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Health Again

Kevin Brewer

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Orsett Psychological Services  
PO Box 179  
Grays  
Essex  
RM16 3EW  
UK

[orsettpsychologicalservices@phonecoop.coop](mailto:orsettpsychologicalservices@phonecoop.coop)

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Kevin Brewer BSocSc, MSc

An independent academic psychologist, based in England, who has written extensively on different areas of psychology with an emphasis on the critical stance towards traditional ideas.

A complete listing of his writings at <http://psychologywritings.synthasite.com/>.

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## **1. MEDICAL BORDERLANDS**

Edmonds and Sanabria (2014) talked of "medical borderlands", where "health and enhancement practices are subtly entangled" (p202). This describes the situation where "prescription" drugs to return "ill" individuals to "health" overlaps with "healthy" people taking the same or similar drugs to enhance their everyday lives. The fact that such drugs can be given for "off label" uses as well as the presence of "private" (for-profit) healthcare plays into this growing "grey area" of health/enhancement.

Edmonds and Sanabria (2014) reported ethnographic fieldwork in Brazil on the uses of plastic/cosmetic surgery ("plastica") by women in Rio De Janeiro, and sex hormone therapies ("hormonio") in Salvador da Bahia.

They explained: "Plastica and hormonio are available in both private and public healthcare in ways that reveal the class dynamics underlying Brazilian medicine" (Edmonds and Sanabria 2014 p203). Edmonds and Sanabria (2014) continued: "these therapies are sometimes used with the intent of engineering the sexual and reproductive body from the inside out. We further argue that these therapies are becoming morally authorised as routine ways of managing women's health. They are often merged with cosmetic and hygienic regimes of cuidar-se (self-care) seen as essential for modern femininity. Pharmacies, beauty parlours, gyms, health food shops, private medical practices, and pseudo-medical cosmetic services abound in Brazilian cities. The patients we encountered viewed hormonio and plastica as integral parts of ordinary regimes of cuidar-se that included work-outs and weight-management, having manicures, hair straightening, cultivating tan lines, or the 'Brazilian' body wax. The distinctions between cosmetic, hygienic, erotic and health practices are thus often blurred -as are the lines between necessary medical interventions and those with more diffuse rationales of boosting auto-estima (self-esteem) or managing life's exigencies" (p203).

All of this raises ethical problems. "The very ordinariness of contraceptives can mask their more experimental uses in boosting mood, controlling weight or regulating sexual or social life. And while plastica may seem to be a more obvious case of medical enhancement, its rationale of enhancement is subtly minimised as it is practiced in public hospitals or integrated with mainstream healthcare" (Edmonds and Sanabria 2014 p203).

Edmonds and Sanabria (2014) proposed that "these technologies are adopted to respond to pressures, anxieties and aspirations arising out of work and intimate life. These uses often diverge from official medical discourse or public health agendas, although they can receive the tacit support and encouragement of doctors" (p204). These authors summed it up with the sub-heading, "therapies in search of disease", which echoed Oudshoorn's (1994) "drugs looking for diseases" (to describe hormonal therapies).

From their interviews with a variety of healthcare practitioners and "patient-consumers", Edmonds and Sanabria (2014) noted the use of technologies and procedures that were "experimental" (in the sense of no clinical trials on their use in a particular way). For example, "travestis" (male to female trans-gender individuals) using over-the-counter contraceptives to feminise their bodies along with plastica on the face, say, or testosterone implants ("T") to help women "during work-outs or to boost energy, vontade (will/desire), and disposicao (disposition/desire). Marketing and health care practitioners present T as a kind of aphrodisiac, although women's descriptions of their experiences are more ambivalent" (Edmonds and Sanabria 2014 p205).

The use of these technologies can be linked to biopolitics, and the work of Rose (2007), and Rabinow and Rose (2006), who have "distinguished between an older, disciplinary biopolitics and a newer, emergent biopolitics. The older biopolitics is a mode of governance - which often includes coercive techniques exercised by sovereign states to regulate their populations' health. The newer form, they argue, is a mode of 'self-management' or 'somatic individuality' that reflects the rising importance of a politics of risk and the 'responsibilisation' of patient-consumers for their own health in 'advanced, liberal societies'" (Edmonds and Sanabria 2014 p208).

The public health sector for working-class individuals, Edmonds and Sanabria (2014) described as the "older" mode of biopolitics, as contraceptives are prescribed "according to a logic of population control tied to national development" (p208). While private practice for the middle-classes is the "newer" biopolitics at work. For example, the use of sex hormones to "manage affect or limit risks to sexual relationships due to partners' straying by chemically boosting their desire with T" (Edmonds and Sanabria 2014 p208).

Add to this stories of celebrities benefiting from

hormonio and plastica, and these technologies "point to the importance of sexual and class aspirations and celebrity culture in Brazilian medicine" (Edmonds and Sanabria 2014 p209).

Edmonds and Sanabria's (2014) work concentrated on women, and these technologies are used to "manage passage through the life-course". For example: "Pregnancy and childbirth are seen to pose risks and cause iatrogenic damage to the female body, which can be 'fixed' through surgical intervention. A range of techniques are available to meet the norm imposed by star culture - as well as medical culture - to rapidly return to 'shape' post-partum. Post-partum plasticas include breast and abdominal surgeries as well as liposuction and lipoescultura, which redistributes fat in order to 'contour' the body's silhouette. Injunctions to manage weight-gain during pregnancy mix aesthetic concerns with health risks concerning gestational diabetes or high blood pressure. Plastica is also integrated with mainstream Ob-Gyn, with Ob-Gyns referring mothers to plastic surgeons who promise to return the belly, vagina or breasts to their pre-pregnancy condition. In Brazil there are high rates not just of cosmetic surgery but also surgeries such as tubal ligation, episiotomy, hysterectomy and C-section" (Edmonds and Sanabria 2014 p210).

Hormonal replacement therapy (HRT) is common in relation to the menopause. Edmonds and Sanabria (2014) gave the example of "Zunara" (61 years old) who refused HRT: "A lesbian, feminist and medical doctor, she is outraged that hormonio is so prevalent in Brazilian gynaecology. During a consultation, her doctor expressed shock at how resecada (dry) Zunara's vagina was and started to instil fear in her, speaking of 'a scorched field' and risks of infection. Reflecting on the event, she concluded that gynaecologists who are 'ferocious hormonio prescribers' are used to 'nice pink vaginas' and not to seeing 'what a 61 year old vagina really looks like'. The norm, by virtue of pharmaceutical intervention, has changed. It follows that 61-year old vaginas are no longer, in private practice, 'dry'. What is a feminist response to this, Zunara wondered? Promoting sexual pleasure beyond reproduction can be seen as part of a project of sexual empowerment. However, this seems to be happening through the imposition of a norm obliging women to remain sexually available and attractive according to an idealised representation of (youthful) femininity. Women like Zunara who opt

out of HRT are considered 'brave', 'alternative' or irresponsible, and lacking in basic self-care" (p211).

Focusing on menstruation, Sanabria (2011) stated: "As a substance that flows from the bodily depths out, menstrual blood is carefully managed, concealed, contained, and increasingly suppressed through the use of hormonal contraceptives. We can read the management of this flow of blood as a means of working on the body's boundaries, that is, of demarcating the body's inside from its outside" (p94). But she continued that the demarcation is not so clear, and "parts that may initially appear to belong to the body's interior – such as the vagina and the uterus – cannot be clearly considered as inside or outside the body" (Sanabria 2011 p94). She linked this situation to "an epidemic of vaginal plastic surgery in Brazil" (Sanabria 2011 p94).

Sanabria (2011) reported an interview with a gynaecologist who described vaginal births as "violent and aggressive; they distend the vagina and damage the perineum", while he saw caesarean sections as "a means of humanising birth because they do not mark women's bodies in this way" (Sanabria 2011 p107). Sanabria (2011) explained: "Effectively, the vagina is demarcated as the domain of sexuality rather than reproduction, and when the vagina is 'damaged' by childbirth, surgeries are carried out to tighten and repair it" (p107).

McCallum (2005) pointed out that the "sexually adapted, attractive and active female body – the proper condition of modern Brazilian women – is represented by untouched and aesthetically pleasing genitalia. These genitalia, if also used for giving birth, lose their power to signify modernity and progress. On the contrary, when sexuality and reproduction become inter-linked through vaginal childbirth, the meanings attached to the genitalia's referent (the female body) are inverted. Such a body is pre-modern, damaged. It is repulsive to others" (quoted in Sanabria 2011).

Edmonds and Sanabria(2014) ended: "As technologies become embedded in routine healthcare they also become more medically acceptable; health risks hence become easier to minimise or dismiss. But these therapies are becoming routinised not only because they have been aggressively or cynically marketed. Rather, they reveal conflicts in gendered norms concerning how to be properly and ideally desirable and desiring; how to balance reproductive and sexual desires; and how to be a 'good' mother and a 'modern' woman" (p213).

## REFERENCES

Edmonds, A & Sanabria, E (2014) Medical borderlands: Engineering the body with plastic surgery and hormonal therapies in Brazil Anthropology and Medicine 21, 2, 202-216

McCallum, C (2005) Explaining caesarean section in Salvador da Bahia, Brazil Sociology of Health and Illness 27, 2, 215-242

Oudshoorn, N (1994) Beyond the Natural Body: An Archaeology of Sex Hormones London: Routledge

Rabinow, P & Rose, N (2006) Biopower today Biosocieties 1, 195-217

Rose, N (2007) The Politics of Life Itself: Biomedicine, Power and Subjectivity in the 21st Century Princeton, NJ: Princeton University Press

Sanabria, E (2011) The body inside out Social Analysis 55, 1, 94-112



## **2. COPD AND DEPRESSION**

Chronic obstructive pulmonary disease (COPD) is a long-term, progressive respiratory disease, and sufferers often report poor mental health. For example, generalised anxiety, phobias, and panic attacks at a higher prevalence than the general population (Gundry 2020).

Anxiety and depression can be viewed as a co-morbidity of COPD. Schneider et al (2010), in a longitudinal study over ten years with 35 000 patients, reported an incidence of depression of 16.2 cases per 1000 person-years compared to 9.4 cases among non-COPD individuals. While Hanania et al (2011) found a prevalence of depression of 26% among 2118 COPD patients compared to 12% of 305 smoking controls and 7% of non-smokers.

Atlantis et al's (2013) meta-analysis of 25 studies suggested that the relationship between COPD and depression was bidirectional - ie: "depression may be both a cause and a consequence of COPD. However, the exact mechanisms linking COPD with depression and anxiety have not been identified" (Yohannes and Alexopoulos 2014 p346).

"Depression and anxiety may lead to fear, panic and hopelessness, low self-esteem, social isolation and dependence on caregivers, thereby initiating a vicious circle that perpetuates anxiety and depression" (Yohannes and Alexopoulos 2014 p346).

Maurer et al (2008) outlined three sets of barriers to treatment of depression and anxiety among COPD patients:

i) Patient-perceived barriers - eg: lack of knowledge; unwilling to disclose to doctor.

ii) Physician-perceived barriers - eg: short consultation times; limited experience with mental disorders.

iii) System-level barriers - eg: lack of resources for mental health treatment (Yohannes and Alexopoulos 2014).

