when making many medical decisions for a ward of court. With the new decision-making system, all healthcare decisions are now explicitly listed as being amongst the decisions for which the assisted decision-making process is applicable - removing both the procedural barriers to care as well as placing the medical professional on much surer legal footing. The exception to this is those decision relating to life-saving treatment, which are still decided by the medical practitioner in case of incapacity, subject to any applicable advanced healthcare directive. It is important to note however that a last-minute amendment has been proposed in advance of the full implementation of this system which would exclude Enduring Powers of Attorney from this change. So, a discrepancy would exist whereby those utilising the new tiered assisted decision-making system could make healthcare decisions as part of it, but decisions for those under the Enduring Powers of Attorney system would remain within the domain of the medical practitioner.

On a practical level, the new system now provides for a searchable register of some decision-making agreements and of enduring powers of attorney – this register will be available online and searchable by either i) a recognised member of a professional body that has been approved by the decision making support service; or ii) a member of the public who can demonstrate an legitimate interest. Although there is no further clarity as yet as to which professional bodies will be so approved, one assumes that medical professionals will be included. This will allow general practitioners to ensure that they are dealing with the right persons when it comes to treating persons with reduced capacity, as well as ensuring that the decision-making agreement in question covers the decision being contemplated.

Finally, the Act does provide much firmer legal foundations for the operation of advanced healthcare directives on these shores. Whilst previously recognised in common law (i.e. by the Irish Courts) there was no piece of legislation until now which set out how they should operate and what the requirements around making them may be. The Act states that anyone over the age of 18 who has capacity may make an advanced healthcare directive. It provides that the making of such a directive should be witnessed, but that the directive itself need not be in writing (i.e. a video / audio recording may suffice). Once made, any refusal of treatment contained in it must be respected. An advanced healthcare directive may also set out treatment requests, and while a medical practitioner is not obliged to provide such treatments, they are obliged to take them into consideration when deciding on a treatment course. Following the entry into force of the Act general practitioners can now proceed more confidently and with more robust legal backing when presented with these advanced healthcare directives.

Unfortunately, however, and in contrast to decision making agreements, there will be no searchable register of advanced healthcare directives. It is not entirely clear why these directives will not have a searchable register (although it may have something to do with data protection and the more sensitive nature of their contents), and this surely represents a real missed opportunity in this area. General practitioners dealing with acute deteriorations in the community or in care homes may often be presented with documents purporting to be advanced healthcare directives, but it may often not be possible to quickly establish their veracity or whether they have met procedural requirements. Without an official register to rely on, many may understandably choose to err on the side of caution and treat or refer to acute services as applicable- the uncertainty coupled with the irreversibility often associated with choosing alternative option leaves many with little in the way of real choice. It is noteworthy that section 86 of the Act does exclude medical practitioners from criminal or civil liability if they had reasonable grounds to believe, and did believe, that the advanced healthcare directive in question was valid and enforceable. Nevertheless, for most general practitioners this does not provide complete comfort – with no clarify for example on the position as regards professional complaints against them on foot of their actions.

At the time of writing, the go live date for full implementation of the Act is the 21st of November 2022. There have been false starts before and it is possible there may be one or two more twists on the road yet, but at this stage we can expect that such delays will be in the order of no more than a few short months. As such, it is crucial that the General Practice community familiarise themselves with the changes that are afoot in this area, and ready themselves for both new actors and terms which they will shortly be encountering as well as the benefits and complexities that the Act may herald.

Otalgia in GP practice, a diagnostic dilemma

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Patients walk in through the door with various health issues and concerns, ear pain is not an exception and is a very common presentation in everyday GP practices.

I recently reviewed a 69-year-old male, who was referred by his GP to ENT A&E department. Reason for referral being unilateral (left) otalgia for 6 weeks associated with mild peri auricular tenderness. No relief despite two different courses of antibiotics and was referred to ENT for further assessment. He has a background history of hypertension, Atrial fibrillation, prolonged CCU admission due to covid pneumonitis, COPD and dilated cardiomyopathy. He is also an ex-smoker (quit 20 years ago) and drinks 6-10 units of alcohol weekly. On examination the gentleman was vitally stable, under otomicroscopy his both ears appeared normal with an intact and functional tympanic membrane. His facial nerve was intact. The oral examination was unremarkable apart from a mildly coated tongue. Noted tiny palpable L2 lymphadenopathy on left side of neck palpation. Patient at this time mentioned that he could have occasional painful swallowing (odynophagia) however denied any dysphagia, weight loss, night sweats and family history of any malignancies. For completion of an ENT examination a flexible nasendoscopy was performed and to everyone’s disbelief a mass lesion/ tumour in the left base of tongue was spotted. Which was unfortunate for the pleasant gentleman but was very surprising as the only presenting complain this man described was a unilateral otalgia. He is now being investigated further to distinguish the extent of disease, available treatment options and prognosis.

Now, as the title suggests, Otalgia is indeed a diagnostic dilemma for us clinicians, for which in this essay we will try to find answers and connect the dots to deliver effective and exceptional care for our patients.

Otalgia can be categorized into two types. Primary otalgia is known as pain that originates from the ear itself, whereas Secondary Otalgia (or in other words referred pain to the ear) originates outside of the ear. Primary otalgia is commonly seen in children and adolescents whereas secondary otalgia is more common in adults. Within the 10-15 minute consultation time we spend with each patient, a comprehensive history and physical examination is key to determine the etiology and to manage appropriately

From the time the patient walks into the consultation room, observe and listen closely to what the patient has to say regarding the pain. Question the location, duration, aggravating and alleviating factors, medical history, associated symptoms such as hearing loss on the symptomatic ear, headache and so on. Ask for specific symptoms such as otorrhea, tympanic membrane fullness and vertigo which may suggest a primary etiology. Social history such as smoking, and alcohol abuse is important to take note of in every initial assessment. The character of pain also provides important clues, for example a continuous and progressively worsening pain is more likely to be associated with infection which is a primary etiology. Intermittent pain is likely to be associated with secondary causes.

Remember a unilateral Otalgia may be the only presenting symptom in several serious conditions such as malignant neoplasms and temporal arteritis almost always with a normal ear examination like the case we discussed already at the beginning. Assess potential risks such as age being 50 years and older with a concerning history of unintentional weight loss, heavy alcohol consumption, tobacco exposure, is a diabetic, coronary artery disease and or immunocompromised. This population is at higher risk for head, neck and esophageal cancers. Studies mention consumption of 50g or more of alcohol per day increases the risk of head and neck cancers by two to three times compared with nondrinkers; smoking and drinking alcohol increases the risk more than three folds compared with alcohol use alone. In addition, complaints of unilateral hearing loss warrant further investigation if an obvious cause is not apparent (e.g., lodged foreign body, cerumen impaction etc.)

Examining the patient is a crucial part of any consultation. Physical examination should include inspection of the auricle and periauricular region, as well as an otoscopic examination. GP’s often do not have access to readily use otomicroscopy in the community.

