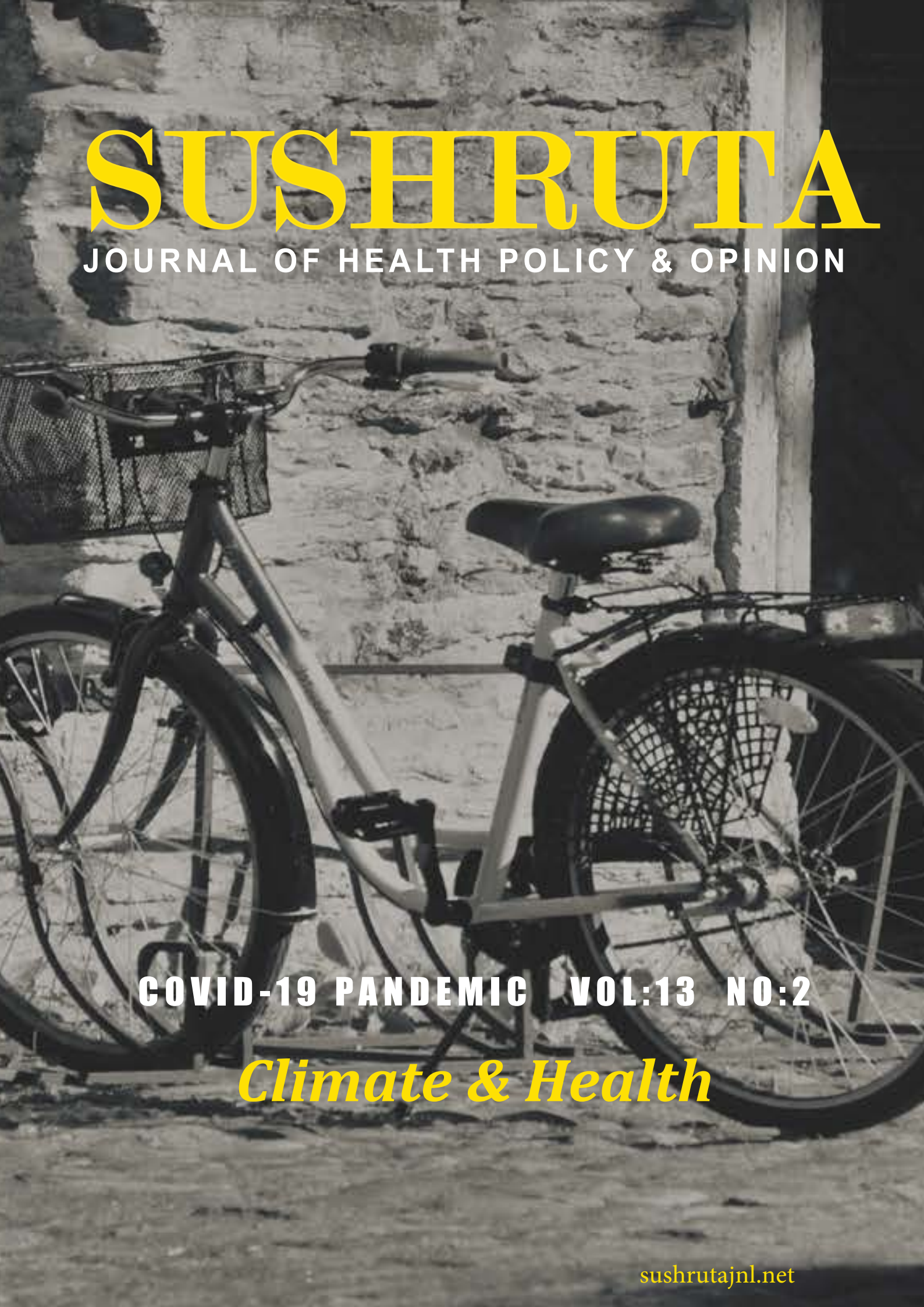

SUSHRUTA

JOURNAL OF HEALTH POLICY & OPINION

COVID-19 PANDEMIC VOL:13 NO:2

Climate & Health

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BAPIO
British Association of Physicians of Indian Origin

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Sushruta

Page Number

SUSHRUTA

PUBLICATION TEAM

BAPIO Executive

Editorial Board (2019-2021)

Editor.sushruta@bapio.co.uk

ISSN 2732-5156 (Print) 2732-5164 (Online)
Published by BAPIO Publications on behalf of British Association of Physicians of Indian Origin.

Scope; Sushruta Journal of Health Policy & Opinion is a journal for a multi-professional audience in the UK and globally, established in 2007 in print and online from 2020.

SUSHRUTA

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Cover picture by Subarna Chakravorty

Editorial

Climate Change & Health

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Guest Editors

Article Information
Submitted 14 June 2020
Published 22 June 2020

Key words: Climate change; health inequalities; pandemic

We are living through a time of huge uncertainty and for many great hardships. The COVID-19 pandemic has changed society perhaps irreversibly. It has revealed cracks in our health and welfare systems, stimulated conversation and triggered innovation and change, through the disruption of many areas of life.

The July edition of Sushruta was initially intended to focus on climate change and health, but as we slowly move toward a new normal in the post-COVID era it became clear we needed to widen the scope of this issue. This edition looks at the various ways in which planetary health interacts with human health. Topics covered range from air pollution and child health, changes in vector borne disease patterns, sustainable nutrition and the winner of our international essay competition on climate change and health.

We also include important articles focusing on the Covid-19 pandemic, such as original research on the differential susceptibility among Black Asian & Minority Ethnic (BAME) groups.

This mixture of topics brought us to reflect on the connections between climate change and COVID-19 and what it can teach us going forward. The response to COVID-19, though varied between countries and not without controversy, demonstrates the capacity for social and cultural change that, post-COVID, need to be driven and harnessed.

This gives hope for climate change mitigation. The drastic changes to government, economy and industry required can be achieved if political and public will is present. Covid-19 has highlighted extreme health inequalities with those from BAME and lower socio-economic groups seeming to suffer more severe forms of the illness and a higher death rate amongst health professionals.

This is something that, as the journal of the British Association for Physicians of Indian Origin, has hit close to home. Particularly as we work to ensure equality and diversity in the NHS for BAME doctors. Similarly, it is poorer populations of countries in the southern hemisphere that will face the greatest hardship from climate change due to extreme heat and weather events, unstable food systems, conflict, and migration. These inequalities must continue to be recognised and addressed as new health policy is created and even as the West begins to move out of the most tragic phase of the disease, we must not leave LMICs behind.

We want this edition of Sushruta to provide an optimistic view of the future. Throughout the pandemic images of nature regenerating have come to be a symbol of hope such as fish in the canals of Venice or satellite images of skies free of pollution. As we emerge from the COVID-19 pandemic we must take the concept of 'a new normal' and apply it to the way our society addresses climate change. Reductions in carbon emissions can continue as we continue to work from home and limit travel. The government should aim to support a 'green economy' promoting economic recovery with a low carbon footprint. It will be difficult, but we have proved ourselves to be resilient and adaptable in the face of a crisis. ❑

Editorial

Health Professionals and Climate Change

Richard Smith
Chair of the UK Health Alliance on Climate Change and former editor, BMJ

Article Information
Submitted: 22 June 2020
Published: 24 June 2020

Both the World Health Organisation (WHO) and the Lancet have called climate change the world's major threat to health. [1 2] It is unfortunately a much more serious threat than the Covid-19 pandemic. Although the pandemic is likely to kill millions, it will eventually pass. Humans have experienced pandemics since they moved into cities some 5000 years ago. In contrast, although the Earth has experienced wide swings in temperature, humans have not experienced the global warming that is underway.

Climate change is already causing suffering and premature death as a result of extreme weather, sea-level rises, extension of infections into new areas, crop failure, water shortages, forced migration and the air pollution that accompanies climate change. [3] This is all set to become dramatically worse if we do not manage to reduce greenhouse gas emissions. The Intergovernmental Panel on Climate Change (IPCC), an instinctively cautious body, warned in 2018 that we have less than 15 years left to reduce greenhouse gas emissions to keep global temperature to less than 1.5°C above pre-industrial levels, a level that should avoid what the IPCC calls "extreme climate change." [4]

In order to keep the global temperature below the 1.5°C increase the world has needed to reduce greenhouse gas emissions by about 7% a year. [4] But they have been increasing by about 7% a year, [5] meaning that we are heading towards a temperature increase of 4°C, a level that could have catastrophic effects on health. [6]

As a result of the pandemic and consequent lockdowns of economies it is estimated that greenhouse gas emissions will fall by about 8% in 2020. [7] This is good news in that it shows that reductions are possible, but it also shows the extent of change necessary: shutting down the global economy is not possible, but equally dramatic changes must be made—by the international community, and every country, organisation, and individual.

It's important to recognise that the vast majority of the greenhouse gases emitted into the atmosphere since the start of the industrial revolution have come from high-income countries. Yet the most serious consequences from climate change will be in low income countries. This has led to the idea of Contraction and Convergence in mitigating climate change. [8] All countries need to converge towards net-zero emissions, but high emitting countries need to make the biggest reductions while some low income countries might temporarily increase emissions to aid development before contracting to net zero.

The UK Health Alliance on Climate Change (which I chair) has spelt out what this means for a high emitting country like Britain (present average per capita emission 5.6 tons of carbon dioxide) is each person rapidly converging to the global average (4.8 tons/capita), and then reducing to zero by 2040. The allowance for Britain is about 0.5 tons/ per capita between now and 2040. Yet the average British home emits 2.7 tons of carbon dioxide a year from domestic heating, and a return flight from London to New York emitting 1.0 ton of carbon dioxide. These examples illustrate the dramatic changes we need to make in how we live, eat, travel, and work to keep below a global temperature increase of 1.5 degrees.

Improving health and mitigating climate change

Fortunately but unsurprisingly, what is good for mitigating climate change is also good for human health. [3] The Australians have a phrase "Healthy planet, healthy places, healthy people": it is difficult if not impossible for people who live in unhealthy places to be healthy. To mitigate climate change we need to drive and fly less which means exercising more, which is good for the health of individuals (transportation accounts for just over a quarter of greenhouse gas emissions). We also improve our health by eating less meat and more plant-based foods, which in turn reduces greenhouse gas emissions from food (about 14% of global emissions). Recognising that we are part of nature and cherishing it more is good for our mental health.

It's important make clear, however, that, although we will need to change how we live, the most important changes need to be made at a political level. We need global cooperation, commitments by governments to reducing carbon emissions that they deliver, and a shift from an economy that pursues growth to one that promotes wellbeing. Individuals alone changing will not be enough to avoid climate catastrophe, and political changes in transport, agriculture, trade, and urban design make it easier for individuals to live healthy lives in which we consume less carbon.

Health systems and climate change

The recognition of the huge threat to health from climate change might be expected to mean that health systems would

be in the forefront of reducing carbon consumption. In fact, as the Lancet Countdown in Climate Change has shown almost all health systems have rising not falling carbon emissions. [5] The US health systems accounts for about 12% of emissions, while the NHS produces 5-6% of Britain's emissions. Health systems may have been so slow to reduce carbon emissions because of what's been called "moral offsetting"—those working at what they see as socially beneficial activities like treating the sick do not think that they have the same obligation as others to reduce their carbon consumption. [9]

There is, however, something absurd and paradoxical for health systems not to be acting on what is deemed the major threat to health. The NHS in England has now committed itself to getting to net-zero emissions as quickly as possible and has a net-zero advisory committee (on which I sit) advising on how fast net-zero can be achieved and the steps that will need to be taken to get there. [10] (It's worth explaining at this point that "net-zero" accepts that it will not be possible to reduce carbon consumption to zero, and so some carbon emissions will have to be removed from the atmosphere through natural methods like planning trees or enriching soil or through technologies, although those technologies are nor currently able to work at scale.)

Almost three quarters of the NHS carbon footprint arises from procurement of goods and services with pharmaceuticals alone counting for about 20% and medical equipment another 10%. [11] Travel accounts for another 13% of the total NHS footprint, and about one in 20 journeys on British roads arises from deliveries and patients and staff travelling to health facilities. The NHS uses about 2 billion plastic gloves a year, and anaesthetic gases and inhalers make a material contribution to greenhouse gases.

Health professionals acting on climate change

Far from being laggards in mitigating climate change, health professionals should be leaders. They have scientific training, which means they are better able than many to understand the science that underpins climate change. They are more trusted than any other group, particularly after the bravery they have shown in countering the pandemic, and they interact with millions of citizens every day. Then the threat to health and the positive benefits to health from a low carbon life are probably the best way for citizens to be motivated to act on climate change. In many countries health workers outnumber and other group of employees, and the actions they and their families take as individuals can have a sizeable impact—and they provide leadership by example. Finally, health professionals have global networks, and mitigating climate change demands global action.

When trying to influence international organisations and governments health professionals have a stronger voice if they speak together. That was the thinking behind the formation of the Global Health and Climate Alliance, [12] the UK Health Alliance on Climate Change (UKHACC), and similar bodies. UKHACC is five years old and includes most of the royal college in the UK, including those of nurses, physicians, surgeons, and general practitioners, and the BMA, the Lancet, and the BMJ. [13] Altogether the members of the Alliance have some 650 000 members, a sizable proportion of the workforce of National Health Service.

Some other countries have similar organisations to UKHACC, [12] but most do not. It seems to me that every country should have some organisation of health professionals, and preferably the organisations should include the existing respected professional bodies. The World Medical Organisation, which is made up by medical associations from around the world, has declared a climate emergency and called on the international health community to join its mobilisation. [14]

The Global Health and Climate Alliance campaigns at the annual United Nations meeting on climate change—the Conference of the Parties (COP). COP26 was due to be held in Glasgow in November 2020 but has been delayed until November 2021 because of the pandemic. It will be a particularly important meeting because countries are required to renew their Nationally Determined Contributions (NDCs). The current NDCs, agreed in Paris in 2015, will not be enough to keep the temperature increase below1.5°C (and, as I've said, are not being achieved by most countries). It may be that the pandemic will lead to countries acting more strongly on the threat of climate change. The Global Health and Climate Alliance is working with WHO, UKHACC, and the British government to try and ensure that health features prominently in COP26. As the number implies, there have been 25 previous meetings of COP, and for many years health did not feature at all.

The UKHACC was part of pressuring the British government into committing the country to achieve net zero by 2050, and we are currently campaigning on the Environment Bill, air pollution, and economic recovery from the pandemic being a recovery that is sustainable and low carbon.

Mitigating climate change requires organisations to change, and UKHACC and any similar organisation speaks with more authority if its members are putting their own houses in order. The attached list shows actions that we have asked our 21 members to take, ranging from the relatively easy like promoting vegetarian food in their canteens to the more complex like disinvesting in fossil-fuel companies. (table I) These are actions that could be taken by most organisations. Some members of UKHACC have taken all the actions, whereas others are at the beginning. Members of the Alliance help each other.

There are around 40 million health workers in the world, and the demand for health workers is predicted to increase to some 80 million by 2030. [15] These workers can play a leading role in mitigating the world's major threat to health. Firstly, they can campaign for their governments, cities, communities, health systems, professional organisations, and any other organisations to which they belong to act to mitigate climate change. Secondly, they can act themselves, and I've posted a blog in the BMJ listing actions that individuals can take. [16] Thirdly, they can work with their patients to encourage them to take these same actions—and the health professionals can do so knowing that they will also be befit-

ting the health of their patients.

Conclusion

Climate change is the major threat to health. Although some health systems and professionals have acted on climate change, many have not. There is a huge opportunity for health professionals to take and even lead actions to mitigate climate change, and I urge them to do so.

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Policy

How to Build Climate Resilient Health Systems:
Reinforce the Framework Instead of Reinventing the Wheel

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Article Information
Epub; 01.04.2020
Final (v3) 01.06.2020

Cite as: Yoon S. (2020) How to build climate resilient health systems; Reinforce the framework instead of re-inventing the wheel. Sushruta J Health Policy & Opin vol13(2) DOI:

Abstract

Climate change will have adverse effects on health at a population scale. Health systems need to be strengthened in order to better address changing health needs and increased demand. Frameworks exist to guide the improvement of health systems, however, they do not necessarily address adaptations to be made for climate change. This article reviews the WHO Operational Framework and identifies where this can be built upon to tackle changing health needs due to climate change.

Key words; Climate change, health systems, resilience

Background

Climate change is acknowledged as the biggest public health threat of the century. The consequences of human actions, notably the burning of fossil fuels, are affecting all countries in the world. According to the report of the Intergovernmental Panel on Climate Change (IPCC), climate change is expected to significantly increase health risks, especially in low-middle-income countries (LMICs).[1] Also, it will disproportionately affect vulnerable groups in each country, such as the poor, children and the elderly, and people with pre-existing comorbidities.

With a rising exposure to climate change and a limited capacity to adapt to impacts, health systems of low-middle-income countries already face challenges. Climate change is different from other traditional public health issues in that it has effects over extended periods on a global scale, is subject to multiple uncertainties, is strongly mediated by social determinants of health, and causes diverse and interacting health impacts. Therefore, it requires strengthening health systems in collaboration with different actors at various levels. The concept of 'resilience' has been proposed to equip health systems facing climate change and other challenges such as a pandemic, natural disaster, or conflict. Building resilient health systems is to raise the capacity of health systems to absorb, adapt, and transform exposed to a shock, and still to protect and improve population health.[2, 3]

This editorial will review the current World Health Organization (WHO) framework gaps. Lessons from adaptation responses around the world will be considered in order to suggest how to build climate resilient health systems from a people-centred perspective.

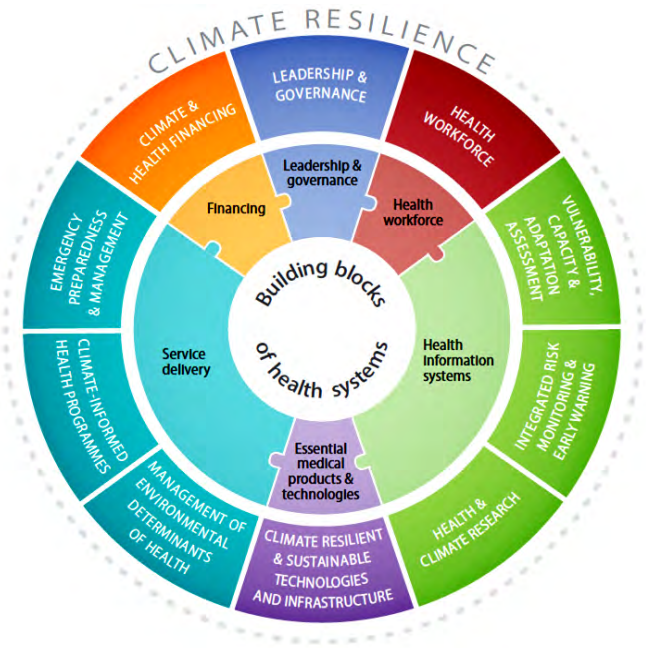
WHO Operational framework and knowledge gaps

WHO has identified six "building blocks" in health systems that are necessary to support the delivery of Universal Health Coverage and to improve health. Starting from this framework and considering a comprehensive health response to climate change, WHO has outlined the operational framework with ten components (Fig. 1).

This framework suggests that climate resilience should be incorporated into every sector of the health system, and as a systemic approach, interconnections between the various components are emphasized to reinforce one another. All building blocks should become climate resilient, and the health sector should extend its sphere of operations beyond itself to other sectors (e.g., water, energy, food, and agriculture).

Figure 1. Ten components comprising the WHO operational framework for building climate resilient health systems, and the main connections to the building blocks of health systems

This framework can be useful in several ways. It presents a simple way to discuss the key functions of health systems. It provides a common language and a shared understanding. As it relies on already well-known six building blocks, it is easy to adapt to different contexts and ensuring all essential functions of health systems are covered. Nonetheless, many gaps could emerge from addressing the adaptation of health systems with this framework. These building blocks are considered a set of inputs that contribute to the health system. Consequently, this framework neglects the links between inputs, outputs, and outcomes. How much can be expected and done from systemic changes? What is happening in the process by which inputs are transformed into outputs? Also, it is difficult to identify the interactions between the building blocks and different actors at various levels. Are all building blocks equally important, if not, which one would be prioritized when there are trade-offs? How can climate resilience policies be aligned with a global governance framework with the partnership? How can different actors, including local and community level, reinforce each other,



and collaborate against fragmentation? To address these gaps, lessons from adaptation responses in real-world need to be learned, not to reinvent the new wheel, but to reinforce the old one.

A people centered perspective

Climate change includes the interrelationship between different aspects: human beings and ecosystems. Resilience is not just about absorbing shocks from outside but also harnessing the changes in the existing systems. A people centered perspective highlights the capacity of people improving their livelihood in the face of environmental disturbances. This resilience is underpinned by human agency and empowerment by centering people as the main actors in the policy and practice.[4] Especially because social and economic determinants of health actively mediate the effects of climate change, it is essential to put people's values and needs in the center of health systems and to ensure people's participation in the policy process.

Local knowledge

Despite growing knowledge, there is a lack of enough understanding to address the links between climate change and health. It is not only about scientific evidence, but rather the capacity to combine and integrate different types of knowledge and how to prepare this knowledge for adaptation.