### **REFERENCES**

Atlantis, E et al (2013) Bidirectional associations between clinically relevant depression or anxiety and COPD: A systematic

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review and meta-analysis Chest 144, 766-777

Gundry, S (2020) COPD 2: Management and nursing care Nursing Times 116, 5, 49-52

Hanania, N.A et al (2011) Determinants of depression in the ECLIPSE chronic obstructive pulmonary disease cohort American Journal of Respiratory and Critical Care Medicine 183, 604-611

Maurer, J et al (2008) Anxiety and depression in COPD: Current understanding, unanswered questions, and research needs Chest 134, 43S-56S

Schneider, C et al (2010) COPD and the risk of depression Chest 137, Supp 4, 341-347

Yohannes, A.M & Alexopoulos, G.S (2014) Depression and anxiety in patients with COPD European Respiratory Review 23, 345-349

### **3. METHODOLOGICAL CAUTIONS**

- 3.1. CRISPR
- 3.2. Algorithms and racial bias
- 3.3. Twins
- 3.4. Predicting performance
- 3.5. References

#### **3.1. CRISPR**

The gene-editing tool, CRISPR-Cas9, has gained "rock-star status among scientists in the decade since its extraordinary potential was first recognised" (Li 2021 p43). Claims about its promise vary from the elimination of certain medical conditions, like cystic fibrosis, to wiping out crop pests (Li 2021). Leaving aside the hype, reality always has concerns, like what if the gene editing goes wrong?

Specifically, CRISPR-Cas9 could be used to modify human embryos to prevent genetic diseases. But there is growing evidence of "off target" gene mutations (ie: changes far from the target gene altered), and nearby unintended changes ("on target" changes) (Ledford 2020).

The "unwanted effects" may be missed by researchers, and could be difficult to eliminate in the future. Geneticist Fyodor Urnov drew a parallel with space flight - these problems are "the equivalent of having the rocket explode at the launch pad before take-off" (quoted in Ledford 2020).

There is a potential "off-switch" for CRISPR. Bacteria are attacked by viruses called bacteriophages, and CRISPR evolved to combat these attacks. The bacteriophages have evolved a response in the form of small proteins called anti-CRISPRs (Acrs), and these could be a "genetic off-switch". Though there may also be risks with Acrs to consider (Li 2021).

A method to alter RNA in the same way as CRISPR and DNA has been developed. Proteins in the body are made by DNA creating a complementary strand of RNA (or "messenger RNA"; mRNA). Cells are able to edit the RNA, and artificially created "anti-sense RNA" can be used to edit RNA (Le Page 2021) <sup>1</sup>.

Katrekar et al (2021) showed the ability to alter

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<sup>1</sup> Called "adenosine deaminases acting on RNA" (ADARs).

RNA in mice with this method. This approach, however, is limited only to changing an "A" to a "G" in the RNA code (Le Page 2021).

### **3.2. ALGORITHMS AND RACIAL BIAS**

An analysis of an algorithm used in the USA to determine who should be treated for kidney disease was found to be bias against Black individuals (Diao et al 2021).

But defenders of the algorithm argued that its "race-based correction factor" is based on scientific data. The algorithm takes into account the creatinine level in the blood, which is used as a marker of kidney function. There are general differences between Black and White individuals in creatinine levels, and the algorithm "corrects" for this variation. The consequence for Black individuals is "potentially making their kidneys seem healthier than they actually are" (Madhusoodanan 2020 p547).

The critics of the algorithm and the correction factor argue that "it perpetuates the problematic idea that people of different ethnicities have different biology" (Madhusoodanan 2020 p547). There are also critics of the use of creatinine levels alone as the biomarker of kidney function (Madhusoodanan 2020).

Madhusoodanan (2020) noted that in the USA, Black individuals are "almost four times as likely as White people to experience kidney failure. It's tough to tell whether – or how much – the race-corrected algorithm has worsened this crisis, because the rate of disease is affected by other factors influenced by systemic racism, including socio-economic inequalities and a lack of health insurance..." (p547).

Removal of the correction factor would lead to more Black individuals being diagnosed with kidney disease (eg: 3.5% more "new cases"; Diao et al 2021).

### **3.3. TWINS**

Jonsson et al (2021) summed up the situation: "A common assumption is that the sequences of the genomes of monozygotic twins are almost identical<sup>1</sup>. However, there is a paucity of studies characterising genomic differences between these twins" (p27).

Using whole-genome sequencing data from 381 pairs of monozygotic (MZ) (identical) twins, their offspring,

spouses and parents. Jonsson et al (2021) found a difference on average of 5.2 early developmental mutations between two identical twins. Put another way, "in 15% of monozygotic twins a substantial number of mutations are specific to one twin but not the other. This discordance suggests that in most heritability models the contribution of sequence variation to the pathogenesis of diseases with an appreciable mutational component is underestimated" (Jonsson et al 2021) <sup>2</sup>.

The differences originate in the early stages of development in the womb. After the egg is fertilised, the zygote divides into approximately sixteen cells in the first week, and subsequently implants into the uterine lining. Mutations "most likely occurred" in this early stage, and accumulate over time" (Jonsson et al 2021).

### **3.4. PREDICTING PERFORMANCE**

Long-distance runners collecting performance data (eg: speed, distance, heart rate) has grown in popularity in recent years. "In principle, these data provide an exciting opportunity to monitor human physiology non-invasively under real-world conditions outside the laboratory. Measuring the physiological response to physical activity can provide important insights for a variety of populations ranging from elite athletes to recreational exercisers to patients in rehabilitation" (Emig and Peltonen 2020 p2).

Laboratory testing of physiology has traditionally been seen as the most controlled way, but it tends to be short-term and limited. "The undeniable fact that the best test of running performance is an actual race and not laboratory tests highlights the need for models specifically constructed to extract performance indices of an athlete from their regular exercise performance. For these reasons, models that can utilise data from wearable devices and turn those into meaningful performance parameters may offer a cost effective alternative approach to laboratory testing" (Emig and Peltonen 2020 p2).

Emig and Peltonen (2020) created such a model. Exercise data were taken from an exercise tracking platform where users uploaded running information from wearable sensors (around 14 000 individuals and 1.6 million exercise sessions). The algorithm to predict performance was based on two measures - aerobic power index, and endurance index.

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<sup>2</sup> Mutations were found in the offspring of the twins (Jonsson et al 2021).

### 3.5. REFERENCES

Diao, J.A et al (2021) Clinical implications of removing race from estimates of kidney function JAMA 325, 2, 184-186

Emig, T & Peltonen, J (2020) Human running performance from real-world big data Nature Communications 11, 4936

Jonsson, H et al (2021) Differences between germline genomes of monozygotic twins Nature Genetics 53, 27-34

Katrekar, D et al (2021) Robust RNA editing via recruitment of endogenous ADARs using circular guide RNAs bioRxiv (<https://www.biorxiv.org/content/10.1101/2021.01.12.426286v1>)

Ledford, H (2020) Crispr editing wrecks chromosomal mayhem in human embryos Nature 583, 17-18

Le Page, M (2021) Time for RNA editing New Scientist 30th January, p16

Li, G (2021) Taming Crispr New Scientist 16th January, 43-45

Madhusoodanan, J (2020) Is a biased algorithm delaying health care for Black people? Nature 588, 546-547

## **4. ENCOURAGING GLOBAL PHYSICAL ACTIVITY**

- 4.1. Introduction
- 4.2. Benefits
- 4.3. Details
- 4.4. Health messages
- 4.5. Measurement of PA
- 4.6. Types of PA
- 4.7. Physical activity and inactivity together
- 4.8. References

### **4.1. INTRODUCTION**

The World Health Organisation's (WHO) (2020) global guidelines on physical activity (PA), based on the "best evidence", make a number of recommendations (eg: amounts and frequency of PA). Such guidelines are important because they "represent a consensus of scientific knowledge following a transparent process and as such serve as a reference for national policy: gaps in knowledge are identified and thus they also provide as a guide for future research priorities" (Stamatakis and Bull 2020 p1445) <sup>3 4</sup>.

The "best evidence" is "derived largely from high income countries (HICs); only a small fraction of the global physical activity and sedentary behaviour research originated from LMIC [low and middle income countries]. This is more than just 'another research gap'. There are large differences in how economies and societies are structured in LMIC countries, as well as a diversity of cultural norms and standards. Combined, these demand the development of physical activity evidence specific to these countries" (Stamatakis and Bull 2020 p1446).

LMICs experience "very real differences in context, competing health and development priorities, available resources and undoubtedly, political will" (Lambert et al 2020 p1447).

One difference is that most PA in HICs is recreational compared to work/transport-related in LMICs

<sup>3</sup> These guidelines are a development of the WHO "Global Action Plan on Physical Activity 2018-30" (GAPPA) (WHO 2018), which proposed a 15% relative reduction in the prevalence of insufficient PA by 2030. This, in turn, built upon the 2010 WHO "Global Recommendations on Physical Activity" (WHO 2010) (Hamalainen et al 2020).

<sup>4</sup> Bull et al (2020) explained that global and national guidelines on PA are crucial to public health policies: "WHO recommends all countries establish national guidelines and set physical activity targets. To help support populations to achieve the targets and maintain healthy levels of physical activity, all countries are advised to develop and implement appropriate national and sub-national policies and programmes to enable people of all ages and abilities to be physically active and improve health" (p1451).

(Stamatakis and Bull 2020).

In relation to transport PA (eg: children going to school; workers commuting), it may a situation of "need versus choice" in LMICs, and in disadvantaged communities in HICs (Lambert et al 2020). For example, children walking to school because they have no alternative, and despite unsafe environments (eg: no sidewalks; physical danger).

Overall, Stamatakis and Bull (2020) were positive about the WHO recommendations, hoping that they will be used globally; "advocates can use these new guidelines to leverage these fertile circumstances and help achieve what over 40 years of science and advocacy have persistently strived for: to move physical activity policy from a 'nice to do' to a 'must-do', to support the health and well-being of peoples of all ages and walks of life" (p1446).

But Lambert et al (2020) argued that the WHO guidelines, though designed to be inclusive of all types of countries, "alone are not sufficient to address the lack of change in global PA prevalence, or the potential decline in PA, associated with rapid urbanisation in LMICs. Guidelines need to be accompanied by inter-sectoral national plans and policies that position PA as a developmental and rights-based issue, one that promotes the co-benefits beyond health and ensures equitable access" (p1447).

Based on the idea of "food security", Lambert et al (2020) argued for "physical activity security", which they defined thus: "When all people, at all times, have physical and economic access to sufficient, safe and enjoyable physical activity to meet, not only their health needs, but to promote physical and emotional well-being and social connectedness, for an active and healthy life" (p1448).

Hamalainen et al (2020) also raised a criticism that "the existence of PA guidelines at global level, or even national level, is alone unlikely to prompt sustainable changes in PA behaviours of populations. To have an impact, guidelines must be tailored to the country context and be used by national, regional and local organisations when developing, implementing, and evaluating policies and interventions" (p1149).

The covid-19 pandemic is an extra issue to consider. Lockdowns, stay-at-home orders, and quarantines have reduced PA in some cases, while, in others, less traffic and better urban air pollution encourages PA (Lambert et



al 2020).

#### **4.2. BENEFITS**

Hafner et al (2020) set out to calculate the benefits to a population over the next thirty years if the WHO guidelines are implemented. They calculated an increase in global domestic product (GDP) of up to 0.24% at the lower limits of the recommendations (ie: 150 minutes of moderate-intensity PA per week). This gain being through the reduction in working-age mortality and morbidity. "For instance, healthier individuals may live longer and may be more productive than non-healthy individuals, earning more income and consuming more over time. The benefits of being healthier then apply not only to the individual themselves but also create positive external effects in the economy (eg: on firms, the government) because they may consume more, save more and pay more taxes for longer" (Hafner et al 2020 p1482).