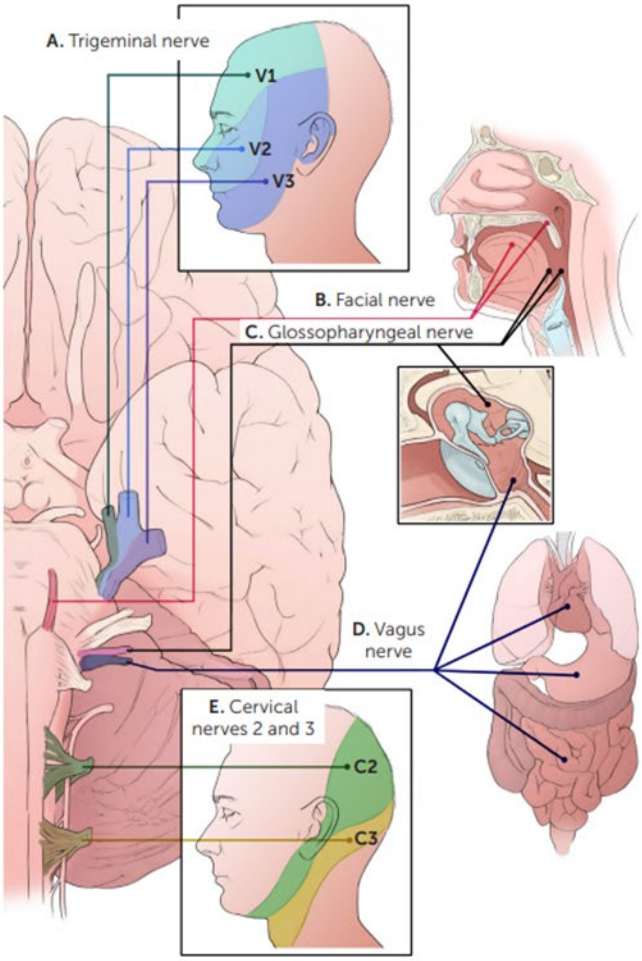
In terms of Primary otalgia, can be further delineated into pain originating from the external ear, ear canal or middle ear. Causes such as trauma, sunburn, acute folliculitis, cellulitis of auricle, contact dermatitis and other skin conditions can trigger external ear pain. Make sure to further assess with imaging when trauma is suspected as there could be potential temporal, parietal, and or skull base fracture which can be fatal if missed. Rare systemic disease called relapsing polychondritis may cause pain which is characterized by a relapsing, bilateral, erythematous or violaceous appearance on the external ear, sparing the ear lobes.

Pain originating from external auditory canal may be due to cerumen impaction, foreign bodies (seen usually in pediatric and elderly population) and most commonly otitis externa (also known as swimmer's ear). Otitis externa is often associated with otorrhea, swelling, redness and inflammation along the external auditory canal. Bacteria accounts for 90% of infection and 10% fungal. An effective aural toilet is the treatment of choice to achieve resolution. Malignant otitis externa is a rare condition found in patients with diabetes or who are immunocompromised. Which is characterized by severe unrelenting pain and a subtle finding of inferior external auditory canal granulation tissue at the bony cartilaginous junction. Herpes zoster oticus is caused by reactivation of latent herpes zoster infection from the geniculate ganglion (facial nerve) but also can involve cranial nerves V,IX and X. Symptoms include facial paralysis and ear pain while the patient has vesicles in the external auditory canal.

Thirdly pain originating from middle ear typically is due to acute otitis media in which the onset of pain would be acute (less than 48 hours) , middle ear effusion with erythema and moderate to severe bulging of the tympanic membrane. History of tympanic membrane perforation associated with active otorrhoea may indicate chronic suppurative otitis media which does require aural toilet and further ENT referral for elective myringoplasty if beneficial for patient, particularly in young patients with associated conductive hearing loss. Bullous myringitis is uncommon but occurs when serous or hemorrhagic blisters form in the ear canal or on the lateral tympanic membrane. Symptoms generally include sudden onset of severe pain and hearing loss. Pain often decreases after bullae rupture and drain. Eustachian tube dysfunction affects an estimated 3% of population presenting with primary otalgia, in which tympanic membrane retraction is visualized, a negative valsalva maneuver and or tympanogram indicate negative middle ear pressure. Other uncommon causes include infectious, neoplastic and inflammatory etiologies. Especially tumours in the postnasal space obstructing the eustachian tube may show a middle ear effusion on examination. Mastoiditis is an infection in the air cells of the skull behind the ear, this is a rare complication from acute otitis media. This is a clinical diagnosis with peri auricular tenderness, erythema, edema, and warmth in the mastoid region. Cholesteatoma may produce a sense of fullness rather than a severe pain but may also be asymptomatic. These abnormal findings with apparent cause can be identified and treated appropriately.

Now, when it comes to secondary otalgia with a normal or equivocal finding of the ear, warrants further head and neck examination, as it is a referred pain arising from an origin elsewhere other than the ear. The etiology of secondary otalgia is more complex as the nerves innervating the ear have a shared distribution to include the head, neck, chest and abdomen. These nerves provide sensory innervation to these regions. Cranial nerves V, VII, X,C2 and C3 innervate the auricle; the external auditory meatus and canal by cranial nerves V,VII and X ; the tympanic membrane by cranial nerves VII, IX and X and the middle ear by cranial nerves V, VII and IX . Any kind of lesion (such as a tumour, infection, or an inflammatory process) within the sensory distribution of any of these nerves may cause referred pain to the ear. Sensory distribution of the nerves innervating the ear is portrayed in figure 1 below for better understanding.

FIGURE 1



Sensory distribution of the nerves innervating the ear. ***(A)*** **Trigeminal nerve (V): face, sinuses, teeth.** ***(B)*** **Facial nerve (VII): anterior two-thirds of the tongue, soft palate.** ***(C)*** **Glossopharyngeal nerve (IX): posterior one-third of the tongue, tonsils, pharynx, middle ears.** ***(D)*** **Vagus nerve (X): heart, lungs, trachea, bronchi, larynx, pharynx, gastrointestinal tract, middle ears.** ***(E)*** **Cervical nerves 2 and 3 (C2 and C3): external ears, ear canals, anterior region of the neck, posterior region of the neck.**

Illustration by Dave Klemm

Let's focus on frequent etiologies that are responsible for the referred ear pain. Pain arising from the trigeminal nerve (CN V) is the most common source of secondary otalgia in adults, stemming from TMJ syndrome, dental infections, trigeminal neuralgia, and mandibular osteomyelitis or tumour. Herpes zoster can affect cranial nerve VII to a lesser degree than in Ramsay hunt syndrome, which can cause otalgia associated with bell's palsy and a normal ear examination. Cranial nerve IX can cause referred pain to ear which is caused by tonsillitis, pharyngitis, sinusitis, pharyngeal tumour, or glossopharyngeal neuromas. Interestingly the vagus nerve affects many systems as inferior as the colon and can be activated by any vagal stimulation. Otalgia has been reported as the presenting symptom of myocardial ischemia from irritation of this nerve. In Patients with risk factors for coronary artery disease with unilateral otalgia (however uncommon) consider ECG, CXR and blood troponin. If any abnormal result refer patient to nearest Emergency department for cardiac work up. In patients older than 50 years with headache, especially scalp tenderness, diplopia, fever ,anorexia and malaise with a ESR of >= 50 mm per hour highly suspect a diagnosis of Temporal arteritis. Which requires immediate treatment with high dose systemic steroids (to prevent permanent blindness) and urgent referral to appropriate specialty for biopsy and further management. Temporal pain is only present in 40% of patients with temporal arteritis.

Secondary Otalgia may indicate a pool of other diagnosis. Less common subacute etiologies can be cervical spine arthritis, cervical adenopathy, gastroesophageal reflux, trigeminal/glossopharyngeal/geniculate/sphenopalatine neuralgia, myofascial pain, psychogenic, salivary gland disorders and thyroiditis. Less common acute etiologies include subdural hematoma, central line placement, carotid artery aneurysm and pott's puffy tumour.