Evidence suggests that local and indigenous communities have been successfully adapting to climate change by developing context-specific practices and building the resilience of their communities.[5, 6] Local knowledge is considered to provide an effective strategy for adaptation. In African Sahel, local farmers have developed several adaptation measures, including the early warning system for extreme weather events with the wealth of local knowledge on predicting weather and climate. They also have successfully achieved sustainable livelihoods by adapting to variabilities in their farming and livestock keeping.[5] Climate change adaption strategies can recognize the value of indigenous knowledge systems developed in a specific context, also because of uncertainties in the current scientific evidence base. Considering that indigenous people in most parts of the world contribute little to climate change, but are at most risk of its outcomes, their participation is essential based on the principle of justice. When their knowledge and experience are incorporated into climate change health practice, adaption will be more effective and sustainable.

Community participation and delivery

Community participation in the process of developing adaptation strategies has been emphasized in many literatures.[7, 8] Community empowerment can activate local capacity to improve resilience and consider equity in health systems.

Most studies suggest that sea-level rise will cause the relocation of residents at risk of floods.[9] In contrast, coastal communities in the Philippines preferred to stay and implement adaptive measures themselves to minimize the risk of floods.[8] They adapted to flooding by constructing stilted houses and raising floors with coral stone. People in Funafuti, Tuvalu, wished to remain as well because of their culture and identity.[10] Both communities considered migration as the last option, opposite to the strategy by authorities. It implies that bottom-up adaptation measures can be completely different from top-down approaches. Community-based adaptation engages people to actively cope with the health impacts of climate change, leading to the climate resilience of health systems. Furthermore, community participation is crucial for adaptation policies to gain public acceptance. Nevertheless, not all adaptation measures by communities are sustainable in the long term. As above, in the Philippines, many islanders used coral stone to raise their floors for adaptation to flooding. This measure can temporarily reduce the impacts of climate change; however, it might increase the vulnerability of communities in the long run.

Multicentered relationship

Addressing climate change and implementing adaptation responses in health systems requires engagement between various levels and types of governance. Horizontal and vertical collaboration could play an important role, and these collaborations require a synergistic relationship between stakeholders.
Multilevel governance has been proposed as it enables combining decisions across different levels and sectors, and different institutional types at the same level.[11] It is based on participation and coordination with accountability and transparency across and within levels.

An increasing number of cities and local governments have pledged mitigation and adaptation initiatives underpinning health co-benefits. The Covenant of Mayors (CoM) is an initiative in which local authorities voluntarily commit to reduce CO2 emission. As of 2020, it involves 10,009 signatories covering 318 million people, mainly in Europe. The development of multilevel governance has facilitated the participation of small municipalities. Provinces and regions have committed to providing financial and technical support to these municipalities. Results from monitoring inventories in 2017 showed achievement of 23% reduction in CO2 emissions compared to 2005.[12]

Conclusion

Although climate change impacts through ecosystems, thinking resilience of health systems goes beyond that and stays with the people inhabiting these ecosystems. A people centered perspective can address the social determinants of health and underline the capacity of people to adapt to changes. However, there is a lack of research on a people centered perspective on climate change and adaptation. The critical lesson from the world is working 'with' people and putting their values in the center of health systems.

Resilience depends on social values regarding what we consider important and how we allocate resources. When there are trade-offs and priorities among social, economic, and environmental objectives, who decides, based on what kind of values? These questions should be discussed with the consensus of people, not be left to experts with the framework.

Summary Points

Climate change is a significant threat and requires the resilience of health systems.

A people centered perspective can be enabling to address adaptation measures by putting people's value and needs in the center of health systems.

Lessons of recognizing the local knowledge, enhancing community participation, and multilevel governance can be learned from the world.

Building climate resilient health systems depends on social values and requires the consensus of people in the society.

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Policy

Climate Change and Nutrition

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Abstract

Human health and planetary health are intertwined in many ways, food systems being an example. This article describes the complex manner in which food systems impact on the environment and how our dietary choices have consequences for climate change. Subsequent changes to weather patterns and ecosystems can then destabilise these food systems impacting on human health. This article explains how various components of food systems must be considered when attempting to understand effects on climate change. It concludes by offering practical solutions on an individual and societal level to mitigate these effects.

Key words: Climate change, nutrition, food systems, sustainability

Cite as: Kelly N. Climate Change and Nutrition. Sushruta 2020 (Jul) 13(2): pre-print v1 ePub 23.04.2020 DOI: 10.38192/13.2.8
Climate change and Nutrition

The recent COVID-19 pandemic has brought into focus the link between human health and planetary health. This is something we need to keep in mind once we make it through this crisis and ensure that we move forward in a way that benefits both human health and the environment. One area that needs particular attention is food; our food systems have a tremendous impact on the environment, accounting for 20-30% of total global greenhouse gas emissions [(1)]. Food systems include everything that happens to our food from farm to fork such as the agricultural practices used, processing, transport and food waste. However, these different aspects of the food system don't contribute equally to climate change. About two thirds of emissions linked to our food are from the agricultural side of food production, mainly from livestock and changes in land use for farming. The remaining third is accrued during processing, packaging and transport.

Livestock and Land use

Livestock alone produce approximately 15% of overall GHG emissions, mainly due to methane production from cattle and sheep, but also includes contributions from feed production and changes in land use for grazing. Large areas are deforested each year to convert the space into pasture for animals to graze, or crops to be grown. Forests are considered "carbon sinks" which means they are good for soaking up carbon from the atmosphere. Therefore, removing large amounts of forests reduces the amount of carbon dioxide being absorbed, but can also lead to carbon dioxide actually being released into the atmosphere when the trees are cut down.

Water use

Water used in agriculture is a combination of stored rainwater (called "green" water) and groundwater which is found in the spaces between soil and rocks underground. We are increasingly reliant on groundwater in agriculture, particularly in India where 90% of groundwater is used for agriculture. As temperatures rise and incidence of drought increases in certain areas more water will be needed to produce crops, particularly those such as almonds and avocados which are grown in dry, hot areas and require a lot of water.

Transport

Half of the food consumed in the UK is imported, adding extra emissions to our food system [(2)]. About one third of UK food is imported from Europe and the other 20% comes from various regions including Africa, South America and Asia. Fruit and vegetables are the main types of foods imported, partly due to the demand for certain fruits and vegetables all year round, rather than when they are in season. However, this is a complex issue and there are times when transporting foods from abroad in fact has lower emissions than locally produced foods. For example, growing tomatoes in the UK under heated conditions can be more energy intensive than those grown in Spain [(1)].

Biodiversity

Biodiversity, or the variability of species in a region, is an important part of planetary health as each species place a role in sustaining ecosystems. One of the main drivers of loss of biodiversity is changes in land use, such as deforestation and changes in land use for farming, which can destroy animal habitats. As well as this, some agricultural processes are putting some of our pollinators such as honeybees as risk. In the United States a large portion of the honeybee population are transported to California by beekeepers each year to pollinate almond trees. It is risky bringing such a large proportion of one species to one location as if they came in contact with a pathogen, there is the potential for the bee population to be depleted [(3)].

How climate change can affect our food systems

There has been an increasing occurrence of extreme weather events like floods, forest fires and drought in recent years, which can have major impacts on food production and supply. However, these events and the warming of the planet is not happening evenly. Low- and middle-income countries, which hold most of the world's population, are more vulnerable to climate change than high income countries and have already begun seeing some of its affects. Additionally, a modelling study carried out in 2016 by Springman and colleagues predicts that by 2050 there will be a 3.2% reduction in food availability, which consists mainly of reductions in fruit and vegetables, and these effects will predominantly be seen in Africa, Southeast Asia and Western Pacific Regions [4].

Rising temperatures will increase the demand for water for use in agriculture, particularly in drought prone areas. Seasonal patterns have begun to shift slightly and this along with changes in rainfall and temperatures makes harvests unpredictable and can lead to spoilage and food loss. This dysregulation can also negatively affect insect pollinators which may begin to migrate to other areas that have a more suitable climate.

It is difficult to predict each way climate change may affect our food supplies but there is some debate over whether climate change may impact the nutrition quality of foods, or whether some crop pests and diseases may become more virulent [5]. Due to our widespread use of monocropping, where only one variation of a crop is grown, a change in the behaviour of pests could lead to devastating impacts on food production.

What can we do about it?

While this all can sound very worrying, there are things we can do to help reduce our impact. On a large scale, research is being conducted on technology that can be used to reduce emissions linked with agriculture, such as using robots instead of heavy machinery, improved irrigation, and vertical farming where fruit and vegetable are grown on shelves one on top of the other. But what can we do ourselves to reduce the impact of our diet on climate change?

Reducing waste

One third of the food produced worldwide is either lost or wasted. Food is considered "lost" when it is removed from the food chain before it gets to the consumer, for example food lost through processing ultra-high processed foods or being rejected by supermarkets because of size, shape or colour. Whereas waste refers to the food that is thrown away after reaching the consumer. As the global population is predicted to rise to 9 billion by 2050, it is crucial we start to tackle this issue by reducing our food waste; buying only what you need and freezing foods you won't use before they go off.

There is currently research looking into circular economies for food, which are closed loop systems that aim to maximise resources and reduce as much unnecessary waste as possible. Outside of this, some companies are making profits from these "lost" foods and delivering surplus or rejected fruits and vegetables to homes and offices, or making sauces or smoothies from it. As well as this, there are a variety of apps such as Karma and Too Good to Go, looking to reduce food waste from restaurants, where the public can purchase food from food outlets at a reduced price to prevent it from being thrown away. Another example is OLIO, which help to reduce household waste by allowing members of the public to advertise foods they will not use for someone else to pick up for free.

Reduce meat consumption

Diets that are considered environmentally friendly are those that are more plant based with a smaller proportion of animal products, particularly vegetarian and vegan diets. These diets also tend to be healthier than those with higher impacts on the environment as they are higher in fibre and lower in saturated fat. Therefore, adopting sustainable environmentally friendly diets be an extremely useful way of promoting both public health and planetary health.

A lot of the messages about dietary change for planetary health focus on promoting veganism, removing all animal products from the diet. While it is entirely possible to meet your nutritional requirements on a vegan diet with supplements of fortified foods, it is important to be aware a vegan diet is not always suitable for everyone. Instead, it might be more useful for the majority of people to reduce their meat consumption, particularly red meat. A modelling study by Green and colleagues predicted that a person could reduce their Greenhouse Gas emissions by 40% if they reduced their red meat consumption by three quarters [6].

Buy locally produced, seasonal foods

Buying locally produced foods that are in season will help to reduce the transport emissions associated with out of season foods and potentially reduce water usage for crops grown in drought prone countries. However, this would require us to educate ourselves about what fruit and vegetables are in season month to month. Avoiding plastic packaging when possible, as most people are aware, can also help reduce the environmental impact of your diet and many supermarkets have begun trialling refill stations in their stores. Another consideration is limiting consumption of ultrahigh processed foods which require a lot of resources but also leads to food loss.

Despite the challenges linked to making our food systems more sustainable, these actions have the potential to improve not only planetary health but our own health too. Small and sustainable changes such as those mentioned above can help to transform our food systems to reduce their overall impact on the environment, increase demand for more sustainably produced foods and potentially safeguard against some of the effects of climate change on nutrition.

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Article

An Online Survey of Healthcare Professionals in the COVID-19 Pandemic in the UK: *Perceptions of Risk Factors*

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KEYWORDS: COVID-19, Social distancing, BAME, Personal Protection Equipment, Health Care workers

Cite as: Chakravorty I, Daga S, Dave S, Chakravorty S, Bhala N, Menon G, Mehta R & Bamrah JS. An online survey of healthcare professionals in the COVID-19 Pandemic in the UK. Sushruta 2020 (Jul) vol13(2): ePub 25.04.2020 (pre-print v1.2*) DOI: 10.38192/13.2.9

Acknowledgement: The authors would like to thank all the respondents, BAPIO Think Tank, members of BAPIO and associates in publicising and sharing this survey.

ABSTRACT

To explore the emerging concerns of COVID-19 related issues amongst health care workers, members of a range of healthcare organisations, governmental agencies, and the media, an online self-administered survey of healthcare workers was undertaken by the British Association of Physicians of Indian Origin in April 2020.

Results

The respondents were predominantly hospital doctors (67%), aged between 40-60 years (72%) and from Black, Asian, and Minority Ethnicity (BAME) backgrounds in the UK (86%). Thirty percent of respondents had one or more health comorbidities. Over 78% reported either lack of, or inappropriate personal protective equipment (PPE) for their role and 68% of respondents felt that they were unable to comply with or that it was impractical to adhere to social distancing at work (including commuting). At the time of the survey, 18.5% of respondents reported having a confirmed or suspected diagnosis of COVID-19. In multivariate analysis, inability to self-isolate and having a BAME background emerged as independent risk (OR 1.45) for COVID-19 when adjusted for confounding factors.

Conclusions

These results add to the emerging concerns expressed internationally on the observation that BAME ethnicity appears to have a higher risk of developing COVID-19. This is the first study that adjusted work-related factors (inability to maintain social distancing and inadequate PPE) and comorbidities. Our work supports the imperative for designing and conducting urgent larger studies to understand this risk and plan appropriate mitigation of the risks to health care workers

*version 1.2 includes addition of self-isolation as a risk for COVID-19. See Table 4.

INTRODUCTION

We are living in unprecedented times and in the midst of a pandemic that has changed our world in many ways. While the interdependency can cause rapid global spread of a pandemic, it can also offer opportunities for equally rapid collaborations and exchange of vital information. The data from Italy, Spain and France has led to a significant increase in mortality figures, when compared with initial reports from Wuhan, China. Equally concerning were the reports emerging of healthcare workers succumbing to the virus having contracted it whilst on duty [1]. This has led to an understandable concern regarding the effectiveness of PPE provided to HCWs. Another demographic trend observed in data emerging from intensive care units in the UK and USA is a higher number of Black, Asian and Minority Ethnic (BAME) patients dying of COVID-19 [2- 4]. This highlights the importance of studying the potential causes leading to this outcome, so that factors to mitigate this risk can be instituted early in preventive strategies and treatment options.

Early reports from the UK media of healthcare workers succumbing to this illness were almost exclusively from BAME communities. Hence, increased demands to the UK government to report on ethnicity of those that are affected and dying [5].Combining this with other early indicators that obesity (in the USA), increased prevalence of hypertension, cardiovascular and renal disease in the BAME populations in the west may be the underlying cause of the observed increased risk [6].

The British Association of Physicians of Indian Origin (BAPIO) is a national, voluntary, membership organisation set up originally to represent and support the cause of doctors from the Indian subcontinent. In recent years,

BAPIO has expanded its remit to provide the same degree of representation to all healthcare professionals in a multi-professional environment and has worked closely with other similar organisations. BAPIO, through its various arms, has extensive experience of working with national regulatory bodies, academic institutions and royal colleges across the spectrum. BAPIO executive set out broad terms of reference for its Research & Innovation Forum (BRIF), which through active engagement and serious debate with members and collaborators from the scientific community, embarked on designing specific studies to answer the questions.

This survey was designed to explore the prevalence of COVID-19 among HCWs, their access to suitable PPE and their ability to maintain social distancing at work, while commuting to-and-from work and for self-isolating when necessary.

Rationale:

The extent and impact of the COVID-19 pandemic is evolving with over 2.5 million people infected so far and over 170,000 deaths reported worldwide [7] Observations in captive populations such as cruise-liners [8] [9] [10]. shows that SARS-CoV-2 spreads rapidly and often through proximity to asymptomatic cases/carers. Therefore, public health scientists across most affected countries worldwide have identified "social distancing", ''staying at home'' and frequent handwashing as the strongly recommended measures to contain the spread of the disease. HCW represent a group that have to do exactly the opposite by commuting (often using public transport), caring for patients with proven or suspected COVID-19 and interacting for several hours at a time in close proximity with colleagues among whom there will undoubtedly be asymptomatic carriers of the disease.

Data from Italy shows about 20% frontline HCW became infected and many have lost their lives [1]. Media reports in the U.K. have highlighted the concerns of many frontline HCW regarding well documented deaths [5] [11] [12]. A recent survey by the British Medical Association highlighted concerns amongst respondents of the perceived lack of personal protective equipment (PPE) for frontline HCW [13]. There is concern amongst HCW about the increased risk of acquiring SARS-CoV-2 infection while at work.

The emerging signal of increased risk and poorer outcomes requires further exploration[3] [4] [6]. Current evidence from a scan of emerging data and focus groups [2] suggests that age (over 60 years), comorbidities (such as cardiovascular, kidney disease and diabetes), male sex, and BAME background may be risk factors for increased COVID-19 associated mortality. There is lack of data that establishes BAME ethnicity as an independent risk factor over and above medical, demographic and social/ cultural factors.

The aim of this survey is to explore the personal experiences and perspectives from HCWs on the risk of COVID-19 and antecedent demographic, geographical and professional factors in relation to this risk.

METHODS

Participants:

The survey was open to all HCWs in the U.K. in electronic format only. The questionnaire was shared via social media (twitter, Facebook, WhatsApp and personal social network) and emails were sent to all HCWs on the BAPIO contact database. The survey introduction stated the purpose and intention to disseminate the results through publication in SUSHRUTA Journal of Health Policy & Opinions and the individuals' responses are completely anonymous. A total of 2003 responses were received.

Questionnaire:

The questionnaire was developed by the members of the BRIF, with further discussions with members of the BAPIO Think Tank which has 65 active members from a range of healthcare specialties, thus forming stakeholder involvement in designing the survey. The five key focus areas for data collections were:

1. Demographics including age, ethnicity and co-morbidities
2. COVID-19 status – confirmed, suspected or none
3. Occupational factors – geographical distribution, profession, work area
4. Preventive Measures -
5. Personal protection equipment – availability and appropriateness
6. Social distancing - while at work and commuting to-and-from work
7. Self-isolating and personal safety
8. Likelihood of COVID19

Administration of the questionnaire:

The questionnaire was administered online using Google forms and a full version is available in the appendix to this paper. The questionnaire received responses from 14.04.20 to 21.04.20 07:30H UK summertime. The questionnaire has 11 questions, with a range of options from a single answer to multiple options depending on the subject matter.

Statistical Analysis

The raw data (in .CSV format) was checked, missing items resolved and analysed independently by two primary investigators. The results were checked for consistency and inferences discussed and agreed with all authors. In addition to descriptive statistics of the population of respondents, the survey results were analysed using non-parametric tests, univariate analysis and regression analysis (Bivariate logistical regression) using SPSS software v26 (IBM Inc, USA). The primary outcome measure was a self-reported diagnosis (confirmed by viral PCR swab testing) and / or clinical suspicion based on NHS guidance for self-isolation due to classical symptoms.

RESULTS

1. Demographics

Majority of respondents were aged between 40-60 years

(Figure 1), hospital doctors (Figure 2), and from BAME communities (Figure 3). Further distribution of individual ethnic groups amongst the respondents is given in table 1, showing a majority of South Asians. There was an even representation from all parts of the U.K. (Figure 4). Nearly a

third of respondents reported one or more comorbidities which were relevant to the NHS vulnerable disease- group guidance (Figure 5).

