**A Review Paper on HIS in Morocco**

**Commissioned by**

Faculty of Health Sciences at the American University of Beirut (FHS/AUB) and Social Research Center of the American University in Caro (SRC/AUC)

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1. **Introduction**

In the era of e-Health, health systems in the Eastern Mediterranean region in general and in Morocco in particular are behind the international trend in terms of computerized management of health. In Morocco, the Health Information System (HIS) is still under reform in order to follow the worldwide speedy movement which is redesigning the way knowledge is created by integrating the whole process of data collection, analysis, processing and communicating reliable and accurate results to decision makers. Despite important reports and papers published on health inequity and social determinants of health (SDH) in Morocco, none of them were dedicated to health inequity and SDH in the HIS. For the HIS in Morocco to be an efficient tool of health management, it is compulsory that its implementation is regularly updated and information widely shared through an equitable access which foster participation of all components of the Moroccan population, including academic researchers, politicians, elected representatives and stakeholders in general.

1. **Structure of the current health information system, types of data available and their level of disaggregation.**

A national health information system (HIS) started informally operating in Morocco in 1980. However, its existence was not formalized by any legislative or regulatory text until 2011 when the expression ‘‘health information system’’ first appeared in the framework law No. 34-09 of July 2, 2011.

The HIS is supposed to monitor data collected from different sources, including population and housing censuses, civil registration, different national surveys, regional departments of Ministry of Health (MoH) and different studies carried out by national institutions and or international organizations. However, the main data used by the Moroccan HIS are provided by surveys carried out by the MoH and regular data collected locally by departments of the MoH at the levels of regions, provinces and communities. The MoH publishes regularly an annual report called ‘‘Health in numbers’’ (Santé en chiffres) [1]. This report summarizes values of different indicators, including health resources, performance, productions of public hospitals, evolution of main communicable and non communicable diseases, morbidities, causes of deaths and socio-demography in general.

Table 1 below gives a list of the main sources providing disaggregated data according to social determinants of health like gender, milieu of residence (rural-urban), income or consumption usually given by quintiles and education level.

**Table 1:** Health-related data sources

|  |  |  |  |
| --- | --- | --- | --- |
| **Study/survey/census** | **Date** | **Reference** | **Disaggregation** |
| Survey Covid-19 impact on household (economic, social & psychological) | 2020 | High Commission for Planning (HCP) [2] | Gender, milieu, income, education |
| Survey on Population and Family Health (ENPSF 2018) | 2018 | Ministry of Health. PAPFAM Project [3] | Sex, milieu, income, education, |
| Survey on NCDs Common Risk Factors 2017-2018 | 2018 | Ministry of Health  & WHO STEP [4] | Sex, milieu, income, education |
| Morocco Population and Housing Census (RGPH2014) | 2014 | High Commission for Planning ( HCP) [5] | Sex, milieu, income, education |
| National Survey on Disability | 2014 | Secretariat FEPH [6] |  |
| Survey on Population and Family Health (ENPSF 2011) | 2011 | Ministry of Health  PAPFAM Project [7] | Sex, milieu, income, education, |
| Disparities in access to healthcare : case studies | 2011 | ONDH [8] | Sex, milieu, income, education |
| Multiple Indicator Cluster Study (MICS) | 2006-2007 | Ministry of Health and UNICEF [9] | Sex, milieu, income, education |
| Morocco Population and Housing Census 2004 | 2004 | High Commission for Planning ( HCP) [10] | Sex, milieu, income, education |
| National Survey on Disability | 2004 | MSFFDS[11] | Sex, milieu, income, education |
| Survey on Population and Family Health (EPSF 2003-04) | 2003-2004 | Ministry of Health DHS [12] | Sex, milieu, income, education |
| Panel Survey on Population & Health (EPPS 1995) | 1995 | Ministry of Health  DHS [13] | Sex, milieu, income, education |
| Survey on Population & Health  (ENPS-II 1992) | 1992 | Ministry of Health  DHS [14] | Sex, milieu, income, education |
| Survey on Family Planning, Fecundity and Population Health (ENPS 1987) | 1987 | Ministry of Health  DHS [15] | Sex, milieu, income, education |

