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Towards the development of a model of Health Determinants for Morocco

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ABSTRAC

Our health is influenced by many factors, called the determinants of health. WHO has defined its determinants as the set of "personal, social, economic and environmental factors that determine the health status of individuals or populations" (WHO, 1999). Conceptual models or theoretical frameworks help us to understand the complex issues that impede the determinants of health, support health planning interventions and policy development, and most importantly, understand the dimensions of health in order to act to reduce health inequalities between different population groups. This study examined diachronically different frameworks related to the determinants of health, classified them into forty-one conceptual frameworks developed by different countries, organizations and theorists and described as explanatory frameworks, and/or interactive frameworks, and/or action-oriented frameworks. Each framework is detailed according to the important elements and its field of interest. Five frameworks were selected after an in-depth analysis to agree on a comprehensive framework adapted to the Moroccan context and current political concerns and knowledge. In this perspective, our project proposes a conceptual framework of health determinants specific to the Moroccan context that is based on a holistic and intersectoral approach, which recognizes social inequalities in health, describes the role of individuals and communities, gives the importance of upstream action, and helps to improve our understanding of complex problems in the Moroccan health system.

Keywords: Rutin; Ethanol; Memory impairment; Oxidative stress; Morris water maze.

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INTRODUCTION

Despite continuous biomedical and technological progress over the past 50 years, and despite the expansion of health protection, social inequalities in health persist or have even worsened in several countries around the world since the 1990. As a result, several authors have examined the implementation or study of existing determinant models in order to provide individuals and the community with great opportunities for disease prevention and improving the health status of the general population. These determinants of health can be defined as the set of "personal, social, economic and environmental factors that determine the health status of individuals or populations" (WHO, 1999).

However, to improve this state of health of the population, it is not enough to describe but rather to be able to explain them in order to progress in understanding the underlying mechanisms explaining health.

Therefore, the interest of further studies of these determinants or models is to renew, among other things, the study of health inequalities based on a better understanding of the interactions between social situations in the broad sense and health. In particular, it is necessary to measure, along the social continuum, the health impacts of different forms of vulnerability. Thus, many authors in social epidemiology underline the importance of studying new individual determinants. These include the social determinants of health that are currently the focus of a growing body of public health research. These are based on conceptual models that are still being discussed to date by research groups around the world, including WHO.

These determinants include representations of individuals' health, attention to their health and prioritisation of health needs in relation to other basic needs of the person, certain psychosocial characteristics, internalization of medical norms, and past or family experiences of illness and care use.

Research on health belief models shows a strong relationship between health beliefs and care use, adherence, use of prevention programs and modification of negative health behaviours (Lim et al. 2009). With regard to the conditions of social integration, many studies have shown an association between a low level of social integration and an increased frequency of risky behaviours as smoking, alcoholism, eating disorders, sedentary lifestyles (Maamri, 2015 et 2016). Other researchers have observed strong associations between the importance of an individual's social network and the incidence and lethality of certain diseases. Some authors have proposed

theoretical models of social determinants of health that integrate both psychosocial characteristics and conditions of social integration, social support and social capital.

These conceptual frameworks help us to understand the complex issues that impede the determinants of health, to support health planning interventions and policy development, and most importantly to understand that health is not limited to disease or infirmity but rather a state of physical, mental and social well-being (WHO, 1946).

The objective of this study is to seek a comprehensive and inclusive conceptual model of health and its determinants that can understand the diversity of the environment that influences population health in Morocco, understand the full scope of the functions of the Moroccan health system, and consequently influence the broadest possible set of health interventions, as well as their evaluations that contribute to the consolidation and improvement of the health and well-being of the Moroccan population.

Methods

A systematic search strategy was carried out in three databases (Pubmed, Web of Science and WHO data) using different keyword combinations, resulting in about 100 citations. Only citations that included different study designs were considered. The articles included were evaluated on their methodological quality using the Newcastle-Ottawa Quality Rating Scale. For each citation identified, we proceeded as follows:

- Identify and select determinants of health models/frameworks by type: (explanatory frameworks: explain determinants of health, interactive frameworks: help to identify systemic causes and frameworks for action: policy development and decision-making) and according to the important elements that follow.

