Housing and Health: From Interdisciplinary Principles to Professional Practice

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Abstract:

This paper suggests that there is a need for innovative approaches in the complex field of housing and health. It suggests that current shortcomings in academic research and professional practice are mainly the result of a narrow vision that does not address the fundamental issues at stake. In contrast to traditional disciplinary approaches which are sectoral, interdisciplinarity offers a broader approach. Interdisciplinarity highlights the difference between a biomedical model that often adopts a symptom-treatment interpretation of housing and health, and a holistic or integrated model that combines biological, cultural, economic, political, psychological and social factors in a new way. One example of an interdisciplinary approach is en ecological perspective which has been applied to interpret housing and health.

Keywords: disciplinary approach, ecological perspective, holistic, housing, health, interdisciplinary approach, professional practice

INTRODUCTION

Residential environments are known to be an important determinant of quality of life and well being following the results of numerous studies in a range of disciplines (Lawrence, 2000). Today we know that the multiple components of housing units and outdoor areas need to be considered in terms of their potential and effective contribution to physical health, and social and mental well being. In principle, there are eight main components that ought to be considered including:

1. The characteristics of the site, in ensuring safety from "natural" disasters including earthquakes, landslides, flooding and fires; and protection from any potential source of natural radon.
2. The residential building as a shelter for the inhabitants from the extremes of outdoor temperature; as a protector against dust, insects and rodents; and as a provider of security from unwanted persons; and as an insulator against noise.
3. The effective provision of a safe and continuous supply of water that meets standards for human consumption, and the maintenance of sewage and solid waste disposal.

4. Ambient atmospheric conditions in the residential neighbourhood and indoor air quality both of which are related to emissions from industrial production, transportation, fuels used for domestic cooking and heating, as well as the local climate and ventilation inside and around buildings.
5. Household occupancy conditions, which can influence the transmission of airborne infections including pneumonia and tuberculosis, and the incidence of injury from domestic accidents.
6. Accessibility to community facilities and services (for commerce, education, employment, leisure and primary health care) that are affordable and available to all individuals and groups.
7. Food safety, including to provision of uncontaminated fresh foods that can be stored with protection against spoilage.
8. The control of vectors and hosts of disease outdoors and inside residential buildings which can propagate in the building structure; the use of non toxic materials and finishes for housing and building construction; the use and storage of hazardous substances or equipment in the residential environment (World Health Organization, 1990; 1992).

Research in the fields of environmental psychology and housing studies during the 1990s confirms that the relations between residential environments and health are not limited to the above eight sets of criteria. In addition, the housing environment can be considered in terms of its capacity to nurture and sustain social and psychological processes (Halpern, 1995). For example, the capacity of the resident in her/his home environment to alleviate stress accumulated at school or in the workplace, and whether this capacity is mediated by views of nature or being in natural surroundings such as urban parks. The multiple dimensions of residential environments that circumscribe the resident's capacity to use her/his domestic setting for restorative processes is a subject that has been studied by a limited number of scholars during the last decade (Hartig and Lawrence, in press). In addititon, there is little doubt that the physical condition of housing units should be examined with respect to forms of housing tenure, household composition and income, the availability and cost of building materials, infrastructure and services, the levels of education, and the employment status of residents (McCord and Freeman, 1990; Morris, Cook and Shaper, 1994). These dimensions of housing environments and the health of residents cannot be isolated from their diet, lifestyle, type of employment and the availability of health care (Marmot and Wilkinson, 1999).

If housing and the built environment are considered too narrowly then the interrelations between housing, health and well being may not seem important. This paper suggests that there is a need for innovative approaches in the field of housing and health, as for many other problem-solving subjects. This paper argues that current shortcomings are not simply the result

of a lack of resources, or viable solutions, or political commitment. These shortcomings are above all the result of the narrow vision of academics, professionals and policy makers who only address the treatment of symptoms rather than the fundamental issues at stake. This paper also suggests that transdisciplinary approaches can highlight the difference between a discipline-based interpretation of housing and health and an interdisciplinary approach that rejects a symptom-treatment explanation based on a biomedical model by combining the interpretation of biological, cultural, economic, political, psychological and social factors in a new way. This paper argues that an ecological perspective can provide a broad framework for comprehending all these factors and the interrelations between them in order to improve our still limited understanding of housing and health. This paper concludes with some suggestions for future contributions that are pertinent not only for theoretical development but also for policy definition and implementation.

