Reducing chronic stress to promote health in adults: The role of social prescriptions and social movements

Short title: Social interventions to reduce chronic stress

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We need a radical new model of healthcare because our current model is not working.

It's true that we have had a century of spectacular success. The medical model has cured cancers thought to be incurable, discovered and contained HIV, and prevented deaths from heart disease and stroke helping to raise life expectancy. Public health has been successful in preventing, curing and eliminating infectious diseases resulting in a considerable reduction in infant mortality. So, what exactly is not working?

Chronic stress and chronic health conditions

There has been a rise in long term conditions which is not just caused by people living longer. For example, among US children and adolescents, during 2002-12 the annual incidence of type 1 and type 2 diabetes increased by 1.4% and 7.1%, respectively.[1] Many long-term conditions such as diabetes, depression, anxiety, cardiovascular disease and dementia tend to cluster in areas of deprivation, which creates a gap between the life expectancy of the rich and the poor. These conditions also tend to cluster in the same person, with 23% of adults having two or more chronic conditions (ranging from 7% of those under 45 years of age to 51% of those 65 years or older) with a significant deterioration of quality of life with each co-morbidity.[2]

To understand the cause of this developing problem and why current policies will continue to fail to address it, we need to understand what is happening at the community, individual and cellular levels.

Our body is designed to respond to short-term stress; if these responses are used for long term chronic (toxic) stress, it can be highly damaging to the body and can result in chronic inflammation in the following ways (Figure 1):

1) Stress leads to the release of corticosteroids, such as cortisol, through the Hypothalamic Pituitary Adrenal (HPA) axis, which increases appetite leading to excess consumption of palatable food; these extra calories are stored as visceral fat, which can cause inflammation.[5]
2) Our body constantly releases catecholamines and cortisol through repeated activation of the HPA which switches from being anti-inflammatory to inflammatory.[7]
3) Chronic stress leads to coping mechanisms such as smoking and the use of drugs and alcohol, all of which lead to chronic inflammation.[6]
4) We become less active to try and conserve energy. We lose our motivation and push activity further down our list of priorities. Sedentary behaviour is strongly inflammatory. [7]

Cardiovascular disease, depression, anxiety, dementia, diabetes and frailty all have a shared pathological risk factor of chronic inflammation, which causes damage to the body over many years.[3] Chronic inflammation is directly related to deprivation and children with adverse childhood experiences will have raised inflammatory markers (such as IL-6, CRP and anti-TNF) compared to their peers. This chronic inflammation in childhood lays the foundations of long-term conditions and premature aging.[4] Chronic inflammation is a disease in itself and because it has no medical cure, it has to be treated by reducing chronic stress through lifestyle changes.