Identify and select from among the frameworks that fulfill the fields of interest according to the following criteria: (categorization of determinants, interdependent components, existence of structural determinants, concepts of social inequalities/inequity; causal links, adaptation to the context (health in all policies/social epidemiology), framework for action, resources for the various actors: policy makers, researchers, professionals; to carry out an in-depth study based on the presence of elements that relate to the Moroccan context

- Analyze the different models, which served as a basis for discussion to agree on a global framework adapted to the Moroccan context and current political concerns and knowledge.

RESULTS AND DISUCSSION

The literature review conducted shows the existence of at least forty conceptual frameworks on the determinants of health developed by different countries, organizations and theorists that are either explanatory frameworks, and/or interactive frameworks, and/or action-oriented frameworks (Tab. I)

Table I: Summary of conceptual frameworks identified by type

Frame type	Number of frames
Explanatory frameworks	85 % (n=35)
Interactive frameworks	61 % (n=25)
Action-oriented frameworks	46 % (n=19)
Explanatory and interactive frameworks	56% (n= 23)
Explanatory and action-oriented frameworks	32% (n=13)
Interactive and action-oriented frameworks	29% (n=12)
Explanatory, interactive and action-oriented frameworks	24% (n=10)

A diachronic analysis of the most significant reference frameworks on the international scene on social determinants allowed us to identify the salient points at the level of each framework (Tab. II):

Table II: Conceptual frameworks identified by type and important elements and according to a diachronic approach

Frame names	Type	Important elements and field of interest
The Lalonde model (1974)	Explanatory	First assumption of the Determinants of Health approach: human biology; environment; life habits; organization of the health care system.
Dever's approach (1976)	Explanatory	Highlighting the primacy of individual Behaviours resulting from lifestyle habits as an explanatory factor in mortality.
Health Mandala (Hancock and Perkins, 1985)	Explanatory Interactif	Modèle écologique: avec 4 déterminants de la santé: biologie humaine, comportements personnels, environnement psychosocial et environnement physique.
The health gradient, WHO Joint Working Group on Intersectoral Action (Taket, 1990)	Explanatory	Implication of social and living conditions on the health of the individual
The Evans and Stoddart model (1990)	Explanatory	Concept of inequity Six categories of determinants: Genetic heritage; social environment; physical environment; health care system; individual response, prosperity. Three states of health: pathology; functional state; prosperity.
Expanded model of the social determinants of health (Dahlgren and Whitehead,	Explanatory Interactif	Determinants arranged in three rings: 1. Socio-economic, cultural and environmental conditions

