



Income and Health

There is a strong and extensive body of literature relating income to health outcomes. The relationship is robust – persons who report higher incomes also tend to report better health and experience better health outcomes; persons who report lower incomes tend to be less healthy and experience less positive health outcomes. Why this occurs is a matter of some debate.



The development of this presentation was supported by Cooperative Agreement Number 1U48DP005005 from the Centers for Disease Control and Prevention. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Centers for Disease Control and Prevention.

References



- ▶ Berkman LF, Kawachi I, & Glymour MM (eds). *Social Epidemiology* (2nd edition). Oxford University Press, 2014.
 - ▶ Chapter 2: Socioeconomic status and health
 - ▶ Chapter 4: Income inequality
- ▶ Subramanian SV, Kawachi I. Income inequality and health: What have we learned so far? *Epidemiologic Reviews* 2004;26:78-91
- ▶ Kawachi I, Kennedy BP. Income inequality and health: Pathways and mechanisms. *Health Services Research* 1999;34(1):215-227.
- ▶ Marmot M. The influence of income on health: views of an epidemiologist. *Health Affairs* 2002;21(2):31-46.

Mechanisms



- ▶ Better access to health care
- ▶ More positive material conditions
- ▶ Unobserved or unmeasured characteristics

The default (or most common) assumption is that income matters in health because those with greater income have better access to health care. It is also possible that higher incomes are associated with better health because of the link with material conditions, such as clean water, good sanitation, better housing, and better transportation.

It is also possible that the observed effect – the relationship between income and health – is a function of other characteristics that are not observed or measured – for example, parental SES or lifetime preferences.

It may also be important to think about these mechanisms a little more – what IS it about income that is driving the more positive health?

Income measurement



- ▶ Inclusion/exclusion
 - ▶ Source of income
 - ▶ Household versus individual

There are four basic considerations with regard to income, as it is measured in health research: What sources of income to include; whether to consider the individual or the household income (both of these are addressed on this slide); and considering income as an absolute dollar figure or adjusting it for household size and proximity to the poverty line (these are addressed on the next slide).

The first issue is sources of income, or what is included or excluded in the definition of income. People have various definitions, including and excluding different types of income – e.g. earned wages, tips, entitlement program benefits (e.g., food stamps, SSI benefits). This can influence the amount of income people report for various studies – which can influence the association observed between income and health.

The second issue is whether you look at the individual's income or the household's income. I live in a household with my spouse. If you ask me what my income is, I'd probably respond in terms of my individual income, but my household income includes his income, and, trust me, he makes a lot more money than I do. If we have needs, we can draw on the combined total for our household rather than just my income. The point is that you should be explicit with people in your survey or interview about what it is you want them to include. This becomes particularly important with lower income families, who may often live in extended family

situations. They may have grandmother, aunt, uncle, friends, other relatives and all sorts of people living in that household and contributing to the resources for the greater good. You need to be clear about what you want your survey respondent to include (or exclude) when they give you an answer about their income.

The good news is that you do not have to make any of these questions up anew. There are any number of national surveys that include income questions you can use. I suggest you check out the National Center for Health Statistics at CDC. They have all sorts of questionnaires for national surveys online – you can review these and find a question or series of questions that will probably meet your needs.

Income measurement issues, cont'd

- ▶ Adjustments
 - ▶ Household size
 - ▶ Poverty line calculations

One final point about income measurement. You need to think about whether or not you want to adjust it. There are basically two ways (though there may be more) to consider adjustment: By household size and by poverty line. With regard to household size, you should ask yourself whether it is the absolute dollar amount (of income) that you are concerned about or does it need to be adjusted for household size. The rationale here is that \$30,000 does not go as far when you have a family of 6 people as it might if you only had a family of 2 people. Thus, you might want to do a per capita adjustment to get a better sense of the resources that the family really has to bring to bear on an issue. (Divide the total amount of income by the number of people in the household to get a dollars-per-person number.)

