Introduction to Social Determinants of Health

Implications for Public Health Practice
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References

  - Chapter 1: An historical framework for social epidemiology
We all know that epidemiology is the study of how diseases and their risk factors and causes are distributed in the population. There is a relatively new branch of epidemiology that is focused on understanding how social factors contribute to disease development – and ultimately to prevention and control of diseases. Some of these considerations are bread and butter for public health practitioners – others, as you will see as we move through some of the slides to come, have not traditionally been considered to be within the responsibility of public health. But that perception is changing.
The social determinants that are most often considered are listed here, including income, education, culture, race, racism and discrimination, neighborhood, and occupation. There may be others that you can identify, as you think through these issues.
Why is it important to consider social determinants? We know that individuals do not live in isolation – we live in families in neighborhoods and communities; we interact with others in workplaces and social environments and places of worship; we interact with institutions and agencies and organizations. In order to fully understand why some people get sick while others stay healthy, we need to understand the impact of those environments and interactions as well as what is going on inside the individual. It is widely thought that environments influence disease processes at least in part because they place constraints on individual choices and other social factors can either create vulnerability or susceptibility or both.
Some authors have proposed that social factors are likely fundamental causes of disease. They embody access to important resources. They are not disease-specific, but rather they affect multiple disease outcomes in various ways. That mechanism of action may and likely does differ by disease. They help to explain how people come to experience exposures that are important to disease occurrence. If we do not understand the process leading to exposure, our efforts to reduce the risk may be ineffective or at least less effective than it needs to be.
Let’s consider an example. Let’s look at coronary heart disease. There are a variety of what some people might call physiologic risk factors of coronary heart disease -- things like obesity, blood lipids, smoking behavior, inactivity. There are a whole host of others. We don’t mean this to be an exhaustive list of all the risk factors for coronary heart disease. These are just a few examples. Each of these four areas independently contributes to one’s collective risk of developing coronary heart disease. That’s the outcome that we’re looking at here.
These four risk factors are also what we would call proximal risk factors for coronary heart disease. They’re close to the disease outcome. They’re mostly physiologic. Smoking is a behavior but it produces the physiologic effects that certainly are what conveys the risk for having heart disease. They’re close in a causal chain, if you will, that leads up to having coronary heart disease. Epidemiology started focusing on these factors first, as we should have, because those were the obvious ones, those were the big ones, and those were close and conveyed the most proximal risk for having coronary heart disease.
To simplify our example a little bit more, let’s limit ourselves to one proximal risk factor, obesity. Obesity itself is caused by certain risk factors. One is a high caloric intake. The other is physical inactivity. Being obese is really a function of the calories you take in versus the calories you expend. If you take in more calories than you expend, you’re going to gain weight. There are some other factors that may offset that, metabolic rate and some other things, but basically it’s an issue of energy balance in what you consume versus what you expend overall that determines whether you gain weight or you lose weight. If you work your way upstream, then, a high calorie diet is influenced by a whole variety of things. It’s influenced by social networks. It’s influenced by who you tend to associate with, what their eating patterns are like -- particularly, as you affiliate with them more, then you are more likely to adopt that eating pattern as well.

Stress is a factor affecting high calorie intake. People tend to overeat when they’re under stress (some people under eat, but most people over eat). And it’s probably because eating is distracting and, as your gut kicks in and as your parasympathetic nervous system kicks in to help you digest those foods, has a calming effect. A lot of people refer to the comfort foods and other things that make them feel better when they’re under a lot of stress. Thinking about neighborhood, it’s clear that certain neighborhoods don’t offer opportunities to get out and walk on sidewalks or go to the local parks; in other neighborhoods a lack of safety make it more challenging to be physically active. Of course
parents in high crime areas don’t want their children out on the street. They’d rather have them stay inside and stay less physically active than expose themselves to other risks out on the street. Culture is a factor. We had a colleague in the Delta, who is a very well educated African American woman, does a tremendous amount of health and community advocacy, and runs an innovative community based organization. She confided in us, not long ago, that every Sunday she has to have her pig’s tails because that brings back memories of her family and her mother and every Sunday her mother would prepare pig’s tails. So that’s what she does every Sunday. She says, “I know it’s not good for me. I know it’s causing me to gain weight. But that’s part of my culture.”

The same is true with physical inactivity. Social networks, the people that you are around, their exercise patterns, the social comraderie that one develops, all influence your physical activity patterns. If you have friends in your social network who engage in physical activity, you’re more likely to be active. Conversely, if your network doesn’t support physical activity, you’re less likely to be physically active. Stress -- it is common that people who are under a lot of stress tend to be more physically inactive. They just don’t feel like getting out when they’re really stressed. There are those that get out and exercise more because they find it to be a way of coping with stress. Either way, stress influences your activity patterns. Neighborhood -- if the neighborhood is not safe, if it doesn’t offer you opportunities to get out and walk, jog, run, or bike, you’re going to be less physically active because of the barriers imposed on you by the neighborhood. Culture -- in some cultures, it is not appropriate for women to sweat and be physically active. So culture can certainly be a factor.