1991)		2. Social and community networks 3. Factors related to personal lifestyle Concept of equity in health policy making.
Public Health Agency of Canada - What determines health? (PHAC, 1994)	Explanatory	12 determinants of health: Income and social status, social support networks, education and literacy, employment and working conditions, social environments, physical environments, personal care practices and coping skills, healthy child development, biological and genetic heritage, health services, gender, education and culture.
Policy Development Model (Kingdon, 1995)	Action-oriented	problem definition, policy strategy and political process (structural determinants)
Population Health Promotion Model (PHAC, 1996)	Explanatory Action-oriented	Based on the Ottawa Charter for Health Promotion (1986) Explains the determinants and proposes interventions
The approach of Stronks et al (1996)	Explanatory Interactif	4 determinants: health; behavioural factors; socio-economic status and structural factors
Spectrum of action on health inequalities (Whitehead, 1998)	Action-oriented	This framework has been used to identify and analyse the factors that are essential for the implementation of policies to reduce social inequalities in health
A Framework for Addressing the Social Determinants of Health and Well-being (Queensland Health, 2001)	Explanatory Interactif Action-oriented	Examines community determinants and approaches.
Relationships between key determinants of health and sustainable development (Hancock, 2001)	Explanatory Interactif Action-oriented	Link between health and sustainable development. Concept of natural, built, social, economic and human capital
Rankings of counties by population health status (University of Wisconsin Institute of Population Health, 2003)	Explanatory Interactif Action-oriented	Notion of the relative contribution of the various categories of determinants of health.
Prismatic framework for health and sustainability (Parkes, Panelli and Weinstein, 2003)	Explanatory Interactif	The foundation of health and sustainability is based on the links between ecosystems and social systems
Health Information Framework, La Trobe Consortium (WHO, 2003)	Explanatory Interactif	Gender equality perspective. Four levels of health data: health status, determinants, health system performance and community and social assistance system characteristics.
Community Health Action Model: A Model for Community Development and Action (Annis, 2005)	Explanatory Interactif	Interactions between social, economic and environmental forces community health action model
Public health framework for assessing health impacts and establishing health status (Schulz and Northridge, 2004)	Explanatory Interactif Action-oriented	Social factors contribute to disparities in environmental exposure and health inequalities. according to the interaction between four levels: global (macro), community (meso), interpersonal (micro) and

		individual (population)
Alberta's Social Determinants of Health Framework (O'Hara, 2005)	Explanatory Interactif Action-oriented	Four fundamental determinants of health: social and economic equality, social inclusion, affordable housing and education. Priority issues.
Population health conceptual framework (Etches et al., 2006)	Explanatory Interactif	This model highlights the complex interactions between social, proximal and upstream factors. Proximal social factors are: physical and social environments, biological factors (including interactions between genes and the environment). and the upstream factors cited according to this model are: political, social, cultural, economic, spiritual, ecological and technological factors.
Social determinants of health and pathways to health and disease (Brunner and Marmot, 2006)	Explanatory Interactif Action-oriented	Notion of stress as a determinant of health
Commission on Social Determinants of Health - Conceptual Framework (WHO, 2007)	Explanatory Interactif Action-oriented	Origins of health-related differences between social groups with causal links between Structural Determinants: socio-economic context and situation (social class, gender, ethnic origin, education, employment, income). Intermediate determinants: material, behavioural, biological and psychosocial factors. Social cohesion and social capital.
Commission on Social Determinants of Health - Framework for Action on the Social Determinants of Health Inequalities (WHO, 2007)	Explanatory Interactif Action-oriented	Key policy dimensions and guidelines with a focus on intersectoral actions at various levels: Global, Public, Community and Individual
Social determinants of health: building an evidence base for political action (Kelly et al., 2007)	Action-oriented	Social determinants at the strategic level for policy orientations.
Links between the national plan to reduce health inequalities and other plans and programmes (Ministry of Social Affairs and Health of Finland, 2007)	Interactif Action-oriented	Application of a whole-of-government approach ranging from policy to the social environment. Addressing social inequalities through policies
Conceptual framework for gender-sensitive health and migration (Bierman, 2007)	Explanatory Interactif	Migration & Determinants of health at level : Macro: migration policies, economy, global positioning and labour market. Meso: community characteristics, social norms and networks. Micro: income, education, family structure, employment, ethnicity, age, health beliefs and