1. **The conceptual framing, health-related themes and indicators to measure health in general and SRH in particular?**

Following broadly the conceptual framing provided by the World Health Organization (WHO) [16-17], the Moroccan HIS is based, in principle, on the use of efficient integrated software materials that allows data collection, compilation, simulation and analysis to provide decision makers with relevant, accurate and updated information. In order to strengthen health information systems in the WHO Mediterranean region, WHO-EMRO analyzed health information systems in Eastern Mediterranean countries and found that by 2014, *‘‘in most countries, determinants of health and health risks are not regularly monitored, cause-specific mortality is incomplete and incorrectly reported; as to the coverage of interventions and the performance of health systems, they are not adequately assessed’’*. Consequently, the Regional Office lead two parallel and interrelated initiatives: **(1)** initiative focusing on improving civil registration and vital statistics, with particular emphasis on strengthening cause-specific mortality statistics, and **(2)** initiative aiming to reach a consensus on the main elements or components of a national health information system and to define for each component the aspects that should be monitored [18].

For health-related themes and indicators to measure health in general and Sexual and Reproductive Health (SRH) in particular, the Moroccan HIS is inspired by the large sets of themes and indicators used by international organizations and researchers. For instance, ‘‘Health Equity Monitor: Compendium of Indicator Definitions '', in which the WHO gives a list of 32 health indicators with precise definitions, accompanied by socioeconomic factors of disaggregation (quintiles standard of living, place of residence, education, nationality, region, sex, etc.) [19], the IHE report ‘‘The Marmot review’’, made up of 6 chapters dedicated to health inequalities in England and offering a large number of indicators and examples of application [20], the authors Albert-Ballestar S and Anna García-Altés A published in 2021 a systematic review of the indicators and themes used to measure inequalities in health. They retained 691 indicators and 120 themes [21]. Finally, a recent study on health inequity in Morocco retained five themes (health expectancy and morbidity, infant health and mortality, women and reproductive health, chronic diseases, access to health) and 40 indicators [22].

1. **Efforts devoted to strengthen the HIS. Do these efforts attempt to integrate equity and SDH in the HIS?**

In order to improve the national health information system (NHIS), the Ministry of Health (MoH) organized the first national conference on the national health information system (SNIS) and the use of new technologies, information and communication (NTIC) in July 2003. One the most important recommendations issued by that conference suggested the development of a master plan for the SNIS as a roadmap for the future development of the SNIS and its computerization; and since then, the Ministry of Health, with the support of international organizations (WHO, UNICEF, FNUAP, UNDP, World Bank) aimed to design a health information system based on an integrated process for collecting, processing, reporting and using health information to inform decision makers in policy development, program implementation and health research.

Nonetheless, despite its existence for many years, the Master Plan has not become fully operational due to many shortcomings that hindered its implementation such as:

\* Problems related to the quality of the data collected and compiled,

\* Long delays in the transmission of data despite the disease surveillance system being well functioning in many areas,

\* The fact that many parallel data collection systems operate side by side and include epidemiological surveillance data linked to specific public health programs, and data on curative services and consultations from primary health care facilities and hospitals,

