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A glossary of culture in epidemiology

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ABSTRACT

Culture frequently is used to explain population differences in health. This glossary defines key concepts and terms relevant to the concept of culture and describes three challenges—definitional, theoretical, and methodological—in identifying specific pathways by which culture affects health.

Culture is frequently invoked to account for population differences in health and to explain the diverse ways that people interpret and treat similar medical conditions. Underlying many uses of the term is the view of culture as a shared system of learned norms, beliefs, values and behaviours that differ across populations defined by region, nationality, ethnicity or religion.[1–3]

Culture has been proposed to affect health in three key ways. First, people use culturally specific explanatory models to think about, talk about, and direct care for health problems. This can lead to different patterns of health-seeking and prevention, as well as mismatched provision of care.[4–6] Second, cultural habits and practices can protect against, modify or create novel vectors for transmissible disease through, for example, eating culturally preferred raw or undercooked food,[7 8] hygienic practices such as hand-washing,[9] modes of sexual activity,[10] and patterns of social interaction such as mass pilgrimages.[11] Third, culture indirectly influences health when learned beliefs, values, and norms affect such daily activities as food consumption,[12] physical activity, and drug use[13] in a way that increases (or decreases) the risk of non-communicable diseases.

Cultural accounts of health disparities differ from racial accounts by explicitly seeking to explain population differences in terms of accumulated learning and shared habits, rather than *innate* biological differences. Cultural accounts are also distinct from purely ecological or structural accounts, which explain population differences in terms of external conditions, such as differences in climate, toxin exposure, healthcare access, material resources, food availability, and exposure to racism. That said, it is often difficult to disentangle cultural and ecological explanations, as ecological conditions such as neighbourhood activities, city layout, or social hierarchy are themselves shaped by local norms, values and behaviours. Indeed, at very long time scales the accumulated product of cultural practices can dramatically change disease ecologies, such as the influence of agricultural practices on malarial vectors.[14] However, here the focus is on shorter-term effects of culture, including the effects of cultural models and habits on health-seeking, disease transmission and prevention.

Despite efforts to link culture with health, several challenges frequently preclude firm conclusions about when and how cultural factors play a role in health disparities. The aims of this glossary are to address three primary classes of challenges—definitional, theoretical and methodological. Specifically, the glossary (1) defines basic culture-related concepts widely used in health research, (2) describes proposed mechanisms of cultural transmission and change and (3) presents tools for measuring and analysing culture in studies of population health. At a deeper level, the hope is to encourage research on culture that goes beyond a black-box understanding of culture's influence and that focuses on the mechanisms by which learned norms, values and behaviours might account for population differences in health and well-being.

BASIC CONCEPTS

Anthropologists have catalogued hundreds of definitions for culture, but three usages are particularly common in the social sciences.[15] A pragmatic view sees culture as what one must know and do to function in a given society.[16] A learning perspective defines culture as norms, values, beliefs, and behaviours that are socially transmitted.[17] Finally, culture can be defined in statistical terms as norms, values, beliefs and behaviours that are common in a population.[18]

Inherent to these and many other definitions of culture are elements such as values, beliefs, knowledge, norms, and practices and the notion that these are shared among a specific set of people. A *value* or *preference* is a standard for what is desirable that makes people choose some courses of action over others.[19 20] A *belief* is a psychological state in which an individual holds a statement to be true.[21] A *norm* is a behaviour that is sustained by the sanctions of others and by internalised emotions.[22] Norms, values, and beliefs that pertain to a particular domain of activity or knowledge often form a loosely organised whole—a *cultural model*.[23] An *explanatory model* is a particular kind of cultural model used to explain how an illness (or other phenomenon) arises, what consequences it has, and what one does to deal with it.[5] In addition to cognitive models, people also can learn particular behaviours, develop habits, and come to value particular ways of doing things—what is defined in sociology as *lifestyle*.[24]

Racial categories are often employed, implicitly or explicitly, in the public health literature to group people by a presumed set of shared values, beliefs and norms. Like race, *ethnicity* is often used synonymously with culture, but may also be defined in terms of shared origins, common language, religion or perception of self.[25] Culture, like ethnicity and race, is used predominantly

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when discussing minority populations. However, all people participate in cultural systems based on beliefs, values, norms and behaviours.