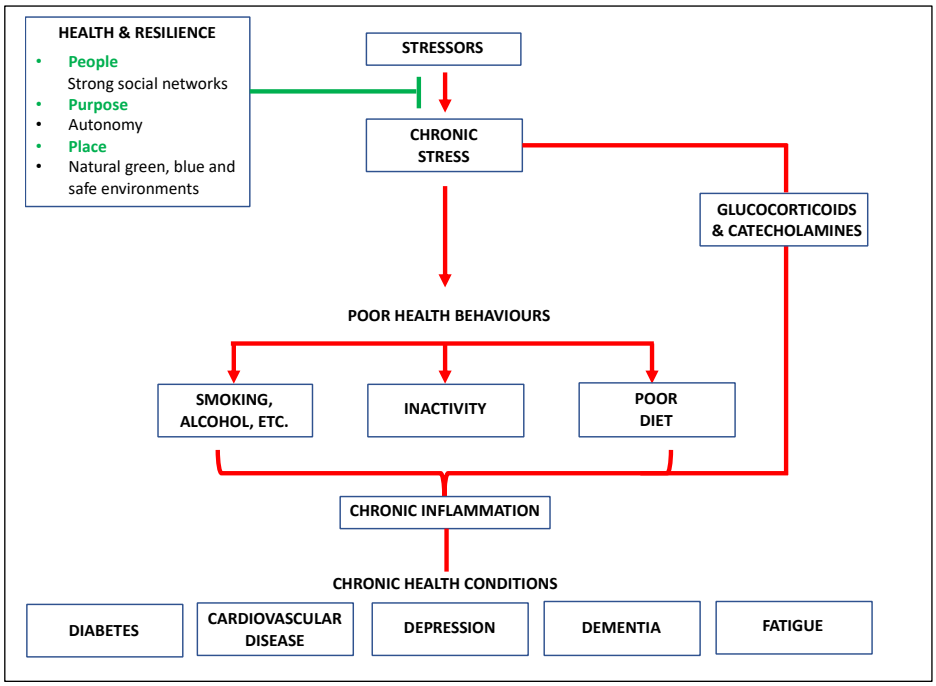

Figure 1: Highlights two pathways: Pathway 1: health/resilience related factors (people, purpose, place) which can inhibit and relieve stress; Pathway 2: stressors that can lead to chronic stress and poor health behaviours, both of which can lead to chronic inflammation and chronic health conditions (Adapted from Chapter 1.6, Oxford Textbook of Nature and Public Health 2018).[8]

Evolution of chronic stress

How do we overcome and reduce chronic (toxic) stress?

We evolved to be hunter gatherers and we perfected our survival techniques over 200,000 years through three main factors that are the fundamental basis of health.

1) People: We had social support from family and friends who made us feel valued.
2) Purpose: We had a sense of purpose where we had defined roles, which created a sense of belonging and control over our life.
3) Place: We were outdoors and connected to nature, which we observed, understood and respected.

These three “Ps” create resilience, which can reduce chronic stress, leading to reduced chronic inflammation and therefore greater health and wellbeing.

Today’s society is taking us further away from the factory settings for which we were designed.

1) People: We have a rising problem of loneliness and social isolation.
2) Purpose: A sense of powerlessness and lack of autonomy.
3) Place: A disconnection from nature and the outside world.

The further we stray away from the context in which we evolved, the less resilience we will have, leading to worsening chronic stress, greater chronic inflammation and subsequent poorer health and wellbeing (Figure 1).

Overcoming chronic stress

Overcoming chronic stress requires proactive approaches that can counteract the negative effects of stressors that could aggregate and evolve to become chronic stress over time.

Health and care systems have a major role to play in helping people combat chronic stress but this requires a departure from the predominantly biomedical approach that most systems have become accustomed to over the past 100 years. It requires taking an approach that embraces precision medicine as it was originally envisaged – i.e. to address environmental and lifestyle factors (people, purpose, place) in addition to genetics.[9]

To date, health services have attempted to promote health and resilience, with varying degrees of success, in three distinct ways: exercise referrals, social prescribing and social movement.

Exercise Referrals

Exercise referrals and physical activity prescriptions were the original way health and care systems attempted to use the biomedical model to prescribe physical activity in a gym or through sport. This was a logical continuation of the medical model in which physical activity deficit should require a prescription of physical activity. This method has been used since the mid-1980s but it has not scaled dramatically because the drop out was nearly 80% and after 6 months there was no difference in levels of physical activity as compared to baseline.[10] The main problem was that physical activity was the end point and those who were inactive had no reward or positive experience in going to a gym to become active. This model is still in use in many countries but has stopped being recommended by the UK's National Institute for Clinical Excellence (NICE).[10]

Social Prescribing

Social prescribing is an important part of precision medicine:[9]

"where people have autonomy and control over the way their care is planned and delivered, based on what matters to them and their individual strengths, needs and preferences. This happens within a system that supports people to stay well for longer and makes the most of the expertise of families and communities in delivering better health and wellbeing outcomes and experiences"[11]

Social prescribing uses a link worker to connect people with existing community groups with structured activities such as Health Walks, Park Runs, Zumba classes, sport etc. in addition to providing support for other aspects of their lives like navigating benefits schemes and getting job training.[12] These structured interventions help to promote health and resilience (Figure 1) by directly addressing people, purpose and place and giving people new opportunities to become active, socialise, get their life back in order and feel part of the community rather than depend on new analgesia or anti-depressants.

Social prescribing is a major step forward in disrupting the medical model but there are challenges to its widespread use including funding failing to reach delivering organisations (usually voluntary, charity or social enterprise organisations) and a bias towards patients wanting to be referred in the first place into a system with a hierarchy of professionals, leaders and structures. This mean that social prescribing has limited scope to reach the many thousands who have the greatest need.