All of those, the social networks, the stress, the neighborhood, the cultural factors are what we might call distal risk factors because they’re up the chain in this sequence of factors that affect your caloric intake and your physical activity, ultimately, your level of being overweight or obese and your risk for coronary heart disease. As we mentioned before, epidemiology started with the proximal risk factors because we needed to understand those first and then they gradually worked their way up the chain to the more distal factors. That’s what we think of when we think about the social determinants of health, those distal risk factors.
This picture describes what we talk about as ‘upstream’ and ‘downstream’ approaches to prevention of disease and disability. You can work closer to the waterfall, focusing on treating the disease once it has occurred, or even on treating the risk factors that are present. Or you can work more upstream to prevent the risk factors and address social determinants.
When we think of how to impact health in the population, we often use pyramids as a representation. Traditional impact pyramids are 4 tiers – the bottom tier representing population-wide interventions that have impact on the greatest number of people and ascending levels with decreasing impact that represent primary, secondary, and tertiary prevention and care. At the very bottom level we would find public health activities that seek to prevent risk factors – often targeting policy, systems, and/or environmental change. The interventions are placed at the widest part of the pyramid, the base, because they affect the largest number of people simultaneously. Moving up, the next level is often focused on primary prevention of disease, controlling risk factors. Some of the interventions that might fit here are health education and health behavior programs. Moving up the next level, we find secondary prevention, which is typically thought of as early detection of disease before symptoms become evident. Screening programs fall at this level, as do some behavior change programs, like smoking cessation or weight loss programs. And finally, at the top of the pyramid we find tertiary care, taking care of patients who are already ill and trying to prevent the consequences of disease, the reoccurrence of events, the disability or even the death that may occur because of the disease. These efforts are typically focused at the individual level and involve health care. So we move from population level interventions to very focused individually-oriented activities.
Another way to look at this has been suggested by Tom Frieden, former CDC director. His 5-tier pyramid attempts to describe the impact of different types of interventions. Each level is addressed in the slides that follow.
The bottom tier, the foundation of the health impact pyramid, represents changes in socioeconomic factors – often referred to as social determinants. Examples include poverty and education, may also include sanitation and access to clean water. It should be noted that higher socioeconomic status does not necessarily mean no risk of disease or illness. Economic development can also increase illness and death from non-communicable diseases, such as heart disease.
The second tier of the pyramid represents interventions that change the environmental context to make healthy options the default choice, regardless of income, education, occupation, health care service availability and engagement, or other societal factors. Examples include designing communities to promote physical activity, enacting policies to encourage public transit instead of driving, eliminating trans-fat in foods, providing fluoridated water. The defining characteristic of this tier is that individuals would have to expend substantial effort not to benefit from the intervention(s).
The third level of the pyramid includes one-time or infrequent protective interventions that do not require ongoing clinical care, such as immunization, colonoscopy, and smoking cessation programs. These generally have less broad-scale impact because they necessitate reaching people as individuals rather than populations.
The fourth level represents ongoing clinical interventions, such as treatment for high blood pressure or high cholesterol. Though these interventions have the ability to reduce disability and prolong life, the population level impact is limited by lack of access, unpredictable adherence, and somewhat limited effectiveness. Rigorous accountability, incentives for meaningful outcomes, and quality improvement programs are all essential to improve health care system performance.
The pyramid’s fifth and topmost level includes health education and counseling programs, which is perceived by some as the essence of public health action. These interventions are, however, among the least effective at the population level, primarily because they are delivered individually. Educational campaigns do not always lead to increased awareness, and awareness and knowledge does not always lead to behavior change. This may be especially true in environments in which the healthy choice or behavior is not the default action.
While this pyramid structure has been somewhat controversial because of its placement of counseling and education at the very top, it does acknowledge the opportunities presented by addressing social determinants, suggesting that addressing social determinants has the greatest potential to improve health in the population. The population-level effectiveness of interventions tends to decrease at higher levels of the pyramid, but those at the top require the least political commitment. Frieden rightly, we believe, points out that achieving social and economic change may require fundamental social transformation, which will be a long-term process.
Thought questions

- What did you read or hear in this discussion that was new information for you?
- What surprised or challenged you?
- What did you agree with or disagree with and why?
- How does this information make sense in terms of your work in the field of public health?