The other common way of adjusting income lies in reporting income relative to the poverty line. The poverty line is a federally calculated number. It takes into consideration, first, the cost of living within the state that the person resides in, and, second, the household size. What we often see reported in the literature or in the newspaper is a federal poverty income for a family of four, but that actually varies from state to state. It is not uncommon for eligibility for participation in an entitlement program to be based on percentage of poverty – for example, at or below 138% of poverty (for Medicaid expansion programs). So, you can be at 100% of poverty, which means your income is right at the poverty line for households of your size, or you could be at 138% or 200% or some other percent. You could also live below the poverty line, of course. The point is that, rather than

income being expressed as an absolute number, say \$25,000, it is expressed as being relative to that amorphous poverty line.

You should be a critical reviewer of the literature and the press. Check carefully to see how the authors have calculated income and how they are using it in their analyses as you read journal articles.



What is it about income?

The relationship between income and health has been so well established in the literature that it is not questioned any longer – people who have higher incomes tend to have better health outcomes and vice versa. We know MUCH less about what it is about income that is driving that association.

What is it about income?



- ▶ Access to care
- ▶ Psychosocial issues
 - ▶ Stress
 - ▶ Depression
- ▶ Lifestyle inhibition
 - ▶ Physical inactivity
 - ▶ Poor diet

The first thing most people think of when they think of income and health is **access to care**. If you have more money, you can afford to pay for health care. It is certainly true that, if you have more income, you are more likely to be able to afford health care services, both preventive and treatment. However, it is probably not the only answer. There are many studies showing that, even if you control for frequency of access (the number of times the person goes to the doctor), income still seems to be associated with health status.

There are a number of other potential explanations for the association. One common suggestion is that the association between income and health is being driven by psychosocial issues – for example, the stress of not having sufficient income, of always having to worry about how one is going to feed and clothe the family, where the family is going to sleep that is safe and affordable, how to get the children to school, and many other similar things. It is suggested, then, that the stress, depression and other mental health issues that accompany chronic income struggles may be the driving factor.

It is also suggested that the impact of income may be seen in lifestyle inhibition. Physical inactivity is more common among people with less money. They have less disposable income to spend on gym memberships; they tend to live in areas that don't have parks, sidewalks, etc. They have less leisure time – when you're

working two jobs to make ends meet, it is harder to find time to exercise. In addition, the less money one has, the fewer resources there are for purchasing food and having a healthy diet. It is unfortunately true in this country that calories are cheap; it is cheaper to feed a family of four from the dollar menu at the local fast food restaurant than it is to go to the grocery store and purchase fresh fruits, vegetables, and meats and prepare a meal for that same family. It is not unreasonable to believe, then, that the impact of income is occurring through lifestyle inhibition.

What is it about income?



- ▶ Income inequality
 - ▶ Relative income effect
 - ▶ Gap between your income and the income of those to whom you compare yourself
 - ▶ Size of the gap → stress and frustration
 - ▶ Feelings of deprivation
 - ▶ Feelings of injustice
- ▶ Impact through...
 - ▶ Material pathways?
 - ▶ Psychosocial pathways?

Let's keep going on that train of thought for a bit longer. People who live in low income areas with lower incomes tend also to live in neighborhoods that do not present the same physical activity or food opportunities that more affluent areas present. That puts their health at risk. Does that mean we should transfer income from the wealthier to the lower income groups and/or move everyone to the richer neighborhoods? That is certainly one solution, but is it a practical one, or would there be additional problems created by that solution?

There is much discussion in the literature at various times about whether the critical factor is how much money people have OR how much they have relative to others in their communities or society. A few years ago, a low-income parent that I was interviewing expressed the opinion that it is a lot harder to be poor in a rich city than it is to be poor in a poor city. We were in Newport Beach, Rhode Island – the location of many mansions and the vacation grounds for many of our wealthier citizens. She and her family, among others, were living in very dire circumstances but everything around them was expensive. Food was expensive. Health care was expensive, because it was oriented to a large group of people who could easily afford it. It made me think about income in a different way.