CONTEMPORARY THEORIES OF CULTURAL TRANSMISSION AND CHANGE

A central element in most definitions of culture is that it is learned and that population change arises through the transmission of novel ways of thinking and acting. Here, the focus is on theories of cultural transmission and change, as well as particular kinds of culture change frequently considered in health research, including acculturation, modernisation and education.

Learning and cultural transmission

Several theories explain the ways that values, beliefs, norms and behaviours propagate and persist in populations. These include: (1) psychological biases based on context and information content and (2) social structural factors promoting and inhibiting transmission.

Individuals can have heuristic biases in the ways that they learn from others. Such *context biases* include tendencies to follow the majority (conformist), the minority (anti-conformist), opinion leaders or prestigious individuals.[17] When information is costly to acquire or when individuals are unable to directly "test" information themselves, they may rely on simple heuristic learning rules, such as "engage in the same behaviour as the majority of the population." *Prestige bias* is one heuristic that describes a tendency to imitate and value the behaviours of prestigious or popular individuals.[24] Using this bias, Kelly and colleagues (1997) compared the impact of an HIV education intervention when the information was distributed passively in gay bars versus targeted at popular men in gay bars. Only the latter led to lower frequency of unprotected sex, corroborated by greater turnover in condom machines at the intervention sites.[26]

The specific content of a message (*content bias*) can also make it easier to recall and more likely to influence behaviour.[17] For example, labels on cigarette packages with eye-catching graphic images are more effective than text-only messages in engaging smokers, promoting quitting and preventing habituation to messages.[27] In Brazil, once graphic warning signs were implemented, the number of calls to "quit hotlines" increased nearly sixfold over previous levels.[28]

The structure of social interactions also may influence the rate at which cultural innovations penetrate and spread through a population.[29] In a study of contraceptive use in rural Kenya, *denser* networks in which "friends-of-friends" were more likely to interact appeared to promote the spread of innovations, such as contraception use.[30] Barriers to social interaction can also limit the penetration of innovations into population segments. For example, in an analysis of the demographic transition in Belgium, Lesthaeghe showed that the diffusion of changing fertility patterns frequently stopped at linguistic boundaries between adjacent urban neighbourhoods.[31]

Identifying the psychological and social mechanisms underlying cultural change can give a more accurate picture of how an effect is "cultural" and may also provide insight into the kinds of interventions best suited for changing relevant norms, values and practices.[32]

Modernisation, acculturation and education

Three additional terms—acculturation, modernisation, and education—are related to the concept of culture and are commonly used in epidemiological studies.

Acculturation is culture change that occurs when two populations come into contact and has been treated in two ways: (1) as a unidimensional measure of the adoption of values, beliefs, norms and behaviours of another population, or (2) as a bidimensional measure of adherence to each of two cultures.[33 34] Studies of immigrants to the US (and elsewhere) have generated many, often inconsistent, findings concerning the effects of acculturation on health outcomes, such as obesity, cardiovascular disease and diabetes.[35 36]

Modernisation refers to shifts away from an agricultural economy, an emphasis on a cash economy and a shift in the value of social and human capital (eg greater emphasis on children's education), all reflected in transformed values, beliefs and tastes.[37] Modernisation has been associated with positive and negative health effects, but distinguishing the ecological and cultural impact has been difficult.[38]

Education is training by formal instruction and supervised practice in a skill, trade or profession.[39] Formal schooling and training are powerful mechanisms of cultural transmission. Within the same "culture" there may be different belief systems that have to do with different educational experiences, such as those of traditional birth attendants and biomedically trained practitioners.[40] Education is often closely linked with access to social and material resources, making it difficult to parse various causal explanations for the often observed positive association of education with health.[41 42]