Figure 1: Histogram showing age range of respondents

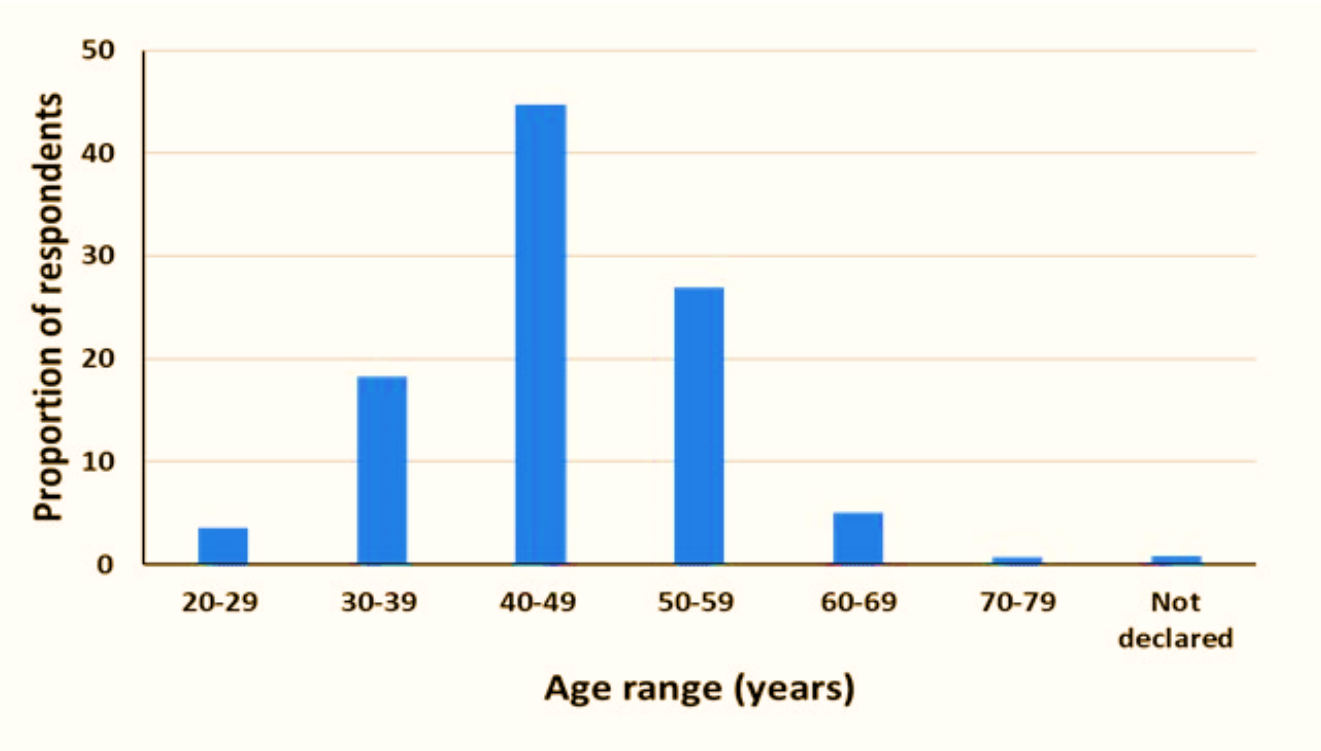


Figure 2: Histogram showing the professions of the respondents

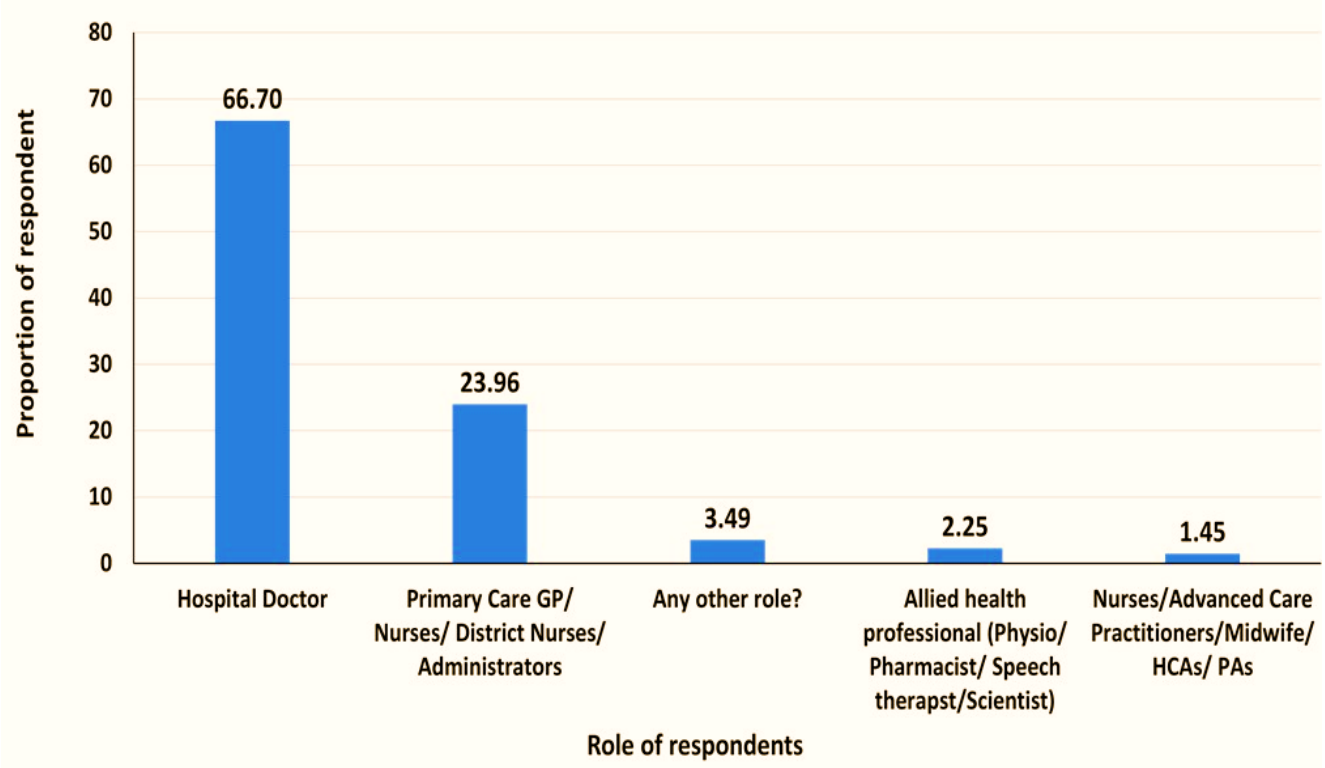


Figure 3. Pie chart showing the ethnicity of the respondents

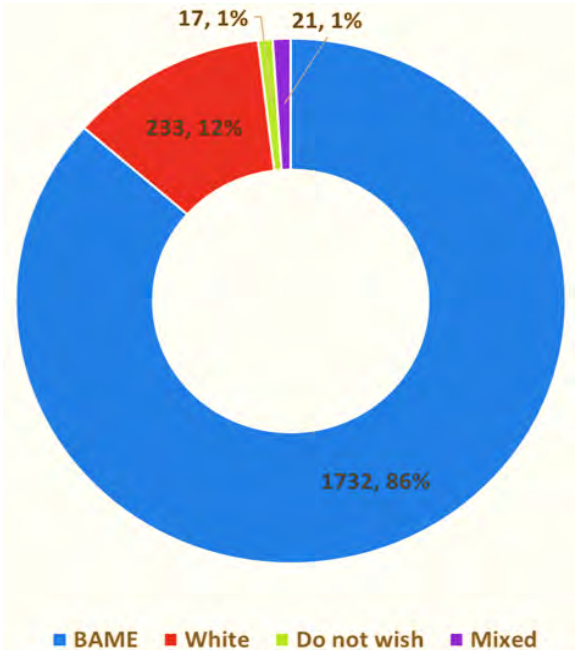


Table 1: Detailed distribution of ethnicity of respondents

Ethnicity	Number	Proportion
South Asian- Indian /Pakistani/Bangladeshi/Other	1516	75.69
Caucasian (British/Irish Traveller/Any other White)	233	11.63
Black/ African/ Afro-Caribbean/ African- American	137	6.84
Arab/ Middle eastern/ North African	45	2.25
Mixed	21	1.05
Chinese/ SE Asian	19	0.95
Do not wish to declare	17	0.85
Any other ethnicity	15	0.75

Figure 4:Histogram showing the geographical distribution of respondents

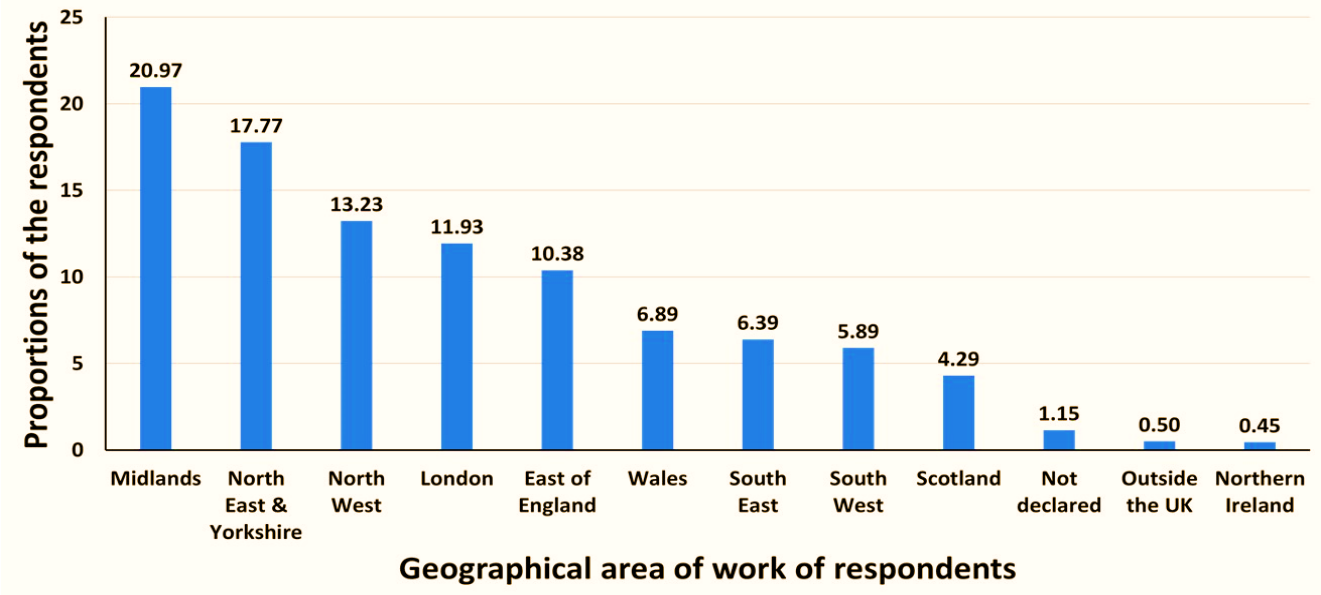
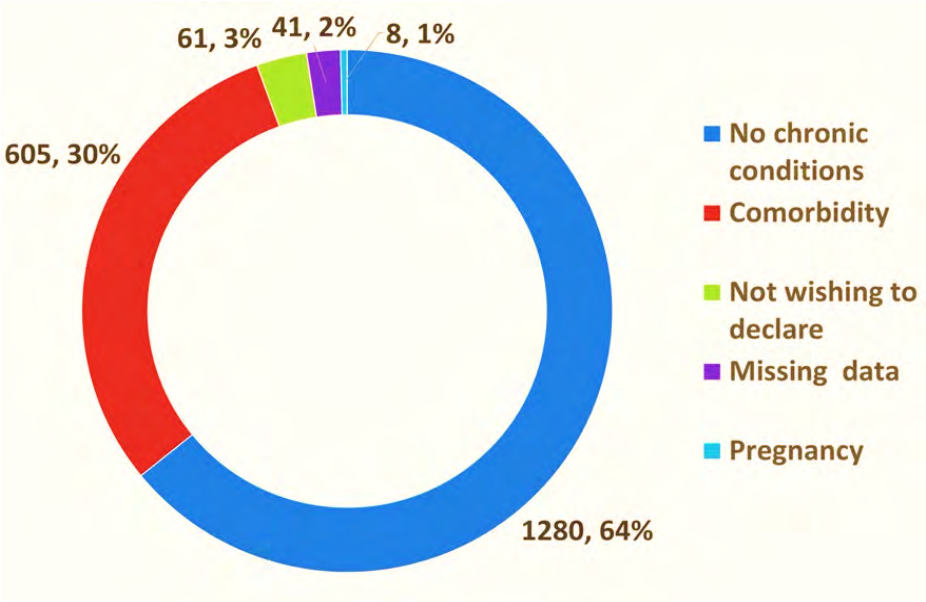


Figure 5: Pie chart showing the reported cumulative co-morbidities



2. COVID-19 status

Prevalence

Case definition was based on respondents who reported having a confirmed (Viral swab PCR) or self-isolating with COVID-19 related symptoms (as per PHE description). There were 79 (3.94%) confirmed and 297 (14.83%) suspected COVID-19 cases, an overall proportion of 19% of the survey population. A range of sources of potential exposures were reported (See Figure 6 and Figure 7).

Figure 6: Histogram showing clinical work area for respondents

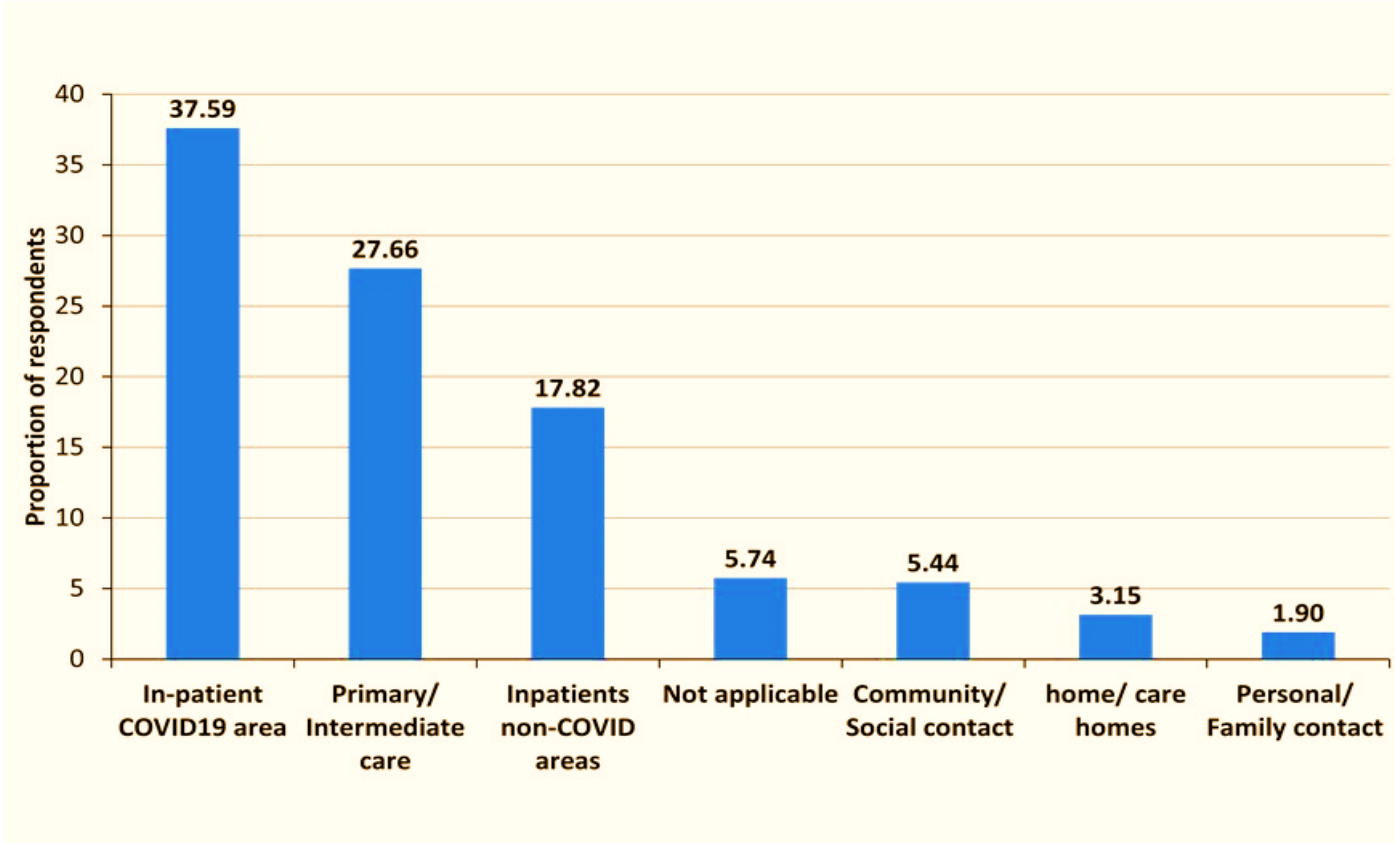
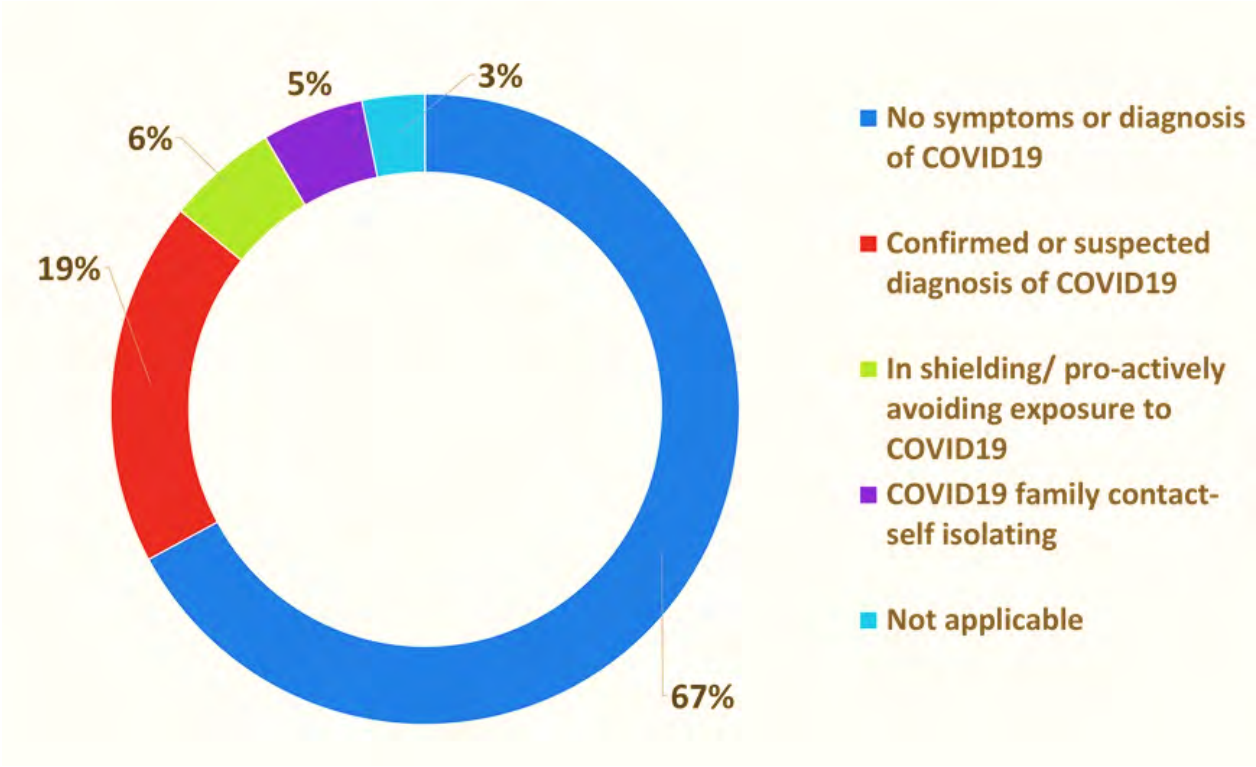


Figure 7: Pie chart showing COVID-19 status for respondents



3. Occupational Risks

Analysis of the respondent's professional group, clinical area of work or NHS region were not found to be significant factors in the risk of having COVID19.

4. Preventive Measures

The survey responses were classified to be 'no issues' or appropriate PPE and 'issues' including inappropriate, restricted/ short supply or being reprimanded. Using this classification, we found that 78% of respondents reported not having adequate or appropriate PPE for their roles. The responses to the individual answer options are given in Table 2. Access to PPE did not show any significant correlation or likelihood to having a diagnosis of COVID19 in our survey.

Table 2: PPE availability and appropriateness

Personal Protection Equipment		
	Frequency	Percent
Having PPE as per PHE recommendations	402	20.1
Having access but not as per PHE guidance	512	25.6
PPE being in short supply/ restricted	650	32.5
PPE being inappropriate for clinical role	262	13.1
Not having access to PPE	80	4.0
Being reprimanded for wearing/ wanting PPE	64	3.2
Total	2003	98.4
Missing	33	

Social Distancing

Table 3: Social distancing compliance

Social Distancing at Work		
	Frequency	Percent
Able to comply	519	26.2
Not able to comply fully	673	34
Cannot comply during commuting	65	3.3
Not practical to comply at work	625	31.6
Working away from patient contact	96	4.9
Missing	25	1.2
Total	2003	100.0

We asked respondents if the PPE supply and social distancing was adequate and appropriate and if not the possible issues (see Table 3, Figure 8 and Figure 9 respectively).