DEFINITIONS AND INTERPRETATIONS

The word health is derived from the old English word "hal" meaning whole, healed and sound. Health is a difficult concept to define and, therefore, it is not surprising that it has been interpreted in diverse ways. Each individual may be a consumer of, and an object to which health services are directed. Simultaneously, each person is an active producer of her/his health by following habits of diet, exercise and hygiene, and other lifestyle traits which may or may not be conducive to health promotion.

The ancient Greeks believed that *Asclepios*, the god of medicine, had two daughters : *Hygieia*, was responsible for prevention, whereas *Panacea* was responsible for cure (Loudon, 1997). This long-standing distinction between prevention and cure or treatment corresponds closely to the difference between public health interventions intended for entire populations and clinical interventions for individuals. The exception to this generalisation can be prevention by immunisation which is applied to individuals, but it does not necessarily involve the whole population in a country, city or any precise geographical area. One key social policy issue should be to establish the appropriate scope and range of preventive and curative interventions to deal with specific health issues in precise localities.

(Insert figure 1 about here)

Health

The definition of the World Health Organization states that health is "not merely the absence of disease and infirmity but a state of optimal physical, mental and social well being" (World Health Organization, 1946). This definition is idealistic, but it has the merit of not focusing on illness and disease, which have often been considered as either temporary or permanent impairment to health, or the malfunctioning of a single or several constituents of the human body. Given that the World Health Organization's definition of health includes social well being, then the most common interpretations of health ought to be enlarged. The World Health Organization also states that the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political, economic or social condition.

Health is defined in this paper as a condition or state of human beings resulting from the interrelations between humans and their biological, chemical, physical and social environment. All these components of residential environments should be compatible with their basic needs and their full functional activity including biological reproduction over a long period. Health is the result of both the direct pathological effects of chemicals, some biological agents and radiation, and the influence of physical, psychological and social dimensions of daily life including housing, transport and other characteristics of metropolitan areas (see figure 1). For example, improved access to medical services is a common characteristic of urban neighbourhoods that is rare in rural areas. In the field of health promotion, health is not considered as an abstract condition, but as the ability of an individual to achieve her/his potential and to respond positively to the challenges of daily life. From this perspective, health is an asset or a resource for everyday life, rather than a standard or goal that ought to be achieved. This redefinition is pertinent for the field of housing and health because the environmental and social conditions in specific residential environments do impact on human relations, induce stress, and can have positive or negative impacts on the health status of groups and individuals. It also implies that the capacity of the health sector to deal with the health and well-being of populations is limited and that close collaboration with other sectors, especially housing and urban planning, would be beneficial.

Environment

Environment derives from the word "*environnement*" first used in the French language about the year 1300 by Godefroy. Initially it was used in the sense of a defining contour or the external boundary of an object. Then, during the 16th century, Estienne redefined the term to mean the group of natural and artificial things that condition human life (and notably not all living organisms). This definition is similar to that in a contemporary Oxford English

Dictionary except that it includes all organisms: "the conditions under which any person or thing lives or is developed; the sum total of influences which modify and determine the development of life and character". Today the term human environment not only refers to those characteristics which people have constructed, modified or perceived as components of human settlements but also interpersonal relations and social organisation which effect both physical and mental health and psychological well being.

The environment of any living species is multidimensional and extremely complex. Therefore, residential environments should not be interpreted as a neutral background for human behaviour (Lawrence, 1987). The human ecology perspective applied in this paper interprets the processes, patterns, products and mediating factors that regulate human behaviour in residential environments using a systemic framework explained in Raffestin and Lawrence (1990). An interdisciplinary approach is therefore necessary in order to overcome the chasm between those health professionals who blame the environmental conditions for the incidence of ill-health, those environmental scientists who blame human individuals, groups and enterprises for the deplorable state of the environment, and those architects, housing administrators and urban planners who still do not accept the reciprocal relationship between people and environment at either the small scale of the residential environment, or any larger geographical scale.