Acculturation, modernisation and education frequently are measured with proxy variables such as the time an individual has lived in a new country, the number of years exposed to schooling, whether one is fluent in the dominant language, whether one owns a television, and more rarely through scales that assess the degree to which an individual does or does not hold "traditional" values and beliefs or engage in particular behaviours.[43 44] When the psychological effects of these processes are important in theories linking culture with health, it will be particularly important to measure the relevant psychological constructs, to understand how they come to be spread through populations, and to assess how they affect behaviour.

MEASURING AND ANALYSING CULTURE

Culture has not been well integrated into many epidemiological surveys in part because of challenges in measurement and analysis. In fact, the challenge in measuring culture probably explains why proxy measures such as race and ethnicity are so frequently employed. Here, the following four key challenges are discussed: (1) developing culturally sensitive and cross-culturally comparable instruments, (2) aggregating cultural variables, (3) linking aggregate measures of "culture" with individual outcomes, and (4) analysing and testing the effects of culture on health.

Culturally sensitive and cross-culturally comparable instruments

Cultural ideas and behaviours are diverse within and between contexts. Thus, each cultural setting requires unique, in-depth investigation. Traditionally, anthropologists spent years as *participant observers* to understand the beliefs and practices of a population, but a number of general, well-tested procedures can speed the discovery process: including free listing, focus groups, semi-structured interviews and life history interviews.[45–48] After these steps, there are several methods to collect systematic data on beliefs, values, norms and behaviours, including questionnaires, methods borrowed from cognitive psychology,[46] behavioural experiments[49] and behavioural observation.[50]

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The existence of local cultural models, expressions, and modes of responding raises a challenge for comparison *between* populations. Translation errors can produce instruments with different meanings across groups. Members of some cultures may have more or less experience responding to particular elicitation formats (eg questionnaires, yes/no questions, Likert scales) and may respond with systematic biases.[51 52] Measurement scales may not have the same inter-item correlations across cultures, suggesting that they are tapping into different, incomparable, constructs.[53] Despite these challenges, various remedies, such as back-translation,[54] transcultural translation,[55] the use of population-relevant elicitation formats[51] and sophisticated statistical techniques such as Rasch modelling[56] can correct many of these confounds.

Aggregating cultural variables

Data on cultural models are often collected from individuals and can be compared directly with health-relevant practices, such as assessing whether a belief that mosquitoes transmit malaria affects the use of bed nets.[57] However, data can also be aggregated to produce population-level variables that may be theoretically important, for example reliable estimates of social norms and population diversity in beliefs.[58] In such cases, a further challenge is to aggregate such data into population-level or cultural variables. The Cultural Consensus Model (CCM) is one approach to aggregating individual beliefs or behaviours to identify those that are culturally standard or "correct".[18 59] The CCM is based on three assumptions: (1) there is a single, culturally "correct" way to respond (*a common truth*), (2) individuals respond independently of each other conditional on the truth (*local independence*), and (3) each individual has a fixed ability to know the truth (*homogeneity of items*). If such assumptions are met,[40 59] it may be possible to identify the "correct" cultural model with a very small number of respondents (eg 10–20). The model has been used to show that some cultural systems (eg hot–cold illness classifications) presumed to be homogenous are, in fact, quite variable within populations, as well as showing that some cultural systems which are presumed to vary across ethnic groups in reality do not.[59]

Once aggregate cultural variables are identified, it is necessary to link them back to individual health outcomes. A growing body of research has focused on identifying pathways from aggregate cultural variables to individual and biological outcomes.[60] For example, Chavez and colleagues [61] showed that US Latina women who held beliefs about cervical cancer similar to Anglo women were more likely to have had a pap exam in the previous 2 years. *Cultural consonance*, an individual's behavioural fit with cultural norms, has been associated in several studies with various quality-of-life measures, such as mental health and high blood pressure. An emerging view from this research is that individuals who do not achieve common cultural goals are at the greatest risk of poor health.[60] While initially promising, more research is needed to determine the relative utility and meaning of aggregate variables in predicting and changing population differences in health.