Otalgia as a symptom in Primary care may interpret a wide spectrum of diagnosis, few unfortunately serious conditions which needs prompt medical attention. A decent knowledge in anatomy, knowing the origin and distribution of various nerves which richly innervate the ear can give us valid clues to find the missing pieces of this mystery puzzle. Treatment is most effective when there is minimal delay after a diagnosis is obtained. Making ourselves aware of this symptom and understanding more about it, helps us clinicians to deliver patients the best care which they deserve and to improve their quality of life.

Assisted-Dying: The Future of General Practice in Ireland?

Perspectives from a New Zealand Practitioner

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“Good morrrrning." The way she rolled the letter 'r' made me smile. "I'm detecting you grew up somewhere in Southland?" My accent almost matched hers, yet mine reflected a North Island background. The zoom connection was not perfect, but her distinct branch of the Kiwi accent was unmistakable through the monitor. "Born and raised in Invercargill," she laughed.

Dr Emma Calvert is a general practitioner (GP) currently residing in Wellington, New Zealand. Since graduating from medical school in 2014, she has completed her general practice scope and is working part-time as a clinical advisor for a Primary Health Organisation – a group which oversees general practice administration. Even so, within the past year, however, Dr Calvert found a new vocation. "I'm an AMP [attending medical practitioner], the main go-to person for the process." The 'process' to which Dr Calvert referred to is administering medication for assisted dying.

Dying is a certainty in life, yet until recently, a legal decision on its precise timing for consenting terminally ill patients has not been possible in any country. Assisted dying allows the right to end one's own life with the assistance of a doctor. Such is its controversy as part of medical practice; only six countries globally have legalised it. Ireland is no exception, with assisted dying regarded as either manslaughter or murder. In recent years, however, Ireland has taken steps to put in motion more ‘progressive’ policies. In 2015, same-sex marriage was legalised, quickly followed by abortion rights in 2018 (McDonagh, 2020). Consequently, assisted dying is an important topic of discussion.

An attempt at assisted dying legalisation was initiated with the Dying with Dignity Bill 2020, but it was ultimately scrutinised and discontinued for various reasons, including fears over the provision of inadequate safeguards. A special Oireachtas committee is expected to re-examine the bill in late 2022 in another effort to establish its presence within the country (Kennedy-Cochrane, 2021). Although presently illegal in Ireland, assisted dying is likely to serve a future role in Irish medicine. Albeit, if permitted, the procedure's blending into medical practice is unlikely to be streamlined, given its practical and ethical complexities. If Ireland were to instate assisted dying into medical practice, following in precedence of another country may benefit. As a country of similar size, values and healthcare tactics, New Zealand's management of assisted dying, via its integration with general practice, may provide a necessary blueprints.

No dedicated assisted dying physicians presently exist in New Zealand. Therefore, medical doctors of any specialist scope can be certified to become such a practitioner. General practice appears to have ushered up most of the vacant positions. GPs are aware of the consequences of a diagnosis – having in all likelihood been involved in the earlier management of the particular patient, and as they often treat the same patient for years or decades – it is reasoned that they would be in the ideal position to guide those same patients to end of their lives Nonetheless, assisted dying is a practice still in its infancy in the South Pacific. Emotions remain high, and data is limited on the subject. A qualitative examination of the role through Dr Calvert is therefore welcome. She provides insight into how this emerging role could be integrated into future general practice, thus setting potential guidelines for future requirements of Irish GPs - should assisted dying be legalised.

Discussions on assisted dying are usually unsettling and consequently are invariably avoided. It can precipitate ill feelings, antagonism, and cause emotions to ‘boil over’. Assisted dying is generally believed to be a practice that one could only venture into after years of emotional reconciliation. As a young professional, Dr Calvert appears to break these assumptions. However, her passion has spawned only recently. While voting 'yes' on New Zealand’s 2020 Assisted Dying referendum, she admits to not having had harboured any strong feelings towards the subject. Rather, the subsequent discussions in her professional circles later shifted her mindset. "As [the law] started to come into effect, I became indignant that professional bodies were active against it," she said, "I went to a College [of General Practitioners] conference [where the topic was discussed], and they only had objectors on the panel. There are many conservative views within the sphere of general practice." Dr Calvert is not mistaken. While the New Zealand End-of-Life Choice Act received 65.2% public support, a recent study found that only 41% of New Zealand general practitioners were in favour (Young et al., 2019). Interestingly, palliative care specialists were the most opposed (Oliver et al., 2017). It appears that even fewer supporters in Ireland are represented. One survey showed that only 17% of physicians favour assisted dying in Ireland (Crowley et al., 2021). Alternatively, 52% of the Irish public is in favour (Leahy, 2020). As the younger generations, who, it seems, are more in favour of such ‘progress’ slowly gather more influence, assisted dying in Ireland may become inevitable. Standards and opinions evolve, and doctors may have no choice but to acknowledge the subject and adapt their thinking.

Frustrated that patients may struggle to find an obligative practitioner, Dr Calvert took matters into her own hands. "It set a fire in me," she reported. As part of her clinical advisor role, she initiated the legislative requirements for her region to provide an assisted-dying service. While doctors can conscientiously object to providing an assisted-dying service, the new law compels them to yield adequate contact details for patients to access an alternative practitioner. Suddenly understanding the necessity of the provision, Dr Calvert thought she "might as well get on board."

In New Zealand, eligibility for assisted dying is strict. Patients must be over 18 years of age and have a terminal illness likely to end their lives within six months. Unlike in Belgium, patients in New Zealand who are only suffering from psychiatric conditions are not eligible (Dyer et al., 2015). Should patients seek assisted dying in New Zealand, they must first undergo an initial assessment with an AMP, such as Dr Calvert. An independent medical practitioner will subsequently examine the patient for re-assessment. If the decision is considered uncertain, the patient is reviewed by a psychiatrist to ensure that they are competent in their decision-making. A registrar and panel reviews the patient before eligibility is confirmed (Ministry of Health, 2022). The time and the date for the administration of the medication are subsequently finalised.

Although rejections are frequent. From November 2021 to June 2022, 211 assisted dying applications were made, but only 68 patients were considered ineligible (Ministry of Health, 2022). Dr Calvert obtained similar ratios. "I've been given 14 cases, but I've performed five assisted deaths," she said. Dr Calvert elaborated further that several accepted patients passed before they could undergo the procedure. She later revealed that a colleague had rejected all nine applications they had received. "That is a difficult conversation with people if they're really set on having it," she said. Explaining further, she has found patients do not want to die, but are unable to bear the existence of living.

The cessation of suffering can thus be considered compassion – a motif that seen throughout the rest of the interview.

The core principle of assisted dying advocacy is the elevation of patient autonomy above other moral standards. Such autonomy even extends to the environment of their last 'hurrah'. "I had a younger guy with ‘death metal’ music playing in the background at his house, with 40 people around," Dr Calvert said. The day is specifically catered to the patient. While some patients have farewell parties, others may only have one or two people with them. In one instance, a karakia - a Māori spiritual ceremony - was performed for the patient. "I was blessed to be a part of it”, she recalled. Such personal experiences are not unique to Dr Calvert's patients. Private homes make up 79% of assisted dying locations, with hospices representing only 4% (Ministry of Health, 2022).