Data were collected on relative all-cause mortality risk with insufficient PA, and PA and productivity. Compared to a baseline of inactivity, 600-750 MET-minutes of PA per week was calculated to produce up to 1.5% lower work impairment due to absence.

The study only included the adult population, and it did not calculate the direct health care cost savings with PA, nor the intangible benefits of PA (eg: happiness). Also, "the economic model relies on the simplifying assumption that all additional physical activity happens during leisure time, not work time, and has no indirect negative effects on the aggregate economic output or labour supply" (Hafner et al 2020 p1486). The opportunity cost of PA was not included (Hafner et al 2020).

#### **4.3. DETAILS**

Over one-quarter of adults, it is estimated, and over 80% of adolescents globally do not meet the 2010 WHO recommendations for aerobic exercise (Bull et al 2020). The WHO guidelines are developed from systematic literature reviews.

Lack of PA is exacerbated by age, gender, disability, pregnancy, socio-economic status, and geography (Bull et al 2020).

The main recommendations, based on sub-groups,

included (Bull et al 2020):

a) Children and adolescents (5-17 year-olds) - Sixty minutes of moderate-to-vigorous PA (MVPA) daily, where MVPA is defined as three times the intensity of rest in terms of energy expended (scored as metabolic equivalent task; MET; where 1 = seated at rest) (Bull et al 2020).

b) Adults (18-64 year-olds) - 150-300 minutes of moderate intensity PA per week.

c) Older adults (65 years and above) - PA that aids functional balance and strength training at moderate intensity at least three days a week.

d) Pregnant and post-partum women - At least 150 minutes moderate intensity aerobic PA per week.

e) Adults with chronic conditions (eg: cancer; hypertension) and those living with disability - Similar to healthy adults, but adapted to individual circumstances.

Overall, the guidelines confirmed "the value of participating in regular physical activity to achieve health benefits across all ages and abilities" (Bull et al 2020 p1459).

To summarise, the key messages were (Bull et al 2020 p1460):

- "For all populations, the benefits of doing physical activity and limiting sedentary behaviour outweighed the potential harms".
- "Some physical activity is better than none for those not currently meeting these recommendations, individuals should start with small amounts of physical activity and gradually increase frequency, intensity and duration over time".
- "Countries are encouraged to adopt and disseminate these new global guidelines to key audiences, and use them as the basis for sustained national public education communication campaigns responding to their national context and factors such as culture, ethnic diversity and social norms".

More evidence is needed, however, "on the dose-response relationship between volume and/or intensity of

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physical activity and health outcomes, particularly in people living with disability, and further evidence from low-income and middle-income, disadvantaged or underserved communities" (Bull et al 2020 p1460).

#### **4.4. HEALTH MESSAGES**

Health messages have traditionally been based on a "rational choice" model that assumed that individuals need to know more information about health risks and this will influence their lifestyle choices. "It is now widely recognised that this is not the case, and that the existence of guidelines, in isolation, is highly unlikely to lead to changes in health behaviours at the population level" (Milton et al 2020 p1463).

The best strategy is appropriate communication to the right groups of people. "This includes dissemination of the guidelines (ie: the strategic distribution of information) using appropriate communication channels and messages, and supporting implementation actions (ie: changes in policy and practice to provide appropriate environments and opportunities for physical activity)" (Milton et al 2020 p1463).

Milton et al (2020) outlined the key points of communication strategy for the WHO guidelines:

1. A planning framework - Based on social marketing theory (eg: Hastings 2007), there are a series of steps:

a) Situational analysis - The context of the communication (eg: existing social and cultural norms about PA).

b) Stakeholder analysis - Who is the key audience for the message?

c) Development of the communication - eg: how to communicate the messages.

d) Implementation and evaluation of success.

2. Communication strategy - There are two broad approaches here:

a) Advocacy - This is "a form of communication aimed at strategically influencing people and mobilising them to create change. The WHO [1995] defines advocacy as 'a combination of individual and social actions designed

to gain political commitment, policy support, social acceptance and systems support for a particular health goal or programme'. Advocacy seeks to raise the profile of an issue, gain support at multiple levels and increase the priority placed on taking appropriate action. From a physical activity perspective, advocacy should pursue national adoption of physical activity guidelines as well as changes in legislation, policies, environments and opportunities to support active lifestyles. For advocacy communications, the target audience is usually policy-makers and/or other key stakeholders" (Milton et al 2020 p1464).

b) Education - This is the "translation" of guidelines into "public-facing" messages for the general population or specific target groups. For example, "conveying positive images of physical activity or information on how, when and where to be physically active may be more appropriate than communicating the guidelines themselves" (Milton et al 2020 p1466).

#### **4.5. MEASUREMENT OF PA**

The WHO has recommended national surveillance as a public health strategy, including of tobacco use and alcohol consumption, and of PA since 2004. "The primary aim of monitoring PA is to track compliance with national guidelines, usually expressed as the proportion of the population 'meeting' the main quantitative guidelines. Changes to the PA guidelines can require changes in how PA is monitored, either in the instrument used and/or data analyses and reporting. These changes to national and global surveillance systems and indicators may override the desire for instrument stability that supports tracking population compliance" (Troiano et al 2020 p1468).

Troiano et al (2020) discussed this problem. The PA guidelines are based on evolving scientific knowledge, but their changing can be challenging to the public (eg: "why do scientists tell us something different now"), and to measurement and comparison over time of the goals (eg: self-reported with standardised psychometric instruments). Troiano et al (2020) saw an opportunity for digital devices and technology (eg: wearable trackers and fitness apps).

But such devices are not without limitations, including (Troiano et al 2020):

a) How to interpret accelerometer-based data in relation to PA guidelines.

b) The location on the body of wearing the device can influence the data collected. "For example, wrist wear improves compliance, but increases error associated with hand movement, while thigh wear allows estimation of posture, but estimates of intensity are limited to stepping cadence" (Troiano et al 2020 p1471).

c) Data from "stationary exercises (eg: yoga, strength training), and exercises involving limbs without monitors cannot be captured well" (Troiano et al 2020 p1471).

d) The willingness of wearers to share their data with public health authorities. For example, in a US study (Hyde et al 2020), 22% of 942 adults surveyed currently used a wearable device, and of them, 41% were willing to share their data with public health agencies, but 76% with health care providers.

e) Population representativeness of users. "Despite the rapid growth in fitness tracker and application use, global population penetration is less than 5% and varies greatly by age and income" (Troiano et al 2020 p1471).

f) Wearable devices have a short "shelf life", and new models appear every 1-2 years (Troiano et al 2020).

More generally, PA is "a complex set of behaviours" (p1470), which includes a number of elements (Troiano et al 2020):

- Frequency - how often the PA occurs (eg: daily).
- Duration - how long the PA occurs (eg: minutes per day).
- Intensity - energy expended (eg: MET) or perceived as expended.
- Type of PA - eg: aerobic.
- Context of PA - eg: leisure/recreation.

#### 4.6. TYPES OF PA

The earlier WHO guidelines did not distinguish between the sources of PA - ie: work (occupational PA; OPA), commuting, household tasks, and leisure (leisure-time PA; LTPA) - which was rectified in the latest guidelines (Cillekens et al 2020).

Cillekens et al (2020) provided an umbrella review of OPA, which informed the 2020 guidelines. An umbrella review integrates previous systematic reviews (table 4.1), and seventeen were classed as relevant by the researchers (covering 23 health outcomes).

Strengths	Weaknesses
<p>1. Collates a large amount of studies.</p> <p>2. Gives an overview of a topic, particularly where there are many studies.</p> <p>3. It makes use of systematic reviews which implies a "quality control in process", because individual studies are assessed for risk of bias and reasons are discussed" (Ortega et al 2016 p35).</p>	<p>1. Dependent on the original studies included in the systematic review and their methodological quality.</p> <p>2. Synthesis is not necessarily possible with different types of evidence.</p> <p>3. Tends not to include primary studies outside those in the systematic reviews.</p>

Table 4.1 - Key Strengths and Weaknesses of Umbrella Reviews.

The conclusions can be summarised thus: "Engaging in high versus low OPA showed beneficial health effects for multiple cancer outcomes, stroke, CHD [coronary heart disease] and mental health. In contrast, high versus low OPA showed unfavourable health outcomes regarding all-cause mortality in men, mental ill health, osteoarthritis and sleep duration and/or quality" (Cillekens et al 2020 p1479). Other health outcomes were inconclusive or not addressed, and the quality of evidence was important. The studies were rated as "moderate quality" ("further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate"; p1475) or "low quality" ("further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate"; p1475) (Cillekens et al 2020).

Some reviews included OPA and LTPA, and both types

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were beneficial to seventeen health outcomes (with small differences in effect). Though there was not sufficient data to make a comparison on all-cause mortality (Cillekens et al 2020).

When synthesising such a variety of studies (158 in total), there are always methodological differences. Cillekens et al (2020) outlined their concerns: "All identified evidence suffers from risk of bias (eg: misclassification, publication bias and confounding bias) and reviews showed high heterogeneity and/or inconsistent results. Studies varied widely regarding the confounding variables that were considered and relevant variables such as socio-economic status, body mass index and lifestyle factors (eg: smoking, alcohol and diet) were not addressed in every study" (p1479).

Measurement of OPA was usually self-reported. "Measuring OPA can be challenging as the occupational dose and intensity can fluctuate over time (eg: between days, weeks or seasons) and a general shift in OPA from physically demanding jobs to more sedentary occupations has been seen over the last decades. As most studies of the current evidence base assessed OPA only at a single instance, changes over time were not considered, which could have led to misclassification. On the other hand, OPA could be less subjected to recall bias than LTPA because of the routine nature of OPA and relatively long (ie: sometimes lifelong) exposure to OPA. Self-reported PA may suffer from several biases induced by socially desirable or culturally influenced answers; for example, variation across socio-economic and demographic groups, participants' inability to assess PA at different intensities and recall bias" (Cillekens et al 2020 p1479).

None of the systematic reviews included experimental studies. "Experimental studies provide more insight into causality and deal with issues such as selection bias and confounding" (Cillekens et al 2020 p1480).

Strain et al (2020) compared domain-specific PA in 104 countries and territories using WHO data including the Global Physical Activity Questionnaire (GPAQ) (table 4.2). LTPA, travel and household PA (including OPA) were measured.

Mean work/household MVPA in low-income countries was nearly twice that of high-income countries (1233 vs 668 minutes per week), but the opposite for LTPA (72 vs 143 min/week). Travel MVPA was much higher in low-income versus high-income countries (499 vs 158 min/week).

Looking at the total MVPA, 52% came from

- Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [carrying or lifting heavy loads, digging or construction work] for at least 10 minutes continuously?
- Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?
- How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?
- How much time do you usually spend sitting or reclining on a typical day?

(Source: <https://www.who.int/ncds/surveillance/steps/GPAQ/en/>)

Table 4.2 - Example of items from GPAQ.

work/household, 36% leisure, and 12% travel. However, LTPA was higher in high-income countries compared to low-income ones (28% vs 4%), while 47% and 57% respectively for work/household MVPA.

Of a total of over 327 000 respondents aged 25-64 years old who completed the GPAQ, nearly 48 000 reported zero minutes of MVPA of any type per week. This did not mean that they were sedentary (eg: sitting) because there was low-level PA.