Experts talk about this in much more complicated ways. Generally speaking, however, income inequality refers to the extent of the gap between the “have’s” and

the “have not’s

-- those at the top of the income ladder (the 1%) and the rest of us (the 99%). The size of the gap between my income and that of others (my comparison group) is thought to be directly related to the degree of stress and frustration I experience – either through feelings of deprivation or injustice. It is unclear – and somewhat enthusiastically debated – whether the impact is realized through material pathways (deprivation, inability to purchase good and services or take advantage of opportunities) or psychosocial pathways (stress, frustration).

Lifestyle incongruity



- ▶ Lifestyle
 - ▶ Ownership of material goods
 - ▶ Adoption of behaviors (particularly leisure behaviors) consistent with higher status
- ▶ Sociological concepts of social group membership and status attainment
- ▶ Incongruity – individual presents a culturally contradictory self
 - ▶ “Living beyond your means”

Another way of thinking about the pathway through which income affects health is the concept of lifestyle incongruity. This was a concept that was fostered in the late 1980s and early 1990s by researchers working primarily in the Caribbean nations. The concept was tested in some studies completed in the southern part of the United States, and was then picked up and developed more fully by William Dressler. Dr. Dressler was faculty at the University of Alabama. He defined lifestyle as the ownership of material goods and the adoption of behaviors, particularly leisure behaviors that are consistent with some level of status. The theory, then, builds on the sociological concepts of social group membership and status attainment.



- ▶ “Contradictory interactions” – stressful
 - ▶ Individual placed in situations in which they were trying to convince others of something – more pronounced cardiovascular reactivity, elevated blood pressure, elevated heart rate.
- ▶ Chronic incongruence →
Chronic stress →
Chronic disease state

The theory is that these contradictory interactions, this presentation of oneself as being affluent but with the occupational status that says one is not affluent, puts the individual in a position of constantly trying to convince others of something. That is associated with more pronounced cardiovascular reactivity, elevated blood pressures, elevated heart rate, and other related outcomes. The theory is that this chronic incongruence leads to chronic stress; it is then the chronic stress that leads to a chronic disease state. Chronic stress in this model is a mediator of the relationship between incongruence and disease state.



- ▶ WW Dressler
 - ▶ Lifestyle incongruity associated with –
 - ▶ Higher blood pressure
 - ▶ Higher depressive symptoms
 - ▶ Higher serum cholesterol
 - ▶ Higher blood glucose
 - ▶ Independent of conventional covariates
 - ▶ Demographics – age, gender
 - ▶ Dietary – intake of sodium, potassium, saturated fats
 - ▶ Psychological – stressful life events, chronic stressors, Type A behavior

Dressler and his colleagues over a period of years did a number of studies. These were well-designed, well-controlled studies that took into consideration most of the other possible explanations for the outcomes. They found that lifestyle incongruity was associated with higher blood pressure, greater depression, at least depressive symptoms, higher serum cholesterol, and higher plasma glucose. Those findings were independent of the things you might expect to drive the association – that is, independent of demographics like age and gender; dietary factors like salt intake, potassium and saturated fats; and psychological factors like the number of stressful events, the occurrence of stressors, and type A behavior.

Even after controlling for all those other expected factors, he still found that lifestyle incongruity – measured by the disconnect between one's material goods and lifestyle behaviors and one's occupation status – was associated with less positive health outcomes, most of which were measured biologically. It is an interesting concept, one that makes some sense if you agree that the constant stress of maintaining that picture leads to poor health outcomes.

So what is it about income that is associated with less positive health outcomes? Is it the disadvantage that comes from living in neighborhoods that do not have all the resources? Is it lifestyle incongruity? Is it the stress of or the impact of income inequality at a societal level? Or is it something else? Time and more research will

tell us.

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?