Using Life Course Epidemiology to Inform Social Work Research & Practice
International Federation of Social Work World Conference
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Munich -- July 31, 2006

For the past four years, a colleague and I have been using life course epidemiology to design and conduct research on co-occurring mental and physical disorders. I will briefly describe our life course standpoint; integrate this perspective with another called the "adverse childhood experiences" or ACE research framework; describe the research we have done based upon this work; and share with you what we see as the implications for social work practice.

Life Course Epidemiology – A Brief View

Life Course epidemiology is unequivocal: societies characterized by patterns of social and economic inequality produce inequality in health. Health impact on people is based upon their class position. Inequality in health begins during the prenatal period, continues through the critical period of early childhood development, and is sustained as severe material and psychosocial deprivation and disorganization throughout the life cycle. The threat to evolving human health and well-being is ***cumulative***; the evolving life trajectory consists of a ***chain of risk***. Health risk behaviors – smoking or obesity, for example – are seen as embodiments of class position (rather than consciously chosen poor decisions, a point powerfully argued by Lynch, Kaplan & Salonen (1997) in an article titled, *Why Do poor People Behave Poorly?).*

Krieger (2001a: 695) develops this framework: "the Life course perspective refers to how health status at any given age, for a given birth cohort, reflects not only contemporary conditions but embodiment of prior living circumstances, in utero onwards". Krieger (2001a: 693) describes life course epidemiology as being "distinguished by its insistence on explicitly investigating the social determinants of population distributions of health, disease, and well-being, rather than

treating such determinants as mere background to biomedical phenomena." Research from around the world supports this assertion.

The Adverse Childhood Experiences (ACE) Perspective

Another research group, the ACE research team, discovered another route from inequity to unnecessary disease and death – exposure to an array of family disorganization and violence during early childhood. We will briefly summarize this view. Like the life course perspective, the ACE analysis is based upon a "dose-response" model – the higher the exposure to ACEs, the more probable the intensity of the burden of disease and premature mortality.

There are 10 categories of ACEs: childhood abuse (emotional, physical, and sexual); neglect (emotional and physical); witnessing domestic violence against your mother; parental marital discord; and living with substance abusing, mentally ill, or criminal household members. ACEs rarely occur in isolation: the probability of having more than 1 ACE, given the presence of 1, is very high. The ACE Study (Felitti et al., 1998) "is assessing…the long-term impact of abuse and household dysfunction during childhood on the following outcomes in adults: disease risk factors and incidence, quality of life, health care utilization, and mortality."

ACE researchers link ACE exposure to the leading causes of morbidity and mortality. They also link the ACE score to health risk behaviors that include smoking, severe obesity, physical inactivity, depressed mood, suicide attempts, alcoholism, any drug abuse, teen pregnancy, a high lifetime number of sexual partners (>50), and a history of having an STD.

These relationships were graded to the breadth of childhood exposures: "the findings suggest that the impact of these adverse childhood experiences on adult health status is strong and cumulative." The documentation of cumulative impact links the ACE group to other social

epidemiologists working in the area of life-course inquiry; the ACE group does not factor in current or lifetime socioeconomic position and its impact on health.

ACE researchers' conclusions suggest that typical risk behaviors identified can be seen as coping mechanisms "in the face of the stress of abuse, DV, or other forms of family and household dysfunction." They do not specify the social determinants of household dysfunction, child abuse, domestic violence, and the other ACEs. Links developed by other researchers clearly demonstrate that these behaviors are not equally distributed by class; they increase as income decreases.

Summary – An Integration of Life Course and ACE Perspectives

Life course and ACE outcomes depict a direct stress-related pathway from exposure to prenatal and early childhood poverty and abuse to later life, ongoing biomedical conditions. These conditions have been shown also to produce significant psychosocial outcomes (Siegrist &Marmot, 2004): low self-efficacy, low self-esteem, a heightened sense of hopelessness and helplessness (Christiansen, 2004), and a very low sense of internal locus of control. These psychosocial attributes are socially determined outcomes of inequality or class structure. The burden of disease – to individuals, their families, and the state – is extraordinary.

The Co-Occurring Disorders Research

We integrated the class-health paradigm with the ACE paradigm to determine whether we could identify social determinants of health and mental health. The population studied consists of low income adults seeking mental health care from a community-based mental health agency. As part of the paperwork required of them at intake, they filled out several questionnaires including data about current and childhood SES, self and parents' educational attainment, and smoking and alcohol use patterns. They also completed a medical questionnaire

covering their past and current health condition and contacts with health care providers. The

mental health agency gathered brief data about exposure to childhood abuse and neglect.