Figure 8: Pie chart showing respondents reporting appropriate vs non-appropriate/restricted PPE availability

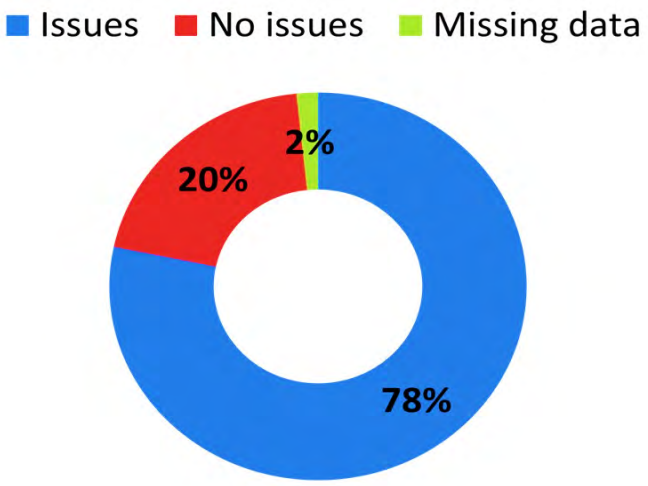
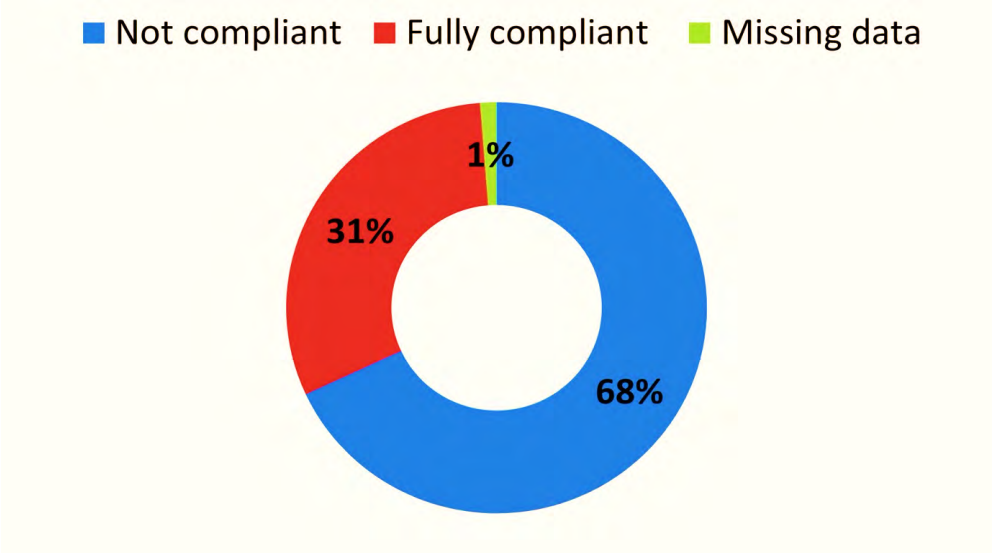


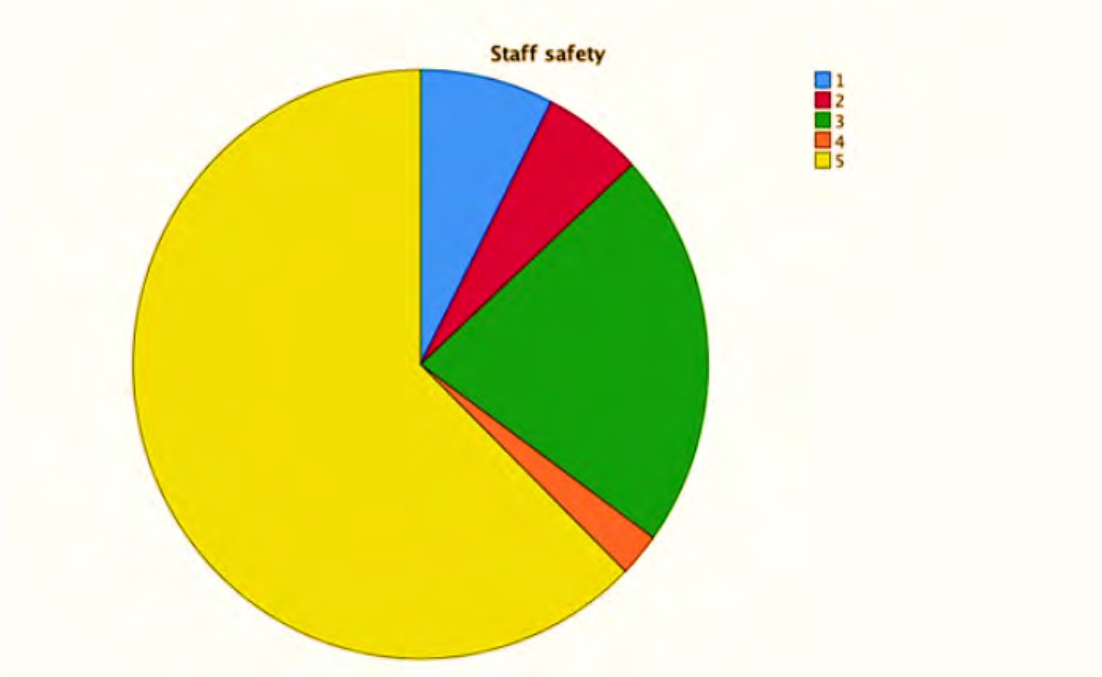
Figure 9: Pie chart showing respondents ability to comply with Social Distancing guidance



Self-Isolating (Vulnerable Staff)

Rspondents were asked whether they were able to self-isolate due to a personal health reason or living with a family member. Figure 10, gives the proportions of respondents who reported (1) being in self-isolation due to a personal or family member being at risk (7.5%), (2) working in non-patient facing roles (5.6%), (3) not able to self-isolate despite known risk(21.9%), (4) have been offered to self-isolate but chosen not to (2.4%) and (5) not applicable (63%).

Figure 10: Showing respondents and their self-isolating status (see text for categories 1-5)



5. Multi-variant analysis of developing suspected or confirmed COVID19

A binary logistic regression model (Log likelihood 1902.648a, Cox & Snell R Square 0.009) after adjusting comorbidities, PPE and social distancing showed that BAME ethnicity and inability to self-isolate (or choosing not to) were independently associated with increased risk of COVID-19 (confirmed or suspected) (See Table 4).

Table 4: Binary logistic regression analysis

Variables	Odds Ratio	95% Confidence Intervals	P value
Inability to comply with social distancing	0.86	0.7-1.1	Ns
Inappropriate/ limited/ no PPE	0.95	0.8-1.2	Ns
Presence of comorbidities	1.21	0.9-1.7	Ns
Reporting to be BAME	1.43	1.0-2.0	0.03
Inability to comply with self-isolating	1.62	1.2- 2.2	0.001

Ns = not significant

DISCUSSION

This survey was the first step towards exploring the spectrum of COVID19 related problems reported amongst healthcare workers in the UK and to help decide the key scientific questions to address and the areas to prioritise for future research. This data is exploratory in nature and although there are important trends emerging, this will need to be taken in the context of a self-administered, anonymised, online survey.

What do the results indicate?

Firstly, it answers the fundamental question that being an HCW from a BAME community makes it 1.5 times more likely that one will acquire COVID-19. The confounding factors of age, regional spread of risk and facilities, co-existing co-morbidities, working in high risk settings are not shown to be significant in explaining this risk, at least in analysis of the results of this

survey. Based on a range of rapid analysis of emerging data from the USA and UK, it is clear that there appears to be a differential spectrum of disease in BAME communities.

What is unclear at present are the reasons that may explain this observation. There is speculation about several clinical, social, economic, cultural and even religious factors that may contribute to a higher risk scenario. Unlike the population of Wuhan district in China, the population amongst the BAME communities in UK and USA remains hugely heterogenous. In the UK, HCWs come from several ethnic groups originating at different points in time from countries across the globe. Every social, cultural, clinical, educational and religious factors are bound to be widely variable. How would it be possible then to define and explore factors contributing to the observed high risk of COVID-19 in such a diverse group? Then hypothetically, it may also be possible that the rich commonality of experience as a BAME HCW in UK NHS, may have an over-riding contribution to the observed risk, far greater perhaps than the inherent factors based on origin. This in the context of this survey, is speculation and will need to be explored through well-designed and funded studies amongst HCWs.

The second area of anxiety and concern is in relation to PPE. Our results indicate that a vast majority of respondents' report having inappropriate PPE for clinical risk, of PPE being in short supply, being restricted in being able to use PPE or being reprimanded for using PPE. This is self-reported and may be subject to a different interpretation of the PHE, UK government and NHS guidance on the appropriateness of PPE for different clinical situations. Having said that, it is important to recognise the rising tide of professional opinion shared in professional groups, reinforced by surveys conducted by medical royal colleges and other professional associations which indicate that there is substance in this finding. Our data suggests an alarming majority of respondents report inadequate or inappropriate PPE. The report from a small proportion of respondents (n=64) of being reprimanded is a cause for further concern. Given the background of institutional racism, bullying, harassment, microaggressions and differential treatment of HCWs from certain minority and migrant groups, this finding is especially very worrying [14].

The third area of interest relates to the concept of social distancing guidance from the NHS and Public Health England for all. It is true that in most clinical areas, teams have to work in close quarters to provide care to patients. While, in an intensive care unit setting, this is provided by HCWs wearing PPE throughout the entire shift, this is not practical or possible in other less intense areas. There is thus a dichotomy in how individuals respond to the social distancing guidance. There is also a learned helplessness amongst staff on the inevitability of asymptomatic transmission between staff working in close quarters. In fact, the high prevalence of COVID-19 amongst staff seen in our survey and reported from Italy, Spain and France tells a similar story. It is unclear whether HCWs acquire infection while treating/ caring for patients or while working/ resting in close proximity to colleagues remains to be established. Our survey is not designed or powered to answer this question. However, our regression analysis indicates that for this population, it is unlikely that PPE or inability to comply with social distancing would have contributed to increased risk of COVID-19. Hence, more research is needed to decide what PPE is appropriate in each clinical risk scenarios.

Finally, the question of self-isolation for HCWs with personal health risk, living with a vulnerable family member or having to forego self-isolation in the interest of one's employment as well as for selfless service. Our results indicate that over 1/5 HCWs were unable to self-isolate despite the risk, hence exposing them to a higher risk of COVID19. Inability to self-isolate or choosing not to, appears to be a significant risk factor for COVID-19. Accepting the weakness of a self-reported questionnaire, this is a worrying trend and perhaps requires further exploration with occupational health experts and human resources departments.

There are inevitably several limitations to the interpretation and conclusions one can draw from this data. Primarily, there is a possibility of a selection bias. By its nature of distribution i.e via BAPIO members and their associates connected through wide social networks, it is inevitable that the majority of respondents would be from a BAME or predominantly South Asian origin. The proportion of respondents reporting on their COVID-19 diagnosis or suspected diagnosis is also based on the recall bias of respondents. The survey did not use registration number or institutional email for verification in the interests of speed and breadth of data collection. This is in consonance with usual practice for online or telephone distant surveys of professionals where self-reporting of status is relied on. The researchers have no reason to believe that a respondent would have any reason to falsify their representations. The second safeguard was that the survey was sent via BAPIO membership database and encrypted social networks to verified recipients. The data distribution amongst professional groups, regional spread, age group and clinical sectors broadly represents the BAPIO membership and associates. Hence, although not a representation of the whole healthcare workforce in the UK, it does represent the BAPIO membership footprint.

CONCLUSIONS

As far as we are aware, this is the first substantial survey of BAME healthcare workers, primarily doctors working across primary and secondary care in the UK. It is evident from this sample that adequate protection, or rather lack of it, is a major concern amongst them, and is more prevalent than has been previously reported. The survey demonstrates that there is a high risk of infection from COVID-19 in healthcare settings, and yet our respondents put themselves in harm's way from a sense of duty. A significant number (15%) were self-isolating on suspicion of having the virus, adding to the evidence that the lack of testing might have hampered their return to work. Our respondents were unable to comply with social distancing at the workplace, but they did not appear to be overly concerned about this. Finally, this survey adds significant weight to the argument that ethnicity may be an independent risk factor and further research is needed urgently to understand this risk and prevent further unnecessary deaths from understanding who is vulnerable

and who isn't.

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APPENDIX

Survey questions

COVID19 5min Survey for Healthcare Professionals

British Association of Physicians of Indian Origin is conducting an online survey of all healthcare workers including its members to estimate (a) the availability and appropriateness of personal protection equipment in different healthcare settings, (b) staff who are off-work and have been off-work due to suspected COVID19, (c) availability of staff testing (d) social distancing at work and finally (e) safety of vulnerable staff members during redeployment.
The anonymised data will be analysed and results published in Sushruta.net and form policy for BAPIO Executive committee in representing its membership as well as healthcare workers from appropriate BAME backgrounds.

Your personal details will not be collected or stored. BAPIO takes personal data security with utmost seriousness and complies with GDPR regulations. For any queries please email admin@bapio.co.uk

1. Please confirm your role in healthcare ?

Column 1

Hospital Doctor
Nurses/Advanced Care Practitioners/Midwife/ HCAs/ PAs
Primary Care GP/ Nurses/ District Nurses/ Administrators
Allied health professional (Physio/ Pharmacist/ Speech therapst/Scientist)
Managers/Estates/ Food/Portering/Administration
intermediate Care/ Nursing Homes/ Carers
Any other role?

2. Please confirm your healthcare sector
Column 1

Secondary or tertiary care facility
Primary care (GP Practice)
intermediate/ Nursing/ Care Homes
Academic institution with no direct patient care
Remote working with no colleague or patient care

3. Please confirm your geographical sector (NHSE/I mapped regions)

Column 2
London
East of England
Midlands
North East & Yorkshire
North West
South East
South West
Scotland
Wales
Northern Ireland
Outside the UK

4. Please confirm your circumstances in relation to COVID19

Column 1

Acute care of COVID19 patients in ED/Inpatients/ICU
Inpatients on non-COVID wards
Primary/ Intermediate care / review of COVID19 patients or suspected
Contact with COVID19 patients at home/ care homes
Personal/ Family contact with COVID19

Community/ Social contact through daily activities
Not applicable

5. Your COVID19 status at any time

Column 1

Confirmed diagnosis of COVID19 from swab test
Suspected COVID19/ self-isolating
COVID19 family contact- self isolating
No symptoms or diagnosis of COVID19
In shielding/ pro-actively avoiding exposure to COVID19
Not applicable

6. Availability of appropriate Personal Protection for your role based on PHE guidance

Column 1

PPE has always been available and appropriate
PPE has been always available but not always appropriate for my role
PPE has been in short supply/ restricted
PPE has been inappropriate for my role
No PPE available for my role (at any time during this pandemic)
I have been restricted/ reprimanded from wearing PPE

7. Social distancing (SD) at work (not including patient contact with PPE) or during commuting based on PHE guidance of 2m

Column 1
I am able to comply fully with SD guidance
I am not able to comply fully with SD guidance
I cannot fully comply with SD guidance during commuting
It is not practical to expect to comply with SD at work
I am working away from direct patient contact due to health/ family reason

8. Safety of vulnerable staff at heightened risk from exposure to COVID19 (see PHE/ NHS guidance on at risk groups)

Column 1

I am in self-isolation due to my health/ family risk
I am in non-patient facing duties due to my health/ family risks
I am not able to self-isolate or avoid COVID19 exposure in spite of my personal/ family risk
I have been offered but chosen not to avoid COVID19 exposure risk
Not applicable

9. Your age group

Column 1

20-29 years
30-39 years
40-49 years
50-59 years
60-69 years
70-79 years
>79 years

10. Ethnicity appears to have a relationship to susceptibility and outcomes in COVID19 *
Choose

Caucasian (British/Irish Traveller/Any other White)
Black/ African/ Afro-Caribbean/ African- American
South Asian- Indian /Pakistani/Bangladeshi/Other
Arab/ Middle-eastern/ North African
Chinese/ SE Asian
Any other ethnicity
Mixed
Do not wish to declare

11. Co-morbidities

Column 1

No chronic conditions
Hypertension
Diabetes
Chronic kidney disease
Asthma/ COPD/ Chronic lung disease
Heart disease
Cerebrovascular disease
Mental Health conditions (any)
Pregnancy
Not wishing to declare

Article

The Bushfires Downunder - A Medical Emergency, Now and Later

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Article Information
Epub: 01.04 2020
Final v2 01.06.2020

Cite as: Chaturvedi S. (2020) The Bushfires down under – A medical emergency, now and later. Sushruta J Health Policy & Opin vol13(2): v3 DOI: 10.38192/13.2.2

Abstract

Although Australia is accustomed to bushfires on a regular basis the extremity of the latest episode was unprecedented causing worldwide concern for the people and ecosystems of the country. This article describes the causes of bushfires alongside the environmental impacts. It reflects on the heroic manner in which the Australian peoples rallied together to overcome their adversity, concluding on lessons to be learned for future generations.

Key words: Australia, burning, bushfires, air pollution

Introduction

An unprecedented catastrophe was created by the uncontrolled bushfires in Australia. Between September 2019 until January 2020 an estimated 19 million hectares of land and 6000 buildings were burnt, killing at least 40 people and about 1.25 billion animals, driving some endangered species to possible extinction, including Australia's famous Koala bear, with the mammoth blaze destroying 30% of their habitat [(1)]. The estimated cost of the 2019 Bushfire is likely to exceed the $4 billion cost of the 2009 Black Saturday fire. State of emergency was declared in various parts of the country with the Australian government pledging $50 millions for fire affected wildlife.

Bushfires are a necessary part of the life cycle for several trees and plants such as Eucalyptus in Australia [(2)] [(3)]. Loose flammable bark and combustible oil in their leaves may promote the spread of fire. Although bushfires are an integral part of the Australian environment, these fires were more extreme than ever known before. The horrific wildfires were clearly visible from satellites images, the smoke rising at least 17 km high and moving approximately 11,000 km across the South Pacific Ocean. NASA estimated emissions of 306 million tones of carbon dioxide. As a result, in some areas, air quality exceeded twenty times the hazardous rating. A possible cause for these devastating fires is climate change which may have brought forward the start of bushfire season and delayed its finish. The tragic loss of lives and properties and the destructive impact on the environment has raised serious concerns in every section of the community [(4)]. Tourism sector revenues have fallen by more than a billion dollars. The fires have undermined Australia's reputation in the international higher education market to the tune of $38 billion.

Health Effects

The medical community has taken on its emergency care role, but also worked to understand the far reaching consequences of these fires on human health. The immediate focus on diseases resulting from contaminated water and food and disease secondary to extreme air pollution became a public health priority. There was increased sediment concentration in drinking water in the run off areas with lead in excess of current drinking water guidelines. The bushfires followed by heavy rains have washed ash alongside other particulate matter into rivers turning the water silt black and killing the fish. Although bushfire smoke affects health, its full unprecedented impact both in the short and long term needs further exploration [(5)]. There was a 51% increase in ambulance calls for breathing difficulties due to smoke and a 25% increase in exacerbation of asthma and COPD since November last year [(6)]. Prolonged exposure to high levels of toxic particles and carcinogens also raise the fear of a spike in lung cancer in the next decade and beyond. WHO estimated that ambient air pollution contributes to 4.2 million premature deaths globally each year. In Australia, atmospheric PM (particulate matter) 2.5 contributed to 2800 premature deaths (2% of all deaths) in 2016. A recent study in China concluded that long term exposure to high concentration of ultra-fine particle of PM 2.5(air quality measure) found in bushfire smoke are linked to stroke in relation to the dose of exposure [(7)].

The Australian medical community and government agencies set up Breath Easy Clinics. More emergency consultations were created both in person and through video conferencing in bushfire affected regions working in coordination with first responders such as police officers, firefighters, paramedics and The Australian Defence Force.

Mental health conditions like depression, anxiety and post-traumatic stress disorder were acknowledged by funding extra sessions of mental health consultations. The profound health effects highlighted the need for future planning. At the outset allocating $5 million in research grants to investigate the long term impact on physical and mental health.

An Australian study conducted during the 2009 Black Saturday disaster, illustrated the physiological stress firefighters experienced in hot, smoky and physically demanding conditions unleashing an inflammatory response that puts the individuals at risk of poor health with repeated exposure. It has been implicated as a predictor of arterial disease and myocardial infarction. The researchers found their inflammatory changes consistent with 'overstrained athletes' [8].

The projected lifetime adversities are likely to include mental health issues, risky/high level alcohol consumption, non-communicable diseases, family violence and environmental damage. The main impact seems to be delayed when people have a chance to stop and reflect on their experiences [9]. A prospective study of 1526 people who suffered losses in 1983 Ash Wednesday bushfire found that after 12 months 42% were defined as suffering from psychiatric illness or psychiatric symptoms using General Health Questionnaire, about double the expected community prevalence. Fortunately, after 2 years half of these numbers showed human resilience and improved. Strong recommendations were made to introduce disaster management in the medical curriculum to prepare generations of doctors for increased climate events culminating in public health emergencies. The generosity of ordinary people was commendable digging deep in their pockets from all walks of life. Australian Indians in their usual spirit of selfless service donated nearly half a million dollars in addition to front line services such as food vans. There were many fundraising events bringing solidarity amongst all Australians. Sydney attracted 70,000 people to support the performance of local and international stars raising well over $50 million.

The Future

This experience has most definitely left no room for complacency. The effects of climate change specific to Australia are recognised and include: significant linear association between exposure to high temperature and greater mortality in large cities of Sydney, Melbourne and Brisbane. Estimated annual productivity losses from heat stress of $616 per employed person in Australia. 2177 reported deaths from extreme weather conditions in the past 100 years. An observed 13.7% increase in dengue carrying mosquitos to transmit disease to humans in Australia between 1950 and 2016.

Australian Medical Association joined other organizations around the world including British and American Medical Associations along with Doctors for the Environment Australia, in recognizing climate change as a health emergency [3]. It has called on Australian Government:

To adopt mitigation target within Australian carbon budget.
To promote health benefits of addressing climate change.
To develop national strategies for health and climate change.
To promote an active transition from fossil fuel to renewable energy.
To establish a National Sustainable Development Unit to decrease carbon emission in health care sector.

Last month, the board of a public hospital in New South Wales rejected a $15 million donation from a coal mining venture, saying the project's potentially negative effects on the local population's health made it unethical. The board's decision should be widely and loudly applauded especially at a time when Australia is grappling with its worst-ever bushfire season that has come at the hands of climate change. Medical Journal of Australia has recently stated: "Heat exposure is more lethal than any other natural disaster in Australia" [10].