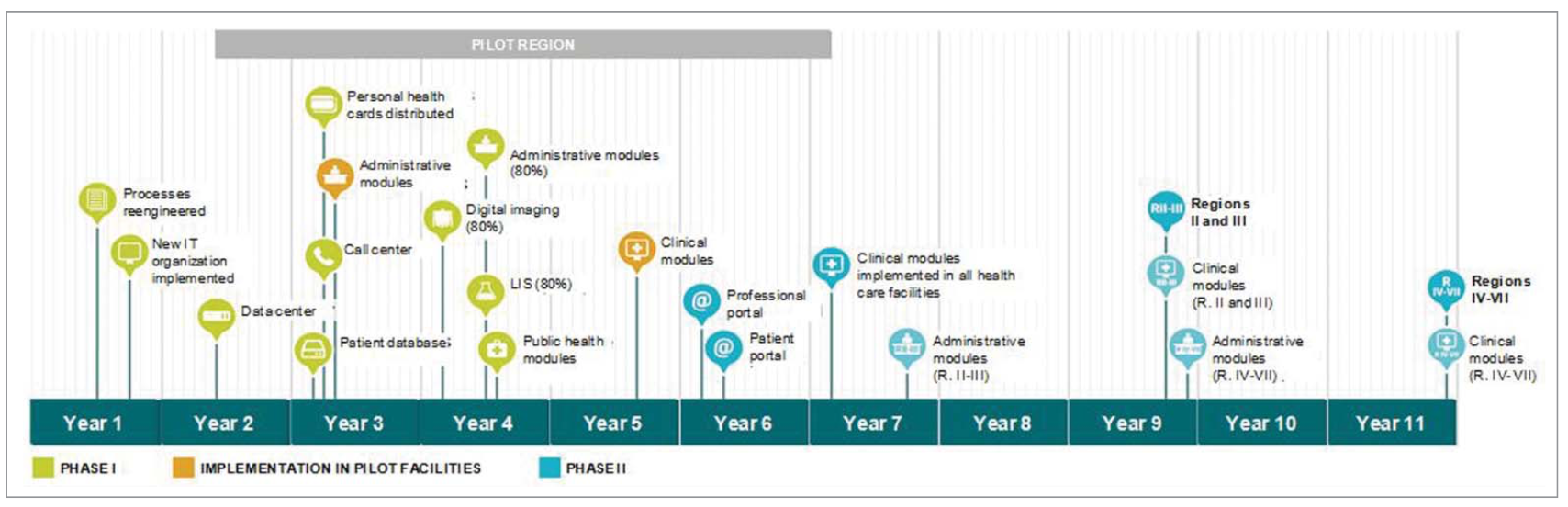
\* The existence of numerous technical and organizational problems at the provincial level, which further accentuates the delays in transmission to higher levels.

In 2012, with technical assistance from WHO, UNICEF and FNUAP, the UNDP allocated an amount of 142,722 USD to the MoH in order to improve the inefficient HIS which was based on paper documentation. This budget was mainly devoted to maternal and infant health/family planning and curative healthcare components of the HIS in Morocco [23].

In 2015, on the request of the government of Morocco, a loan of 100 million USD was allocated by the World Bank to improving primary health in rural areas in Morocco [24]. The document explaining this loan indicated that: *‘‘the organization and delivery of healthcare is fragmented and faces major resource constraints. There is no continuum of care between ambulatory and hospital care, which complicates effective patient follow-up and generates unnecessary costs. Primary health services suffer from a shortage of inputs, in particular drugs and health personnel. In addition, the system faces a critical shortage of human resources in health (HRH) throughout all categories of health personnel as well as issues of absenteeism, dual practice and inadequate skills. There are regional disparities in the distribution of healthcare personnel and there are also regional imbalances in the distribution of private healthcare providers. Because of a lack of a functioning primary health care, access to essential services are constrained, especially in rural areas as evidenced by the low contact rate (0.4)’’* [24]. Consequently, the lack of an integrated, reliable and accessible health information system makes it difficult for the Ministry of Health (MoH) to address these problems and to improve quality and accountability amongst healthcare actors.

With a main financial and technical collaboration from the World Bank, the MoH launched in 2016 a large reform program aiming to improve the health management information system reform (HMIS) of Morocco. As indicated by Figure 1, the implementation plan was scheduled on eleven years. A budget of 69.062 million USD was dedicated to phase I (2016-2018) and phase II (2019-2024). For more details, we refer to the interesting paper published by the team of the World Bank in 2017 in Health Systems & Reform and entitled *‘‘Developing an HMIS Architecture Framework to Support a National Health Care e-Health Strategy Reform: A Case Study from Morocco’’* [25].

Unfortunately, health equity and SDH are not given the importance needed in the the present HIS nor in the implemented reform.