Analysing and testing the effects of culture

Several analytical approaches have been used to determine how and when culture affects health—all with particular advantages and disadvantages.

The simplest approach, which treats culture as a dummy variable, is to show that populations defined in terms of ethnicity, nationality, region, or religion differ in health or health-related behaviours. In such cases, culture may be a residual explanation for population differences unexplained by existing variables. Culture may be examined more explicitly as population-level associations between a putative cultural variable (eg "materialism") and health outcomes (eg "mental illness").[62] Such studies cannot rule out other confounding explanations (ie ecology, structural barriers). They also ignore causal pathways.

Another analytical approach uses quasi-experiments created by recent immigration of a cultural group to a different society. By comparing origin and immigrant populations and comparing immigrant populations at varying degrees of acculturation, such studies have shown that entry into a new sociocultural environment can have dramatic influences on health and health-related behaviours. Unfortunately, such studies have trouble controlling for selection bias, if immigrants are different from non-immigrants or if those with a propensity for swift acculturation are different from those who are slower to acculturate. Similar to cross-cultural studies, acculturation designs often relegate beliefs and norms to a black box, making it difficult to determine whether changes in health are a result of cultural change or rather changes in material or social resources.[63]

On the other end of the methodological spectrum, numerous in-depth case studies have revealed beliefs, values or practices that potentially influence health outcomes. For example, beliefs about illness causation and treatment can vary dramatically across societies. However, it is not always clear to what degree such beliefs and practices matter for health.[4 64] For example, in a study of health-seeking in rural Mexico, Young found that structural factors, such as money and travel time, were as important in determining real health-seeking as were stated beliefs about illness causation and treatment.[65]

The few studies that most convincingly show the relevance of learned beliefs and behaviours to real health outcomes have successfully integrated in-depth study of local culture and population-level designs that can compare alternative hypotheses (eg structural, economic) for effects on health-relevant outcomes. For example, in a study of ethnic differences in late-stage presentation of breast cancer, Lannin and colleagues showed that both structural factors (eg private health insurance, lacking transportation) and beliefs (eg "air causes cancer to spread" and "chiropractic is an effective treatment for cancer") were necessary to account for the increase in late-stage presentation among African American women compared to white women. It is noteworthy that this study involved a collaboration of anthropologists, epidemiologists and medical professionals at all stages of the study.[4]

CONCLUSION

When defining culture in terms of socially learned norms, values and behaviours, it is possible to investigate empirically its influence on health. A necessity in such studies is unpacking how culture in a particular setting might be responsible for the health outcomes of interest. This mirrors the need to identify the causal pathways underlying "neighbourhood effects" or any other aggregate-level context effects.[66] A particularly successful strategy has been an iterative approach that includes in-depth ethnography to identify potential cultural pathways and large-scale population studies that test alternative hypotheses for population differences (ie structural factors, beliefs, racism, education).[4] Focusing exclusively on "culture", and not examining alternative hypotheses, may mask the causal role of other social factors such as deprivation and institutional racism.[67 68]

Once we understand how beliefs, values, norms and behaviours affect health, it is important to understand how to

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reinforce or counteract their action. Cultural values and behaviours may be quite persistent, and there are numerous cases of cultural or behaviour interventions that either have no effect or have unintended negative consequences.[69 70] Nonetheless, there are notable successes, including the decline in smoking among US adults, increased seatbelt use, correct use of rehydration salts and increased contraceptive use.[71–73] Recent interventions indicate that capitalising on general cultural processes of transmission,[24 26 27 74] as well as understandings of local cultural systems,[75] can improve these success rates. Further theoretical and methodological research on how beliefs, values, norms and practices change and persist in populations should help improve our understanding of why some interventions succeed while others fail.

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