We complied this information into a composite score – the Harsh Living Index, a

measure of exposure to poverty-based environmental and behavioral conditions. We also

compiled a score registering the extent or severity of medical conditions – the Damaging

Medical Outcomes Score. We used multi-variate analysis to statistically associate the HLI to the

DMO – as you can see from the slide. The data we will show you now comes from this study.

Basic Demographics

	Female	Male
Age	34	36
< High School Graduate	29%	20%
High School Graduate	32%	30%
Median Income	$7,980*	$6,850*
Parents' Income Equal or Lower	56%	68%

*The "Poverty Line" in the USA for 1 is $9,570. The "Livable Wage" for York County, Maine, where we conducted the study, was >$36,000. Please note the last variable – client's family of origin family income level – was equal to or lower than client's.

Health Risk Behaviors by Gender

	Female	Male
Smoker*	**64%**	**69%**
Smoking at < 15**	**58%**	**61%**
Alcohol Problem or Alcoholic	**22%**	**45%**
Parents Alcoholic	**56%**	**68%**

*All self-reported smokers smoked heavily (>20 per day)
** Heavy smoking at early age predicts long-term heavy smoking and non-responsiveness to smoking cessation. It is also identified as an outcome of exposure to "adverse childhood experiences" (Anda, et al., 1999).

Association Between Health Risk Behaviors & Damaging Medical Outcomes

Variable	P Score/Significance
Smoking	**N.S.**
Smoking < 15	**.01**
Parents Alcoholic	**.04**
Client Alcoholic	**.001**
Sexually and/or Physically Abused as Child	**.01**
Parents' Income =/Lower	**.01**

Predictors of Health Risk/Damaging Medical Outcomes

Parents Income X Parents Alcoholism	**.000**
Parents' Income =/ X Lower X Child Abuse	**.02**
Parents' Alcoholism X Child Abuse	**.000**
Child Abuse X Gender	**.000**
Child Abuse X Income < $6,600	**.01**
Child Abuse X 5 or More Family Moves By Age 16	**.04**

Model Results: Damaging Medical Outcome

Independent Variable	Univariate Results Crude OR (95% CI)	Multivariate Results Adjusted OR (95% CI)
Harsh Living Score	1.1 (1.0 – 1.2)*	1.2 (1.1 – 1.3)**
Gender	0.7 (0.5 – 0.8))**	0.5 (0.4 – 0.7)**
Age Category	1.6 (1.4 – 1.7)**	1.5 (1.4 – 1.7)**

* $p < 0.05$
** $p < 0.01$
Note: OR = odds ratio, CI = confidence interval.
(For complete multivariate model results see – multidmo_022506)
(Harsh Living Score includes: parent education, parent source of income, child living arrangements, number of moves during childhood, parent smoking, parent alcohol problem/alcoholic).

Gender, age, and harsh living are related to whether a client has a damaging medical outcome. The odds of males being in a higher category of damaging medical outcome (rather than a lower) are two times the odds of females. For age category, the adjusted odds of 1.5 tells us that for each one level increase in age category increases the odds 50% of being in a higher category of damaging medical outcome than lower. For harsh living score, the adjusted odds of 1.2 tells us that for each one level increase in harsh living score increases the odds 20% of being in a higher category of damaging medical outcome than lower.

Summary & Conclusions

You can see from this data that an integrated model for conceptualising damaging medical and mental health outcomes is substantiated. The Harsh Living Index predicts damaging medical outcomes; as respondents increase in each age category, the probability of damaging medical outcomes increases by 20-50%. This confirms social epidemiological and ACE findings: a huge

amount of mental health and medical illness is avoidable and unnecessary, caused by inequity in the distribution of wealth and related life resources. This design can be replicated in any country, region, or municipality and with every social, health, or mental health/substance abuse client population. It provides social work with the evidence base to guide social policy development and primary prevention strategy initiatives.

Further, the psychosocial health impact – low self-efficacy, low self-esteem, low internal locus of control, heightened hopeless and helplessness – points the way for social work to address Damaging mental health and health outcomes. The need for empowerment-oriented direct service interventions becomes clear: relationship-building designs, both with individual clients and with client groups, must focus on creating trust and mutual respect. Their objective must be to produce authentic partnerships with clients, oriented to clients' knowledge of their real life circumstances. Social work has the opportunity to use this research design and the findings it can produce to establish our role in every service sector.