**Frigure1:** Main Milestones of the Implementation Plan (2016 - 2026)

**Source:** Reproduced with kind permission from the authors of the paper by Le pape et al. [25]

1. **Health equity and Social Determinants of Health in Morocco and the necessity of their integration in the HIS.**

Following the interesting report on health equity and Social Determinants of Health (SDH) published by the WHO Commission on SDH in 2008, the government of Morocco in general and its MoH in particular, seemed to have well received the call of the Commission to reduce health iniquities by acting on SDH. Thus, Morocco signed the Rio de Janeiro Political Declaration on SDH and five reports on health equity and SDH in Morocco were produced by consultants committed and financed by WHO or WHO-EMRO in 2011, 2012, 2015, 2016 and 2021[26-30]. Moreover, a large number of surveys/studies/publications have been carried out by Moroccan institutions on social inequalities, regional disparities and inequity in health during the last decades [2, 31-34]. In particular, the HCP conducted a survey on the impact of the coronavirus on the economic, social and psychological situation of households [2] and the National Observatory of Human Development (ONDH) carried out interesting studies on the evaluation of the National Initiative for Human Development (INDH) programs and their effects on the reduction of inequalities [32-33] as well as on the intersectional discrimination of women and the accumulation of deprivations [34]. Furthermore, Moroccan researchers were (and are) also highly interested by research on the themes of health inequity/SDH, socioeconomic inequalities and territorial disparities [35-43].

However, despite the important work achieved by institutions, consultants and academic researchers on health equity and SDH, their integration in the HIS remains a crucial challenge. For instance, the fact that in a ten years period (2011-2021), the World Health Organization financed five consultants to analyse health inequities and write reports on the theme of health equity and social determinants of health in Morocco shows clearly that the MoH underuses the important information provided by the consultants to advance action on SDH in order to reduce health iniquities in Morocco.

Data concerning health equity and SDH among people living with disability also raises the need for the HIS to integrate such data. Indeed, using data from the 2004 general population census, the HCP estimated that the national disability prevalence was around 2.3% (2.4% in urban areas and 2.2% in rural areas) [44]. This prevalence would have more than doubled in ten years to reach 5.1% (4.8% in urban areas and 5.5% in rural areas) according to data from the 2014 general population census [45]. These values are lower than those estimated at the same periods (2004 and 2014) by the two national surveys on disability in Morocco and which found a national prevalence of 5.2% in 2004 [12] and 6.8% in 2014 [6]. On the basis of a population of around 36 million inhabitants in 2021, Morocco would have around 1.85 million people with disabilities (mild, moderate, severe or very severe) according to the HCP 2014 study [44] but the figure would rise to around 2.5 million according to the National Survey on Handicap 2014 [6]. The difference between the two estimates would be around 600,000 people with disabilities with significant differences according to different SDH, and this is really unacceptable.

Another example showing the shortage of HIS in Morocco is illustrated by health equity analysis concerning diabetes, blood pressure (BP) and chronic diseases in general on the basis of data provided by two national surveys carried by MoH nearly at the same time. The Survey on Population and Family Health (ENPSF 2018) [3] and the Survey on NCDs Common Risk Factors (STEP 2017-2018) [4]. The first survey considered known prevalence of diabetes and BP (as declared by persons participating in the survey) while the second survey considered both the known prevalence and the diagnosed prevalence, showing that 27% of women and 52% of men had never measured their tension and even more alarming, more than 55% of women and 71.5% of men had never measured their blood glucose. As a result, very large numbers of new diabetics and hypertensive men and women were diagnosed during the Survey STEP [4] and hence heath equity analysis also varies depending on whether the data comes from the first or the second survey.

More generally, the HIS in Morocco has, so far, concentrated on collecting, reporting and analysing data but did very little on the side of communicating information to decision makers in particular and to all components of the Moroccan population (academic researchers, politicians, elected representatives, NGOs…).

1. **The need to build a resilient and equitable health system and to foster research and discussion on the efficient ways to reduce health inequity by acting on SDH**

In Morocco, several initiatives and action plans have been implemented during the last decades, aiming directly or indirectly at reducing inequalities in general and health inequities in particular. Among the strategies and action plans dedicated by the Ministry of Health (MoH) directly to improving the health of the Moroccan population, we can cite the 2 sectoral strategy plans covering the periods 2008-2012 [46], and 2012-2016 [47], the National Multisectoral Strategy for the Prevention and Control of NCDs 2019-2029 [48], the National Nutrition Plan [49] and the Health Plan 2025 [50]. More recently (April 2021), the King of Morocco launched an important project towards achieving UHC and generalizing social protection to all Moroccans with the generalization of Compulsory Health Insurance before the end of 2022. The stress imposed by COVID-19 on the government of Morocco showed clearly the need to have a resilient health system prepared to deal conveniently with unexpected situations that may be caused by pandemics, financial crises, climate change or economic/political/social events.