		behaviours, etc.
Social Determinants of Inuit Health: Discussion Paper (Inuit Tapiriit Kanatami, 2007)	Explanatory	Identifies some unique elements, such as acculturation, productivity and the environment as determinants of health
Model for assessing environments that influence early childhood development (Siddiqi, Irwin and Hertzman, 2007)	Explanatory Interactif	Influence of environments and experiences on early childhood development.
Socio-economic determinants of health (Munro, 2008)	Explanatory	productivity and economic growth are linked to the improvement of occupational and community health Relationship Health status and Inclusion, infrastructure, water, literacy, injuries, choice, adaptability, early childhood, nutrition, safety, health services, social support, culture, environment, gender, income, biology and housing.
Ecosocial framework (Krieger, 2008)	Explanatory Interactif	Various forms of health inequality are shaped by social, political, economic and ecological factors
Gender Determinants of Health Framework: The Importance of Girls' and Women's Health (Benoit and Shumka, 2009)	Explanatory Action-oriented	Gender and gender not only as characteristics of individuals but as fundamental determinants of health
Framework for the use of gender and equity as health indicators in the POWER Study (Clark and Bierman, 2009)	Explanatory Interactif	The determinants of health are classified into two groups: Non-medical factors and Community factors gender is a central element that shapes all other determinants of health
Integrated Life-Course Model and Social Determinants of Aboriginal Health (Loppie Reading and Wien, 2009)	Explanatory	Complex and dynamic interactions among the social, political, historical, cultural, environmental, economic and other factors that directly and indirectly shape Aboriginal health.
Towards Health Equity: A Framework for Action, Public Health Agency of Canada (Daghofer and Edwards, 2009)	Action-oriented	Five priority determinants of health: income level and social status; housing; literacy and education; Aboriginal peoples; and early childhood development. Six facets of Strategies: developing leadership; building community capacity; developing and transferring knowledge; investing in social policies; building social support; and fostering intersectoral action.
Social determinants of health (Raphael, 2009)	Explanatory	Social inequalities in health are based on: Aboriginal status, gender, disability, housing, childhood, income and income distribution, education, race, employment and working conditions, social exclusion, food insecurity, social safety net, health services, unemployment and job security.
Conceptual framework for planning for a healthy	Explanatory Interactif	Health factors and the built and natural environment while focusing on establishing the characteristics of

community (Gudes et al., 2010)	Action-oriented	healthy communities
Déclaration d'Adélaïde sur l'intégration de la santé dans toutes les politiques. OMS, Gouvernement d'Australie-Méridionale, Adélaïde, 2010.	Explanatory Interactif	Integrating health into all policies
Relationship between the five themes of the World Conference on the Determinants of Health (WHO, 2011a)	Explanatory Action-oriented	Five themes: (governance, participation, role of the health sector, global action and monitoring progress) as strategic goals
Reducing inequalities and improving population health: the role of a vibrant community sector (Danaher, 2011)	Interactif Action-oriented	Reduce health disparities through three means in a community sector: providing services, building healthy communities and mobilizing the community to influence policies on the social determinants of health.
Conceptual Framework for Health Indicators (CIHI, 2013)	Explanatory	Four levels of indicators with a strong focus on health systems that are: Health Status, Non-medical Determinants of Health, Health System Performance and Community and Health System Characteristics
Holistic First Nations Policy and Planning Model (AFN, 2013)	Explanatory Interactif Action-oriented	Determinants of the lifelong health of Aboriginal people in Canada using a medicine wheel approach.

Analysis of the table on the different models of health determinants over more than four decades has shown us that scientific research has highlighted the need to reconsider the determinants of population health status beyond the health care system. Health is now defined in terms of its multifactorial dimension.

In this sense, the frameworks studied each have unique and interesting characteristics that have served a specific context and different populations. Each executive has a specific field of interest that presents itself either to the target population (children, Aboriginal people, the rural population, or by gender). Either according to the action approach to reduce inequalities and improve population health in practice.

There are also frameworks that have introduced well-targeted issues such as the environment, ecosystems and the notion of sustainable development. Finally, there are frameworks that propose policies of action and decision-making to improve the health status of the population.

Following this fine analysis, we can say that there are 5 main models that can comprehensively illustrate the social determinants of health. These 5 models are as follows:

1 - The Dahlgren and Whitehead model 1991

2 - The framework for addressing the social determinants of health and well-being (Queensland Health, 2001)

3 - The conceptual framework of the Commission on Social Determinants of Health (WHO, 2007)

4 - The framework for action on the social determinants of health inequalities (WHO, 2007)

5- The conceptual framework of health and its determinants (MSSSC, 2009)

The five selected frameworks were then described and evaluated according to their main approach, the Determinants cited, the important elements and their strength and limitations.