The aftermath of bushfire is likely to be considerable with long standing impacts on the built and natural environment. Rebuilding life both individually and nationally, will be a mammoth task. There is a proud history of health professionals standing up on issues of importance. Asbestos, smoking and climate change are some of those which will now occupy the minds of Australian researchers and people around the world. The February miracle rain of 350mm in some parts of Australia has finally helped to bring the blaze under control. As all the emergency warning are being downgraded people are gradually returning home for yet another phase of grief, sifting through their fire damaged properties.

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Article

COVID-19 and Climate Change

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Abstract
Climate change has been a focal issue for centuries, but even more so in the last decade, with much focus in recent months on the Venetian natural hazards and the Australian bushfires; visible events that were close to home; in the West. However, fast forward a few months, we now find ourselves in an unimaginable and unprecedented situation; the COVID-19 pandemic, a Public Health Emergency of International Concern (PHEIC) as well as an economic crisis, and climate change could not be more relevant.

Cite as: Damani, A. (2020) COVID-19 and Climate Change. Sushruta 13(2): pre-print v1; ePUB 03.05.2020 DOI: 10.38192/13.2.10

There has been an exponential rise in the number of cases and deaths, loss of jobs, increase in debt, panic buying as well as a sense of fear spreading across the globe. However, many will have seen or heard stories of fish appearing in the Venetian waters [1], or the images of the Chinese skies appearing clear and blue for the first time in a while. So how does climate change fit into the picture? The role climate change plays in COVID-19 is important and little attention has been paid to this. Whilst the number of studies are increasing exponentially, there is still a dearth of data on the topic. In this article, I hope to explore the different role climate plays in this pandemic. I will focus on 3 main aspects of the interrelationship between climate change and infectious diseases, with COVID-19 being the case study:

1. Effect of lockdown (secondary to the pandemic) on climate change
2. Effect of lockdown (secondary to the pandemic) on data collection of air pollution
3. Effect of the SARS-CoV-2 (virus) on individuals from areas with high air pollution

1: Effect of lockdown (secondary to the pandemic) on climate change:

Firstly, the pandemic has taken the world by such a storm, that healthcare systems are fearing for their capacity. Lockdown (or quarantine) is one very effective way to slow the transmission of the disease by limiting physical interactions between one and another; flattening the curve. Of course, this results in less travelling, working from home and fewer social interactions, all of which one would assume result in less air pollution. But is that actually making a difference to the climate? The peak of the pandemic coincided with the seasonal spring smog, which is the most polluted time of year due to the winds from Europe as well as fertilising plants and crops in the farmyard [2]. In the Spring of 2014, the seasonal smog in the UK caused around 600 deaths [3]. Although activities that contribute massively to air pollution have come to a grinding halt, this has been counteracted by other activities that have not ceased despite a lockdown: agriculture and wood burning to heat homes. This has contributed to the particle pollution numbers still being above what is considered a low air pollution banding (score of < 4 on the 10-point Air Quality Index scale) [2].

In Venice, for example, the clarity of the water is not actually due to less air pollution but rather due to an "absence of motorised transport", according to Davide Tagliapetra, an environmental researcher [4]. Which poses the question, with COVID-19 silencing the tourism and hospitality industry, could the pandemic enable us to pay closer attention to the inter-connectedness of tourism on climate change and modify our attitudes towards tourism?

2. Effect of lockdown (secondary to the pandemic) on data collection of air pollution

Infectious disease outbreaks pose another problem; due to the rapid transmission, nature of the virus and the incubation period they often require suspected individuals displaying signs and symptoms of the virus to self-isolate and stay at home to prevent further spread. The impact on the workforce can be substantial and detrimental; Transport for London (TfL) reported a third of their employees were off work due to illness or self-isolating [5] and the National Health Service (NHS) reported a figure of 25% [6]. Whilst the exposure to the virus in these professional organisations vary, it would not be unreasonable to assume that similar trends are being observed in other sectors as hinted by a report by the London Air Quality Network. A reduced workforce; decrease in supply means there is a discrepancy in meeting the increased demand.

Continued from .....The Bushfires Downunder

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We have seen within the medical profession; the shortage of nurses and doctors is not one that can be simply addressed in an acute emergency such as this. The same can be said about the air control employees. These roles require training and tasks involve the utilisation of specific instrumentation [7] that certain individuals can use, making them difficult to replace with the knock-on effect is that invaluable data that may be compromised. For those unaffected and fit to work, unclear guidelines issued by the government make the advice open for interpretation. The constant changing of guidelines reflects the magnitude of unknown with regards to the virus. Whilst much attention has been paid to the pathophysiology of the virus, the difference in mortality between the two genders and the efficacy of outbreak control measures, it is inevitable that once the pandemic passes and the storm calms down, scientists and environmentalists will aim to draw comparisons between air pollution levels and hospital admissions due to COVID-19 by region. Which makes it paramount that accurate data concerning air quality is collected now.

3. Effect of the SARS-CoV-2 (virus) on individuals from areas with high air pollution

The correlation between major cities with high air pollution days and the number of COVID-19 cases would be an interesting one to study. Whilst confounding factors and other determinants play a role, with an upper respiratory disease such as Covid-19, the quality of air in the area in which someone lives is bound to have an impact on the pre-disposition to the severity of the disease. We have been told repeatedly, particularly in the initial stages of the outbreak where there were uncertainties about the condition, that the majority of those dying have pre-existing conditions. Although the virus affects individuals of all ages, genders, ethnicities and does not discriminate, we do know that many of the pre-existing conditions such as asthma are exacerbated by air pollution [3, 8-11]. Of course, correlation does not mean causation and factors such as socioeconomic factors and dense population play a part. Areas such as London make transmission of the virus both within the city and households more likely. But with the situation unfolding so rapidly and fast turnover-times, studies are already under away with Harvard university suggesting that areas with higher fine-particle pollution levels also saw mortality rates increase by approximately 15% [12]. However, the study is still in its infancy and has not yet been peer-reviewed.

To conclude, all aspects of the biopsychosocial model are covered by the Covid-19 outbreak. The biological effects of the virus are evident with shortness of breath, coughing and classic signs of infection apparent for many of those affected. The social effects are also taking a toll on us; humans are social beings and the lockdown has proven to be difficult to become accustomed to, with what was initially 3 weeks and still in place for the foreseeable future. No doubt, both the biosocial factors impact the psychological emotions of anxiety, loneliness and helplessness. [13]. Similarly, we can de-construct the 3 components of the biopsychosocial model and apply it to climate change:

- Biological: less air pollution is benefitting our health ⇨ those with pre-existing respiratory conditions such as asthma
- Social: Working from home results in less commuting ⇨ less pollution
- Psychological: The "one form of exercise a day" advice is being taken up by many and has allowed us to really appreciate nature and our surroundings more, in its purest and most tranquil form. This form of outdoor exercise also acts as an outlet for stress.

However, as tragic times often call for solidarity such as the inception of the NHS in 1948 following the World Wars, could we come out of the pandemic stronger than ever before and renew our commitment to climate change and air pollution? Could this be the catalyst and driver in making the 1-day traffic stop possible and help reduce the seasonal spring smog? Could this eliminate unnecessary travel, encouraging working from home? Could this reduce unnecessary flights across the globe that emit more energy than anything else? With cities such as Milan already pledging to reduce vehicle use in the post-lockdown era [14], let us hope that other cities will follow in its footsteps. Only time can tell.

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Article

Remote Consultations – The New Norm?

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Keywords: remote consultations, video consultations, NHS Long term plan, triage first

Abstract:

COVID-19 pandemic has presented with unique challenges and opportunities for healthcare services globally. Remote consultation has played an integral part to allow the healthcare systems to function and at the same time to adhere to the restrictions to prevent spread of SARS-CoV-2. Regulators, organisations, clinicians and patients have all adapted and adjusted to the widespread use of remote consultations across specialties and healthcare settings. In this article, we discuss the advantages and limitations of remote consultation in the NHS and its consideration in day-to-day clinical practice.

Cite as: Hussain, A., Shah, S., Dave, S., Ramkisson, R., Quadri, M.F.A. (2020) Remote consultations- the new norm. Sushruta Journal of Health Policy & Opinion 13(2) epub 26.05.2020 (pre-print v1) DOI: 10.38192/13.2.11

Introduction

The Covid-19 pandemic has changed the way we think, behave, and act. It is characterised by uncertainty, change, complexity, and ambiguity. Lockdown and social distancing to minimise the spread of SARS-CoV-2 and to keep staff and patients safe have necessitated significant and rapid changes at policy, regulatory, and practice level. One of those changes relates to remote consultation and telemedicine[1,2]. Within the space of a few weeks, most of us now have had the experience of using some form of remote consultation (RC).

The NHS Context

The NHS long-term plan commits that by 2024 every patient in England should be able to access digital services at least at the primary care level termed as 'Digital First'[3]. At the primary care level, the current NHS guidance adopts the "triage first" model using a telephone discussion. The availability of video consultation (VC) enhances the quality of information and triage, leading to better decision-making. At the secondary and tertiary care facilities we continue to have traditional face-to-face outpatient clinics for new assessments and reviews.

It is important to note that the NHS and the wider healthcare services have already been using telemedicine including remote consultation[4]; the only change now is the scale and the speed of adaptation and implementation. It has been widely observed that the NHS has demonstrated a highly flexible and responsive approach to deal with the pandemic.

Regulation

It is important to be fully up to date with the current General Medical Council (GMC) regulation for the use of RC. The GMC has set out 10 key high-level principles for good practice in remote consultations and prescribing that have been supported by 13 other regulatory bodies in England, Scotland, Wales, and Northern Ireland[5]. These principles are not new guidance, rather the existing standards adapted to

.....Continued from: COVID-19 and Climate Change

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the current pandemic situation.

The GMC emphasises in its guidance that in the current situation at times doctors may need to apply their professional judgment to use the resources available for consultation[5,6,7]. The Royal Colleges, British Medical Association, and other relevant organisation have provided guidance and updates on RC. We would advise familiarising yourself with the most recent guidance from your respective College and regulatory body.

It is vital to also consider the medicolegal implications, inherent risks, and limitations of virtual consultation[8]. Familiarising oneself with the available guidance and updates from medical indemnity organisation is essential for safe and defensible practice.

The NHS Information Governance team's advice is that it is acceptable to use Skype, WhatsApp, Facetime, and other commercially available products as a short-term measure during a pandemic[9]. We would advise that wherever possible, clinicians should consider using NHS approved platform for RC.

Technology and Platforms

The ideal technology for remote consultations is an NHS approved General Data Protection Regulations (GDPR) compliant tool, that has both the audio and visual components. The question one should ask when choosing a fully compliant platform is how urgent and important the consultation is keeping in mind considerations around safety, confidentiality, and data protection.

There are multiple platforms available both paid and free. It will also depend on your organisation that may have an approved specified consultation platform. For a high-quality experience of remote consultation, the clinician requires correct equipment with good webcam, audio, and video system. Internet connectivity for both the patient and the clinician is vital for effective consultation.

Preparation

If one is not used to RC, it can be a learning curve and requires a period of adaptation. Allowing us to be curious and explore opportunities and experimenting with new ways of working is important. There is evidence that once clinicians get used to using certain platforms, the RC becomes less stressful, more efficient, directed, and focused[4,10].
It is sometimes helpful to create a template that may allow for triage of patients who can be safely seen by RC. It may be helpful to send focussed questionnaires or information sheets to the patient who could return it via secure email. Such directed and focussed consultation can add significant value and save time. Some platforms have the facility for multiple participants to join the consultations for example another healthcare professional that is involved in the care or an interpreter.

Developing flowcharts based on evidence and for the most common scenarios can come handy at times when a lot of clinical decision-making will be based on observation and reports. Knowing when to avoid remote consultations is also important and having a list of scenarios and criteria to guide you may be important[11].

Examination

In some specialities, RC can feel inadequate, as it is not possible to examine a patient. Given the extraordinary times with the pandemic, some creative and out of the box thinking is needed[12]. Patients can be advised to monitor their vital parameters by the use of mobile applications or medical devices such as blood pressure machines and glucose tests that are widely available for home use. For instance, in a virtual ADHD clinic, patients monitor their heart rate and blood pressure and send information through the application to inform their clinician. The patient receives some brief training on how to monitor their vital signs. In some cases, following a remote consultation, the patient may need to be seen face to face for the safe delivery of care. The likelihood of such an outcome should be discussed in advance with the patient.

Table 1: Documentation

Consent whether it is written, implied, or verbal.
Location of both clinician and patient
Technology/platform used along with limitations discussed
Clarifying reasons for remote consultation
Discussing circumstances to use face to face consultation
Crisis or medical emergency management plan
Clinic letter to the referrer, other providers and patient

Patient Perspective

It is important to ensure that patients and their carers are comfortable with remote consultation and allow them time to get used to it especially if it is their first experience. Feedback suggests that patients and carers are generally accepting of RC, can manage technical problems, understand limitations, and are generally grateful for the virtual clinical input and intervention. The other observation is that patients are honest and able to express the emotions better as there is still some distance between the clinician and patient. This is particularly important in mental health conditions [4,12,13]. RC will require special consideration and more skill especially when faced with challenging communication for instance in cases where bad news has to be delivered[10].

Therapeutic Relationship

At the core of every good clinical interaction is a robust therapeutic relationship, one that seeks to elicit information and allows for difficult discussions to take place. Clinicians consider the therapeutic alliance as the most important factor for a successful outcome[14]. A sound clinician-patient relationship also helps to improve engagement in the treatment plan and reduces the risk of miscommunication and complaints.

RC can make it challenging to establish a meaningful therapeutic relationship and clinicians may need to work harder. The rapid rollout of remote consultation during the COVID-19 pandemic has given clinicians little time to

translate their therapeutic skills from their consultation rooms to their computer screens. However, clinicians are generally used to working in constantly evolving clinical environments and most would have the flexibility to adapt to this new world.

Evidence suggests that the key principles of therapeutic interpersonal relationships include therapeutic listening, responding to patient emotions and unmet needs, and patient-centeredness[15]. Using technology can be a challenge to developing rapport. Every interaction has the potential to elicit a counter transference reaction in the clinician and care has to be taken that this is appropriately managed so that it does not disrupt treatment[16].

Patients who are used to everyday video conferencing and other technological advances will find the transition to remote consultations easy. However, clinical consultations are different from peer meetings and they might find the clinician on a screen quite distant and harder to relate to. Any barriers in language and culture can magnify this for the patient and make the process dissatisfying. Worse still, difficult transference feelings and lack of confidence might impact on their ability to take the clinical advice on board.

Trainee Perspective

The wide use of RC can have huge benefits for trainees. In providing follow up care, virtual Respiratory clinics can be set up to follow up COVID-19 positive patients after discharge. Trainees with minimal consultant supervision can manage this safely. This offers continuity of care for patients and improves their level of satisfaction. It also helps the hospital-based staff to focus on patients admitted and use resources more appropriately including Personal Protection Equipment. In a geographically widespread deanery, trainees who are located in other locations can also be recruited, thereby making better use of the manpower available.

Admission to hospital with COVID-19 is a traumatic experience for patients and they prefer being able to speak to their team from their homes after they have been discharged. In addition to reducing further exposure, RCs are proving useful in allaying anxiety in patients and improving the doctor-patient relationship.

We have observed a positive transformation in the inpatient referral process as well with the system becoming more efficient. The use of e-mails to send information and invitations securely in combination with RCs works well.

Additionally, 'COVID-19 Webinars' have been organised by different departments (Respiratory, Cardiology, Gastroenterology, Renal, etc.) bringing together a rich training experience and specialist focus on the latest information about COVID-19 including clinical updates, treatment protocols and the evidence base which appears to be growing steadily. This enhanced learning experience for trainees can be safely accessed from the comfort of our homes.

The provision of mentoring for new trainees by senior trainees is an additional feature and this can again be safely delivered by remote technology. Overall, the trainee experience of RC is positive and has opened new channels of education and continuing patient care.

Advantages

The biggest advantage of RC is the ease of access to treatment. Patients do not have to rely on transport or support from others to attend appointments. Once they get used to the format and process, they can manage the appointments with high degree of autonomy. Reduced reliance on family and friends can mean that they take more charge and responsibility for their care; this can improve concordance and health outcomes.

Patients can see their clinician from the comfort of their homes. Those who don't drive will not be disadvantaged. They have greater flexibility in terms of appointment times, as transit times will no longer need to be considered. RC also allow multi-disciplinary approach and it becomes lot easier to involve several specialists who may be located geographically distant from one another to convene and provide their clinical expertise to enhance the treatment plan[11,12,13].

There are financial incentives in terms of not having to bear travel and parking costs and not having to take time off work. Patients will also benefit from the time saved. They would not have to wait unnecessarily in case clinics run over and will save time by avoiding travelling especially to regional centres and places with poor transport links. In the current COVID-19 situation, RC is the near-perfect solution to maintaining social distancing and minimising virus transmission. RC contributes to reducing the carbon footprint and can help in creating sustainable healthcare models that are environmentally friendly and greener[17].

Limitations

There are complex reasons that can make RC difficult to integrate and sustain within a healthcare system including cost, logistics, and adverse impacts on professionals[18]. Clinicians and patients need good and uninterrupted access to the internet and power source along with a device that supports the consultation software. They might need specialist support to troubleshoot technical difficulties.

The GMC recognises that there could be potential safety risks and recommends considering if face-to-face appointment is needed on a case-by-case basis6. Defence unions also advise about being aware of inherent risks with remote consultations[19].

It is not possible to perform a clinical examination apart from observation and inspection. Although mobile applications can assist in the recording and monitoring of vital parameters like pulse rate and blood pressure, more detailed and complex examination remains out of bounds. It can also be difficult to get a full and accurate picture of a patient's mental state. However, in several areas of clinical practice e.g. dermatology, dentistry, and physiotherapy to name a few, clinicians are adapting and able to use technology to complete a full consultation. There are also issues with patient consent and autonomy. Patients may find it harder

to decline appointments and may be coerced into seeing the clinician by family. It can also be difficult to fully ensure confidentiality as unbeknown to the patient, family member or friend might be in the vicinity. This can be challenging for clinician in assessing risk and potential safeguarding issues. Patients with learning, speech, visual, and hearing impairments may require additional adjustments and support with these consultations. For certain vulnerable individuals who are socially isolated, face-to-face appointments provide some opportunity to leave their homes and meet with others. There is a risk this group who are often marginalised may become further withdrawn and lonely.

Clinicians need to be aware that patients may record the consultation. This is not necessarily a disadvantage when clinician is aware and ground rules considered.

Table 2

Important considerations for RCs	
Dos	**Don'ts**
Obtain valid consent	Assume consent and confidentiality
Ensure confidentiality	Be late
Explain limitations of consultation	Be ambiguous with the management plan
Check communication needs, use verbal and non-verbal cues	Assume no one is recording
Have a template to introduce the session	Use non-approved platforms or apps
Ensure good, clear and accurate documentation	Continue the RC if you have any concerns about patient identity or confidentiality
Remain up to date with current regulation and organisational policy	Rely solely on a single platform for RC, have telephone option as a backup
Ensure medical indemnity cover	Use RC where physical examination is essential
Have an alternative if technical problems	Record without prior consent
Review the caseload to consider where RC is possible	
Maintain Professionalism -dress code and background	

Conclusion

We have made significant progress and strides in the uptake and use of technology in all aspects of our lives from consumerism to banking and beyond. In healthcare, despite the limitations and barriers that over time through research, professional experience, and patient feedback have been refined and improved, the use of RCs in clinical practice will remain. For healthcare professionals across all levels of service including primary, secondary, and tertiary care, the recent Covid outbreak has accelerated its uptake. The regulatory, indemnity, and health care organisations have supported the swift transition to using RCs to facilitate social distancing whilst continuing to provide health care. The experiences during this time will add to streamlining the use of RCs in the long-term including advances in hybrid models, risk stratification, contingency planning, and governance structures.

Following the pandemic, it is envisaged that the convenience, cost-effectiveness, and benefits in a variety of scenarios and situations will lead to the use of RCs being embedded in pathways of care. Medical schools and universities may have to look to prepare future generations to embed this way of working.

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Conflict of interest: No conflict of interest declared by the authors

Author's Contributions

Article

Melting Ice and Malaria – *The Tip of the Climate Change Iceberg?*

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Article Information
Epub 01.04.2020
Latest version 01.06.2020

Cite as: Dominic, C. (2020) Melting ice and malaria- The tip of the climate change iceberg. Sushruta J Health Policy & Opin 13(2) DOI: 10.38192/13.2.5

Editorial Review:
This is an ambitious article that gives a thorough overview of the key ways in which climate change will affect global health. It provides a useful grounding in the topic of climate change and health for those new to the subject. The author provides good evidenced based examples of future health scenarios in a warming planet. The style is succinct and readable with complex ideas explained without jargon.
Ramya Ravindrane (Guest Editor)

Keywords: Malaria, climate change, icebergs

Introduction

A line from the WHO report on climate change struck me particularly – 'Roman aristocrats retreated to hill resorts each summer to avoid malaria'. 1 Hoping to pursue a career in Tropical Medicine and Global Health, the climate crisis is one of my primary concerns for the future of global health – will there come a time when we spend our summer holidays hiding in the Pennines from infections at ground level? Being a medical student in London during the climate strikes it was inspiring to see people protest government inaction around preventing climate change - it is certain that climate change is having a measurable impact on global health and that it is time that we encourage awareness and act against it. I was personally inspired when a doctor in an MDT meeting made everyone pause to discuss climate change activism. By mentioning the effect of climate change on infection transmission and vectors, natural disasters, mental health, food security, productivity, and air pollution/allergies I will strive to explore the impact of climate change on global population health.