Arguments used by proponents against assisted dying refer to the doctor’s emotional discomfort during the procedure. Given its conflict with traditional religious teaching, apparent societal morals or beliefs, such as the belief in the ‘sanctity of life’. They could remind one of the Hippocratic Oath’s'do no harm'. Perhaps, some feel it to be an admission of guilt – feeling as though (our) medical science has ‘failed’. Recent studies have suggested that 30-50% of doctors find discomfort in participation in assisted dying (Kelly et al., 2020). They can hardly be blamed for such feelings. Dr Calvert's emotional experiences were, in contrast, divergent. "I've found it to be the most rewarding work which I do," she said, "This is the time and place to connect with a patient and learn what matters most to them." She reports how the AMP seems to develop a highly personal relationship with the patient during the initial assessment. Understanding their mindset, experience, and the collateral effect of the illness (towards carers, friends and family) is integral to understanding their reasons for such a decision.

The emotional quotient required for such human connectivity is the cornerstone of a GP's skillset. Given that patients can spend years or decades with the same GP, assisted dying could be considered the final stage of caring for the patient. Smets et al. (2011) determined that GPs were the most willing doctor specialty to perform assisted dying among Belgian physicians. While no medical professional should be expected or required to cater for assisted dying, general practice may already hold some of the desired skillsets to carry out the procedure. House calls, although waning as a custom within general practice, are integral to the assisted dying process. Most patients prefer assisted death to be in their own homes. Dr Calvert reports that she once travelled to Westport from Wellington, a distance of hundreds of kilometres, to carry out the procedure.

Utilising GPs for assisted dying is almost crucial when attempting to prevent any form of patient coercion. One of the concerns of assisted dying is that patients may feel inclined to die for someone else's benefit. Assisted death must be a self-directed decision with no external influence; otherwise, all participants involved would be considered aiding a suicide, a universal felony. Possible reasons for coercion range from reducing emotional familial burden to life insurance fraud. When examining the risks of coercion, Dr Calvert reflected on a case where reducing household stress weighed heavily on the patient. "He had a daughter jumping around outside, and had gone from full-time father to being bed-ridden and fed within five months," she said, "The patient didn't want to extend the memories for the daughter". While coercion was present, the patient's state of suffering could still qualify them for end-of-life care. The benefit of involving GPs is their ability to distinguish between coercion and essential altruism, a skillset attributed to their understanding of the family dynamic.

The close relationship between the patient and the GP will probably generate improved recognition of falsehoods during the initial assessment. Hypothetically, a patient may ask the GP for an assisted death to reduce the burden on a specific caregiver. However, if the GP was historically aware of an estranged relationship, they could suspect the caregiver of convincing the patient to influence or falsify an intimate relationship for personal gains, such as the attainment of inheritance.

A common misconception of the physician’s role in assisted dying is that it predominantly involves 'death and destruction'. These physicians administer the lethal medication to the patients, but as Dr Calvert informed, the practice represents only a tiny fraction of their job description. "[Non-assisted-dying physicians] see that I'm not running around playing Grim Reaper," she said, "Most of the time, we're not administering the medication, but rather giving the patients some peace of mind that they have another option". In the final few months of a patient's suffering from a terminal illness, there can be loss of body function, quality of life, dignity, and above all, autonomy. Dictated by hospital schedules and what others consider best for them (despite how well-intended). The inability to engage in what previously made their lives meaningful can be as distressing, if not more, than the illness itself. The patient, not the doctor, defines unbearable suffering. In a study completed in Oregon and Washington, two of the few US states that have legalised assisted dying, loss of autonomy was stated to be the primary reason for undergoing the procedure, closely followed by impaired quality of life (Al Rabadi et al., 2019).

Dr Calvert observed that many people whom she initially assessed for assisted dying never actually completed the process, regardless of their eligibility. "[The patient] gets relief in knowing that they have this control over the disease ravaging their bodies, whether they use it or not," she said, "There is a real beauty in that, knowing they can get some peace if [the illness] becomes too much."

When asked to compare the practice of assisted dying to 'traditional medicine', Dr Calvert noted how extensively focused assisted dying is on patient control. For example, when administering the medication, Dr Calvert described 'extra-long tubing' was used to ensure that the doctor could remove themselves to the other side of the room and for the family to be as close as possible to the patient. To end their life when they wish - in an environment of their choosing – helps restore some autonomy of which the patient has been stripped for so long.

Given the controversy and recent enactment of the law, assisted dying undoubtedly carries a stigma in New Zealand society. However, as the law is unlikely to be reversed, physicians in New Zealand must begin to accept assisted dying as part of the medical field. Dr Calvert describes how some palliative care centres previously dissuaded her from entering the premises to see a patient. The spectrum of reasons typically fell between religious affiliation, or personal morals, with the phrase "it's not right" frequently used. Nonetheless, Dr Calvert has observed that palliative care groups are becoming more supportive of the practice. "This would be very anecdotal, but there appears to be a general softening," she affirmed. However, when asked if she ever endeavours to express and justify her stance to others, she appeared disinterested. "Often I don't find myself getting into conversations, as it's quite an emotive topic," she responded, "Arguing back will likely push people into the opposite direction." Her emphasis continues to be comforting the patient, rather than trying to instil her opinion onto others. Social attitudes toward assisted dying may change, just as they have towards abortion, a previously contentious issue in New Zealand.

Assisted dying has an unknown future in Ireland. If Ireland continues its momentum as a ‘progressive’ leader with changing definitions of ethics and morality, the legalisation of assisted dying will likely be realised in the next decade or two. To whom its responsibility should fall will likely be of significant debate. Adding assisted dying to a specialty would change not only the job description but also the reputation of the role, for better or worse. Dr Calvert's experience as a New Zealand GP may help pave an understanding of a potential future collaboration between general practice and assisted dying in Ireland. GPs understand their patients most intimately. With an understanding of the patient's life, a GP could likely detect possible external pressures for coercion. However, assisted dying is a complex issue. It is susceptible, controversial and culturally specific, which forms the perfect storm for an unpredictable future. Only time will tell.

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Stigma and Community Medical Termination of Pregnancy:

Reflections from a General Practice Clinic in Ireland

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Introduction and Background

Termination of pregnancy, or abortion, are terms that possess ethical significance and persisting stigma. This stigma has been brought to the foreground following the overturned Roe v. Wade 2022 decision that previously protected the right to abortion in the United States (1). The decision was met with international outrage and disseminated an eery notion of a present-day The Handmaid's Tale (2) becoming reality. In the context of Ireland, prior to January 2019 (3), "one of the few options available to those seeking abortion in [the Republic of Ireland and Northern Ireland] was to travel abroad for legal access to services (most often to England)" (4). A history of forcing citizens to leave the country to access a medical service has lasting effects on societal perceptions, perpetuating shame. Furthermore, implications of the political and historical context on the individual, self-stigma, are important to consider, even in countries with current protected access to termination of pregnancy.

General practitioners are ideally situated to provide the service of medical termination of pregnancy (MTOP), and to simultaneously combat the stigma that patients may encounter when accessing this service. In a general practice clinic in Ireland as a medical student, I was privileged to observe and participate in MTOP consultations. The experience and observations inspired reflection and research into community MTOP in Ireland, a topic that has not been greatly explored since the widespread adoption of MTOP services. Themes discussed include: stigma, support, access, humanism, and risk prevention.