Residential Environment

Housing is meant to address basic human needs for shelter and security by providing protection against climatic conditions (excessive heat and cold) and unwanted intrusions from insects, rodents and environmental nuisances such as noise that may be harmful for health and well being. Housing contains household activities and possessions. Turner (1976) made the important distinction between housing as a noun and housing as a verb. According to Turner, housing can be considered as a product (from an individual housing unit to the housing stock in a neighbourhood or city). He also suggested that housing can be considered as a process by refering to the provision and maintenance of all kinds of residential buildings either by public authorities or private initiatives. Turner’s interpretation of housing enables researchers and practitioners to consider the multiple interrelations between housing conditions and human processes in precise localities. In order to ensure that cultural, social, economic, political and individual human factors are considered simultaneously at the geographical scale of the housing unit, the residential building (with one or more housing units) and its site and conditions in the local neighbourhood, Hartig and Lawrence (in press) have used the term “the residential context of health”.

Supportive Environments

The concept of supportive environment has been used to emphasise that policy definition and implementation should focus on all the determinants of health, not just those within the health sector (Bistrup, 1991). Therefore, it includes the role of physical environmental factors that influence health and not just the lifestyle of individuals and groups in specific localities. In addition, it is not limited to the physical characteristics of the environment because it accounts for the cultural, social, economic and political dimensions. When these dimensions are explicitly addressed then it is necessary to deal with equality and equity in societies and how these impact on health and well being in precise residential environments.

METHODOLOGICAL PRINCIPLES

The relation between the residential environment and health is multidimensional and complex. It is possible not only to determine whether housing impacts health but also how the health of an individual can influence housing (United Nations Commission on Human Settlements, 1996). Despite the contribution of a wide range of studies by environmental health officers, doctors, psychologists, physiologists, and housing researchers, some recent surveys of the literature on the health-housing relation indicate that there are few comprehensive, empirical studies that identify and measure those characteristics of housing that hinder or promote health and well being (Fuller-Thomson, Hulchanski and Wang, 2000; Smith, 1989). These reviews show that contributions often lack a broad conceptual framework (including the societal context of housing); they have a restricted methodological approach (owing to a lack of multivariate techniques), and they rarely address practical guidelines or policy issues. The majority of contributions identify relations between illness and housing conditions without providing convincing evidence of the mechanisms linking them (Burridge and Ormandy, 1993). Empirical studies of the relationships between housing and health have commonly adopted this kind of approach by examining how one quantifiable characteristic of housing conditions in a precise situation (such as the presence of dampness in the building structure) effects the health and well being of the inhabitants (Kasl and Harburg, 1975; Jacobs and Stevenson, 1981). Alternatively, proxy measures of the morbidity of resident populations (such as the number of visits to a doctor) are related to one aspect of the residential environment (such as floor level above the ground in high-rise housing) (Mitchell 1971; Gillis, 1977). Irrespective of the simplifications inherent in these contributions, the findings of many studies have rarely been replicated in the same or different residential environments as Gabe and Williams (1986; 1993) have noted. Moreover, many studies have commonly examined the relationship between isolated variables at only one point in time. However, there is sufficient evidence from studies

in environmental psychology indicating that the aspirations and preferences of people for housing change during the course of the life-cycle (Stokols, 1982); that the health and well being of people also change, and that the condition of the housing stock varies during the period of occupation.

Four categories of studies have been proposed by Fuller-Thompson, Hulchanski and Wang (2000):

1. Those that consider the impact of biological exposures (such as dampness and mould and the incidence of respiratory diseases).
2. Studies of the impact of chemical and physical exposure (such as urea formaldehyde foam insulation and its incidence on respiratory diseases).
3. Contributions that consider the physical conditions of the housing unit in relation to the risk of accidents or other characteristics of health and well being.
4. Studies that examine the cultural, economic and other social characteristics of housing (such as housing cost or tenure) in relation to health and well being.

Despite numerous contributions in these four categories there is not a cumulative set of empirical findings that has identified and measured the mechanisms linking characteristics of residential environments to physical and mental health. A causal relation has no explanatory value unless the mechanisms linking the variables have been deciphered (Fuller-Thompson, Hulchanski and Wang, 2000).