Natural disasters and Mental Health

It is reported that the number of weather-related disasters has tripled since the 1960s and had a disastrous impact on populations of developing countries. Rising sea levels destroy and displace populations and have a concrete impact on people's physical health (e.g. from trauma, disease, drought or famine) and the burden of mental health due to their displacement. [1] Floods not only contaminate drinking water and increase water borne diseases but cause direct physical impact on global health such as drownings and damage to healthcare provision systems. Following natural disasters, there is an increase in mental illness such as the levels of anxiety and PTSD shown following Hurricane Katrina.[2] There is a direct correlation between heat and exacerbation of existing mental health conditions - University of Maryland's Howard Centre for Investigative Journalism found emergency calls relating to psychiatric conditions increased about 40% in Baltimore in summer 2018 when temperatures were at a record high. [3] The mental health consequences of climate change range from anxiety and depression to suicidality. [4] Health risks continue to occur after an extreme event such as involvement in clean up or as a result of damage to property, loss of infrastructure, socioeconomic impacts and the degradation of the surrounding environment. [4]

Food and Productivity

Climate change is threatening our food security – as well as an increase in bacterial food poisoning cases due to rapid proliferation of bacteria in warmer climates, higher sea temperatures will lead to higher mercury concentrations in fish and contaminants from runoff will enter the soil we grow our plants in. [5] The yield of many of our farmed crops is predicted to decline because of the combined effects of changes in rainfall with increased competition from weeds.[2] The nutritional value of food may decline due to decreased nitrogen and therefore protein concentration in many plants due to elevated levels of carbon dioxide in the air.[2] Increased use of herbicides and rising food prices threaten the stability of health on a global scale with regards to the nutrition of the population and a potential further increase in malnutrition in developing countries.

Air pollution and allergen prevalence

Australia is burning! The headlines from the last month emphasise the recent and recurrent increase in wildfires, which are expected to increase in number and severity therefore contributing to climate change via smoke and

other air pollutants. [5] Increased air temperature and carbon dioxide levels increase the suspension of airborne allergens triggering asthma exacerbations globally. There is an increase in particulate matter resulting from our burning of fossil fuels that is increasing our risk of lung cancer, chronic obstructive pulmonary disease and death as a population. [5] Ground level ozone is increasing and is associated particularly with decreased lung function – this is caused by increased temperature and methane emissions particularly. [2] Increased concentrations of carbon dioxide in the atmosphere can cause an increase in grass pollen which triggers allergies in around 20% of people – an ENT specialist commented that the overlap of seasonal allergens is increasing due to the changes in atmosphere and climate. [3]

The effect of climate change on vectors and infection transmission

Malaria is a public health concern and proven to be one of the most sensitive diseases to climate change – using modelling, the WHO showed that a temperature increase of 2-3 degrees Celsius would increase the number of people at risk of malaria by around 3-5% or several hundred million for context. [1] Climate change will affect infection transmission patterns and have catastrophic impact in already under-developed economies by decimating the workforce and causing unnecessary death – malaria, though treatable, is often unrecognised or the countries affected simply do not have the resources to - and therefore has a much larger impact in Sub-Saharan Africa than if it were to become a problem in a more developed country.

The changes in climactic conditions will affect water and vector-borne diseases especially by lengthening the times of year during which disease is able to spread and when the vectors or organisms are plentiful and prevalent, and expanding the geographical areas affected such as for example a prediction of the area of China wherein schistosomiasis occurs increasing. [6] Mosquito vectors of malaria and dengue are sensitive to changes in climate and it is predicted that their prevalence will continue to increase with increases in heat and fluctuations in seasons 1– the 'vectorial capacity', or ability to infect people, of the dengue virus reached a record high in 2016. [3] Climate changes increases the risk of water-borne illnesses with the increasing temperature causing altered and increased precipitation, rising sea levels, more frequent storms and subsequent runoff. This increases exposure to waterborne pathogens such as Giardia and increases the prevalence of diarrhoeal disease which has a huge toll on the population both in terms of lost productivity and unnecessary suffering. [2] A further problem is the melting permafrost uncovering potentially long dormant strains of for example anthrax, which could cause epidemics of such a scale that we cannot handle.

How to increase community participation in efforts to lower climate change?

The principal of tackling climate change, like many other public health concerns, is primarily to educate the public and not through the apocalyptic and alarmist narrative sometimes used unsuccessfully in the press. We must convince the public that, though a serious issue which is having catastrophic impact, there is still so much they can do within their daily lives to help tackle climate change - talking about solutions, and preparedness instead of talking about disaster – how can we protect our society from impending doom? Public health strategies must be developed at high level to make it easier for people to take positive and consistent action in their daily lives – a simple example would be, if meat consumption is having a negative impact on climate change but vegetables are expensive, to create means-tested government subsidies to alleviate this cost. Further to this, it is necessary to develop a clear strategy on climate change as a nation with the implementation of community and school programmes around education and promoting awareness and action around climate change – this is something NGOs currently focus on, but the schemes must be nationalised to have a true effect. As scientists it is our duty to engage with communities and tackle misconceptions surrounding climate change.

Conclusion – WHO and who?

The key message in all of the areas that climate change is affecting, is that it is everybody on the planet's problem – it is affecting each one of us and therefore it is each individual's responsibility. Currently resource poor countries are the ones ravaged by natural disasters and we are far removed from their tragedy – but that should not mean that we by any means ignore their plight. Vulnerable groups are the 'who' that the WHO (world health organisation) is concerned amount – those of low income, certain races, immigrant groups, indigenous peoples, children and elderly, pregnant women, vulnerable occupational groups, disabled people and those with pre-existing or chronic conditions. As Greta Thunberg recently said 'I want you to feel the fear I feel every day. And then I want you to act. I want you to act as you would in a crisis. I want you to act as if our house is on fire.' which is fittingly true – the planet, all of our home, is on fire both literally and metaphorically, and this is having catastrophic implications for the health of our global population. There is definitely a shift is social attitudes, such as the concept of 'flight shaming' which is encouraging people to cut their emissions by flying less, towards a community where we are each able to make an individual and a community difference.

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Essay

Climate Change & Health

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Article Information
Submitted 29 Jun 2020
Pre-print 1 Jul 2020

Estimated to cause a quarter of a million additional deaths1 per year between 2030 and 2050, climate change is an imminent threat. A phenomenon growing with vehement stride, it continues to menace the very facets of life we, as humanity, take pride in establishing: environment, economy and health. In this essay we will explore the furore, climate change exhibits on the health of populations, analysing the success of operations to mitigate its tyranny on the planet. After all, there is no sense in adversity if not to cultivate innovation.

To begin with the undisputable, baseline temperatures are rising. What is already an ageing population in many developed countries is further threatened by the growing incidence of heat waves, which contribute directly to deaths from cardiovascular and respiratory disease. For instance, the European heat wave in the summer of 2003 recorded more than 70,000 excess deaths1. High temperatures also raise ground-level ozone (a major component of smog) and particulate matter air pollution, exacerbating further cardiovascular and respiratory disease. Furthermore, extreme heat increases the levels of pollen and other aeroallergens, triggering increased hospital admissions for asthma. Whilst not part of the global climate change associated with the troposphere, the example of stratospheric ozone depletion accelerated by the widespread use of chlorofluorocarbon (CFC)s in aerosols and refrigerants in the past, illustrates exactly the reciprocation of damaging behaviour between industry and the planet. The reciprocation itself being that the stripping away of the ozone barrier increases ultraviolet (UV) exposure on the Earth's surface, an occurrence that increases the incidence of skin cancer.

It is also impossible to ignore the more drastic means by which climate change attacks the health of populations: natural disasters. Whether it's hurricane Sandy directly claiming the lives of over 125 victims[2] in the United States of America, or the devastating secondary implications of cyclone Aila in triggering a widespread diarrhoea outbreak infecting over 7,000 people in Bangladesh3, climate change has often publicised the magnitude of its power on a global scale. It is important not only to consider the immediacy of the damage exhibited, but also its long-standing effects on developing nations, for whom healthcare infrastructure can be severely undermined.
On the topic of weather, increasingly variable rainfall patterns can diminish fresh water supplies. The lack of safe water then goes on to compromise hygiene, increasing the risk of water-borne diseases. Recognised by the United Nations General Assembly4 as a basic human right, a compromised access to clean drinking water must be severely condemned. If such an adversity in itself cannot successfully convey the importance of assigning climate change its due alarm, then we must introspectively question what further manifestations we need to witness in order to believe its menace.

The eradication of once inescapable epidemics has become synonymous with development, a landmark of evolution almost. Yet, climate change has tapped into this very domain and is slowly, but surely, reintroducing shadows believed to have been squelched in the past. This is where we address the severity of vector-borne diseases, for which climate change advantageously lengthens transmission seasons and widens geographic range. Already killing over 400,000 people per year1 (and mainly children under age 5 in certain African countries), Anopheles-driven malaria poses an undeniable threat that can't afford to be accelerated by the nefarious influence of climate change. It is with similar reasoning that I emphasise the potential of the phenomenon to increase our exposure to the Aedes mosquito vector of dengue. Outbreaks of these tropical diseases may inundate healthcare infrastructure in low-income countries (LICs), dampening the burdens to communities for whom health setbacks can translate into a cycle of economic poverty.

On the topic of global damage distribution, it is imperative to acknowledge the larger toll of climate change on LICs. Severe weather events and changing rainfall trends are projected to cause declines in crop yields, threatening food production for a growing global population. The extent to which rising food prices will widen global economic inequality is unknown, but what is certain is the compromise on food security and, in the case of elevated atmospheric CO2 levels decreasing plant nitrogen - and therefore protein - concentration, the nutrient content of crops. As far as malnutrition is concerned, I must refer back to the principles of basic human rights, and where that is threatened, serious reflection and mitigation should follow.

The detriment of climate change on global health is not limited to its physical manifestations, but also in the area of mental health. Described by the American Psychiatric Association as "a chronic fear of environmental doom,"5 eco-anxiety is an emerging, yet pertinent, issue. According to a 2018 national survey, almost 70% of people in the US are

worried about climate change, with 51% feeling helpless5. Ranging from post-traumatic stress disorder (PTSD) incurred from hurricane Katrina, to a more ominous sense of growing disquietude in the face of damage to community groups, a loss of food, and reduced medical supply security, it is clear climate change challenges mental health from both more, and less, obvious angles. In a digital world dominated by constant media coverage, people are often overwhelmed by the juxtaposition of their desire to 'save the planet', with their supposed lack of control of the problem. After all, instinct is to preserve what we can for future generations.

Now for the tone shift we have all been waiting for: the issue of climate change is not as overcast as it has been in the past. In fact, the question is no longer solely what we have done to propagate it, but rather what we have done, and can further do, to mitigate it. As I mentioned before, adversity breeds innovation, and while this can be seen on a global scale in the development of Carbon Capture and Storage schemes for instance, local efforts are equally laudable. In the UK, Woking Borough Council employs its own utility company ('Thamesway'), which provides sustainable energy from solar farms. Their endeavour to make their residents' daily lives more energy efficient has reduced local energy consumption by 52%, and CO2 emissions by 82%, since 19906. Another small-scale approach with a large-scale effect is London's BedZED6 (Beddington Zero Energy Development) initiative, which has created a region of homes that use 80% less energy for heating. A heroic initiative in itself, the UK Government's 'Green Deal' scheme6 contributes up to £1,250 towards the cost of installing two energy saving home improvements, like loft insulation. The complaint, therefore, should not be that the necessary innovation does not exist, but rather that it doesn't always receive the level of support needed to make the difference it strives to establish. It comes down to consumers to pave the path for such progress.

I, for one, believe strongly that education is the engine of revolution. What can be engrained into the youngest of minds will soon translate into a future generation more secure in its endeavours. As a personal example, my seven-year-old brother rose to the challenge of this year's British Science Week by presenting a project on the issue of global climate change! The simple advice he shared on "switching off the light when leaving the room" and "turning off the tap when brushing your teeth" resonated with me. In fact, these simple solutions prove to be the most effective when undertaken collaboratively as a global population. A study7 has published that a single light left on overnight over a year accounts for as much greenhouse gas as a car drive from Cambridge to Paris. Kuznets Curve6 shows the proportionality between rising economic development (where basic priorities of food, water and shelter have been achieved) and affluence, education and an increasing concern for the environment. This reaffirms the significance of a key stakeholder, often overlooked in their capability of bridging the gap between environmental indifference and a genuine chance of change: the consumer. Schools can play a major role in changing perceptions and behaviours by encouraging recycling, reducing food miles and 'Walk to School' schemes. As reasonable as it is to blame industry and multinational corporations (MNC)s for their incredulous carbon footprints, considerable responsibility also lies with each and every one of us in our place as consumers. When it comes to reducing carbon footprints, the power lies, quite literally, in our own feet, in that the paths we individually and collectively choose to take will contribute to increasing global sustainability.

To conclude, the growing threat of climate change on the health of populations cannot be underestimated, but the most important message from this essay is that there is still hope. Continued support of 'green' initiatives, a more conscientious profile as a consumer and a wider appreciation of our contribution to the global carbon footprint can significantly protect future generations from the impending damage climate change inflicts. Whilst we can't all be a 'Greta Thunberg,' we can at least exercise our responsibility for maintaining a sustainable lifestyle. When it comes to climate change, the smallest initiatives can make the biggest difference. So, in the face of this adversity, let us collaborate as a global community of responsible consumers and support innovation with the strongest of ladders: effort.

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Conflict of Interest none declared

Opinion

Climate Change and Childhood

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Key words: Climate change, childhood,

Cite as: Singh G. Climate change and childhood. Sushruta 2020 (Jul) vol 13; issue 2: ePub http://www.sushruta.net
Version 2- received 09.04.20

When I was a child, I was a proud member of the World Wildlife Fund for Nature. I would pore over my issued green wallet and the gleaming silver-gold coins with endangered species imprinted where the Queen's head should be. Saving the world was a noble goal, and as a young person, I was earnest about it.

Today, as a practicing paediatrician, I see it less as a quaint interest than a matter of life and death. In the two and a half decades since I first worried about deforestation and species extinction, my worst fears have come true. Humanity has wiped out 60% of animal populations since 1970 and up to half of all mature tropical forests since 1950 [1]. At this rate, extraordinary creatures like tigers and rhinos will inhabit only our myths. The generation before mine ignored the unfolding crisis, and focused instead on economic growth at all costs: churning out mountains of needless stuff, and throwing that stuff away, burning ever-more fossil fuels in the process. My generation could have changed things, but we were lulled into complacency, as fashion became faster, products more dispensable and far-flung countries easier to fly to.

We knew about the dangers of climate change as early as the 1950s, and yet did nothing to reduce emissions. Industry knew, our governments knew, the environmentalists knew - everyone knew. And we all still know. We know that the coming transformations of our planet may well undermine the very possibility of civilisation. And we know that the coming changes will be worse for our children, and worse yet still for their children, whose lives – our actions have demonstrated – mean nothing to us. We have failed to appreciate the danger, and we have failed to act. We have failed to put aside our own interests for those who come after us.

As a paediatrician, the real tragedy is in prognosticating the health of children in the warming years to come. As the WHO-Unicef-Lancet commission [2] asks, is there "A future for the world's children?" What kinds of lives will they eke out on a planet scorched and scarred? Are we expecting them to play in gardens turned to deserts? To climb the charred remains of trees? To eat from tins where we used to pluck fresh fruit? Instead of a carefree, creative existence, they will migrate long distances in search of a safe home. But safety will be hard to find. A climate-changed world is a conflict-ridden one with mass displacement triggered by rising sea levels and desertification, putting pressure on the few places still hospitable to life. In 2016 the number of malnourished people in the world reached over 2 billion. [3] If the near future promises population increase, food shortage and nutrient collapse what number will this rise to?

As temperatures rise, malaria, dengue and Lyme disease will spread. In overcrowded conditions, diseases once considered vanquished - such as TB and cholera - will return emboldened. Much of the progress that medical science has made on these fronts could be wiped out in a single generation.

This is not hyperbole; in a wicked twist of injustice, those living in the nations that have contributed least to this crisis – Bangladesh, Ethiopia and the small island nations - are at this very moment facing situations just like those described. How long before the entire world's children suffer the same fate?

The dangers to the wellbeing of our children are so considerable it makes me question whether I ought to bring children of my own into such a world. If I did, one thing is certain: I would be enraged. I would not leave the streets or the doors of politicians until someone could give me an answer for why we have been so horribly betrayed.

The Extinction Rebellion and the school climate strikes have brought this crisis to international attention. And yet states' response to protestors has been to arrest them. How dare we imprison those who stand for the future of our children? Politicians criticise climate protests for 'significantly disrupting the lives of others'. But it's only disruption if you're distracted by something else: mindless consumption or endless profit. These protests and climate strikes are not disruption - they are vital.

We have cost our children the earth. It is difficult to look at this fact and not flinch. But doing so illuminates. The danger posed to our children brings into relief a dimension of the crisis that has been largely absent – the moral dimension. In "Laudato Si", the encyclical on the environment and human ecology, Pope Francis quotes St. Bartholomew: "to commit a crime against the natural world is a crime against ourselves, and a sin against God". [4] He urges that environmental problems require us to look not just for technological

solutions but for a change at the very heart of humanity - otherwise we are dealing merely with symptoms.

I am not a Catholic, but this is a language I can understand. As a doctor, there is no greater threat to the health of my patients than the viability of our heartbreakingly beautiful, fragile, planet Earth. All paediatricians – and arguably all doctors - should be climate activists. We should be standing side-by side with the Extinction Rebellion and with striking children.

Could I have done more to help save the planet as a child? Probably, as Greta Thunberg is demonstrating. [5] Can I do more to help save it now? Absolutely. And I urge my colleagues to join me. It is easy to complain that the problem is too vast and each of us is too small. But even in the face of overwhelming odds, action is still possible.

For my medical colleagues, there is much we can do. First, we must join calls on our governments to tell the truth about climate change, declare an ecological and climate change emergency and make serious moves to radically reduce emissions. Second, we must lobby to 'green' our medical institutions: to divest from fossil fuels and go plastic-free immediately. Finally - and most essential– we must back a vision for the world that puts planetary health at the centre. We must push for an economic model that does not privilege profit and growth for the few, but that encourages abundance for the many. Such models are being developed as I write. [6] Models that might, just might, secure a world for our children to inherit.

Everything is changing about the natural world, and everything must change about the way we conduct our lives. The weight of science and morality insists we act, and that we act now.

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Opinion

Air Pollution: A Tale of Two Cities

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Abstract:

This article describes the battle with air pollution in two large cities, London and Delhi. Air pollution is a major cause of morbidity and mortality across the globe, particularly affecting those in large, urban environments. Action has been take to reduce pollution levels and some improvement have been seen, but not to a significant enough degree. We as healthcare professionals have a responsibility to advocate for greater change to be made.

Key words: Air pollution, New Delhi, London, morbidity

Cite as: Ravindrane R. Air Pollution: A Tale of Two Cities. Sushruta 2020 (Jul) vol13(2); epub 1.4.20 DOI: 10.38192/13.2.4

Air pollution and Health

Having lived in London for the last ten years with many summers spent in bustling Indian cities, I often worry how much pollution I have been exposed to. It's not uncommon on my walk home from the underground station to smell the pungent fumes from car exhausts. Likewise, I recall countless times looking up at an urban skyline in India to see grey smoke waft through the air. Newspapers often liken living in a large city to smoking over a hundred cigarettes a year [(1)]. However, these seemingly sensationalist headlines hold truth. Chronic exposure to ambient air pollution has devastating effects on health and those living in large, urban areas are often the most exposed.

Air pollution is the amalgamation of harmful chemicals in the air due to natural or human causes. Outdoor or ambient air pollutants include carbon monoxide, nitrogen oxides, sulphur dioxide and particulate matter (small particles produced in part by burning fossil fuels) which are emitted from vehicle exhaust, fumes from industry, heat and power generation and agriculture. Another chemical, ground level ozone, is a key element of smog, which is produced when chemicals such as those found in vehicle exhaust fumes react in sunlight.

Breathing in these pollutants on a daily basis has disastrous consequences on our health. 91% of the world's population live in areas where the air quality is below the standard set by WHO. Ambient air pollution lead to significant levels of morbidity and mortality through cardiovascular disease, respiratory disease and cancer. WHO figures show that 29% of all deaths and disease from lunch cancer and 4.2 Million premature deaths in 2016 were due to outdoor air pollution [(2)]. Chronic exposure to particulate matter leads to cardiovascular and respiratory disease, nitrogen dioxide can cause airway inflammation and ozone can lead to worsening of asthma and stunted growth in children [(3)].