Stigma

From the moment patients entered the consultations, internalised stigma was evident. The gravity of the consultation for patients was tangible through closed body language and visible signs of anxiety. The physician immediately normalised the consultations and empowered patients by stating:

I see from your appointment that you are here for a medical termination of pregnancy. I hope that this consultation will be helpful to you. I understand that this is a very difficult decision for anyone to make, and as long as it is your decision, I am certain it is a good decision.

Following focused histories and describing the MTOP procedure, patients frequently had queries and expressed fear regarding confidentiality. Numerous levels of discretion concerns were described: partner, family and friends, other healthcare staff and physicians, and the general public. Stigma also manifested in behaviours such as hiding the pills out of concern that individuals in the waiting room would recognise them. These concerns and behaviours powerfully illustrate how stigma permeates the thoughts and beliefs of those accessing MTOP. Patients were reassured that the consultation was confidential, and that they were in control of information sharing. The physician asked permission from patients to write a letter to inform their general practitioners of the medical procedure, and in doing so continued to normalise the service by reassuring patients that their doctors would appreciate this information for continuity of care. Some patients refused this request in favour of complete confidentiality. It is evident that stigma, both internal and external, remains a significant burden for individuals accessing MTOP.

To combat stigma, both societal reform and individual interactions must be considered. Normalisation is a major approach, utilised widely by awareness campaigns and individuals on social media. Specifically, following the overturned decision in the United States, individuals worldwide turned to social media to share their personal experiences of termination of pregnancy. These voices amplified a message of support for MTOP access, and worked to shift the views of the public, as well as empowering individuals who may access MTOP in the future. Providing MTOP in general practice clinics integrated in the day-to-day caseload strongly normalises the service and further de-stigmatises patients by allowing for anonymity in the waiting-room, which would not be possible in a dedicated MTOP service. General practitioners have the opportunity to engage in large-scale advocacy, as well as individually address the self-stigma felt by their patients. Regarding advocacy, the Irish physician group Doctors for Choice (DfC) is an excellent example of how physicians can positively influence public perception of MTOP and pressure government concerning MTOP legislation (5). Importantly, physicians providing and advocating for MTOP may also endure stigma and marginalisation from other medical professionals (5), therefore supports for physicians must also be considered when addressing MTOP stigma. At the individual level, general practitioners can conduct MTOP consultations founded upon the principles of validation and empowerment. General practitioners are also in the position to offer further counselling support to alleviate the internalised stigma endured by patients.

Support

A factor alleviating anxiety for patients was the role of supportive partners, family members, or friends in the consultations. These individuals were welcomed by the physician and thanked for their roles as advocates for the patients, further normalising the consultations and protecting against external stigma. Throughout the consultations, the support provided by these individuals was both emotional as well as cognitive. The individuals were able to provide comfort to patients, in addition to offering the capacity to attend and recall the instructions for the termination procedure. In consultations with patients who attended alone, patients often requested instructions to be repeated numerous times, and shared remarks of distress in forgetting and incorrectly performing the procedure. Recognising the nature of an MTOP consultation and the stress experienced by the patient, having a supportive individual present in the consultation is of great benefit. Although not observed, it is important to note that conversely, in circumstances where coercion may be suspected, it would be appropriate to ask the individual to leave the consultation in a tactful manner.

A next step in mediating stigma through providing support may be to have the primary care team encourage patients to have a supportive individual attend the consultations. This discussion would occur upon booking the appointments and would be careful to avoid pressuring patients if they preferred to attend alone. It is possible that patients are unaware of the option, and patients may be more likely to do so if informed.

Access

Access was not explored with patients directly, nevertheless accessibility of MTOP services should be examined as barriers to access prevent normalisation of the service and perpetuate stigma. As an Irish resident, access to medical termination of pregnancy is free. The ‘My Options’ service (myoptions.ie) provides counsellors who will share information and a list of clinics who offer the service up to 9 weeks gestation (6). Accessibility is multi-faceted, beginning from obtaining information about the service and continuing until the care has concluded. Importantly, barriers to access are not alleviated simply by offering a free service which addresses only a financial barrier. Firstly, patients require access to the internet, technological literacy to navigate the site, and access to a phone and a safe space to contact the ‘My Options’ counsellors. Upon review, the ‘My Options’ resources were reachable as a top result following internet search of keywords such as ‘abortion Ireland’, and the information is clear and non-judgemental. Access also incorporates acceptability of the service (7), which is influenced by stigma, a sociocultural barrier discussed previously.

As only certain clinics provide the service, accessibility is dependent on the clinics available. Throughout one week in the clinic, there was a marked increase in the number of MTOP consultations, with numerous per day. It was discovered that a physician at a different clinic who provided the service was on holiday. This increase in appointments demonstrates the essential nature of MTOP service providers. The MTOP legislation requires three visits, presenting a barrier to access for patients and a time-demand for physicians. The first visit to confirm an informed decision and gestational age, the second visit taking place a minimum of three days after where the medications are dispensed, and the third visit two weeks following the procedure to assess completion, complications, and contraception (8). Reflections from Mullally et al. (2020) following eighteen months of the MOPT service in Ireland included discussion about the three-day wait, asserting that:

Apart from the presumptive and patronizing insinuation that people are not certain in their decision, we have all had experience where this waiting period has resulted in a person being unable to avail of care in the ROI and being forced to travel or avail of medications elsewhere. Legislation will be reviewed after three years and this will be an area for advocacy (3).

General practitioners should not be required to enforce this waiting period, as they are physicians who have expertise in risk-management, and the service should be left to their discretion to be provided in a safe way that does not limit access. A factor that increased accessibility during and following the consultations was providing a one-page patient leaflet, created by a previous medical student, that detailed the procedure steps, what to expect, and possible complications to be aware of. This take-home resource enhanced understanding of the procedure and increased patient confidence, making for a more comfortable and secure patient care pathway. Ease of access is integral for MTOP services, consequently, all components must be evaluated and optimised.

Humanism

Humanistic care is fostered by a safe environment and doctor-patient trust. By providing the MTOP service, general practitioners have the opportunity to respond to sensitive topics with compassion. Emphasising the confidential nature of the consultation, demonstrating empathy by acknowledging the weight of the decision on the individual, and empowering the patient in their decision were approaches utilised to enhance patient comfort. Patients are not required to justify their decision for medical termination, they are only asked to confirm that the decision was their own. However, some patients chose to share circumstances including intimate partner violence and assault. These disclosures allowed the opportunity to listen and validate patients' experiences, and to offer further supportive services and advice. Furthermore, throughout the consultations, the physician offered themself as a point of contact for any concerns, and scheduled follow-up phone-calls. Despite being standard practice and part of legislation to safety-net and follow-up, the relief patients felt was evident knowing that the physician, who was not their primary care physician, cared enough to do so. General practitioners are uniquely situated and skilled in communication to be able to extend humanistic care to the MTOP service.

Risk Prevention

A crucial component of the MTOP consultation is discussing future contraception options. Most frequently, no regular method of contraception was being used prior to conception. Research by Horgan et al. (2022) on MTOP in Ireland corroborated this finding with “Three hundred fifteen (66%) of women at the time of presentation for first visit reported using no contraception” (8). The physician emphasised the importance of creating a contraception plan, often recommended the Mirena intrauterine device, then detailed the timeline of steps to arrange device insertion. Aiding in contraception prescribing is the recent HSE announcement, September 2022, of free prescription contraception of all methods for those 17-25 years of age (9). However, the arbitrary age cut-off excludes patients who should also benefit from this programme and re-evaluation of eligibility is necessary. Reproductive health, including MTOP and contraception carry historical and present-day stigma, and a general practice clinic offers a safe community space for education and service provision.