An Ecological Perspective

There are important conceptual and methodological questions that need to be examined if the relationships between conditions in human settlements and health are to be considered from a broad perspective. This kind of perspective implies that an analysis of the interrelations between multiple factors is necessary. Multifaceted interpretations of human illness and health have a long but chequered history. They can be traced back as least as far as the Hippocratic treatise "*On Airs, Waters, and Places*" published initially about 2600 years ago (Hippocrates, 1849). Hippocrates applied an integrated approach that is far removed from much contemporary academic research and professional practice adopted by people who isolate variables from each other and from the contextual conditions in which they occur.

The term "ecology" derives from the ancient Greek words "*oikos*" and "*logos*" and means "science of the habitat". It is generally agreed that this term was used first by Ernst Haeckel (1834-1919), a German zoologist, in 1866. The word ecology designates a science that deals with the interrelationships between organisms and their surroundings. Since the late 19th century the term "ecology" has been interpreted in numerous ways. For example, in the natural

sciences, botanists and zoologists use the term "general ecology" to refer to the interrelations between animals, plants and their immediate surroundings. Human ecology explicitly deals with people-environment relations (Lawrence, 2001). It provides a conceptual framework for academics and practitioners from both the natural sciences (e.g. biology, chemistry and geology) and the human sciences (e.g. anthropology, epidemiology, sociology and psychology) to accept divergent disciplinary concepts and methods and develop an integrated approach.

The ecological perspective proposed herein maintains that four main sets of interrelated factors should be considered: *the individual*, who has a specific genetic code with a susceptibility and immunity to illness and disease, as well as lifestyle traits; *the agent or vector* of illness and disease, including not only bio-geo-physical components of the environment but also the social and psychological dimensions of human settings; *the physical and social environment* of the individual which affects the susceptibility of the host, the virulence of bio-physical agents and the exposure, quantity and nature of the contact between host and vector; *the available resources* used by the individuals and households including housing, nutrition, money, information, and access to health and medical services which ought to be affordable for all groups of the population.

The distinction between biomedical models and ecological interpretations of health is fundamental (Catalano, 1979). The germ theory, for example, is an incomplete explanation of human illness and disease because it ignores the contribution of numerous physical and social dimensions of the environment that can effect health. Ecological interpretations maintain that the presence of a germ is a necessary but not a sufficient condition for an individual to become ill. They accept that some individuals become more susceptible to certain illnesses because of their differential exposure to numerous environmental, economic and social factors that can promote or be harmful to health and well being. This interpretation does not ignore the influence of genetics, individual behaviour or primary health care. However, it maintains that, alone, these do not address possible relations between social problems and illness (e.g. inequalities) or positive social dimensions and health promotion (e.g. public education). The distinction between potential and actual health status can be the foundation for a new interpretation of health which includes ecological, social and psychological determinants (Hartig and Lawrence, in press).

Reorientation for Future Contributions

It is not wholly surprising that there is no widely shared consensus about the nature of the relationship between health status and living conditions (Corvalan, Nurminen and Pastides,

1997). Some reasons for this lack of consensus include the environmental, geographical and temporal complexity of the subject, as well as the diversity of ethnic, occupational, and other social groups living and working in residential neighbourhoods (Organisation for Economic Co-operation and Development, 1996). Furthermore, current disciplinary interpretations of health (including a wide range of theoretical and methodological approaches used to study it) do not facilitate the task. Apparently researchers and practitioners do not have the analytical tools or the measurement techniques that enables them to deal with the complexity of health in residential environments. In addition, this paper shows that conceptual clarification and theoretical development is necessary. Current understanding can be improved if the following principles are borne in mind.

Residential environments are complex with many material and non-physical constituents. The concentration of diverse kinds of human activities in urban areas leads to the discharge of large volumes of commercial, industrial and household wastes (United Nations Commission on Human Settlements, 1996). These negative impacts on the life support systems of cities have health effects that ought to be recognised and effectively dealt with by housing officers, urban planners and public health officials (McMichael, 1993). Other kinds of problems that have harmful effects on health are related to population density, housing conditions (including homelessness), imported foods, access to community services and health care, working conditions, as well as socio-economic inequalities and spatial segregation in urban neighbourhoods (Lawrence, 2000). In order to integrate all these dimensions, it is necessary to go beyond interpretations that rely solely on the bio-medical model of health, and socio-economic interpretations need to be replaced by interdisciplinary contributions.