There was a pattern of declining work/household PA with the shift in a society from manual labour and with access to labour-saving technology in the home, while urbanisation depressed travel PA (Strain et al 2020).

The analysis by Strain et al (2020) was dependent on the data collected, including the validity of the self-reported GPAQ.

#### **4.7. PHYSICAL ACTIVITY AND INACTIVITY TOGETHER**

Individuals engage in both PA and sedentary behaviour, and it is the relationship between them that impacts health. One possibility from the research is that "high levels of physical activity attenuate or even eliminate the associations between sitting time with all-cause and cardiovascular disease mortality" (Ekelund et al 2020 p1499). Though many studies used self-reported measurement, which is "prone to misclassification and social desirability bias, likely underestimates sedentary time, and has limited validity for estimating both light-intensity and total amount of physical activity" (Ekelund et al 2020 p1499).



Ekelund et al's (2020) meta-analysis included only studies with accelerometer measures of PA and sedentary behaviour. This involves nine prospective cohort studies and over 44 000 participants (and follow-up between 4 - 14 years). The data from the various studies were standardised into counts per minute (CPM) (ie: steps/movement in a 60-second period). A period of time with less than 100 CPM was categorised as sedentary behaviour, while a period of over 1500 CPM was MVPA. The total time categorised as the latter varied between studies from 0.8% to 3.9% of daily waking time, while between 57.5% and 82% of time was spent in sedentary behaviour. The remainder of the time was spent in low-intensity PA.

The highest total PA/lowest sedentary time one-third of participants were grouped and compared to the lowest total PA/highest sedentary time one-third. Controlling for variables like smoking, body mass index, and socio-economic position, "the risk of all-cause mortality increased with lower levels of physical activity and greater amounts of sedentary time" (Ekelund et al 2020 p1501). But the impact of sedentary behaviour on health was attenuated by MVPA, estimated at 30-40 minutes per day. This was less than previous studies (eg: 60-75 minutes per day; Ekelund et al 2016). Ekelund et al (2020) suggested that low MVPA was not necessarily detrimental to health if individuals spent large amounts of time in low-intensity PA (ie: low total sedentary behaviour). In simple terms, any PA is better than none.

Table 4.3 summarises the key strengths and weaknesses of this study.

Strengths	Weaknesses
<p>1. Only studies with accelerometer-measured PA included in meta-analysis (ie: more objective measures than self-reports).</p> <p>2. The standardisation of data from different studies and using different accelerometer devices (ie: CPM).</p> <p>3. Control for many potentially confounding variables in analysis.</p>	<p>1. All studies included were observational, which means that causation cannot be established.</p> <p>2. The participants were adults aged 40 years at least, which limited the generalisability of the findings to younger age groups.</p> <p>3. Accelerometers measure movement, so standing would be classed as a sedentary behaviour, but it is better for health than sitting.</p>

Table 4.3 - Key strengths and weaknesses of Ekelund et al (2020).

#### 4.8. REFERENCES

- Bull, F.C et al (2020) World Health Organisation 2020 guidelines on physical activity and sedentary behaviour British Journal of Sports Medicine 54, 24, 1451-1462
- Cillekens, B et al (2020) How does occupational physical activity influence health? An umbrella review of 23 health outcomes across 158 observational studies British Journal of Sports Medicine 54, 24, 1474-1481
- Ekelund, U et al (2016) Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than one million men and women Lancet 388, 1302-1310
- Ekelund, U et al (2020) Joint associations of accelerometer measured physical activity and sedentary time with all-cause mortality: A harmonised meta-analysis in more than 44 000 middle-aged and older individuals British Journal of Sports Medicine 54, 24, 1499-1506
- Hafner, M et al (2020) Estimating the global economic benefits of physically active populations over thirty years (2020=2050) British Journal of Sports Medicine 54, 24, 1482-1487
- Hamalainen, R-M et al (2020) New global physical activity guidelines for a more active and healthier world: The WHO Regional Offices perspective British Journal of Sports Medicine 54, 24, 1449-1450
- Hastings, G (2007) Social Marketing: Why Should the Devil Have All the Best Tunes? Oxford: Elsevier Science and Technology
- Hyde, E.T et al (2020) Physical activity surveillance using wearable activity monitors: Are US adults willing to share their data? American Journal of Health Promotion 34, 672-676
- Lambert, E.V et al (2020) Making the case for "physical activity security": The 2020 WHO guidelines on physical activity and sedentary behaviour from a Global South perspective British Journal of Sports Medicine 54, 24, 1447-1448
- Milton, K et al (2020) Maximising the impact of global and national physical activity guidelines: The critical role of communication strategies British Journal of Sports Medicine 54, 24, 1463-1467
- Ortega, A et al (2016) From qualitative reviews to umbrella reviews. In Biondi-Zoccai, G (ed) Umbrella Review: Evidence Synthesis with Overview of Reviews and Meta-Epidemiologic Studies New York: Springer
- Stamatakis, E & Bull, F.C (2020) Putting physical activity in the "must-do" list of the global agenda British Journal of Sports Medicine 54, 24, 1445-1446
- Strain, T et al (2020) Levels of domain-specific physical activity at work, in the household, for travel and for leisure among Psychology Miscellany No. 146; 15th March 2021; ISSN: 1754-2200; Kevin Brewer

327 789 adults from 104 countries British Journal of Sports Medicine  
54, 24, 1488-1497

Troiano, R.P et al (2020) How can global physical activity surveillance adapt to evolving physical activity guidelines? Needs, challenges and future directions British Journal of Sports Medicine  
54, 24, 1468-1473

WHO (1995) Report of the Inter-Agency Meeting on Advocacy Strategies for Health and Development: Development Communication in Action Geneva: World Health Organisation

WHO (2010) Global Recommendations on Physical Activity for Health Geneva: World Health Organisation

WHO (2018) Global Action Plan on Physical Activity 2018-30: More Active People for a Healthier World Geneva: World Health Organisation

WHO (2020) Global Guidelines on Physical Activity and Sedentary Behaviour Geneva: World Health Organisation

## **5. FOOD**

- 5.1. Flavanols and blood pressure
- 5.2. Meat consumption
- 5.3. Different diets
- 5.4. Climate change and food and health
- 5.5. References

### **5.1. FLAVANOLS AND BLOOD PRESSURE**

High blood pressure and cardiovascular disease (CVD) risk can be reduced by changes in diet, including macronutrients, and, of recent interest, "bioactives". These are non-nutritive dietary compounds, like flavan-3-ols (found in tea, berries, and nuts, for example) (Ottaviani et al 2020).

Early studies suggested that flavan-3-ols improves vascular function in healthy adults, but this research tends to be small-scale and short-term, and using self-reported dietary data (Ottaviani et al 2020).

Furthermore, the processing of food can influence the bioavailability of flavan-3-ols - "for example, the amount found in tea, one of the main dietary sources in the UK diet, ranges from 10 to 330 mg/100 g" (Ottaviani et al 2020 p2). These problems can be overcome by measuring nutritional biomarkers (ie: dietary compounds and their metabolites), which was used by Ottaviani et al (2020) with the Norfolk (eastern England) cohort of the European Prospective Investigation into Cancer Study (EPIC Norfolk) (n = 25 618 40-75 year-olds recruited between 1993 and 1997). Follow-up for CVD continued until March 2016.

Flavan-3-ol intake was negatively associated with blood pressure, and blood lipids, but there was no relationship with CVD incidence or mortality. Interestingly, "the association between intake and blood pressure was strongest among participants at higher risk of developing cardiovascular diseases, in particular older participants and those with existing hypertension..." (Ottaviani et al 2020 p6).

The intake of flavan-3-ol was linked in the cohort primarily to tea consumption. But the researchers admitted that the "biomarkers used in this study were surrogate biomarkers. They are used to rank participants according to intake, but it is not possible to use them to calculate the actual amount of flavan-3-ol consumed. In order to estimate the amount consumed by participants in the top decile of intake, we have therefore used data

from 7-day food diaries and calculated flavan-3-ol intakes using not only mean food content, as is common practice, but the entire range of reported food content" (Ottaviani et al 2020 p7). The biomarkers came from one-off non-fasting urine samples, whereas multiple samples would be ideal (Ottaviani et al 2020).

## **5.2. MEAT CONSUMPTION**

High meat consumption, particularly of red and processed types, has negative consequences for health and the environment (eg: 15% of human global greenhouse gas emissions; Wolstenholme et al 2020).

How to reduce meat consumption? There are some studies on attitude change after hearing health messages (but not necessarily behaviour changes). "This is problematic as attitudes and intentions do not always predict behaviour" (Wolstenholme et al 2020 p2). It is also not clear if environmental messages by themselves may be better in reducing meat consumption (Wolstenholme et al 2020).

The combination of different types of messages, however, could work. For example, Amiot et al (2018) presented messages about the impact of meat consumption on health, the environment, and animal welfare to a sample of Canadian men. These individuals had reduced meat consumption one month later compared to controls. Other studies have not found this benefit for combined messages (Wolstenholme et al 2020).

Another area of interest is "behavioural spillover". This is where an intervention to change one behaviour also influences related (but not targeted) behaviours. So, a pro-environmental message to reduce meat consumption that leads to other pro-environmental behaviours (eg: buying local rather than imported food to reduce air miles; recycling; reducing packaging; Verfuert et al 2019). Again, not all studies report such successes (Wolstenholme et al 2020).

Wolstenholme et al (2020) combined all these issues in their study that compared health and environmental messages to reduce red and processed meat consumption as well as investigating pro-environmental behavioural spillover.

The participants were 320 undergraduates in the UK, who were randomly allocated to one of four conditions:

- i) Health - Every day for two weeks automated

messages were sent to highlight the health impact of meat consumption.

ii) Environment - Environmental impact of meat consumption messages.

iii) Combined - Both health and environmental messages daily.

iv) Control - No messages.

Food diaries were kept for the two weeks of the study as the outcome measure of meat consumption. Surveys were completed about pro-environmental behaviours generally. There was a follow-up one month later.

So, three measurement points were made - baseline (before the intervention) (T1), at the end of the two-week intervention (T2), and one month later (T3).

All three intervention groups showed a significant reduction in meat consumption between T1 and T2 compared to the control group. This reduction was also evident at T3, especially for the combined group. There was no pro-environmental behavioural spillover found.

It was noted that the control group showed a small reduction in meat consumption by T3, and the explanation could be that "completing the daily food diaries led control participants to monitor their meat intake, causing a reduced consumption of red and processed meat" (Wolstenholme et al 2020 p11). This can be seen as an example of the "observer effect" where individuals change their behaviour because they know they are being watched. More cynically, Wolstenholme et al (2020) admitted an alternative explanation that "participants from different conditions shared information about the study aims in the delay between the intervention and the one-month follow-up, which could have led control participants to reduce their consumption as a result of social desirability. This possibility cannot be ruled out, as many participants were studying on the same course and therefore may have been acquainted with each other" (p11).

The measure of meat consumption was self-reported. The participants were required to "indicate the number of servings of red and processed meat they had eaten in the previous week. Although participants were provided with example portion sizes for red and processed meat, this might not have been sufficient to ensure a precise measure participants' meat consumption. Participants also

may not have been able to accurately recall the amount of red and processed meat they had consumed retrospectively, during the previous week" (Wolstenholme et al 2020 p12). The detailed food diaries were only completed during the two-week intervention. The use of shopping receipts would have been a more objective measure.

The study did not investigate whether the reduced meat consumption was part of an overall food consumption reduction, or if there was an increase in plant-based foods consumed.