In line with this framework of important initiatives, strategic plans and reforms, it is compulsory to have an integrated and reliable HIS able to deal with the whole management of health data, starting by collecting updated data and ending by suggesting efficient solutions to decision makers and obviously going through analyzing, processing and communicating with all stakeholders in order to foster research and constructive discussions.

Despite the important numbers of reports and papers published on health equity and social determinants of health in Morocco (as indicated in the previous section), none of them were devoted to discussing the gap in HIS and the ability of HIS to measure health equity and SDH. In order to overcome this shortage, the MoH should make the HIS more accessible and encourage stakeholders and academic researchers to participate, discuss, analyze and publish results on health equity and SDH.

1. **The Strategic New Model of Development and the challenge of rebuilding a country with more social justice, less territorial disparities and better access to human rights, including health, education and a decent life.**

In 2011, Morocco instituted a new Constitution stating health care as a fundamental right of the Moroccan people. Indeed, article 31 of the Constitution stipulates: *"The State, public establishments and local authorities work to mobilize all available means to facilitate equal access for citizens to the conditions allowing them to enjoy the right:* ***-*** *to health care;* ***-*** *social protection, medical coverage and mutual aid or solidarity organized by the State;* ***-*** *modern, accessible and quality education;* ***-****….* ***;******-*** *to sustainable development"*[51].

Morocco is engaged to achieve the 17 Sustainable Development Goals (SDG) and in particular SDG3 which aims to *“Ensure healthy lives and promote well-being for all at all ages”* by leaving no one behind [52].

In October 2017, at the opening of the first session of the second legislative year of the 10th legislature, the king of Morocco recognized that le development model in Morocco needs to be revised: *"... If Morocco has made manifest progress, recognized worldwide, the national development model, on the other hand, proves today to be unable of meeting the pressing demands and growing needs of citizens, of reducing categorical disparities and territorial differences and to achieve social justice.*

*In this regard, we invite the government, the parliament and the various institutions or bodies concerned, each in their area of competence, to reconsider our development model in order to bring it into line with the the country evolution...* " (Extract from the Speech of His Majesty King Mohammed VI Opening of the first session of the second legislative year of the 10th legislature - October 13, 2017)

Following this speech, an ad hoc Commission was designated to propose a New Model of Development (NMD) and after a year of meetings, discussions and consulting with all components of the Moroccan population, the Commission published a general report on a NMD. Concerning the health sector, le NDM general report indicated that: *‘‘despite the expansion of health coverage (AMO, RAMED), the difficulties of access to the health care system remain persistent, due to the low budgetary resources allocated to this sector and a rate of medical supervision far below the standards established by the World Health Organization (WHO) and an unequal distribution of health care provision on a territorial level. Health is a source of vulnerability for Moroccans, since 38% of the population lacks medical coverage and households provide on average 50% of health expenditure’’* [53].

The 2021 Moroccan general election was held on 8 September 2021 to elect the 395 members of the Parliament and consequently the new government will inevitably adopt the NMD as a plate-form and work to achieve a more equitable development with more social justice and less territorial disparity, especially in terms of access to health, education, employment and decent conditions of live in general.

1. **Conclusion**

During the last decades, Morocco has made noticeable achievements in terms of access to health and improvement of conditions of life in general. In line with the hard work to achieve the Sustainable Development Goals (SDGs), the country is moving toward universal health coverage (UHC) with the ambition to cover the majority of its population. However, action on social determinants of health to reduce health iniquities remains a crucial challenge. Indeed, the recent study made by a consultant on health equity and SDH in Morocco showed that 23 out of 40 indicators considered were associated with a high degree of health inequity based on the values (>10%) of the index of dissimilarity or the concentration index related to inequalities by milieu (rural-urban), income, education level and territorial disparity by regions. Building an efficient HIS that integrates all health data and allowing an equitable access to information will ineluctably help decision makers to *“Ensure healthy lives and promote well-being for all at all ages”* by leaving no one behind.

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