1- The expanded model of the social determinants of health (Dahlgren and Whitehead, 1991):

This often cited framework was designed to clarify the concept of equity in the context of health on three levels:

- Socio-economic, cultural and environmental conditions;
- Social and community networks;
- Factors related to personal lifestyle.

It is a framework that is recognized worldwide for its usefulness in raising awareness and contributing to the debate on health equality, and in introducing the notion of equity into health policy making.

But the interactions of various factors on health are not clearly defined and areas of potential intervention are not indicated.

2- A framework for addressing the social determinants of health and well-being (Queensland Heath, 2001)

This framework outlines the particular role of those who provide public health services in supporting intersectoral collaborative efforts and community interventions to improve the health and well-being of the population.

Her area of interest is a practice-based approach (population health). The resulting determinants of health are socio-economic and structural determinants, community context and individual factors.

This framework recognizes social exclusion, offers a range of measures at the individual, community and systemic levels to address the determinants of health

The limits of this framework are in the representation of interactions between the determinants.

3- Conceptual framework - Commission on Social Determinants of Health - (WHO, 2007)

4- Framework for action on the social determinants of health inequalities (WHO, 2007)

These two frameworks have been designed to guide the work of the Commission on Social Determinants. They have been designed to address the questions of the root causes of health

differences between social groups; as well as the pathways that lead from root causes to significant population-wide health differences; and finally, how should action be taken to reduce health inequalities.

The determinants are divided into "structural" determinants: socio-economic context and situation (social class, gender, ethnic origin, education, employment, income) and

"Intermediaries": material, behavioural and biological, and psychosocial factors.

Social cohesion and social capital bridge the gap between the two categories.

The WHO Framework for Action provides the policies required at various levels:

- Global: stratification to reduce public policy inequalities, reduce exposure of disadvantaged people to harmful factors.
- Community: to reduce the vulnerabilities of disadvantaged populations.
- Individual: to reduce the unequal social, economic and health consequences of the disease.

The focus of these two frameworks is policy development and decision-making.

These two frameworks must be used together to represent the determinants, their interactions and possible interventions.

5- Conceptual framework of health and its determinants (MSSSC, 2009)

It is a policy framework that has served as a backdrop for collective reflection with stakeholders in surveillance in all areas of public health, both national and regional, to propose a conceptual framework for health and its determinants adapted to the Quebec context.

The conceptual framework selected is structured around five fields: the global context, the Systems, living environments, individual characteristics and health status of the population.

The latter field is visually distinct from the others, since it is the ultimate goal of Public health surveillance and action.

Each of the fields is divided into several categories, which include subcategories. This framework supports the choice of objects, measures and indicators for monitoring plans.

However, it is a broader framework, posing a number of operational challenges: lack of data, limited access to some data sources - which are therefore little or not used -, little knowledge on the links between certain determinants and the schematic representation of this framework focuses only on the Fields and their categories. It does not indicate or imply any causal relationship between the components.

DISCUSSION

It this study allowed us to identify the frameworks related to the determinants of health and to categorize them according to the chosen criteria. Thanks to this categorization, we were able to identify five major frameworks that synthesize the main determinants of health and the resulting interactions.

In general, each framework of determinants of health has specific and other general characteristics. These frameworks follow a development over time depending on the development of research and the political and socio-economic context prevailing at the time of its development. Because of this, each frame has its advantages but also its limits.

Frameworks highlight strategies for intersectoral collaboration that could help determine the role(s) of different sectors in addressing the determinants of health. Frameworks also provide a basis for practice and research for policy makers, researchers and practitioners who take into account specific parameters as a factor in improving or maintaining health.