The measure of pro-environmental behavioural spillover was a list of ten activities (eg: "have shorter showers or infrequent baths"; "donate to an environmental group"), and the participants again self-reported their frequency.

The sample was UK students, which "means that the findings may not be generalisable to the wider public" (Wolstenholme et al 2020 p12).

### **5.3. DIFFERENT DIETS**

The excess energy intake in modern Western societies has led to the increasing prevalence of obesity. Two main theories (and treatments) have been proposed as explanation (Hall et al 2021):

i) Carbohydrate-insulin model (Ludwig and Ebbeling 2018) - Intake of high-glycaemic carbohydrates produces excess insulin secretion and consequently fat accumulation, and, in turn, increased hunger/energy intake. The solution is a low-carbohydrate (LC) diet.

ii) Passive overconsumption model (Blundell and MacDiarmid 1997) - High-fat foods "may promote passive overconsumption of energy due to their high energy density, their weak effect on satiation and satiety, as well as modifying food hedonics in a way that supports increased intake" (Hall et al 2021 p344). Treatment is a low-fat (LF) diet.

These two theories, and particularly their diet recommendations are "the subject of long-standing debate" (Hall et al 2021 p344). Studies of them tend to involve controlled or uncontrolled situations (Hall et al 2021):

- Free-living/outpatient/uncontrolled studies - Adherence to the prescribed diet, even when the food is provided, is an issue.

- Inpatient/controlled studies - Tend to be short-term only, and usually compare one type of diet with the "usual diet".

Hall et al (2021) reported a latter type of study over four weeks that compared LC and LF diets. It was a crossover study (or repeated measures/related design), where the twenty participants received both diets (ie: two weeks of LC and two weeks of LF in a random order). The LC diet was animal-based (with only 10% of energy from carbohydrates and 75% from fat), while the LF diet was plant-based (with 75% of energy from carbohydrates and 10% from fat). In both cases, participants received three daily meals at standardised times, and a continuous supply of snacks and bottled water. Individuals were encouraged to eat as much or as little as they wanted.

The LF diet led to significantly less energy intake than the LC diet, "with participants losing weight and body fat while reporting no significant differences in hunger, fullness, satisfaction or pleasantness of the meals" (Hall et al 2021 p351).

The researchers felt that the findings did not favour either model above, but suggest that regulation of energy intake is more complex" (Hall et al 2021 p352).

#### Evaluation of methodology:

1. Control over situation, variables, and diet by researchers (+), but difficult to generalise to the real world (-).

2. Small volunteer sample of healthy, normal weight, young adults in the USA (-).

3. The study lasted four weeks, which is longer than many inpatient studies (+), but still a relatively short period of time (-).

4. "The participants were told that this was not a weight-loss study, were instructed not to attempt to change their weight and were blinded to their body weight measurements as well as the primary purpose of the study" (Hall et al 2021 p352) (+). But there was enough information for the individuals to guess the purpose of the study (-).

5. No "usual diet" condition; particularly important because the food provided was low in processed content



(-/+).

6. No "washout period" between the two diets (ie: no gap between the two diet-periods) (-), but this meant that the length of the study was manageable for the participants (+).

#### 5.4. CLIMATE CHANGE AND FOOD AND HEALTH

Globally childhood malnutrition has declined in recent decades, but undernourishment has increased in the 2010s. Climate events are relevant to the latter (Niles et al 2021).

Niles et al (2021) focused on the role of climate on diet diversity, which is an indicator of malnutrition, with data on over 100 000 under five year-olds in nineteen low- and middle-income countries (for 2005-09) <sup>5</sup>.

The individual diet diversity score (IDDS) <sup>6</sup> was a mean of 3.22, which meant that children ate on average 3.2 food groups (out of ten possible; table 5.1) in the prior 24 hours to the parent(s) being questioned. This ranged from 4.77 in Colombia to 1.80 in Lesotho.

- Cereal grains
- White tubers and root foods
- Dark leafy greens
- Vitamin A rich vegetable/tubers
- Vitamin A rich fruits
- Other fruits and vegetables
- Meat and fish foods
- Eggs
- Legumes/nuts/seeds
- Milk and milk products

Table 5.1 - Ten possible food groups.

Diet diversity was less in rural areas (ie: further away from the nearest urban centre), in poorer households (below the average income for the country), and areas of higher long-run average temperatures (ie: average of thirty years of monthly data and above average for that month), for example, while the IDDS was higher, for instance, in households with greater wealth and education

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<sup>5</sup> The data came from the Demographic Health Survey, which involved national representative samples, and covered population demographics, health and nutrition of all ages.

<sup>6</sup> Developed from the United Nations Food and Agriculture Organisation.

for the head, and higher-than-average precipitation in the previous year. The two climate factors (temperature and rainfall) correlated with diet diversity "at levels equal to or greater than many variables that are often a focus of current development policy, including market access (ie: distance to urban centre), livestock density, education, and gender" (Niles et al 2021 p3).

Niles et al (2021) explained the findings via "direct and indirect pathways". Firstly, higher temperature and low diet diversity: "Higher temperatures can directly impact the yield of many globally important staple crops. Higher temperatures can also affect the physiology of animals and may reduce livestock productivity and also increase livestock water consumption. Both of these pathways could influence the amount and quality of food available in a given region and thereby affect food prices and access. Higher temperatures also have known physiological impacts on human beings. Women who are pregnant during hot spells often deliver babies with lower birth weights. Indirectly, higher temperatures also have the potential to influence the macro and micronutrient content of a variety of crops, which may not directly affect the overall number of diet categories consumed, but could contribute to micronutrient deficiencies over time" (Niles et al 2021 pp5-6).

Secondly, rainfall and higher diet diversity: "Mostly obviously, the direct impact of a reduction in rainfall can lead to a reduction in agricultural productivity, with these impacts most profound in drought conditions" (Niles et al 2021 p6). Previous research has found an association between child malnutrition and low rainfall in individual countries, like Rwanda, Kenya, Mexico, and Swaziland (Niles et al 2021).

But Niles et al's (2021) data covered a period which coincided with a world food price crisis in 2007-08 (ie: increased prices). "This crisis was caused by many factors and not just climate change, and may have affected diets across the world" (Daniel Mason-D'Croz in Lu 2021).

Watts et al (2021) outlined the emerging health profile of the changing global climate. One key indicator is heat-related morbidity and mortality, which has been increasing in the 21st century (eg: a 50% increase in heat-related mortality among over 65s in the last twenty years).

Another indicator is extremes of weather (eg: floods, droughts, storms), which, like other changes,

impact health via threats to global food security.

Other key indicators are changes in climate-sensitive infectious diseases (eg: widening vulnerability to mosquito-borne diseases), and human migration as a result of climate change (and that impact on health) (eg: a 5 metre rise in sea levels will make coastal settlements involving over 500 million people uninhabitable) (Watts et al 2021).

Watts et al (2021) made this sobering observation: "A changing climate threatens to undermine the past 50 years of gains in public health, disrupting the well-being of communities and the foundations on which health systems are built. The effects of climate change are pervasive and impact the food, air, water, and shelter that society depend on, extending across every region of the world and every income group. These effects act to exacerbate existing inequities, with vulnerable populations within and between countries affected more frequently and with a more lasting impact" (p134).

## 5.5. REFERENCES

Amiot, C.E et al (2018) Testing a novel multi-component intervention to reduce meat consumption in young men PLOS ONE 13, e0204590 (Freely available at <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0204590>)

Blundell, J.E & MacDiarmid, J.I (1997) Fat as a risk factor for overconsumption: Satiating, satiety, and patterns of eating Journal of the American Dietetic Association 97, 7, S63-S69

Hall, K.D et al (2021) Effect of a plant-based, low-fat diet versus an animal-based, ketogenic diet on ad libitum energy intake Nature Medicine 27, 344-353

Ludwig, D.S & Ebbeling, C.R (2018) The carbohydrate-insulin model: Beyond "calories in, calories out" JAMA Internal Medicine 178, 1098-1103

Lu, D (2021) Climate may undermine food security efforts New Scientist 30th January, p13

Niles, M.T et al (2021) Climate impacts associated with reduced diet diversity in children across nineteen countries Environmental Research Letters 16, 1, 015010

Ottaviani, J.I et al (2020) Biomarker-estimated flavan-3-ol intake is associated with lower blood pressure in cross-sectional analysis in EPIC Norfolk Scientific Reports 10, article 17964

Verfuert, C et al (2019) Understanding contextual spillover: Using identity process theory as a lens for analysing behavioural

Psychology Miscellany No. 146; 15th March 2021; ISSN: 1754-2200; Kevin Brewer

responses to a workplace dietary choice intervention Frontiers in Psychology 10, 345

Watts, N et al (2021) The 2020 report of The Lancet Countdown on health and climate change: Responding to converging crises Lancet 397, 129-170

Wolstenholme, E et al (2020) Two birds, one stone: The effectiveness of health and environmental messages to reduce meat consumption and encourage pro-environmental behavioural spillover Frontiers in Psychology 11, 577111

## **6. SMOKING**

- 6.1. Smoking and mental health
- 6.2. E-cigarettes
- 6.3. References

### **6.1. SMOKING AND MENTAL HEALTH**

The tar (not nicotine) in tobacco smoking can increase the need for higher doses of some psychotropic medications, and so smoking cessation will lead to lower doses and fewer side effects of these drugs (Ross 2020).

Individuals who smoke who find themselves in a smoke-free hospital environment can have problems. This leads to behaviours including smoking secretly (and so creating a fire risk), or becoming aggressive when demanding a cigarette (Ross 2020).

Tobacco smoking is common among psychiatric patients, and "a major barrier to implementing smoke-free policies is staff perceptions that they will result in increased physical violence" (Robson et al 2017 p540). Staff in psychiatric facilities are exposed to violence (for various reasons), so this is not an unfounded fear (eg: 187 assaults per 1000 staff in the UK in 2014-15 compared to 21 per 1000 in general hospital settings; Robson et al 2017).

In terms of violence related to enforcement of a smoke-free hospital policy, studies showed "reduction, no change, or an increase in violence towards staff, but a reduction in patient-toward-patient violence" (Robson et al 2017 p540). Methodological differences explain the varied results, including controlling for potential confounders, which was important in the study by Robson et al (2017).

They used the quasi-experimental research method of an interrupted time series design. The study involved four psychiatric hospitals of a NHS trust in south London, where a comprehensive smoke-free policy was introduced on the 1st October 2014. The patients from 38 wards included psychosis, and mood, addiction, and dementia disorders.

The number of physical assaults per month officially recorded for thirty months before the policy and the

twelve months after were analysed <sup>7</sup> <sup>8</sup>. A physical assault was defined as "the intentional application of force against the person without lawful justification, resulting in physical injury or personal discomfort" (Robson et al 2017 p542). Furthermore, the researchers defined "assaults related to smoking if the record of the antecedent to the assault included a smoking-related term (eg: smoke, smoking, cig or cigarettes, tobacco, fag, roll up or roll ups, rolli or rollie, water pipe, or cigar)" (Robson et al 2017 p542).

Potential confounders of violence included proportion of men in wards, age, mental disorders, individuals "sectioned" (compulsory detention), time and seasonality.

During the study period, there was a total of 4550 physical assaults, of which 2916 were patient-toward-staff and 1634 patient-toward-patient. Assaults related to smoking were 225 (4.9% of total).

Robson et al (2017) summed up the findings: "After adjustment for all significant confounders, the results suggest there was a 39% reduction in the number of violent assaults per month overall in the period after the introduction of the policy compared with the period before the policy was introduced" (p544).