Not only is ambient air pollution directly damaging to health, but it also acts as a mechanism of climate change. Carbon dioxide, though not directly damaging to health, is the major by-product of burning fossil fuels and is a powerful greenhouse gas, trapping heat in the atmosphere. Particulate matter worsens this problem by settling on surfaces such as ice caps and snow reducing their reflective properties causing less light to be reflected from the earth's surface and increasing surface temperatures.

London

London is a city with a long history of air pollution. 1952 was the year of the Great Smog, a week long episode of extreme air pollution in which the air was thick with a polluted fog. It contributed to the death of at least 4,000 people. As a result, the Clean Air Acts of 1956 and 1968 were created. These acts banned emissions of black smoke from urban residential areas and factories which were forced to switch to smokeless fuels [(4)]. The act was successful in reducing visible pollution due to particulate matter. However, despite the clearing of the skies, air quality in London is still of serious concern with current pollution levels exceeding limit values set by the European Union [(4)].

The latest report by the London Air Quality Network for 2018 showed that large reductions in carbon monoxide have been seen over the last twenty years. There has also been a decrease in nitrogen dioxide levels between 2017 to 2018 and particulate matter 10 and 2.5. Nonetheless, it is important to bear in mind other nitrogen dioxide levels are still exceeding set limits causing the majority of the 9,400 premature deaths per year linked to ambient air pollution in London [(5)] [(6)]. With one third of London's schools being in close proximity to roads with illegally high levels of nitrogen dioxide we need continued vigilance against this threat [(3)].

Steps are being taken to tackle this problem through the London Local Air Quality Action Plan. This initiative gives responsibilities to each London borough to monitor and put in place schemes to reduce air pollution. The key areas being addressed are transport and green infrastructure. Encouraging active travel is one component, specifically creating cycle super highways and more pedestrianized areas such as the Van Gogh Walk in Lambeth. The congestion charge zone is being used to create an ultralow emission zone as of April 2019. This means that any vehicles entering the congestion charge zone will also need to meet a minimum exhaust emission standard or pay an extra charge. Possibly most significantly there will be a UK wide ban on new petrol and diesel cars as of 2035. Green infrastructure

refers to green spaces designed to promote healthy living, mitigate flooding, improve water and air quality, cool the urban environment and promote ecological resilience. By increasing the numbers of and access to green spaces it is hoped air quality will improve through reduced industrial and transport related emissions and reduced dispersion of pollutants [3] [7].

Delhi

Everyday in Delhi approximately eighty people die due to air pollution related illness [8].
In 2016 Delhi experienced one of its worst episodes of Diwali smog. Pollution levels were some of the highest Delhi had seen over the preceding 17 years with PM 2.5 fourteen times the allowed standard. According to the Centre for Science and Environment pollution levels were higher than those recorded in the Great Smog of London 1952 [9]. 'Diwali smog' is the peak of extreme air pollution, largely due to particulate matter, that occurs as a result of the combustion of fireworks in celebration of the Hindu festival. The smog of 2016 was particularly extreme due to a mixture of fireworks, vehicle exhaust fumes, fumes from burning garbage and burning of paddy residues in neighbouring states coupled with a lack of wind. This left particulate matter stagnant in the air and a smog that lasted ten days [10]. Emergency action was required, schools were shut down, the Badarpur power plant was closed and construction was halted for ten days.

The incident in 2016 lead to long term steps being taken to address the air pollution crisis affecting Delhi. Areas of priority included reduction in emissions from diesel fuelled vehicles, waste burning, construction and power plants. The Delhi Clean air action plan laid out key action needed in order to tackle this worsening issue [9]. Specific measures included laws against visibly polluting vehicles, more pedestrianized zones and improved public transport systems [11]. Badapur coal fired power plant was permanently shut down in 2018 [12]. Polluting industries were targeted, with industrial units not compliant with environmental and waste management policies shut down and sanctions placed on industries using poor quality fuel such as furnace oil which emits extremely high levels of sulphur when burned. Waste management was a key issue with greater vigilance over already banned open burning of waste and crop burning. Legal frameworks were put in place to ensure proper recycling of construction waste. Banning of diesel generator sets and limitations on use of brick kiln which are fired by coal was also recommended [9].

Some improvement was seen with decreasing average levels of particulate matter and sulphur dioxide from 2016 to 2017. Results of the Air Quality Index (AQI) showed the number of days with very poor or severe air quality had decreased and satisfactory days nearly doubling from 2016 to 2017 [13]. However, despite this a repeat episode of severe smog was seen in 2019. A Public health emergency was declared. The AQI in New Delhi was un-recordable indicating levels over 999 (normal air quality between 0-50). On November 3 PM 2.5 levels were 23 times higher than the WHO air quality guidelines [14].

Next Steps

The effect of air pollution on health is well established. Thousands of people around the world, particularly those in major cities, are suffering ill health and early death due to unnaccepatble levels of exposure. Governements are attempting to take action, but change is not occuring fast enough. As a society we need to realise that a paradigm shift is required. This is not a crisis to be averted for future generations, this is a crisis we are living through now. On an indiviudal level better choices to reduce fossil fuel combustion such as active travel are required. However, there is a limit to what one person can do. We as healthcare professionals have a responsbility to advocate for our patients not just in the clinical setting, but also in the wider community on public health matters such as this. We must put pressure on our governemtns to rapdidly divest from fossil fuels, increase legislation on air pollution levels and invest in renewable fuel sources. If we do not we will only continue to see patients suffering from preventable illness on a mass scale. Change can happen, as we have seen with successful initiatives to reduce pollution to date, but we cannot be complacent.

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Opinion

Going Virtual
– *'No going back in the cave….'*
Reflections of a NHS Trust Chair

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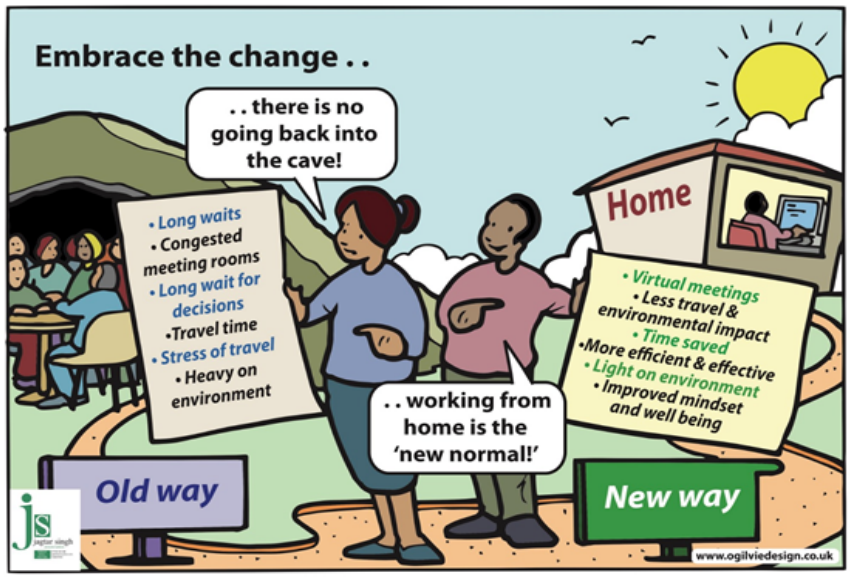
Cite as: Singh J. Going virtual- 'No going back in the cave…'. Reflections of an NHS Chair. Sushruta 2020 (Jul) vol 13(2) DOI: 10.38192/13.2.7 pre-print ePub 21.04.2020 (awaiting peer review)

Editorial Review: 23.04.2020 Abhay Chopada (abhaychopada@gmail.com)

This is a reflective paper which summarizes the current disruption in traditional working environment with good insight into the rapid integration of alternatives to traditional meetings. I enjoyed the clear and insightful commentary . The suggestions are very practical and doable for adaptation by the audience.
The paper could have been bolstered with some background analysis of similar transformations in other industries in non-pandemic situations to assess the sustainability beyond the current phase. I would also recommend inclusion of innovative thinking and technology innovations in this area to have been assessed .
On balance, I am happy this timely publication for Sushruta audience and would encourage a follow up publication 3 months down the l with wider analysis of digital engagement practices across a spectrum of industries.

The impact of the Covid-19 crisis and how Trust Boards have adopted technology to face the challenges of how they continue to function effectively.



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Hindsight is a wonderful thing, so I won't apologise for using it. Many organisations will have dusted down their emergency plans from previous health crises as an initial defence to the challenges that COVID-19 brought. However not many would or could have anticipated the challenges that the lockdown would present, in particular the lack of familiarity with digital technology. In this article I discuss how the ability to cope with these challenges allows Trusts to navigate their way through an unprecedented crisis but also presents a disruptive opportunity to change the way we work forever.

We have all faced emergencies and situations that test our leadership and our systems in the past but nothing like COVID-19. The national lockdown was an abrupt hard cut-off of how I worked and how my natural style best works face to face with people. Within days I found that most of my meetings had to be conducted virtually. Technology apps that many took for granted became an essential new language within the NHS. At a pace I have never witnessed in my time in the Fire Service or the NHS, adoption of new skills became compulsory and having to adapt rapidly to new ways of working became a survive or die situation. The board's responsibility of duty of care has never before been tested in the way Covid-19 has challenged. The need to reach every single member of the Trust with clarity, to provide assurance and build confidence, and to ensure their wellbeing and ability to do their job, was never more important.

This is the first of a series of articles that will track my journey during the period of lockdown and beyond. This article provides a personal insight into my experience of going virtual and what this means for future working, as well as some tips on how to cope and help you make the transition. My story demonstrates how quickly individuals need to switch to new ways of working due to external pressures, in this case COVID19. My experience over the last few weeks shows how virtual meetings can be challenging and rewarding in equal measure. However this new world order is now a fundamental way of how we get things done – and is here to stay.

When we are over COVID19 it is my belief that we will not be able to go back to the old ways of working. As one member of my staff said to me 'we cannot go back into the cave.' Virtual meetings will increasingly complement the traditional face to face roundtable meetings and so we must embrace the opportunities that this sadly tragic situation offers. It will be even more tragic if in the end NHS Trusts revert back to how they worked pre Covid-19. I hope never again will a GP make you wait 7 days for an appointment. During the current lockdown, everyone I have spoken to has had a call back from a GP in hours not days. What a great improvement and transformation.

So here are my personal insights into my journey over the last few weeks of how I managed to adapt and cope. They include, after a few false starts, the things I have done to improve my and others' experiences and to help make meetings more effective, inclusive and efficient. I am sure many of you are on a similar or the same journey of discovery and change. What I have suggested below is therefore not definitive. In fact I would welcome you to share your experiences so please feel free to send them me at *jagtarbasi@yahoo.com* and I will update this article and share our collective thinking.

1. **Personalised checklist.** This will help you avoid some of the basic pitfalls of virtual meetings. I have highlighted my starter-for-ten below – please help me make this richer by sharing your coping mechanisms.
2. **Formality and purpose.** I have found that it works better if each meeting has some element of formality and structure through agendas, objectives and decisions/ outcomes. You may be at home, but remember you are in a workplace meeting. Dress comfortably but appropriately and try not to offer any distractions through your surroundings/background.
3. **Prepare then test, test and test.** I cannot stress this point enough. Being totally reliant on technology there are several things that must be considered before embarking on your first and subsequent virtual meetings until they become second nature. Even then making the basic checks will help ensure a smooth, efficient and effective meeting.
4. **Be clear and take the lead if you are chairing or facilitating.** Not all apps are the same. The way in which invitations and joining instructions are communicated is different in each case. Breaking language down and using 'Noddy' joining instructions and navigation guidance, whilst seemingly patronising, does work. Speak to people in advance to instil and ensure confidence.
5. **Listen and be heard.** Body language and other physical signs you can pick up in a face to face meeting will not be evident in the same way. Therefore the need and ability to listen more intently and communicating clearly and concisely is imperative. Remember, if you are using video, your facial gestures will be prevalent more than normal.

My top tips for effective, inclusive and efficient virtual meetings with multiple attendees:

► Before the Day.

- Make sure everyone has the same app and link for the meeting and it works on their device
- Provide sufficient help and support to ensure the technology works for your attendees
- Check the link and the technology works on your device
- Give people clear and simple instructions on how to join the meeting
- Encourage participants to join the meeting a few minutes before the scheduled start

► On the Day.

- If you are the chair or facilitator join early and have our phone close by
- Make time for introductions (unless it's a broadcast communications exercise)
- Clarify the agenda and purpose for the meeting
- Outline the key protocols of making comments or asking questions
- Consider appointing a facilitator to keep an eye on chat box conversations and manage Q&As

► Good practice

- Be an active listener and show verbal empathy throughout the meeting
- Ask participants to mute their microphones when not talking
- Don't be tempted to fill the gaps of silence
- Encourage participants to give physical signs of acknowledgement (eg thumbs up)
- Use the chat box facility to seek agreement/ confirmation and/or to raise questions
- Give everyone attending the opportunity to contribute and input
- Ensure you have practiced good governance and received good assurance on the key issues and objectives
- For longer meetings ensure you schedule break points
- At the end of the meeting summarise the key points, decisions and actions
- After the meeting provide a summary record of the meeting to all attendees

►Try to avoid

- Don't be too task or agenda led – allow the meeting to flow and people opportunity to speak
- Don't run meetings for more than one hour without scheduling a break
- Long 'speeches' from participants or the same participants dominating agenda items
- Keep presentations short and digestible
- Distractions in the background

Finally, on a personal note, I have had to make the necessary adjustments that the Covid-19 challenge has created and I now feel healthier for having to travel less. As a nation, we are lighter on the environment with less fuel consumption and alive to the many benefits of a different way of working. We now have the opportunity to embrace the change that necessity has forced upon us, but is also bringing about a realisation that we can be far more efficient. Only time will tell but I genuinely feel our decision making process is also beginning to become even better and faster.

I do not believe that we should, or that our staff will allow us, to go back to the old ways of working, or as one member of staff said, '*go back into that cave*'.

Embrace the change and don't return to the cave!

Review

Climate Change Policy:
From Negligence to Implementing a Carbon Tax

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Summary

With the UK leaving the EU in 2020, its policies to combat climate change currently remain undecided. One policy discussed in this report is a carbon tax. This report finds that implementation of a carbon tax will require a favourable political climate, public attention and an appropriate cost, with a starting price of £40 per tonne of CO2 emitted, gradually rising to £100-125/ tCO2 [1]. Also, to be politically acceptable, there must also be 'revenue recycling', with some of the proceeds of the carbon tax being redirected to public services [2,3].

Key words: Climate change, carbon tax, revenue recycling

Cite as: Patel JA, Bloodworth OJ, Unadkat VA, Assi S, Badiani AA. Climate Change Policy: From Negligence to Implementing a Carbon Tax. Sushruta 2020 (Jul) vol13; issue 2; ePub 06.04.2020 https://www.sushruta.net

Introduction

Since the industrial revolution, humankind has made unprecedented development, with health, technologies and economies improving. The lives of people have improved immeasurably. Yet, we have exploited the environment to a breaking point, and urgent action is required to combat the worsening situation. With the United Kingdom (UK) leaving the European Union (EU), one such policy being discussed is implementation of a carbon tax. This report will address the evidence on climate change; why it did not reach the policy agenda earlier; and the implementation of a carbon tax policy to combat the deleterious effects of climate change.

History

Currently, the UK uses the EU's Emissions Trading System (ETS) system which is a 'cap and trade' system, where companies receive or buy emission allowances, which are tradable [4]. All of one's emissions must be covered by this allowance and exceeding them incurs heavy fines [4]. The UK has also maintained a carbon price floor since 2013, which producers were required to pay if the EU ETS carbon price fell below this threshold [5]. However, with Brexit, the UK may need to revisit its carbon emissions strategy because the ETS may no longer be applicable.

The Evidence Base

The scientific consensus is that climate change is real and man-made, with around 97% of scientists holding this view. Data on the impact of climate change is provided by the Intergovernmental Panel on Climate Change (IPCC), which consists of working groups I, II and II who assess the physical scientific basis for climate change, the impact of climate change to natural systems and how to mitigate the effects of climate change respectively. The findings of their most recent report, the 5th Assessment Report, are reported below [6]:

- Average global temperatures have risen and humans are "extremely likely" to have caused this rise.
- Greenhouse gas emissions (nitrous oxide, carbon dioxide and methane) have risen since preindustrial times, with the majority being due to humans.
- Global sea levels have risen and polar ice sheets have melted.
- There have and will be greater risks of extreme weather events due to global warming.
- Rising temperatures and extreme weather can and have caused crop failures.
- Rising temperatures will further threaten endangered species and ecosystems.

Policymakers aim to prevent global temperatures from rising by more than 2°C compared to preindustrial figures because above this temperature, scientists feel that there will be irreparable damage to the planet [7].

Failure to Make the Policy Agenda

1. *McDonalds meets Misinformation – the role of democracy, capitalism and profit maximisation*

According to Forbes, six oil companies are in the largest 25 companies in the world [8]. Clearly, they have large financial interests in the climate change agenda considering that the fossil fuel industry is a large driver of anthropogenic (man-made) climate change. These companies worry that tougher environmental regulation would affect their bottom line. In response, they have lobbied governments, paying US Congressional climate change deniers US$1.87million between 2007 and 2015.

Similar to the tobacco industry, oil and gas producers have attempted to sow seeds of doubt about the deleterious effects of their activities upon the planet through the funding of research and misinformation. ExxonMobil funded 39 studies which "misrepresented the science of climate change" in 2005 [9] and funded the production of Sceptics' Handbook, a pamphlet denying man-made climate change, which altered the evidence base and made some people sceptical about climate change. It also shifted the Overton Window, which defines the spectrum of acceptability of public policies, away from climate change action, allowing looser environmental regulations to continue; therefore, oil and gas companies could continue to operate freely and maximise their profits. Also, the economic capital of energy giants allows them to threaten to move their operations overseas if their demands are unmet and has allowed them to spend $1billion since the Paris Agreement on lobbying [10].

2. *The media and its framing of climate change:*

Yet, the framing of climate change has been critical to the inaction regarding it [11]. Firstly, it has become a partisan issue, preventing action. The left has largely wanted to tackle climate change, whereas the right has either displayed ignorance or an unwillingness to tackle climate change. In the UK, the partisan divide has impeded political progress, with Labour supporters 56% more likely to be extremely or very worried about climate change compared to Conservative voters [12]. To this end, the role of the media, who are able to shape the thoughts and preferences of the public to dictate the political agenda, has been critical in framing climate change as a partisan issue [11]. Overall, this political polarisation of climate change has prevented action to mitigate or adapt to its effects.

3. *The People:*

Despite scientific consensus over anthropogenic climate change, there are sceptics and deniers. According to Schwartz [13], climate change sceptics and deniers display "wilful ignorance" of modern scientific evidence. They often dislike the economic and political implications of climate change, hence they choose to not believe in it [14]. For these people, tackling climate change does not warrant the politico-economic trade off.

The Policy Agenda

Shaping the Policy Agenda

Firstly, for climate change action to be taken, it must be on the policy agenda. Kingdon states that implementation of policies requires action within windows of opportunity, which require [15]:

- focusing events which attract public attention towards the issue.
- a favourable political climate.
- a solution to the problem.

Producing a Favourable Political Climate

The first challenge must be to convince the population of the deleterious effects of climate change and that action must be undertaken. Yet, considering the vested interests of corporations and the apathy of some individuals towards the subject, there may be some people who will be unchanging in their beliefs. However, 46% of Europeans did not feel that "climate change is a very serious problem" – if some of these people are open to changing their opinion, it will add further weight to the masses of people demanding further action [16]. Therefore, those who understand the importance of climate change must undertake concerted action to highlight the issue to policymakers.

Ultimately, politicians are responsive to voters, hence greater public support for an issue will encourage political action. However, the political climate must also be appropriate for action. Considering UK Prime Minister Johnson's previous statements labelling Extinction Rebellion climate change activists as "uncooperative crusties" and his previously sceptical views over anthropogenic climate change, this may prove difficult.

Also, the power of focusing events must be harnessed - including sudden, adverse weather events - which are more likely due to climate change, and the publicity gained by activists including Greta Thunberg and Extinction Rebellion [6,7,15,17].

A Potential Solution – A Carbon Tax

Having placed climate change action high up on the political agenda, a solution is required. One such response is a carbon tax, which taxes greenhouse gases emitted. It can be applied to manufacturing, power plants, transport and the household energy industries. Burning fossil fuels is a negative externality, with the societal costs of environmental damage outweighing the price paid by consumers and producers. Therefore, there is often overconsumption of these resources above what is societally optimal, hence a carbon tax should reduce the amount of greenhouse gas emitted by raising their costs.

The UK government had previously suggested a price of GB£16 per tonne of CO2 produced if there had been a no-deal Brexit [18]. However, this figure appears to be too low – Burke, Byrnes and Fankhauser suggest that to allow the UK to reach its net-zero emissions target by 2050, a carbon tax would need to cost around £40/tCO2 in most sectors and rise to £100-125/tCO2 by 2050 [1]. It may reduce greenhouse gas emissions through several mechanisms, such as by: encouraging the energy industry to switch to cleaner forms of energy, with similar measures reducing UK coal usage by

91% since 1990 [19]; reducing the amount of energy used by industries; and promoting efficient energy usage.