The health status of populations in precise residential areas is not only the result of many material and non-physical constituents but also the interrelations between them. Hence, several conceptual and methodological questions need to be examined if the constituents and the interrelations between them are to be understood comprehensively. It is inappropriate to isolate a constituent from the contextual conditions in which it occurs. Instead, ecological approaches ought to be applied to understand both the constituents and the interrelations between them (Lawrence, 1993).

Innovative Approaches in Professional Practice

The preceding paragraphs show that conventional urban planning has successfully used reactive approaches to correct or remove inadequate housing and working conditions. However, today we know that infectious diseases stemming from unsanitary conditions are not the leading cause of morbidity and mortality in industrialised countries. Instead, non-communicable

illnesses having multiple causes are the main challenge for public health. Therefore, urban planning could shift from using reactive to proactive approaches. Urban planning should not only deal with removing negative health impacts but actively promote well-being (Barton and Tsourou, 2000). One example of an innovative approach would reconsider land use planning and transportation in and between residential neighbourhoods from a broader ecological perspective. This approach would imply a shift from dealing with piecemeal approaches to road transport, car parking and traffic safety. It would reinterpret accessibility and mobility in and between urban areas not only in terms of public and private modes of transport but also air and noise pollution, consumption of non-renewable resources, monetary costs and public investments, active and sedentary lifestyles, as well as health and well-being. This interdisciplinary approach not only raises questions about the high priority attributed to private motor cars during the 20th century. It also shows that investments in efficient public transport systems and pedestrian precincts can be considered as investments to promote environmental quality, reduce energy consumption and air pollution while promoting health and well-being.

The ecological perspective proposed in this paper has been applied to improve the local authority housing stock and the well being of residents in some British cities including Liverpool and Sheffield. Green and Gilbertson (1999) have identified the interrelations between environmental, economic, health and other social conditions of urban neighbourhoods with multiple problem. They have shown there are several ways of using investments for the renovation of these large-scale housing areas (which were also known as "model housing" estates in the 1960s). The high-rise buildings have a number of architectural and technical problems including dampness in walls, poor thermal insulation, inadequate cross-ventilation, inefficient energy consumption and emissions contributing to air pollution.

Green and Gilbertson (1999) describe three pathways to improve the quality of the housing stock and simultaneously reduce negative impacts on the local environment and promote the health of residents. Route 1 concerns investments for improving the housing stock that focus on more efficient thermal insulation leading to less dampness and improved thermal comfort which have a positive impact on health. Route 2 uses the same investments in housing to lower household expenditure on heating and improved living conditions owing to more choice in the way income is spent on, for example, food, clothing and education. Route 3 indicates that housing investments also lead to lower energy consumption. When this reduction is aggregated at the level of the urban neighbourhood or city it indicates less reliance on fossil fuels and lower levels of air pollution which can have positive impacts on health. After the renovation work in some housing estates had been completed the authors monitored health impacts, thermal conditions, expenditure on heating and residential satisfaction. Improvements have

been identified in all sectors and show that intersectoral collaboration for policy decision making can consider investments in housing as investments in health promotion.

FROM INTERDISCIPLINARY PRINCIPLES TO PROFESSIONAL PRACTICE

This paper suggests that there is a need to reconsider the knowledge base that made possible the 20th century revolution in health in order to deal not only with many kinds if infectious diseases but also the increasing burden of non-communicable diseases. A report published by the World Health Organization (1996) has identified critical gaps in knowledge to deal effectively with the growing incidence of allergies and respiratory infections, cardiovascular diseases, malignant neoplasms (commonly labelled cancers), intentional and unintended injuries (including suicide), and neuro-psychiatric ill-health (including depression, drug dependence and other disorders). The report states that "among the many competing demands on the funds allocated to international assistance for health, those contributing to the generation of the new knowledge, products and interventions that can be shared by all have special merit". (p.6)

In order to move towards this goal, this paper argues that there is a need for conceptual clarification, and methodological rigour using a combination of qualitative and quantitative approaches. It has already been suggested that there is an urgent need for more co-ordination, because health and well-being are not limited to genetics or the medical sciences. In addition, a major barrier to the design and construction of residential environments that support health is the strong tendency for architects, planners and policy makers to focus too strongly on technical information and applications without referring to a holistic framework, without understanding the contextual conditions of the site location, and without considering the dialectics of people - environment relations at the local and broader geographical scales. This paper shows that the medical, natural and social sciences together with architecture and urban planning can contribute to broaden current understanding of housing and health.