Points of evaluation of this study include:

i) (-) The quasi-experimental method means that causality cannot be established.

ii) (-) Data were not available for individual wards.

iii) (-) Non-controlled potential confounders include staff variables, aspects of the physical environment, and external influences (Robson et al 2017).

iv) (+) The study covered the period before and after the smoke-free policy was introduced. Other studies have varied between two weeks before and after the policy introduction, to two years post-policy (Robson et al

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<sup>7</sup> The following categories were excluded - verbal abuse, attempted assaults (ie: no contact), threats and intimidation, damage to property, and racist and sexist language or behaviour.

<sup>8</sup> "There were several occasions in which one incident report contained assaults directed towards more than one member of staff or patient. If the number of victims was clearly stated we counted the exact number of assaults. However, if the report was vague and only inferred more than one staff had been assaulted, we counted these as two assaults. If a person was hit multiple times in the same incident, we counted it as one assault" (Robson et al 2017 p542).

2017).

v) (+)(-) The focus upon physical violence only, "whereas some previous studies have combined verbal, physical violence, violence towards property, and other disruptive behaviours, making it difficult to interpret the true extent of physical violence after policy implementation" (Robson et al 2017 p545).

vi) (+) A common system of officially reporting physical violence was used throughout the study period, so, according to Robson et al (2017), "making it unlikely that changes in the way our outcome was reported were being falsely attributed to the smoke-free policy" (p54). An alternative to incident reporting used here, which other studies have employed, is observational rating scales.

vii) (+)(-) The catchment area of the hospitals is representative of London in terms of age, sex, ethnicity, education, and social deprivation, but it "might differ from the rest of the UK and other countries" (Robson et al 2017 p545).

viii) (-) Dependent on the official reports of violence, which varied in detail.

ix) (+) A large sample size (n = 18 135 patients or 747 338 occupied bed days of care) (compared to 31 to 298 participants in previous studies) (Robson et al 2017).

All were adults (18 years and older), which meant the exclusion of child and adolescent wards, as well as forensic wards "because patients had been exposed to a comprehensive smoke-free policy longer than patients in adult wards" (Robson et al 2017 p541).

x) (+) An experimental method (or randomised clinical trial) was not feasible (if not unethical). In such situations, the quasi-experimental method "allows the incidence of an outcome after policy introduction to be compared with that beforehand, while filtering out the effect of any underlying temporal or seasonal changes or variations in other potentially confounding variables" (Robson et al 2017 p541).

The findings may also have been influenced by the nature of the smoke-free policy, which went beyond just banning smoking. A comprehensive tobacco addiction treatment policy was introduced, which included "offering

smokers nicotine replacement therapy (NRT) within 30 min of arrival on the ward, and combination NRT for the duration of admission from ward staff trained in smoking cessation or dedicated hospital tobacco dependence treatment advisers. The use of disposable electronic (e)-cigarettes is allowed. These are purchased by patients rather than supplied by the hospital, and patients can use them in single bedrooms, but not communal areas" (Robson et al 2017 p541).

## **6.2. E-CIGARETTES**

Rigotti (2020) observed that "[F]ew topics in public health and medicine "are as contentious as electronic cigarettes (e-cigarettes), a diverse and rapidly evolving array of products that appeared on the consumer market a decade ago" (p1835). They have the potential to help in tobacco smoking cessation, and so reduce health harms, while there is fear that "non-smokers – primarily youths—who would never have used cigarettes but experiment with e-cigarettes, with some becoming addicted to nicotine and transitioning to smoking. Even if e-cigarettes are only used for a relatively short period" (Rigotti 2020 p1835).

Concentrating on the use of e-cigarettes with tobacco smoking cessation, there are large randomised trials being undertaken. For example, in England, Hajek et al (2019) found significantly better sustained cigarette abstinence at one year compared to nicotine replacement therapy (NCT) among 886 participants. While in New Zealand (Walker et al 2020), among 1124 cigarette smokers, e-cigarettes and NCT together was better than NCT alone at six months post-cessation (Rigotti 2020).

In Canada, Eisenberg et al (2020) compared nicotine e-cigarettes and individual smoking cessation counselling with non-nicotine e-cigarettes and counselling, and counselling alone in the E3 trial (Evaluating the Efficacy of e-Cigarette Use for Smoking Cessation). The counselling included designing a quit plan, coping skills, and self-monitoring of triggers. A total of 376 adult volunteers from seventeen centres began the 12-week randomised clinical trial.

Nicotine e-cigarettes and counselling was significantly better for self-reported seven-day cigarette abstinence at Week 12 than counselling alone only, but this difference was not significant at Week 24 (ie: twelve weeks after the trial ended).

Rigotti (2020) pointed out a problem with this study: "Despite careful planning, this trial



experienced an unexpected complication during recruitment. The e-cigarette device became unavailable, and this necessitated a premature end to study enrolment, after only 376 (77%) of the planned sample of 486 participants were randomised. This smaller sample left the trial underpowered to test its primary end point, smoking abstinence at 12 months" (p1835).

This study began in November 2016, and another problem was the "rapid product evolution of e-cigarettes ... [which] complicates the generalisability of trial results of this and other studies. The trial by Eisenberg et al [2020] used a second-generation e-cigarette, typical of devices used when the trial began. By 2017, these products had been eclipsed by newer devices, exemplified by JUUL, with pre-packaged liquid 'pods' and a formulation that allows delivery of a higher nicotine dose. These products now have the largest US market share. With higher nicotine delivery, these products will likely be more effective for smoking cessation than earlier e-cigarettes. However, recent systematic searches revealed no randomised trials testing the effectiveness of newer devices for smoking cessation. Of course, higher nicotine delivery also has a downside—a greater likelihood for the devices to produce nicotine dependence when used by non-smoking youths, for whom the devices clearly have strong appeal" (Rigotti 2020 p1836).

These two limitations show the reality of attempting controlled research (ie: randomised clinical trials) in the real world. Put simply, everyday life gets in the way of the perfectly controlled experiment.

### 6.3. REFERENCES

Eisenberg, M.J et al (2020) Effect of e-cigarettes plus counselling vs counselling alone on smoking cessation: A randomised clinical trial JAMA 324, 1844-1854

Hajek, P et al (2019) A randomised trial of e-cigarettes vs nicotine-replacement therapy New England Journal of Medicine 380, 7, 629-637

Rigotti, N.A (2020) Randomised trials of e-cigarettes for smoking cessation JAMA 324, 1835-1837

Robson, D et al (2017) Effect of implementation of a smoke-free policy on physical violence in a psychiatric in-patient setting: An interrupted time series analysis Lancet Psychiatry 4, 540-546

Ross, L (2020) Smoking cessation 3: Supporting people with mental health conditions Nursing Times 116, 5, 46-48

Walker, N et al (2020) Nicotine patches used in combination with e-cigarettes (with or without nicotine) for smoking cessation: A pragmatic randomised trial Lancet Respiratory Medicine 8, 1, 54-64

## **7. GLOBAL PSYCHE**

- 7.1. Overview
- 7.2. Personality disorders
- 7.3. Pharmaceutical creep
- 7.4. References

### **7.1. OVERVIEW**

Behague and MacLeish (2020) reflected upon psychiatric symptoms and diagnoses, which have become "sites of threat, governance, care, resistance, mobilisation, and knowledge creation in domains ranging from health care access, borders and immigration, police violence, nuclear conflict, and control and funding of scientific research to white nationalism, post-industrial precariousness, neoliberal managerialism, hate crime, and liberal apocalypticism. In the process, conceptions of mental life become sites of moral and political reckoning and ethical speculation and reconfiguration, birthing novel experiments in justice, rights, survival, personhood, and the good life" (p5). They summed this up with the phrase, "global psyche".

"Global" here refers to the spread of (Western) psychiatric knowledge throughout the world, and "psyche" to "mental life". All of this embedded in a particular time and place which is now (eg: post-colonial; climate change).

Behague and MacLeish (2020), writing from an anthropological position, wanted to highlight three themes to explore relating to "global psyche":

i) The possibilities and limitations of psychiatric and biomedical expertise.

ii) How global ideas are transformed at a local level.

iii) Alternatives to medical diagnosis that include "practices of creativity, refusal, and the embrace of uncertainty" (Behague and MacLeish 2020 p8).

### **7.2. PERSONALITY DISORDERS**

Ayinde and Gureje (2021) reviewed the cultural validity (ie: universality) of DSM-5 (APA 2013) and ICD-11 (WHO 2018) diagnostic criteria for personality Psychology Miscellany No. 146; 15th March 2021; ISSN: 1754-2200; Kevin Brewer

disorders. Specific questionnaires have been designed that operationalise the diagnostic concepts (eg: Levels of Personality Functioning Scale; LPFS). There is also the process of the translation of these measures, usually from English, to the local language.

It should be noted that even in the West personality disorders "have remained one of the most controversial diagnostic rubrics in psychiatric nosology" (Ayinde and Gureje 2021 p70). Furthermore, the conceptualisation of personality disorders changed from categories in early versions of DSM and ICD to dimensions in the newer versions of the classification systems.

Ayinde and Gureje (2021) concluded that the "general picture is that of reassurance that the constructs have acceptable applicability in places wherein this has been explored. There is nevertheless a need for more of such research, especially studies in which users' perspectives take prominence" (p74). There were few studies, however (eg: four with non-Western translated versions of personality measures).

In terms of the views of service users, Hackmann et al (2019) found that those in focus groups in India, for example, "expressed frustration that there were better words or idioms of expression in their native language that best fit their lived experiences. Service users also raised objections to the use of language such as 'maladaptive' to describe their condition" (Ayinde and Gureje 2021 p73).

### **7.3. PHARMACEUTICAL CREEP**

Under the title, "Pharmaceutical creep", Chua (2019) explored the relationship between pharmaceuticals and the US military.

For example, anti-depressants, in the form of selective serotonin reuptake inhibitors (SSRIs), are used by many service members, and what is different is the "in-theatre" use of psychiatric medications (ie: during active combat). "While authorised and unauthorised psychoactive substances have long been used to enhance performance and to ease injury and boredom among soldiers at war..., the documented use of medications to treat symptoms associated with psychiatric diagnoses in active combat had been highly contentious and limited within US military psychiatry" (Chua 2019 p41). But now, Chua (2019) continued, psychiatric medications "enter theatre in bottles and bloodstreams alike: drug formularies have grown to treat symptoms newly diagnosed

in deployment, while soldiers may take with them 180-day bulk supplies for previously diagnosed conditions" (p42).

SSRIs can be used by active soldiers to avoid removal from operational duties and so damage their career opportunities (Chua 2019). While a sleep medication like Zoloft "may be prescribed to a high-ranking officer to smooth out the new onset of symptoms and thus to keep her in theatre so that she can continue to do the specialised work that few others can. Or it may be supplied in theatre to an infantry soldier on his fourth tour in Iraq who, since returning from his second tour, has been on the Zoloft prescribed to him by a military provider for the management of his combat-related PTSD [post-traumatic stress disorder]. But it may also be brought without authorisation into theatre by a soldier who was first prescribed Zoloft by a civilian provider years before he enlisted in the Army for the 'routine' management of depressive symptoms" (Chua 2019 pp42-43).