The description and evaluation of the five selected frameworks identified the following key elements:

- The approach is general and focuses on the entire population, taking into account gender, general population, children, rural areas and immigrants
- They provide specific insights into how to categorize determinants and/or clarify the link between determinants of health and health status/inequality and clear statements of interactions between determinants
- They recognize social exclusion,
- Use a holistic and intersectoral approach,
- The role of individuals and communities is crucial
- Emphasize the importance of upstream action.
- Are intended for policy development and decision-making
- Mention well-targeted issues such as the environment and ecosystem
- Executives who adopt practice and research-based approaches

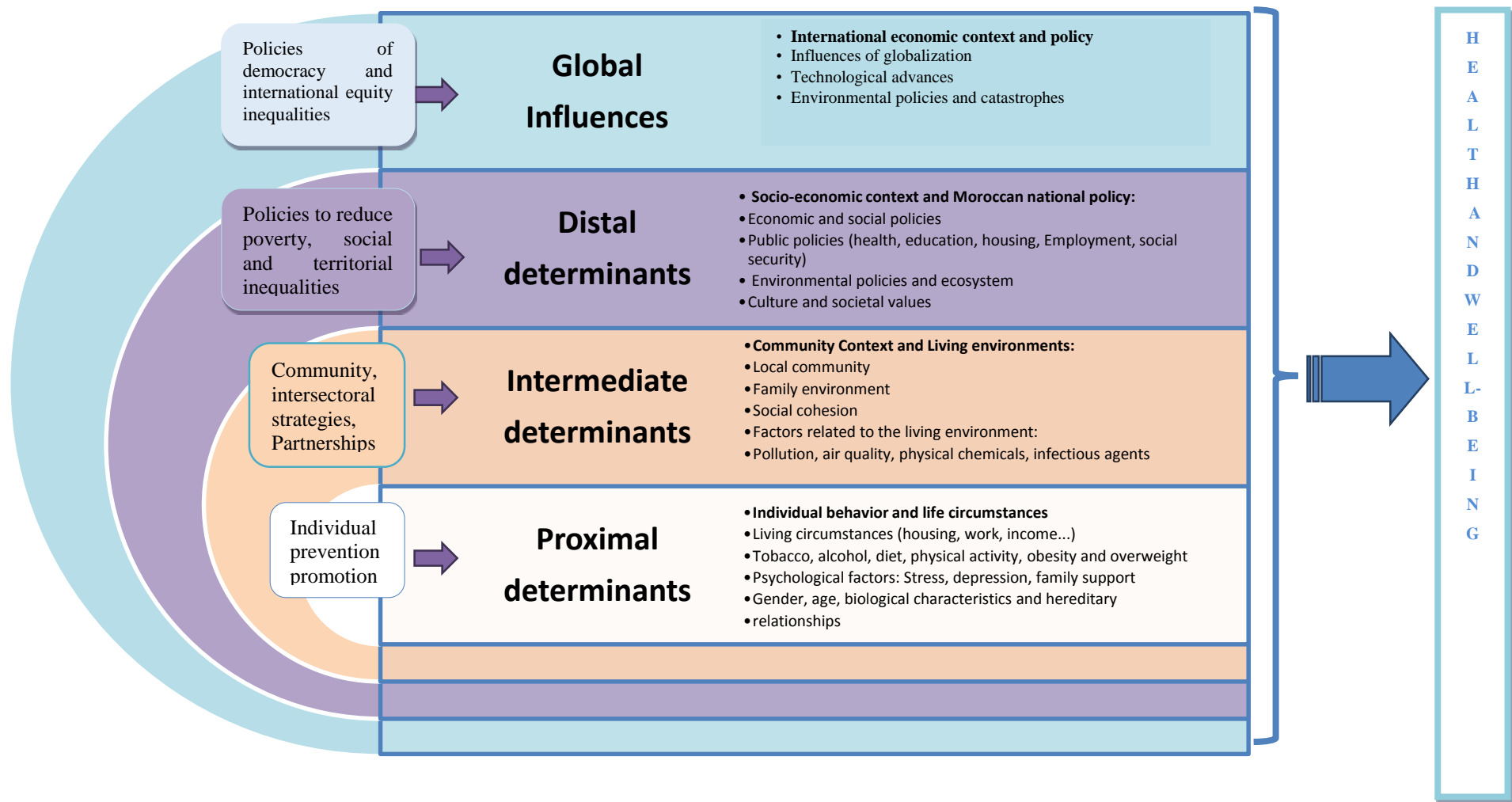
In this perspective, our project consists in proposing a conceptual framework of the determinants of health specific to the Moroccan context. The choice of model allows for a holistic and intersectoral approach that recognizes social inequalities, describes the role of individuals and communities, and gives the importance of upstream action, so the interactions between the determinants are clearly stated.

