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Review Article

Life Course Approach: A Review

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Abstract

In recent years public health research has increasingly focused upon exploring the social determinants of health. Many health education interventions have been influenced by health behavior research based upon psychological theories and models. These theories focus at an individual level and seek to explore cognitive and affective processes determining behavior and lifestyle. Current psychological theories have only a limited value in the development of public health action on altering the underlying social determinants of health. New theoretical approaches have however, emerged which explore the relationship between the social environment and health. This paper aims to review and highlight the potential value to oral health promotion by public health theoretical approaches called Life Course Approach which analyses the complex ways in which biological risk interacts with economic, social and psychological factors in the development of chronic disease throughout the whole life course.

Keywords: Life course, Social determinants, Eco epidemiology.

1. Introduction

Health promotion practice and policy is currently undergoing a process of radical change. For many years, a health education model has been the dominant approach in prevention. This approach placed the emphasis on lifestyle and behavioral change through education and awareness raising programs. The focus of many health education interventions has been on defined diseases, targeted at changing the behaviors of high risk individuals. Health professionals have dominated this approach in terms of the programmed development, implementation and evaluation. This health education model has been very popular with the dental profession as it fits the clinical approach to care and treatment of individual patients. However, the potential limitation of the dental health education approach was failure to include social, economic, environmental and political factors in the analysis of health behaviors which ultimately resulted in negative and victim blaming development of potentially harmful and largely ineffective health policies.[1]

In the USA, the Institute of Medicine has reviewed the evidence base for health promotion policy and has recommended a change in approach is required. The report stresses the importance of focusing on the social determinants of disease, injury and disability, and of adopting a complementary range of different interventions to promote health.[2] The World Health Organization global strategy for the prevention and control of non-communicable diseases also places emphasis on developing interventions which address the environmental, economic, social and behavioral determinants of chronic disease.[3] In addition, the recently published US Surgeon General's Report on Oral Health has highlighted the importance of the social and environmental determinants of oral health and the need to adopt a more holistic approach to oral health promotion activities.[4] Then evolved a theory called Life Course Approach which analyses the complex ways in which biological risk interacts with economic, social and psychological factors in the development of chronic disease throughout the whole life course.

This paper aims to review and highlight the emerging theory called Life Course Approach in public health research. It incorporates more innovative and

effective approaches in oral health promotion policy as it includes the social determinants of health.

2. History

The development of science has always been influenced by chronological eras, distinguished by their dominant paradigms, analytical methods and preventive practices. Susser and susser outlined the epidemiology in the 19th and 20th centuries; a history defined by three main chronological eras. The sanitary era, which dominated most of the 19th century, focused on 'foul emanations', with sanitation at the center of the efforts. Towards the end of 19th century, the advent of germ theory opened a new era of infectious disease terminology. The analytical approach of isolation and culture of infectious agents was combined with practice comprised of vaccines, quarantines and antibiotics.

In the years after World War II, infectious disease epidemiology gave way to chronic disease epidemiology. The concept uses a 'black box' metaphor that is many risk factors are linked to outcomes without necessity for dominant factors. For example, postwar cohort studies identified diseases like hypertension, raised cholesterol levels and various personal behaviors (e.g.: smoking, exercise levels and diet) that predispose an individual to coronary heart disease.[5]

Current developments in epidemiology suggested that the 'black box' paradigm should be replaced by the 'Chinese Boxes' paradigm. Susser and Susser use this metaphor to explain the 'eco epidemiology era'. The paradigm entails the interplay between individuals (bodies), components of bodies and their relationships with the world (biological, physical, social and historical contexts) in which the individual lives. The eco epidemiology era has been evolving along four main analytical lines.[6]

Eco epidemiology main analytical lines adapted from Susser

2.1 First Line

It considers multiple levels of causation as determinants of illness or health in populations. It concurrently investigates risk factors operating at a variety of hierarchical levels, from the macro (societal), individual (behavioral) and micro (molecular) levels.

2.2 Second Line

It investigates the interplay between genetic and environmental factors. It considers genetic and non-genetic factors together; our epidemiologic research designs must adapt to incorporate and exploit gene biology.

2.3 Third and Fourth Line

A multidisciplinary and trans disciplinary approach incorporating the various medical sub specialties. It aims to elucidate biological, behavioral and psychosocial process that operates along an individual's life course, or across generations, to influence the development of disease: Life Course Approach.

Life Course Approach is defined as "the study of long term effects of chronic diseases risk of physical and social exposures during gestation, childhood, adolescence, young adulthood and later adult life."[7]

It seeks to understand causal links between exposures and outcomes taking into consideration the importance of time (duration) and timing in the disease development.

3. Life Course Approach: Theoretical Models

Kuh and Ben Shlomo[4] developed a typology of models for life course investigations to help the understanding of how exposure and its effects can be related to later health related outcomes.

3.1 Critical Period Model

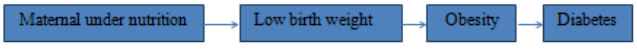
This model sees the time window of exposures as the key. It shows that the exposure in a critical period of development influences disease outcome much later in life; this is the critical period model.