Among the US military, increased pharmaceutical use is blamed on reservists. Chua (2019) explained: "Like rampant consumerism or obesity, psychiatric medication use in contemporary American society was read by 'careerists' I interviewed – seasoned military personnel whose time in service spanned decades – as signifying the vices of civilians and civilian culture: mental weakness, intolerance to pain and suffering, self-indulgence, and desires for immediate gratification, among others. Some understood this to be a decidedly generational and cultural issue" (p48). The US military thus positioned itself as "an enclave of mental toughness, and a rampart against rising cultural tides of feminising weakness, effete intellectualism, and emotionality" (Chua 2019 p48). "Pharmaceutical creep"<sup>9</sup> is like a contamination of the military body.

Military psychiatrists expressed their concern thus: "the increased dependence on National Guard and Reserve soldiers meant that the Army was receiving personnel who were treated according to civilian community standards rather than military readiness standards concerning prescriptions for SSRIs, atypical antidepressants, and anti-anxiety medications. This resulted in an increased requirement for available medications in theatre"

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<sup>9</sup> "Pharmaceutical creep" describes "the slow drift of psychopharmaceuticals from an overmedicated civilian world into theatre and into the military corporate body in the post-9/11 era, a seepage that simultaneously unsettles and reinforces the boundaries that would distinguish home front from war zone, military from civilian" (Chua 2019 p43).

The term parallels "bracket creep", which was coined to describe "the expansion of categories of psychopathology into everyday behaviours" (Chua 2019 p47).

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(Schneider et al 2011 quoted in Chua 2019).

The military response is gate-keeping - the controlling of soldiers' access to pharmaceuticals - with limited success, it seems. Chua (2019) explained: "Once in theatre, psychiatric medications are notoriously hard to track. They also circulate along official and unofficial channels as they are consumed, shared, experimented with, and traded. Luis <sup>10</sup>, who deployed to Iraq from 2008 to 2009, told me about the 'steady flow' of Adderall that he was regularly supplied by a sergeant in his unit. This sergeant had been on Adderall for years for the treatment of his ADHD [attention deficit hyperactivity disorder]..." (p52).

Adderall is basically a stimulant. So, "Luis" described using it regularly to deal with 18-hour patrols. "Having entered theatre as a legitimate therapy for one sergeant's ADHD, in the global context of US military power - of daily patrols outside Baghdad at the tail end of the so-called surge of troop build-up in Iraq - Adderall becomes incorporated into a very different regime of practice, ethics, and meaning: the 'lifesaving' drug that enabled Luis to remain alert, alive, and attuned in the application of violence" (Chua 2019 p52) (figure 7.1).

Pharmaceuticals, Chua (2019) described as offering "an instructive lens for inquiry into processes of globalisation and localisation, in addition to questions of personhood, identity, illness, and suffering" (p44). They are global, in the literal sense, because "military medical supplies leach into local markets" where the US troops are based. Pharmaceuticals are also global in the symbolic sense of as "hopeful panaceas for the recruitment challenges, exhaustion, strain, and traumas of the slow grind of the post-9/11 wars, psychopharmaceuticals are global for the ways they prop up a strained military in America's 'forever war' (Filkins 2008)..." (Chua 2019 p44).

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<sup>10</sup> Chua (2019) drew on her fieldwork with active, part-time/reservist, and veteran army personnel in North Carolina.

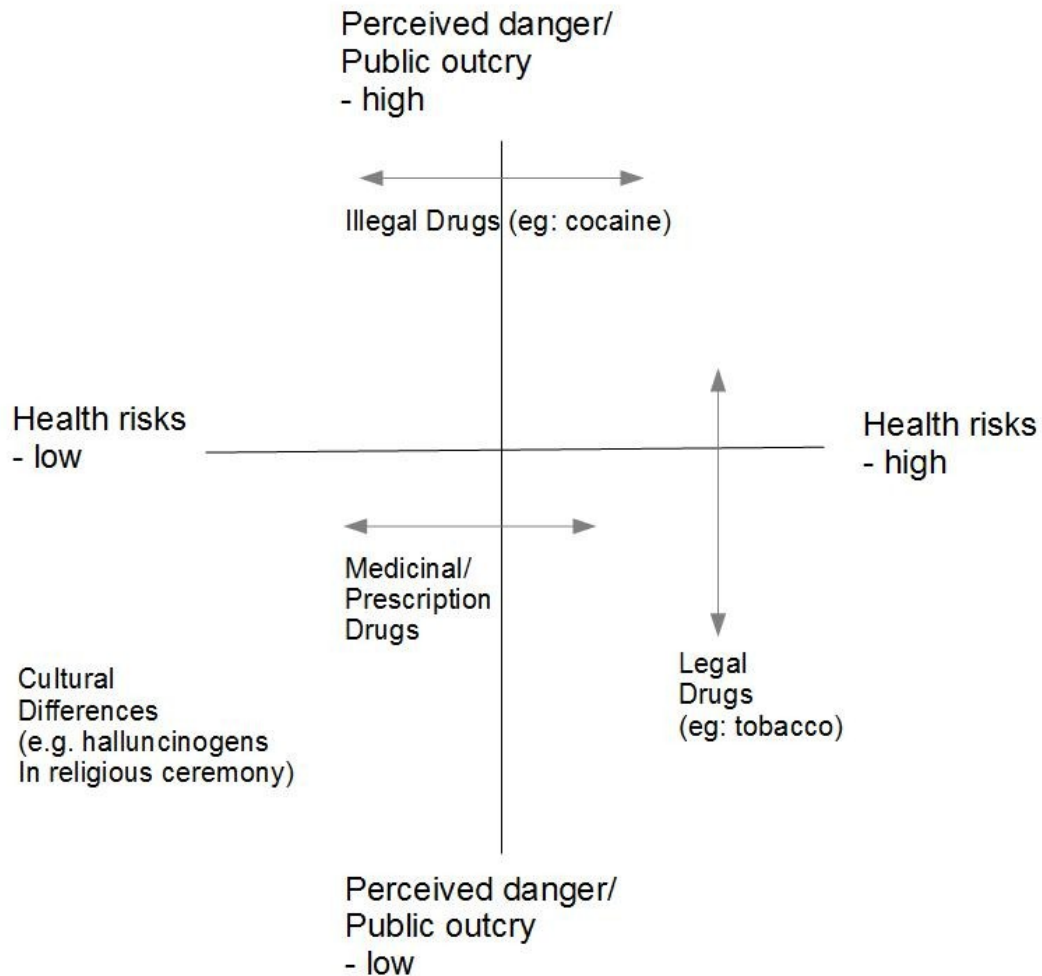


Figure 7.1 - A representation of the health and legal aspects of drugs.

#### 7.4. REFERENCES

APA (2013) Diagnostic and Statistical Manual of Mental Disorders (5th ed) Arlington, VA: American Psychiatric Association

Ayinde, O.O & Gureje, O (2021) Cross-cultural applicability of ICD-11 and DSM-5 personality disorder Current Opinion in Psychiatry 34, 70-75

Behague, D.P & MacLeish, K (2020) The global psyche: Experiments in the ethics and politics of mental life Medical Anthropology Quarterly 34, 1, 5-20

Chua, J.L (2019) Pharmaceutical creep: US military power and the global and transnational mobility of psychopharmaceuticals Medical Anthropology Quarterly 34, 1, 41-58

Filkins, D (2008) The Forever War New York: Vintage

Psychology Miscellany No. 146; 15th March 2021; ISSN: 1754-2200; Kevin Brewer

Hackmann, C et al (2019) Perspectives on ICD-11 to understand and improve mental health diagnosis using expertise by experience (INCLUDE Study): An international qualitative study Lancet Psychiatry 6, 778-785

Schneider, B et al (2011) Psychiatric medications in military operations. In Ritchie, B (ed) Textbook of Combat and Operational Psychiatry Falls Church, VA: Borden Institute Textbooks of Military Medicine, Office of the Surgeon General of the United States Army

WHO (2018) ICD-11 - International Classification of Diseases for Mortality and Morbidity Statistics (11th revision) Geneva: World Health Organisation



## **8. HEALTH SHORTS**

- 8.1. Gut microbes
- 8.2. Statins
  - 8.2.1. Nocebos
  - 8.2.2. Breast cancer
- 8.3. The 14-day limit
- 8.4. References

### **8.1. GUT MICROBES**

The community of gut micro-organisms (known as microbiota) have co-evolved with their animal hosts. Alterations in their composition and function are being linked to neurological conditions in humans (Fang and Hsaio 2020). Burberry et al (2020) reported the example of amyotrophic lateral sclerosis (ALS), a neurological disorder with loss of movement, speech, and cognition. These researchers found that "ALS mice" (genetically engineered to show ALS-like symptoms) had less microbiota diversity compared to controls.

The mechanisms of the gut bacteria influencing the loss of cells in the brain is not entirely known, but one hypothesis is that gut microbiota have an effect on the immune system and inflammation, and this can lead to brain cell change via auto-immunity (ie: the immune system attacking healthy cells as if they were invading pathogens) (Fang and Hsiao 2020).

Burberry et al (2020) found more cytokines in the blood, and T cells in the spinal cord of the "ALS mice". These are signs of a more active immune system.

### **8.2. STATINS**

#### **8.2.1. Nocebos**

Wood et al (2020) studied individuals who had previously discontinued statins within two weeks of starting because of side effects. These individual (n = 60) were a given a placebo, statins, and no treatment - in each case four bottles to cover one month. Each day the participants reported symptom intensity (from 0-100) on a smartphone app.

The reported symptom intensity was very similar during the statins month and the placebo month. This would suggest that the statins side effects were a nocebo (ie: a negative placebo). In other words, individuals

expected to feel them and they did.

### 8.2.2. Breast Cancer

Early breast cancer (EBC) can be treated with anthracycline- (Anth) and/or trastuzumab-based (Tra) chemotherapy, but both these treatments have the risk of heart failure (HF) as a long-term side effect (ie: cardiotoxicity). Heart disease is the leading cause of older EBC survivors (Abdel-Qadir et al 2021).

Statins appear to be a means of combating HF in this situation, Abdel-Qadir et al (2021) reported in their research. This was a retrospective study using data from the Ontario Health Insurance Plan in Canada. The sample was women diagnosed with EBC before 66 years old, with no prior HF, treated with Anth and/or Tra. They were matched for those who had received statins and those who had not (666 Anth pairs and 390 Tra pairs), and HF was the outcome measure over the following five years.

The statins groups were less likely to present at hospital with HF than the non-statin groups (figure 8.1).