A restricted disciplinary interpretation of health has hindered the development of a broad understanding of the contextual conditions of human well being in residential environments. The author of this paper has already discussed this shortcoming with respect to disciplinary interpretations of population density, housing occupancy conditions, health and well being. This contribution shows that segmented interpretations could be replaced by studies of the mutual interrelations between humans, their residential environment and the local ecosystem as a dynamic, regulated network that can be studied as a system and in terms of its components. From this perspective, studies of people detached from their housing conditions and their

societal context should be replaced by studies of processes and relations that occur between the non-human and human components of open, dynamic residential environments that have a precise scale and location at the micro-level of a much larger ecosystem and biosphere (Raffestin and Lawrence, 1990).

Our capacity to deal with these complex subjects is insufficient for several reasons including the diversity and complexity of these problems; the difficulty of identifying and measuring the interrelations between them and their components; and the need to understand the relative importance of these components in precise localities, at different geographical scales and over time (Lawrence, 2001). Therefore, it is suggested that it is necessary to shift from multidisciplinary to interdisciplinary and transdisciplinary concepts and methods.

In this paper disciplinarity refers to the specialisation of academic disciplines especially since the 19th century (Klein, 1996). Multidisciplinary refers to research in which each specialist remains within her/his discipline and contributes using disciplinary concepts and methods. Interdisciplinary studies can be interpreted as the bringing together of disciplines that retain their own concepts and methods that are applied to a mutually agreed subject. In these studies one contributor will usually co-ordinate the research process and seek integration. Whereas interdisciplinarity can be considered as the mixing together of disciplines, transdisciplinarity implies a fusion of disciplines in such a way that the fusion of disciplinary concepts and methods creates a new hybrid which is different from any specific constituent part (Somerville and Rapport, 2000). This interpretation means that transdiciplinarity is not an automated process that stems from the bringing together of people from different disciplines or professions. In addition, it requires an ingredient that some have called “transcendence” which implies the giving up of sovereignty over knowledge, the generation of new insight and knowledge by collaboration, and the capacity to consider the know-how of lay-people. Collectively, transdiciplinary contributions enable the cross-fertilisation of ideas and knowledge from different contributors that leads to an enlarged vision of a subject, as well as new explanatory theories (Klein, 1996). Transdisciplinarity is a way of achieving innovative goals, enriched understanding and a synergy of new methods, which are essential if our current understanding of healthy residential environments is to be improved.

Multidisciplinarity, interdisciplinarity and transdisciplinarity are complementary rather than being mutually exclusive as some authors have claimed. It is important to stress this complementarity because without specialised disciplinary studies there would be no in-depth knowledge and data (Lawrence, 2001). The interrelations between these approaches ought to be more systematic than they have been in general, and in studies of housing and health, in

particular. To date, disciplinary contributions have dominated and there still are too few interdisciplinary contributions about health and residential environments.

Transdisciplinary research and practice require a common conceptual framework and analytical methods based on shared terminology, mental images and common goals. Once these have been formulated, then the next requirement is to develop a research agenda based conceptually and pragmatically on diverse sources of data and information that can be organised in ways to help understand, interpret and deal with problems (Klein, 1996). There are several ways of promoting transdisciplinary approaches. The problem-solving approach, for example, can be used. It is typically small-scale, locality specific, and it is appropriate for the study of health and housing in precise localities. This kind of approach can identify and explain what factors are pertinent in order to analyse and deal with problems that are frequently complex.