Conclusion

General practitioners are well-suited to provide MTOP and to additionally challenge stigma surrounding the service. As a physician, it is important to recognise the external and internalised stigma patients may experience in order to empower and advocate for patients. Encouraging supportive individuals to attend the consultations alongside the patient may also moderate stigma. Challenges to access of MTOP, such as the legislated three-day wait between first and second visits, must be addressed moving forward. Additionally, the MTOP consultation allows the opportunity to offer compassionate care, to provide a safe space for patients to disclose sensitive issues, and to discuss future contraception options. Following my experience, I greatly appreciate the importance and significance of providing MTOP in the community. I hope to have shed light on the impact of stigma-informed care for patients and the skills general practitioners have honed that aid in providing the MTOP service.

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Communication in General Practice: Crossed Wires or Crossing Barriers?

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As I was driving towards my first placement of Year 4, General Practice, the city morphed slowly into fields and farmhouses. This seemed like a far cry from the glamour of the operating theatres or the urgency of the Coronary Care Unit I witnessed on my year three hospital placements. In fact, as a medical student, I am embarrassed to admit that I bought into the rampant slew of negative media coverage and public scrutiny aimed against General Practice in the wake of the COVID-19 pandemic. I pulled up the car outside the two-story building, fresh scrubs, stethoscope in bag and ready to meet the challenge of another placement with enthusiasm and vigour, even if I did not expect it to give me any sway towards a future career.

By the time I pulled the car away for the last time three weeks later, I was a bona fide #TeamGP convert.

During my brief time in General Practice, I had the privilege of being part of many patient consultations, some of which were GP bread and butter such as viral illness and cardiovascular disease, and some were with the most complex patients suffering from chronic pain, mental illness or malignancy. The word ‘privilege’ is often used when describing a career in medicine, but no other specialty illustrated this to me in such a poignant way as General Practice. Some of the simplest connections with patients always left me with a smile on my face. I chuckled to myself as a little girl explained to me that her teddy that had accompanied her to the Doctor’s for some moral support was named ‘Stinky’, a pet name that we have bestowed upon our family dog. Who knew these trivial things could spark such joy?

Yet this rapport with patients did not come to me naturally as I gingerly picked up the phone to carry out my first consultation on day one of my placement. In a frenzy I bombarded the patient with my rehearsed, OSCE style questioning only to leave her dumbstruck at the other end of the phone and invariably dissatisfied with the consultation I should imagine. Luckily, I had the good fortune to have excellent mentors who I reckon have schooled me well in the nuances of a GP consultation. This was my first learning point; the General Practitioner is a Master of Communication.

This was when I was introduced to the concept of the Golden Minute. The concept of the Golden Minute stipulates that the GP begins the consultation with an open question which allows the patient to recount in their own words the reason behind their visit. During this time, the GP does not interrupt and instead reaffirms their attention via non-verbal techniques such as nodding or open body language. This is hugely beneficial as the patient will often have thought long and hard at home, before the consultation, about the key points they wish to discuss with the GP. The golden minute grants them the opportunity to get these worries out in the open straight away and this guides the consultation in a direction which is fulfilling to the patient and deals with the most pressing matters on their mind.

From my short experience in General Practice, a common consultation opener can often be, “Doctor, I need an antibiotic.” This is an interesting one to explore as the doctor potentially needs to challenge some health beliefs here around the use of antibiotics. This is incredibly important in this age of antibiotic stewardship. Indeed, a Northern Irish study found that in water samples from the river Lagan, antibiotic resistant bacteria have been found which can in some cases be multi-resistant of up to 11 major classes of antibiotics [1]. A shocking statistic to the scientific world and the ecologically minded amongst us but not one at the forefront of the average patient’s mind when they are suffering through the annual cold and flu season. The doctor now relies on their well-honed history and examination skills to distinguish the agonising strep throats and bacterial sinusitis infections from the self-resolving yearly URTIs and post COVID cases of costochondritis.

At this point, the explanation of the diagnosis to the patient lies in the hands of the GP, or possibly more accurately, their words. Someone who booked their appointment with the intention of receiving an antibiotic will likely not be impressed with their diagnosis of a viral URTI and so from our key Golden Minute, the consultation has now widened its scope into challenging the health beliefs of the patient. To finish, this consultation would be safety netted, in that the door would be left open for the patient to return if they noticed any worsening of their symptoms and this would conclude a consultation which is satisfying to the patient and responsible in today's fragile world.

There is perhaps no better figurehead for communication in General Practice than Michael Balint, a Hungarian psychoanalyst whose legacy lives on today in the form of Balint groups. Balint Groups are safe spaces where local doctors meet, seated in a circle, and discuss their most complex patients confidentially [2]. General Practice is renowned for complex and co-morbid patients, and a group such as this allows the care of these patients to be discussed in a way which focusses on the emotional and psycho-social needs of the patient and doctor. The ultimate intention is to improve the doctor patient relationship by working collaboratively with others and sharing the burden of difficult cases.

In the wise words of Michael Balint, the doctor-patient relationship is based on a "mutual investment" [3]. In the world of finance, to invest is to give money, time or effort into a project, bond, or property in the hope that this will yield a financially beneficial result in the future. In the same way, doctors give their time, advice and knowledge in the hope that someday they will see a positive 'return' in the health of their patient - mentally, physically and socially. Doctors often open themselves up in emotionally charged consultations in the hope that providing a patient with a listening ear will enable them to step upon the path to recovery. Perhaps this is by making an opportunistic attempt at steering a patient towards smoking cessation, perhaps it is a red flag cancer referral. Indeed, such is the personal and emotive nature of this investment, Balint went one step further in saying that "the doctor is the drug" [4].

This is a huge responsibility. Potentially one that can be overwhelming. The BMA published a report in October 2019 entitled "Mental Health and Wellbeing in the Medical Profession" containing a qualitative research study on the issues various medical specialists believed could lead to a deterioration in the mental health of doctors [5]. One intriguing point highlighted the increasing demand placed upon General Practitioners to consult more and more patients within more stringent time limitations. Moreover, public expectation has increased, to a point where doctors can feel that their industrious efforts are met with disdain. Today's general practitioner is certainly resilient. However, as we think about the "mutual investment", it is important to remember that it is mutual and therefore works both ways. If the doctor's best efforts are met by an unmotivated patient, little is likely achieved. Therapies such as Cognitive Behaviour Therapy to treat the likes of chronic pain cycles or anxiety states rely entirely on patient engagement. I can only hope that the rise of public health in the wake of the COVID-19 pandemic, championed in Northern Ireland by the ever level-headed and diligent Sir Michael McBride may engage patients in their own well-being and self-care and lead to a future-proof generation of patient experts.

Now for more myth-busting. General Practice is not simply a watered-down secondary care. In fact, GPs often pull up the slack of secondary care and act as final decision makers in cases where patients have been recirculated around various specialists only to feel like they have moved no further forward. Unsurprisingly, Michael Balint had an astute term for this as well; "the collusion of anonymity" [6]. A BMA study has shown that in July 2022, 39% of patients were waiting over 18 weeks for consultant led elective care [7]. This is a massive jump from pre-COVID times. As such, the weight of caring for frustrated, anxious patients as they wait on referrals falls on the General Practitioner and the Primary Care MDT.