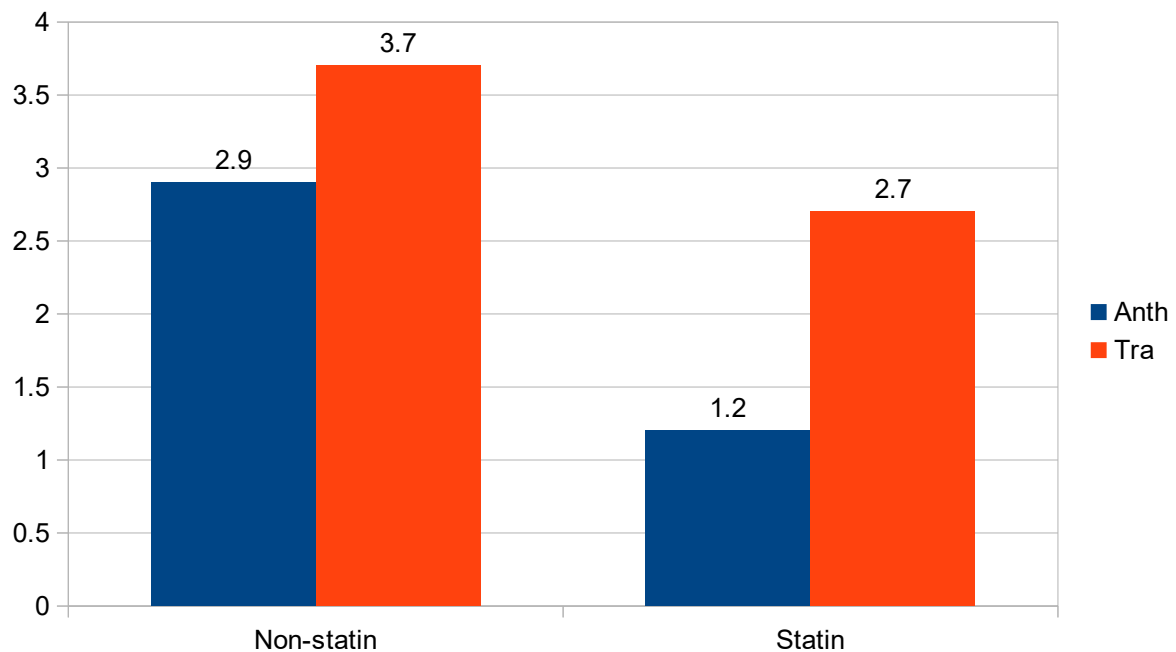


Figure 8.1 - The five-year cumulative incidence of HF hospital presentation (%).

### 8.3. THE 14-DAY LIMIT

The Human Fertilisation and Embryology Act 1990 in the UK introduced the "14-day rule", which "limits research on intact human embryos 'prior to 14 days gestation or the beginning of primitive streak formation'" (McCully 2021 p1). The logic of the rule was that the central nervous system was believed to develop after 14 days, though this has been disputed (McCully 2021).

McCully (2021) argued for an extension of embryo research until 28 days gestation because "there is much research with promising therapeutic applications that would benefit from the ability to explore embryos 15 days and beyond and no coherent or persuasive reasons to deny researchers, and through them humanity, the knowledge and the innovation that this will generate" (p1) (eg: heart development begins around 16 days gestation). Harris (1990) went as far as to suggest that "we would not only be crazy but wicked to cut ourselves off from these benefits unless there are the most compelling of moral reasons to do so" (quoted in McCully 2021).

McCully (2021) continued: "While extending the rule may not answer all questions there are about disease, infertility and miscarriage, it will certainly add to the literature and open the 'black box' of human development, generally thought of as being up to 28 days, after which it is possible to obtain aborted embryos and use these for research" (p2).

The "14-day rule" was also implanted because of the technological limitations of the time, which have now been overcome (eg: the ability to culture human embryos for longer) (McCully 2021).

### 8.4. REFERENCES

Abdel-Qadir, H et al (2021) Statin exposure and risk of heart failure after anthracycline- or trastuzumab-based chemotherapy for early breast cancer: A propensity score-matched cohort study Journal of the American Heart Association 10, e018393

Burberry, A et al (2020) C9orf72 suppresses systemic and neural inflammation induced by gut bacteria Nature 582, 89-94

Fang, P & Hsiao, E.Y (2020) Gut microbes tune inflammation and lifespan Nature 582, 34-35

Harris, J (1990) Embryos and hedgehogs: On the moral status of the embryo. In Dyson, A & Harris, J (ed) Experiments on Embryos London: Routledge

McCully, S (2021) The time has come to extend the 14-day limit  
Journal of Medical Ethics  
(<https://jme.bmj.com/content/early/2021/01/18/medethics-2020-106406.abstract>)

Wood, F.A et al (2020) N-of-1 trial of a statin, placebo, or no  
treatment to assess side effects New England Journal of Medicine  
383, 2182-2184

## **9. PRE-TERM BIRTH AND LATER HEALTH**

Pre-term birth is defined as less than 37 weeks gestational age (compared to 39-41 weeks for full term). Around 8% of babies born in England and Wales in 2016 were pre-term (Coathup et al 2020).

Survival has improved over the last thirty years with advanced medical care, and so there is a growing cohort of pre-term children. In England, the "Tracking the Impact of Gestational Age on Health, Educational and Economic outcomes: A Longitudinal Records Linkage Study" (TIGAR) investigated this group in terms of hospital admissions by ten years old, in the context of all live singleton births in 2005-6 in NHS hospitals. In-patient hospital admissions were grouped into at less than 1 year old, 1-2, 3-4, 5-6, and 7-10 years old.

There was a cohort of 1.02 million children, who were categorised for birth as less than 28, 28-31, 32-33, 34-36, 37-38, 39-41, and 42 weeks gestational age. "Gestational age was recorded in the birth notification record by the midwife or doctor attending the birth and estimated using the date of the mother's last menstrual period, ultrasound dating scan, and the baby's date of birth" (Coathup et al 2020 p2).

The unadjusted data showed a five times higher hospital admission rate for children born at less than 28 weeks as compared to full term. After adjustment for variables like maternal age at delivery, deprivation, and ethnicity, the difference was still evident (but 3-4 times greater). Interestingly, children born at 37-38 weeks had a smaller but notable higher rate of admission than full-term children (about 1.5 times greater) (figure 9.1).

However, "the association between gestational age and severe morbidity ameliorated over time, with the sharpest decline in rates seen after age 2, particularly in those born extremely pre-term [less than 28 weeks]" (Coathup et al 2020 p6).

To sum up, the "association between gestational age and hospital admission rates decreased with age, but an excess risk remained throughout childhood, even among children born at 38 and 39 weeks of gestation" (Coathup et al 2020 p1).

For all children in the study, admission to hospital during childhood was associated with "having a younger, unmarried, UK born mother, living in a more deprived area, being male, White British, pre-term, born by

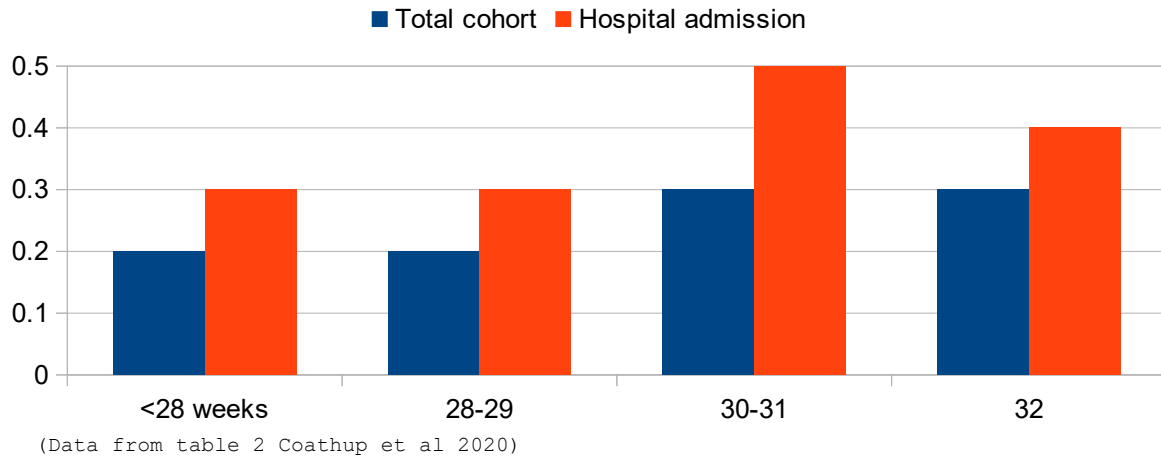


Figure 9.1 - Selected gestational ages in cohort and total hospital admission in childhood (%).

caesarean section, small for gestational age, high risk, and having a long birth admission length of stay" (Coathup et al 2020 p4).

Table 9.1 summarises the main strengths and weaknesses of this study.

STRENGTHS	WEAKNESSES
1. Large size. 2. Ten years follow-up. 3. Use of routinely collected birth registration records and hospital data, rather than depending on the recall of parent(s). 4. Seven narrow birth age categories, while other studies have used broad categories only.	1. The use of secondary data relies on the accuracy of completion by hospital staff, for instance. 2. Some confounders could not be controlled in the analysis (eg: maternal smoking, breastfeeding). 3. Children who were ill, but treated outside the NHS or not by hospital admission, were missed. 4. Outcome measure of any in-patient admission, while other studies focused on specific causes of admission.

Table 9.1 - Main strengths and weaknesses of the TIGAR study.

**REFERENCE**

Coathup, V et al (2020) Gestational age and hospital admissions during childhood: Population based, record linkage study in England (TIGAR study) *BMJ* 371, m4075

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## **10. THE GRANDFATHER CLAUSE**

"A grandfather clause or grandfather effect is a provision whereby an old rule continues to apply to some existing situation while a new rule applies to all future cases. Those exempt from the new rule are said to have grandfather rights or acquired rights" (Wester et al 2020 p151). An example would be the refusal for funding of a treatment by health regulators because the treatment is not cost-effective, but the "grandfather clause provides an exemption from the general recommendation for patients who have already started with the treatment in question..." (Wester et al 2020 p152). This is the case in the UK with the National Institute for Health and Care Excellence (NICE) and the National Health Service (NHS) funding of treatments.

"Grandfathering" was originally developed to ease the passing of a policy. "Expected opposition to a policy from groups who would bear the costs of that policy is bypassed by exempting those groups, either temporarily or permanently, from those costs – costs that will thus only or primarily affect future groups" (Wester et al 2020 p152). For example, in California, attendance at school required vaccination, but non-medical exemptions were allowed. In 2015 (Bill SB 277) removed these non-medical exemptions, while a grandfather clause allowed unvaccinated students at school to continue attending until the next vaccination checkpoint (Wester et al 2020).

Returning to NICE and grandfather clauses, it is argued that stopping treatment for individuals already on it would be unfair. Wester et al (2020) discussed a number of points about this:

i) It is, in fact, unfair because clinically similar patients with the same needs are treated differently.

ii) The difference between the patients is "first-come, first-served". So, "patient A could start treatment P on Monday, and patient B, identical in all clinical respects, may not be able to start treatment on Wednesday because on Tuesday NICE recommended against funding treatment P" (Wester et al 2020 p154). Individuals who are aware of the NICE consultation process could "game the system", and start the treatment to cover themselves against a withdrawal of NHS funding.

iii) The existence of a grandfather clause

challenges NICE's principles of "fair distribution of health resources within society, meeting health needs, promoting equality, and avoiding discrimination" (NICE 2008 quoted in Wester et al 2020).

iv) The decision to deny funding for a treatment because it is not cost-effective is undermined if patients can continue with that treatment. The money spent on the treatment is an opportunity cost met by future patients (ie: money not available for funding their treatment).

v) The equal equivalence or non-equivalence of withholding treatment (ie: not given in the first place) and withdrawing it (ie: ending a treatment being used). There is debate about this. In other words, is withdrawing a treatment ethically worse than withholding it or not?

Wester et al (2020) stated: "We will not attempt to settle this debate here, but remain agnostic with respect to whether withholding and withdrawing treatment are ethically equivalent" (p157). But they argued for a compromise of a case-by-case basis to include a grandfather clause rather than as the default (which is the case with NICE).

Removal of treatment when patients still want it could lead to a public outcry, but "[D]enying treatment to patients who could benefit from that treatment is an inevitable part of priority setting and fair resource allocation in a context of scarcity..." (Wester et al 2020 p158).

## **REFERENCE**

Wester, G et al (2020) The ethics of grandfather clauses in healthcare resource allocation Bioethics 35, 2, 151-160