Social Movements

Social movements are not new and there is no theory that explains how they succeed. Instead of a referral and a link worker referring a patient to an organised activity, the social movement simply connects an individual to a self-created unstructured activity. In this way, every person becomes a link worker. The mum walking her child to school, the teacher taking his class outside, the receptionist getting patients walking, the manager changing the culture of the workplace. The motivation is turned on its head. Exercise and health are now no longer the drivers but merely outcomes that are a by-product of a better life. The drivers of change are

the positive experiences based on the values of the individual and community that increase social connections, create a sense of purpose and connect people to place (people, place and purpose). Social movements use existing social connections (families, workplace, neighbourhoods, schools, etc.), as well as new connections through social media, that lead to new habits and new social norms. Instead of structured activities in the community (that require funding and resource), the vast majority of potential new activities are informal, family based, local and free (Figure 2). The benefits of health and activity are hidden and, again, are simply outcomes of living a better life.

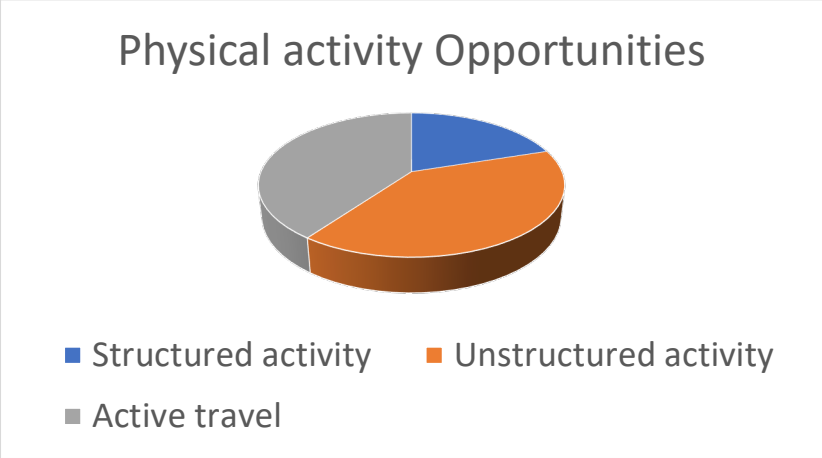

Figure 2. The proportion of physical activity opportunities showing how active travel and unstructured activities have the greatest potential to promote physical activity (adapted from the Sport England Active Lives and Household survey).[13]

Health and care systems are beginning to see the value that could be delivered through social movements; indeed, the English NHS recently created the Health as a Social Movement programme to explore how social movements could be supported and spread.[14]

One example of an evidence-based intervention that uses the social movement model is Beat the Street (www.beatthestreet.me), which aims to get people more active, increase social

cohesion and connect people to their local neighbourhood. It combines gamification technology and behavioural psychology to engage whole communities, particularly the least active and those in the most deprived areas. In four years, over 1 million people and 2000 schools have participated. There is an even split between children and adults taking part and a higher representation of women. Engagement levels can reach up to 38% of the entire population and an average of 44% of the inactive population engaged becomes active and stays active six months later with evidence of sustained change two years post-intervention.[10, 11, 15] In addition to this, Beat the Street can also increase wellbeing[10], active travel[11], improve air quality, strengthen families and community groups and help people to connect to the very local area. The programme's 6-week game provides opportunities for individuals to change their lifestyle by shifting extrinsic (the game itself) to intrinsic behaviour (the positive experience) to create sustained change. In any social movement where health is an outcome, the three domains of people, purpose and place are used as the end points and the physical activity is simply the means to get there:

1) Connecting people to family, friends and community.
2) Connecting people to their place, including nature and neighbourhood.
3) Giving people a purpose. [15]

To infinity and beyond!

We have disconnected from the hunter gatherer environment and way of life for which we were designed and replaced it with lifestyles and environments that promote chronic (toxic) stress. The departure from our hunter gatherer way of life has made us more obese, less active and more predisposed to substance abuse, which has altered our immune system

leading to chronic inflammation – an important driver of long-term conditions and premature aging.

Health and care systems have an important role to play in supporting health and resilience but to do this effectively requires an evolution from current care delivery models, which are too reliant on the biomedical model, to ones which embrace different ways of supporting and promoting health and resilience through people, purpose and place.

This shift will not happen immediately and nor should it. There are no cookie cutter solutions that will sustainably solve these problems across different contexts. It will take time and concerted effort to design/re-design, develop/re-develop and deliver approaches that can sustainably promote health and resilience. Exercise referrals, social prescriptions and social movements give us powerful tools that can help us on this journey but to scale these approaches will require that we as a community (local, national, international and virtual and across sectors) come together to learn from and share with each other so we can benefit from our collective experiences and ensure that health and resilience are an inevitable by-product of living life.

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