Political Implications of a Carbon Tax

Practically, a carbon tax would be relatively simple to implement in the UK, with fuel-use currently being monitored and reported in the EU ETS system [5,20]. However, implementing new taxes remains politically challenging, with the Gilets Jaunes movement arising in opposition to fuel price increases and Australia having repealed their carbon tax [2,5]. Despite this, a carbon tax would generate £20 billion in annual revenue for the government [1]. If recycled appropriately, these revenues would increase the willingness of the public to accept this new tax, with Swedish citizens more likely to accept a carbon tax if accompanied by income tax cuts [2,3].

Practical Implementation of a Carbon Tax

To be effective at reaching a net-zero emissions target by 2050, a carbon tax must be set at around £40/tCO2 in most sectors and rise to £100-125/tCO2 by 2050 [1].

- To be politically acceptable, the carbon tax must increase gradually over time, allowing people and companies to alter their energy usage patterns, such as by switching to greener energy sources or increasing their energy efficiency [21].
- To be politically acceptable, a carbon tax must recycle revenue back into the economy [2,3,5]. It is also essential that policymakers explain how these resources are being used to ensure public acceptability of the carbon tax – for example, these resources could be used to reduce income taxes, provide a carbon dividend or subsidise green technologies [21].

Drawbacks of a Carbon Tax

However, some people argue that implementation of a carbon tax will lead to negative economic and environmental consequences, with firms moving abroad to nations with less strict environmental regulations [20,22]. However, these effects are likely to be modest, with the majority of greenhouse gas emissions in developed countries produced by nontraded sectors, including electricity, transport and construction, which cannot be outsourced overseas to nations with looser environmental regulations [20,22].

Also, a carbon tax may be regressive, harming the poorest in society, who spend a greater proportion of their income on energy and fuel [21]. Appropriate recycling of revenue to the poorest in society may overcome this challenge [21].

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A Student's Perspective

Dijay Dave

As a 5th Year Medical Student, I found myself in a strange position when lockdown began. I was not a Final Year, so was not joining my peers in graduating early. But at the same time, I felt that had enough clinical experience to be an asset on the wards, rather than a liability (my previous experience as a Healthcare Assistant aside).

My university was quick to respond to the crisis and suspended our clinical placements. A volunteering scheme was set up in the following weeks, as a result of the strong desire of the medical students to help. I have to admit that I did not sign up immediately; questions still swirled in my mind if I would actually be useful, and even at that early point it was becoming apparent that BAME individuals had a worse prognosis. I have two parents to look after, each with several co-morbidities, who I felt needed y presence for both their physical and psychological health. Nevertheless, whilst at home I fell a pull to the wards, whether it was an altruistic desire or base scientific curiosity I am still unsure.

The media's catastrophising machine did not help. After receiving a letter from my GP designating my parents as "Shielded" with provisions of medication and groceries to them, I signed up to volunteer. My younger brother returned from University and took on my responsibilities as young carer. To prepare for being back on the wards, I completed a COVID e-learning package covering the basics of Donning and Doffing as well the basics of Non-Invasive Ventilation (NIV), and I sat in on the virtual roundtable of discussions with doctors who had prior experience of working in such climates.

The one I most remember was by Imperial college alumnus, Mr David Nott of "War Doctor" fame, who spoke on the importance of senior doctors demonstrating calm leadership. I didn't understand it then, but after two months, I understand it now, given how much my mood reflected that of the junior doctors and consultants under whom I worked on a given day.

Good leadership wasn't limited to the senior clinicians, the kind F1s and nurses took me under their wing and demonstrated patience which was instrumental in

mefeeling part of the team. Their stress became my stress, whilst their good humour allowed me to express mine. They encouraged me to reflect on my experience and didn't judge my keen spirit.

COVID has been a learning experience for me as a medical student: it has cemented my desire to pursue a career in medicine, reminded me of the importance of my relationships both at home and at work and shown me up close the importance of good clinical leadership through uncharted waters.

Better New World

Nitin Shrotri

Mankind has had a massive shock
From the Covid, that has talked the talk
It has laid us, completely flat and low
More than ever, in the years we've known
Yet mankind within, it's own bright spark
It realises its errors, as it sits in the dark
And slowly but surely it begins to hope
A better new world, instead of sit'n mope
As families, huddled together at home
Some of us are alone and lonesome
Love's come back to us, in difficult days
For who we haven't had, for years a craze
Out of the house, a few lucky ones roam
O'er vales en green, as t' world's a-storm
By hapless police, get caught in the park
Or get a spot to survive, in Noah's ark
As we watch, Planet Earth taking back
What it had lost under our human attack
We realise that perhaps and very much
Mankind must stop behaving as such
Google and Apple creating new apps
Gates and Microsoft filling in the gaps
As social distancing becomes the norm
Humans to stay away as per app inform
Living with other in happiness, harmony
With other creatures, lovely bugs & bunny
Countries too must immediately stop
Treating poor badly, so heal from d'shock
The only one way, some of us will make it
By keeping from other 'an each every Brit
But more so also by respecting our planet
Unless we want to be called, a Covidiot!

Continued from .....Climate Change Policy.....

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Hidden Talents

Jeet Thacker

For several decades, people have made myriad of predictions of what life would be like in 2020, but no one could have predicted what's happening now. Nature has taken its toll on us.

On the flipside, nature has bestowed us with spectacular unseen views of Himalayas, seen for the first time in decades from rooftops of houses. As well as purified and pollution free rivers and a peaceful environment free from the daily traffic noises.

Around the world, nations stand united and are helpful to each other in this pandemic –a truly commendable feat. As they say "in the time of test, family is the best"; lockdown has clearly united people with their family, and I feel happy about this. People are spending more time together at home and online with other family members.

Moreover, people have now become more aware about their health. I utilized this time to do various online certificate courses on COVID and other self development activities to enhance my clinical skills and knowledge. I even did a diploma. I attended many webinars and talks of the Royal College Societies, which were truly helpful. Outside of work, I have used this opportunity to unlock my hidden talents in calligraphy and photography. I like to play keyboard and these times have inspired me to compose new tunes.

I believe this lockdown has made me more spiritual and religious, too. We do prayer sessions two times a day and seek blessings of the Almighty for our wellbeing and peace of mind and soul. This situation has reminded me of the strength in the prayers and deepened my faith.

I think our situation will make governments all over the world recognize the importance of healthcare workers, and also awaken them to invest more in health sectors.

Furthermore, the necessity of quick action on the development of health science and research will certainly arise.

I truly believe this pandemic should be an eye opener to all about our planet's sustainability and how one should respect nature as well.

Dr Jeet Thacker is a doctor from Bhuj, Gujarat. He received his MBBS degree from PDU Gov Med College, Rajkot in 2019. Following this, he has done clinical attachments at Guys and St Thomas's Hospital London,

Norwich Hospital & QEHB Birmingham. He aspiring to become a specialist while working in the NHS and serve humanity.

Behind the Mask

Rishika Sinha

As a GP, end of Life visits have been the most difficult. I would like to see my patients with sympathy and compassion. However, with a mask, visor and gloves along with an apron and head cover donned on, how am I supposed to be empathic?

I would not want to see my own doctor like this, would I? I am used to sitting next to patients and holding their hands. Now, the relatives only talk to me over the phone.

They ask me: "If the diagnosis is COVID pneumonia, then why I can't give some oxygen? Why aren't they given antibiotics? Why did the hospital not keep them?"

"If it wasn't for COVID my mother should have been able to live a bit longer." "Why did the hospital leave my anorexic my daughter in the ward? Doctor, can you answer these questions?"

Every day, I go through this upheaval and turmoil which I feel has made us all helpless. I was not prepared for this.

In the evenings, when I am ready to go home, my chest feels so heavy. However, if I go home with such a heavy heart I can't look after my family.

Once I am out of Billingham and on the A19, I cry loudly and literally howl to let off the built-up emotions. But, by the time I reach home I feel ready to face a beautiful evening with my children and husband.

Dr Rishika Sinha has been a GP Partner at Kingsway Medical Centre, Billingham since 2006, and a GP Trainer since 2008. She came to the UK in 2001, having received her MBBS from Patna Medical College in India.

She is the Clinical Lead for Primary Care at her local Clinical Care Group. She is married to a GP and has two lovely children.

A Student of the Mind

Shantosh Kumar

The Covid-19 Pandemic has been truly an unprecedented and "unreal" experience so far. On the one hand the newness of the experience and the intrigue of being a "scientist", and on the other, the challenge of coping with ever changing huge amounts of data and "conflicting evidence base" and applying it for our patients physical and mental wellbeing. This is difficult.

Overall so far, it has been rewarding coming home knowing that my patients are well, and my family is smiling with relief.

My daughter has been extremely proud of me. Prevention is always the mantra I was indoctrinated with when I grew up studying medicine in India. My background and training have helped me stay calm and focused. Whilst I

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have not contracted Covid-19 (to the best of my knowledge), I know of friends who have, and those who have suffered fatal consequences from their encounters in clinical practice. This was surreal and something that I will find difficult to get over.

I am in a state of internal panic, but outward calmness when I look at my family. I want to protect them and be there for them, but I went through a gripping few weeks (this is lesser now)

of thinking that it may be the last time I may see them.

The BAME part, has been less of a direct experience changer for me. It has for my colleagues and I can see why. The place where I work has been extremely responsive, supportive and understanding of these challenges and proactively made provisions to help me and people like me from BAME backgrounds. For that

I am grateful.

Life came into sharp perspective. Priorities clearly changed. So many things I took for granted I did less so. I created an email account for my little one and have started writing to her, memories that she can hold onto if something happens.

Doing the right thing, the right way, supporting others, being kind, being humane have all been the focus of my actions and work, ever more than it was before.

At this point, to contemplate a future is difficult and I am focusing on one day at a time, to avoid huge panic setting in. I am mindful of my parents and I find myself being more stoic as I realize the enormity of the situation and the helplessness facing us all. I am grateful, to be alive, to be there for my family and for what I can only describe as a humbling experience.

As a student of the mind, I have noticed how the true nature of people comes to the fore, for good and for worse. I wish all reading this safety, health and an experience that has hopefully strengthened us, our families and as a BAPIO group. Santosh Kumar is a consultant Forensic Psychiatrist in North East England. He was trained by some truly eminent teachers, and amazing parents, in India and in the UK. He remains a keen student of the mind and a follower of the passionate work of BAPIO here and in India.

When a Pandemic Strikes

Sarthak Bahl

I was in Spain enjoying my annual leave when we first heard about COVID-19 making deep impact on Italy. Italy had gone into lockdown and soon Spain was to declare a National Emergency.

Our first impression was that we would still be able to go home peacefully on our arranged flight which was two days later.

In the next few days, we noted what an impact of Coronavirus Pandemic can be. All the streets were empty, restaurants were getting closed and when we reached airport for our flights, airport looked deserted.

We saw first-hand experience what life amidst a pandemic can be for tourists. We were able to take a flight home, but I soon realized life was about to change.

Reaching back home, next few days, I began experiencing symptoms of COVID-19 and started to self-isolate as per National Guidance.

Self-isolating was difficult as we were running out of food soon and no delivery slots were available.

I feel really sad when I think about vulnerable groups and how their experience might have been amidst this crisis when they had to depend on others for food delivery. After recovering from symptoms, I was able to join the hospital again.

We were put on emergency rota of 12 hr shifts in order to make sure service didn't suffer as a result of medical staff calling in sick. My rotation into Geriatric Medicine was soon cancelled as was for other trainees throughout the U.K. to avoid disruption to service by rotation of trainees.

In the first few days, the ward soon filled with Covid-19 patients and us as doctors were left amazed by change in PPE guidance every other day by the Public Health England. Seeing stories of doctors dying in the line of duty due to lack of PPE was distressing, as were stories

of BAME communities being more affected due to various factors.

But amidst this gloom, there were some positives. Whether it was various NGOs coming together to help healthcare workers by supplying PPE, or medical students coming together to offer childcare for senior medical staff members; It was amazing to see the role of communities in making sure that healthcare staff never felt alone.

Personally, I benefited a lot from the support of my friends during this crisis. Being away from family is hard for everyone, but if we come together as healthcare workers, we can make this time easier.

During this time in lock-down, I have learnt how to cook and have started cycling back again. I have made sure that I use my time off work to help in the trial of COVID-19 vaccine by volunteering to help at LSTM, Liverpool.

I am not sure if this pandemic is over, but I am sure that this crisis has brought all healthcare workers and communities together with a sense of togetherness.

Born in Sri Ganganagar, Rajasthan, India,Sarthak Bahl completed his MBBS in 2017 from Amritsar. He is currently working as a junior l in Liverpool. He is also involved with BMA Mersey DC as a rep to consultants' committee.

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Perspective

Axelle Schneider

As a French person, my experience might be a little different than yours, but I'll try my best to tell you how I felt. Life in lockdown wasn't that bad for me, I was in the countryside at my boyfriend's parents place. We were 7 in the house but it's quite big, so we had enough space.

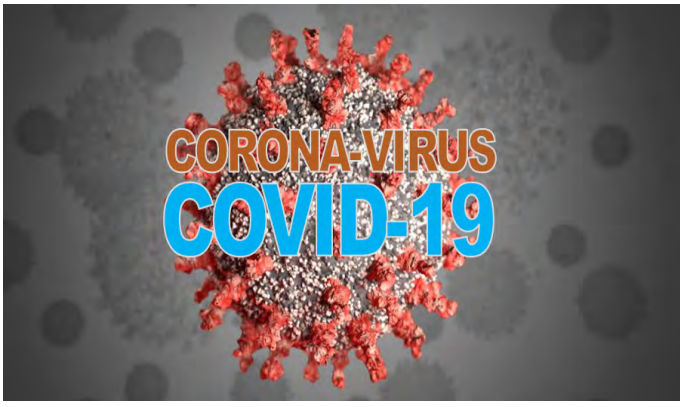
My father in law is a doctor (equivalent of a GP in the UK) so he was on the frontline. In my opinion it was quite reassuring, because it helped us to stay updated on the situation and also stay calm and positive. My mom also works in healthcare and she has been a bit stressed and very exhausted by all of it.

Lockdown has allowed me to have some time for myself, thinking about what kind of life I really want and more importantly what am I able to do in order to be self-sufficient in the future.

I had enough time to read a lot, learn how to play chess, learn some gardening stuff and look for universities to achieve my diploma. I've also cooked a lot and started different sports programs which helped me loose 10kgs.

One thing that wasn't easy was that I didn't plan at all at first to be in this place when lockdown was announced. Maybe I would have felt more comfortable with my family or at my own place. I would have loved spending this time with my brother and sister that I don't really get to see much.

I'm aware that my situation is far from difficult, and that for some people, it has been a living hell ever since it was announced. That's why I'm trying my best to be grateful for the way it turned out for me and thinking about what I could change in my daily life now that lockdown is over, in order to act for a different future.



The One Who Must Not be Named

Anonymous

Corona. The New Corona. The virus.
All these pseudonyms are now part of the variety of language that one may hear outside the pub or while social distancing on a (crowded) beach, soaking up the unusually warm sun. In my workplace, I simply refer to it using the 'one who must not be named' – inspired by JK Rowling's Lord Voldemort.

I say, 'you don't wish to take away something (virus) that you did not come in with. This plus a nod of the head and an understanding smile, is all it takes to get this vital acknowledgment across.

I have seen this in the eyes of people, who are so breathless or shackled to their oxygen delivery devices that speech is not possible. A simple lifting the eyebrows as asking, 'have I go the dreaded virus' and a silent nod, 'yes you have'. Then the eyes are averted, the inevitability of the sentence sinks in deep and no further words are exchanged.

We are a race that is used to the idea of the inevitable, the fate that is not in our hands, the acceptance that one has done the best one can, the rest is not worth thinking about.

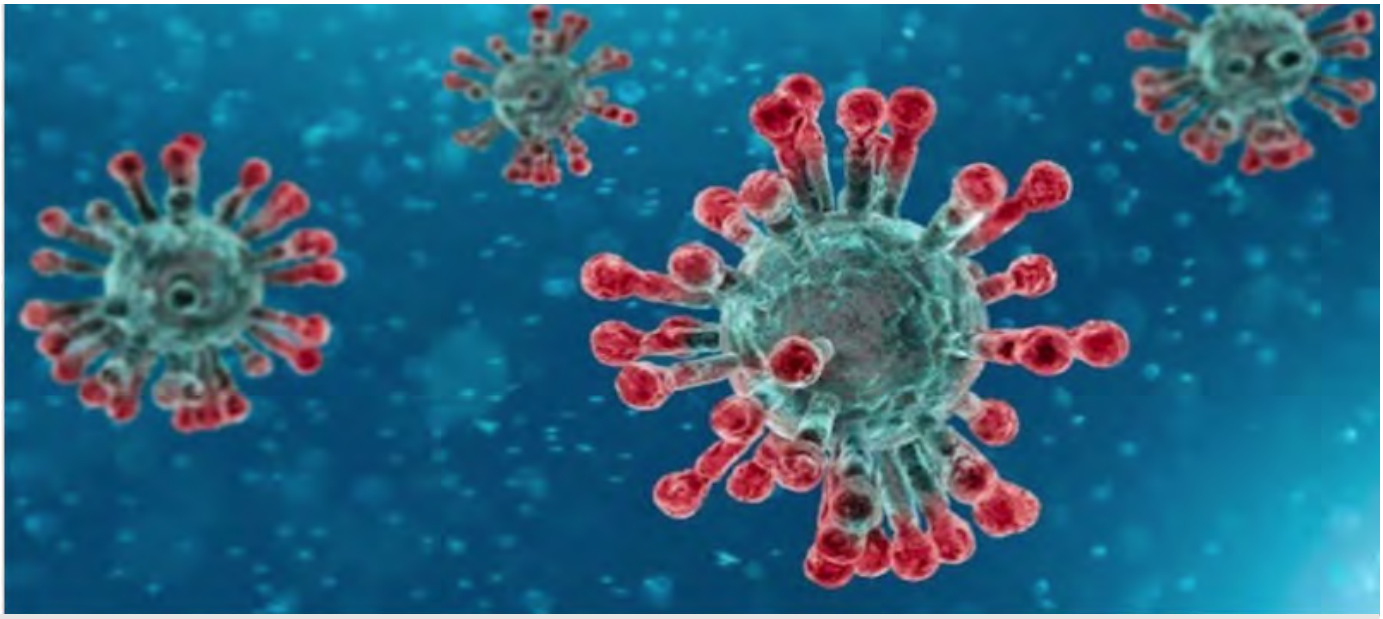
Something strange I have noticed is that like in horror films, the nights are the most difficult to live through. In the daytime, any amount of dreadful news from the blaring 'news briefings' can be tolerated, but at night, one is woken drenched in sweat (cold) and sitting up in a lonely bed, one can only check that one is breathing, check the temperature of the brow with a trembling hand, thank one' lucky stars and lie back thinking of how the world might look from a prone position.

Medical knowledge is a dangerous thing. Yes, you say, if applied wrongly or without care, there can be dangers ahead. I am sure many in the profession will agree that the same knowledge can be equally dangerous when the tables are turned, and one faces the same prospects.

I know of colleagues who have scoured the literature, read every scrap of published material to glean the knowledge that would help make sense of the unknown danger. I have done the same. I have read more papers in the last 3 months than ever did, even when I wrote my 80k word thesis.

Life is sacred. A lot is riding on our shoulders. While we offer comfort to those in our care and help them to makes sense of the injustice of health and disease. We are not immune to these worries. I have learnt to acknowledge my fears and anxieties. To share openly, and therein find my solace.

You should try it.



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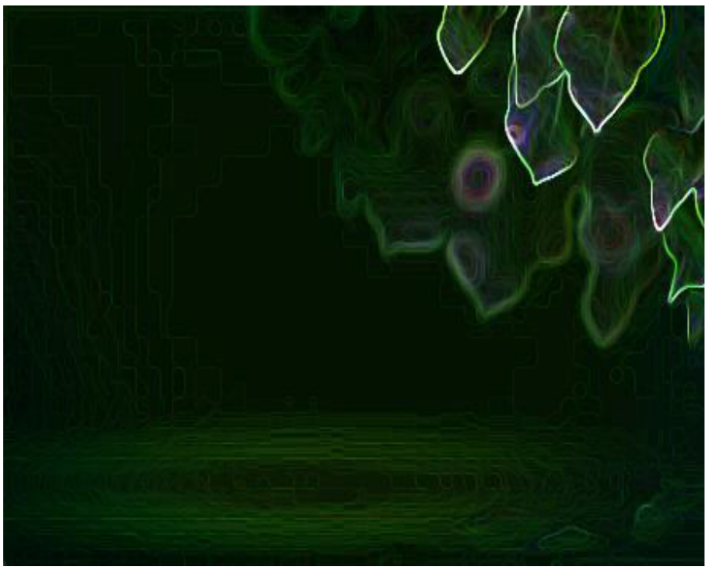

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