CONCLUSION

Like housing, health is multidimensional. Therefore both ought to be considered in terms of the multiple factors that influence them. An ecological perspective recognises that behavioural, biological, cultural, economic, social, physical and political factors need to be considered if a comprehensive understanding of housing and health is to complement disciplinary and sectoral interpretations. Both objective, quantifiable measures and subjective, qualitative assessments are necessary. Today there is a need for innovative approaches that deal with housing and health inequalities in both the wealthiest and poorest countries of the world. Current failures to deal with these problems are, above all, the result of the narrow vision of policy makers and professionals who do not address the fundamental issues at stake. In principle the way these people think strongly influences the way they act.

Today, the relationship between researchers in different disciplines, including those who study health and housing, is often considered not to be conducive for collaboration. Nonetheless, this paper has discussed and illustrated an interdisciplinary interpretation of health and housing using the contributions from several disciplines and professions in a complementary way. This paper discusses how these kinds of contributions can lead to the development of new insights and knowledge about this complex subject. This is an important challenge for housing studies and the health sciences at the beginning of this new millennium.

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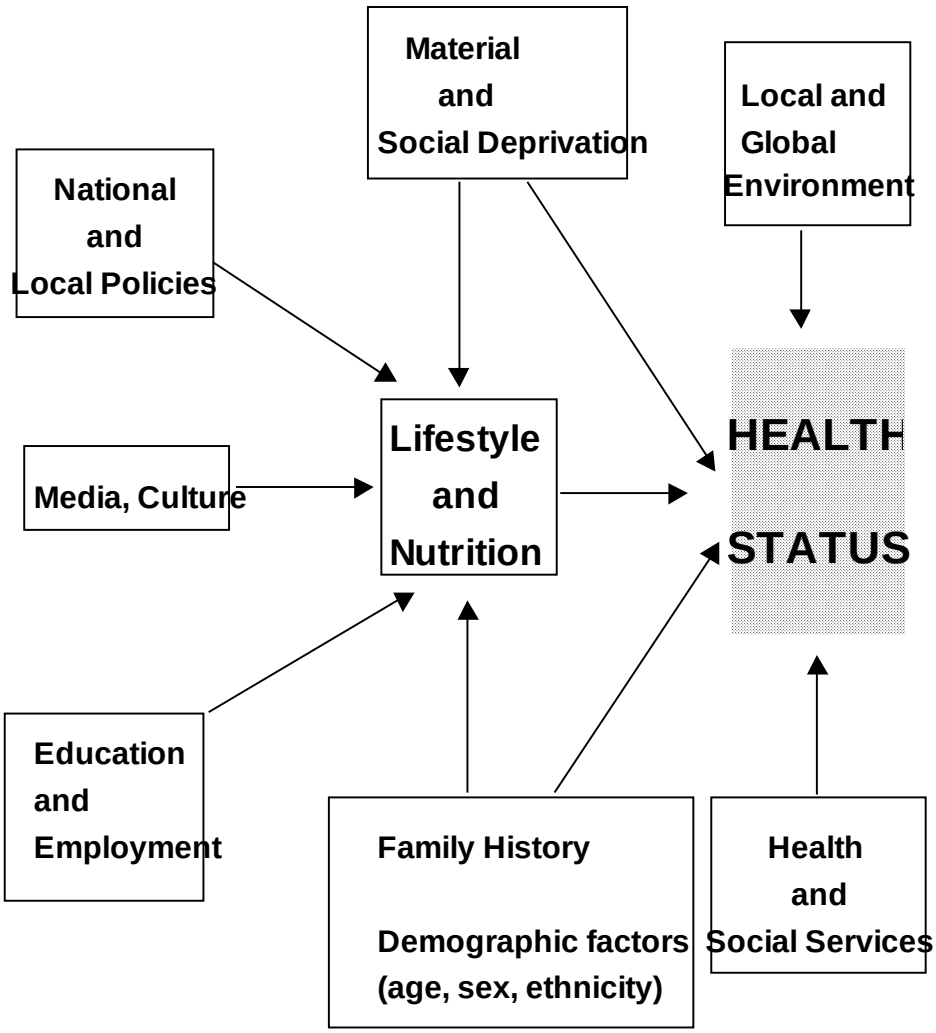

Figure 1: The multiple influences of health status