Indeed, during my attachment, I was fortunate enough to attend a GP Minor Surgery Clinic, in which I had the opportunity to assist the GP in performing punch biopsies of suspicious lesions and to observe draining of sebaceous cysts. Being part of the process of removing worrying lumps/moles for patients and seeing the immediate positive impact this can have on them was a profoundly rewarding experience and one which I did not expect to have in General Practice. Most importantly, this is a process which can take place on the patient's doorstep in a timely manner. It ensures continuity of care to those who are the most vulnerable, for example, the elderly population in rural areas who may struggle to reach the nearest hospital. The roll out of the diverse MDT across all 17 GP Federations in Northern Ireland will be a revolution in primary care once complete, and such collaborative practice will be an asset to the diverse range of patient groups that they cover.

Communication strategies and consultation styles such as the wise words of Balint may be a useful starting point when it comes to medical training, but a 'one size fits all' approach is useless at best and irresponsible at worst in the world of General Practice. Often mental health conditions present to the GP couched as physical health problems and the doctor in this case must maintain an open mind to explore this with the patient. Northern Ireland has a complex past. This trauma persists in certain patient demographics and has even trickled down through to the ceasefire generation. It was when considering this that I learned of Trauma Informed Care. In September 2018 the Safeguarding Board Northern Ireland commissioned a rapid evidence assessment to facilitate and support the adoption of Trauma Informed Care across NI [8]. Trauma Informed Care encourages the clinician to understand the past experiences which have shaped a patient into who they are today and stresses the significance of empowering these individuals to accept their past experiences and forge ahead into the rest of their lives with a support network around them.

Trauma permeates much deeper than just how a patient perceives their illness. It has been shown that four or more 'Adverse Childhood Experiences' (ACE) can have a substantial impact on a person's life in real terms, from doubling the risk of developing a chronic disease to increasing the risk of heroin use 16 times [9]. These adverse childhood experiences accumulate and comprise social issues such as parental separation, domestic violence, neglect or abuse in all its forms. They are at their highest prevalence in areas of social deprivation, making this a serious public health concern. Urban GPs in inner city areas are beacons of light and safety in areas hit hardest by poverty, the current cost of living crisis and relics from the Troubles. The consequences of which come in the form of high levels of mental health issues such as anxiety and PTSD, as well as increased levels of criminal activity. Trauma Informed Care ensures that as healthcare professionals, we have the open mindedness to consider the effect a traumatic childhood has on physical well-being. It normalises talking candidly with patients about the trauma which alters how they view the world and themselves.

Social prescribing is a technique which aims to improve patient outcomes by engaging them in group activities which mend the body and soul. These include anything from walking groups to cold water swimming for the more adventurous patients. Indeed, a local GP surgery engages some of their patients in a unique experience known as 'Alpaca Therapy' and this was nominated for the Nursing Times Awards 2022 under the category of 'Children's Services' [10]. Creative innovations such as this in the world of General Practice is just the novelty needed after the trauma of COVID-19. Indeed, concept of "dualism" in that the mind and body are intricately intertwined has existed since the 17th Century after being formulated by the great philosopher René Descartes, and in today's world this remains more relevant than ever.

From the building blocks of the past in the form of Michael Balint to modern innovations such as social prescribing, the GP consultation has evolved alongside the diverse patient base which it serves. To understand the illness, it is crucial to understand the patient and no other profession in medicine can provide this quite like the general practitioner. The GP maintains continuity of care throughout a patient’s lifetime and in doing so the profession has navigated a changing world. The GP has stayed resilient in times of crisis such as COVID-19. They have opened their minds to the changing landscapes of mental health consultations in medicine. They have opened their practices to new members of the MDT, all in the hope of providing a complete and fit for purpose service in today’s world. To say a GP is a jack of all trades is both a complement and an offense. Yes, a GP is capable of medically managing anything from an arthritic joint to acute anaphylaxis, but they are also masters of the specific field that is Generalism. Masters of the consultation, the patient, the Swiss Army Knife of the community who can cope with any issue thrown at them. As a medical student, I realise that it will take many years for me to achieve the skill sets which I observed on my short placement in General Practice, but I will end by saying that I anticipate the journey with excitement.

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Impacts of Climate Change on Waterborne Disease in Rural Communities in Ireland

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Abstract

Climate change is expected to impact the spread of waterborne disease globally. Waterborne disease disproportionately affects rural populations in Ireland. In this review, the potential effects of climate change on waterborne disease in rural populations in Ireland are explored. Verotoxigenic escherichia coli and cryptosporidium are used as indicators of waterborne disease. Increased intensity and frequency of rainfall events may amplify the risk of drinking water contamination in rural private water supplies, exacerbating existing high levels of microbiological contamination and increasing the risk of subsequent disease. Urban drinking water has very low levels of microbiological contamination, and contamination levels are not clearly endangered by changes to rainfall patterns. Surface water pollution may be worsened by increased runoff and wastewater discharge secondary to intense rain. Contamination of surface waters has been associated with waterborne disease. More frequent flooding is expected, and increased contact with contaminated floodwaters has previously been linked with VTEC and cryptosporidiosis incidence in Ireland.

Introduction

The climate emergency will have a huge impact on the transmission of waterborne disease globally. Increases in storms can contaminate coastal water, heavy rainfall events can overwhelm existing infrastructure, and increased ambient temperatures make bacterial and protozoan waterborne pathogens more likely to grow.(1,2) Climate change is already causing migration and conflict, which damages water infrastructure and leaves populations without adequate access to sanitation and clean water.(3,4)

Diarrhoeal disease is the 8th leading cause of death globally, and in under 5s diarrhoeal disease causes 8% of deaths. Rates of diarrhoeal disease are dropping worldwide. In 2000, diarrhoeal disease accounted for over 2,600,000 deaths globally, compared to

1,500,000 in 2019.(5,6) There is concern that climate change will slow the decline in deaths globally.(7)

Most diarrhoeal disease can be spread through waterborne transmission. In Ireland, key pathogenic causes include salmonella, campylobacter, escherichia coli, and the protozoa cryptosporidium, as well as myriad viral causes.(8) The identification of the route of transmission of diarrhoeal disease often requires significant investigation. Many waterborne organisms are commonly spread by foodborne or person-to-person routes in Ireland. The terms “food poisoning” and “acute gastroenteritis” are often used for diseases associated with these organisms.

In the Republic of Ireland (ROI), many of the organisms responsible for gastroenteritis are notifiable organisms.(9) In Northern Ireland (NI) food poisoning is notifiable, as are the causative organisms. (10) In 2003, a telephone survey across Ireland identified that of an estimated 3.2 million cases of gastroenteritis, only 29% attended a GP, and under 7% of people submitted a stool sample for lab analysis.(11) While this is an old study, it shows that a large portion of people with acute gastroenteritis are not represented in national statistics.

In this review, focus will be placed on cryptosporidium and verotoxigenic escherichia coli (VTEC) due to the important role that waterborne transmission plays in their aetiology in Ireland, and because they are well-studied in both water contamination and epidemiology. (12,13)

Rates of cryptosporidiosis in the Republic of Ireland (ROI) are the second highest Europe, although monitoring is limited in some countries. In the ROI, crude incidence was 12.8 cases per 100,000 people in 2018, and in Northern Ireland (NI) it was 15.8. Cases in under 5s were even higher, at 92.3 per 100,000. (8,13)

In 2017, rates of VTEC in the ROI were the highest in Europe, and 10 times higher than the European average at 19.4 cases per 100,000 people. Incidence in under 5s was 109 per 100,000. In NI, there were 3.0 cases per 100,000, although NI records only one of the verotoxin-producing serotypes of E. coli. (8,12)

Rural populations experience a higher burden of these diseases and have a higher exposure to their risk factors: untreated water and contact with livestock. People in rural areas are 3 times as likely to develop VTEC infection.(14–16) Rural populations are less likely to be connected to water infrastructure, and so have higher reliance on private water sources and wastewater management systems.(17–21)

This review aims to explore how climate change will affect waterborne disease in rural communities in Ireland using VTEC and cryptosporidium as indicator pathogens.