The idea is that an exposure (herpes virus) during a specific period of growth or development physically alters some underlying structure or body function, resulting in permanent and irreversible damage or disease later in life (shingles).

Several markers of poor fetal life and infant body size have been associated with risk of CHD, stroke, diabetes, respiratory disease and their associated risk factors.

3.2 Critical Period with Effect Modifier

Exposures in early life interact with exposures later in life, either enhancing or decreasing the risk of chronic disease; this model is described as critical period with effect modifier.



Studies have shown that overweight adults who had the lowest birth weight have the highest risk of CHD and diabetes.

3.3 Accumulation Risk Model

The accumulation risk model suggests that insults are accumulated incrementally through the life course and initiate episodes of illness, with adverse environmental conditions and/or behaviors subsequently increasing the risk of chronic diseases. This cumulative pathway mechanism proposes that wear and tear add up over time to affect health.

3.4 Accumulation Risk Model with Risk Clustering

Children raised in adverse social circumstances are more likely to be exposed to infection, to become a smoker and have poor oral hygiene habits which in turn may increase their risk of periodontal disease.[8]

This dynamic framework proposed an interaction between intrinsic factors such as individual resources (also called as behavior variables, a psychological resource such as social competence, self-esteem, decision making, problem solving skills and coping strategies) and extrinsic factors such as maternal circumstances and socio-cultural influences, such as family. This model emphasizes on extrinsic risk process, suggesting that external events, which in turn lead to risk of adult disease.

The Life-Course concept appears to be well-suited to oral health. Current research in dental medicine tends towards exploring the link between oral health and systemic health. The characteristics of oral diseases that make them ideal conditions to study using Life Course Approach is that they are increasing public health problem worldwide. Dental caries being good exemplar, as it is cumulative in nature which would allow comparison of the degree of disease development among individuals. Secondly, Caries is a chronic disease which is more likely to be detected only during assessment. Thirdly, validly and reliably can be measured. Fourth, dental caries is prevalent, so that the required sample size for the cohort is manageable.[9] When periodontal disease is considered, the genetic susceptibility is thought to play a large role in the level of tissue destruction occasioned by the individual's chronic inflammatory response.[10]

Further studies are required for supporting the importance of timing and identifying 'windows of opportunity' where interventions may have the greatest long-term benefits in promoting oral health and reducing inequalities. Developing and implementing interventions that offer appropriate support at critical periods has enormous potential needs to be explored further.

4. Conclusion

To conclude, 'the future value of a Life Course Approach will depend for its success on elucidating new mechanisms and disease pathways as well as its ability to explain social, geographical and temporal patterns of disease distribution. The cooperation of dentists is necessary in assessment of general and dental health in a holistic context throughout the life course, to enhance the well-being of public.

A comprehensive range of complementary strategies including healthy public policies are required to effectively promote oral health and reduce inequalities. As Hochbaum and colleagues have stated 'Any profession that is not based on sound and continuously evolving theories that yield new understanding of its problems and yields new methods, is bound to stagnate and fall behind in the face of changing challenges'.[11]

References

[1]. Richard Watt. Emerging theories into the social determinants of health: implications for oral health promotion. *Community Dentistry and Oral Epidemiology* 2002; 30:241-7.

[2]. Smedley B, Syme L. Promoting Health. Intervention strategies from social and behavioural research. Washington DC. Institute of Medicine; 2000.

[3]. World Health Organisation. Global strategy for the prevention and control of noncommunicable diseases. Geneva: World Health Organisation; 2000.

[4]. Oral health in America. A report of the surgeon general. Washington DC. Department of Health and Human Services; 2000.

[5]. Mervyn Susser, Ezra Susser. Choosing a future for epidemiology: II from black box to Chinese boxes and Eco Epidemiology. *American Journal of Public Health* 1996; 86(5):674-7.

[6]. Yoav Ben Sholomo, Diana Kuh. A life course approach to chronic disease epidemiology: conceptual models, empirical challenges and interdisciplinary perspectives. *International Journal of Epidemiology* 2002; 31:285-93.

[7]. Ezra susser. Eco epidemiology: Thinking outside the black box. *Epidemiology* 2004; 15(5):519-20.

[8]. Anne N astroma, Gunnar Ekback, Sven Ordell. Socio behavioral predictors of changes in dentition status: a prospective analysis of the 1942 Swedish Birth cohort. *Community Dentistry and Oral Epidemiology* 2011;39:300-10

[9]. Alm A., Wendt L.K., Koch G. Caries in adolescence-influence from early childhood. *Community Dentistry and Oral Epidemiology* 2012; 40:125-33.

[10]. Nicolau B., W.M. Thomson, J. G. Steele *et al*. Life coarse epidemiology: concepts and theoretical models and its relevance to chronic oral conditions. *Community dentistry and oral epidemiology* 2007; 35:241-249.

[11]. Anne E Spencer, A. John Spencer. Childhood circumstances, psychosocial factors and the social impact of adult oral health. *Community dentistry and oral epidemiology* 2005; 33:370-7.