The proposed conceptual framework seems capable of helping to improve our understanding of complex problems in the Moroccan health system, as well as to support innovation in planning and policy development to contribute to action on the determinants of health.

This model takes into consideration the political orientations of the Moroccan government, which is moving towards a new model of social development and making the reduction of social inequalities in health a choice.

The model chosen is scientific in nature, and implies that essential health decisions must be based on an extremely solid methodological approach based on statistical data in order to properly feed the model with a systemic vision.

The method developed has inherent limitations in the construction of criteria that require the intervention of experts. Nevertheless, the proposed determinants of health framework are consistent with the results of other teams using other selection criteria.

Figure 1: Conceptual Model Of Health Determinants Specific To The Moroccan Context

The present model proposed as a reference framework for the determinants of health specific to the Moroccan context is an explanatory, interactive and action-oriented conceptual framework.

This model is composed of four categories that explain the determinants of health. Each category is composed of several subcategories, highlighting a set of factors that influence the health of individuals either directly or indirectly. Its determinants are intertwined and the links between its factors are complex.

The first category is macro-global, and consists of the global context that includes international economic policies, the influences of globalization, technological advances, and environmental policies and disasters.

The second category is a macro national level, focusing on state policies through its various economic, social, public policies (health, education, housing, employment, social security), environmental and ecosystem policies as well as culture and intra-muro societal values.

The third category is classified at the meso level, it is specific to the Community Context and living environments through the social cohesion of the local community and family environment, as well as factors related to the living environment within a well-defined territory that can be affected by pollution, air quality, physical chemical products and infectious agents.

The fourth category is micro includes the individual's life circumstances (housing, employment, income, educational level, etc.) as well as behavioural factors (tobacco, alcohol, diet, physical activity, etc.) and finally biological factors as fundamental to people's health as individual characteristics (sex, age, etc.).

This model highlights the complex interactions between distal, intermediate and proximal determinants of health.

Distal factors are those factors that act upstream and are presented as political, social, cultural, economic, ecological, ecological and technological factors, their influences are essential in designing the architecture of health systems and related policies to improve the health of the population.

Intermediate determinants are the interface factors between policies and their impacts on the community in different aspects: social categorization, as well as the impact of policies on the community's living environments.

Proximal factors include: physical and social environments, biological factors (including interactions between genes and the environment). Proximal factors are measured at the individual level and have a direct influence on the individual's health.

This model offers an aspect of intervention as facets of policy development and decision-making at different levels. A political level through the establishment of democracy and equity policies to reduce poverty and vulnerability as well as policies to reduce social and territorial inequalities. These policies must be translated into public policies to improve the national health system. A strategic level that focuses on intersectoral action and partnerships between different sectors outside the health sector through community mobilization to influence policies on the determinants of health. The third level is individual through awareness of the importance of behavioural changes and health promotion measures.

CONCLUSION

Today, despite the coexistence of different models on the determinants of health, the adoption of a coherent framework on the determinants of health based on the determinants of inequalities and inequities in health and the use of a holistic and intersectoral approach challenges the State's social model more broadly. In this context, the decision on the choice of this model is primarily of a political and scientific nature. In the light of these considerations, its adoption as a reference framework for Morocco, with the necessary adaptations, seems to us to be justified.

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