Drinking Water Contamination

Private Water Sources

Around a third of households in the ROI rely on septic tank systems for waste management.(21) In 2009, 17% of households in NI used septic tanks.(20) This is more common in rural areas, as urban and suburban areas tend to be supplied by public sewerage.(22) In the ROI, half of these septic failed inspection in 2021, and of those, half did so due to health risks.(21) Septic tanks are not routinely inspected by the Northern Irish government.(20)

When water moves through the top layers of earth, solutes are carried down towards groundwater. Higher intensity rainfall increases the depth and velocity of percolation, which in turn increases the risk of groundwater pollution.(23) Contamination can come from different sources. Having a septic tank within 40-100m of the wellhead increases contamination.(24) Grazing animals in the area are also associated with microbiological pollution.(25) Other sources include run-off from fertilised fields, or overground storage.(26) 137,000 households in the ROI have both a septic tank and a private well.(27)

Hydrogeology also plays a large role in groundwater contamination. Differences in the permeability and thickness of soils, as well as the type of bedrock in the area all affect groundwater vulnerability. In Ireland, particularly vulnerable areas include counties

Kerry, Cork, Clare, Wicklow, Mayo, and Donegal.(28) NI also has areas of high vulnerability.(29)

Given the likely increase in warming of 1.5 degrees in the coming decades, Ireland will see increases in mean annual temperature. Although a 2017 report from the EPA predicted decreases in annual rainfall due to climate change, the IPCC Sixth Assessment Report predicts increases in rainfall in the next 20 years. Summer precipitation is predicted to decrease with further warming, while winter precipitation is predicted to increase. River flooding is set to decrease in Northern Europe, while pluvial flooding is predicted to increase. Extreme rainfall events will become more frequent and more intense.(30,31)

High rainfall increases the radius of impact from pollution sources.(25) High rainfall was found to be associated with contamination in a study on private wells in County Cork.(32) This was supported by a study in the mid-western region of Ireland, and an Ireland-wide study found increased contamination in wells with high rainfall in the 5 days before measurement.(24,33)

In the ROI, 10.6% of the population rely on private wells for access to drinking water, and these tend to be untreated. An additional 5% use private group schemes and small private supplies, which can be treated by the owner. 1% of the population relies on private supply in NI. These supplies tend to be drawn from groundwater. Levels of microbiological contamination in these supplies are high. 30% of private wells were found to be contaminated in 2013, and around 1 in 20 private group schemes and small private supplies were contaminated. In NI this trend continues with 5% of private water supplies showing contamination.(18,19,34)

Private well use is a strong risk factor for VTEC infection: a 2014 paper predicted a 5-6 times higher likelihood of infection. High cattle density also increased the likelihood of infection within rural areas.(15,16) High rainfall was associated with VTEC outbreaks in Ireland between 2005 and 2012.(35) Floods in the winter of 2015 showed associations between groundwater contamination, rainfall, and cryptosporidiosis.(36)

As Ireland sees more frequent and higher intensity rainfall events with climate change, rural water supplies are likely to face higher risks of contamination from sources such as domestic waste water systems and agriculture.

Public Water Sources

Public water supplies are the main water source for over 84% of the ROI population and over 99% of the NI population. In both countries, water compliance with microbiological parameters was over 99.9%, meaning no E. coli or Enterococcus detected in water samples.(18,19,37)

In 2020, there were 46 water supplies on the Remedial Action List in the Republic, affecting over 1 million people and signifying insecure or unsafe water supplies due to contamination. No water supplies were put on the Remedial Action List due to bacterial contamination – 7 were due to inadequate management of cryptosporidium, and the rest were for reasons of chemical contamination. Cryptosporidium is not eradicated in normal water treatment, and if there is a risk from the pathogen then additional treatment must be instated. This makes it a poor indicator for the presence of other pathogens in treated water.

In 2020, 43 boil notices were put into place, indicating a risk to public health from drinking water. This affected nearly 75,000 people. These were due to treatment failures or discrete incidents.(38)

Although there are still improvements to be made, water quality in public supplies is very high in the ROI and NI. Decreases in water quality tend to be due to failures in the treatment process.

Surface Water Contamination

Agriculture is the primary polluter of surface waters in Ireland, accounting for 63% of pollution. 28% can be attributed to human activities affecting hydro morphology such as dams, and 14% comes from forestry runoff and sediments. Another 12% comes from run-off from urban areas.(17) Intense periods of rainfall increase runoff and increase the movement of sediment and other polluting material.(39,40)

Urban wastewater also plays an important role in surface water pollution, contributing to 13% of pollution. Urban wastewater is managed by Irish Water in the ROI. 52% of wastewater is not treated to EU standards, and 34 towns and villages pump raw sewage into watercourses in normal weather conditions.(22) In Northern Ireland, NI Water is the provider of sewerage, treatment, and discharge services. 116 town and city networks don’t have the capacity to manage the waste produced by their catchment area. 7 million tonnes of raw sewage are discharged annually into watercourses.(Greene, 2021; Water Framework Directive Statistics Report, 2021) Heavy rainfall can also overwhelm existing sewer systems, causing more untreated wastewater to be discharged into surface waters through storm drains.(22)

Surface water bodies are in a poor state across Ireland. In 2020 in the ROI, 56% of lakes and 57% of rivers were of satisfactory biological quality. This is a decrease in comparison with previous years.(43) None of the 571 water bodies in NI were appraised as having “good” water quality in 2021.(41) Poor water quality poses a risk to the health of those who use surface waters for occupation and recreation, particularly when polluted with raw sewage.(44) Urban wastewater discharge into surface waters was associated with VTEC and cryptosporidiosis infections during the 2015/2016 Irish floods.(36)

People are also exposed to surface water pollution in floods. Analysis in the UK showed that flood waters pose increased risks of gastroenteric disease to those who have direct contact with them, and a study of urban pluvial flooding in the Netherlands showed increased incidence of acute gastroenteritis in people affected by flooding.(45,46)

As periods of intense rainfall and pluvial flooding events become more common with climate change, runoff into watercourses could be expected to increase. Increased pressure on urban wastewater systems could increase the discharge of waste into surface water, and increased flooding will increase the exposure of the population to polluted floodwater. This could increase the risk of contracting waterborne disease from surface waters.

Conclusion

Climate change is expected to lead to increased incidence of higher intensity rainfall events in Ireland. This could worsen the risk of microbial contamination in private water supplies (which make up a large portion of water supplies in rural areas) and increase the risk of waterborne disease. Drinking water in urban and suburban areas tends to be high quality and has a low risk of contamination. Increased high-intensity rainfall could worsen surface water quality through increased runoff and discharge of wastewater from overwhelmed wastewater networks. Contact with polluted surface water carries a risk of waterborne disease. Expected increases in pluvial flooding may increase exposure to contaminated floodwaters, which has been associated with VTEC and cryptosporidiosis in Ireland.

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