

# Addressing Urban Health Inequalities Using Urban HEART in the Eastern Mediterranean Region

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**Abstract - This study is addressing the implementation of a tool called Urban Health Equity Assessment (Urban HEART) in 9 cities from three countries (namely Tunisia, Egypt, Morocco) plus reviewing 10 reports documenting the assessment of 10 cities in two countries (Saudi Arabia and Bahrain). The countries and cities were selected based on request had been submitted by those countries to World Health Organization of Eastern Mediterranean Region (WHO/EMRO) to join the Health City Programme (HCP). The study has been done by collecting the reports for total of 19 cities in 5 countries then reviewing and documenting the observations on the list of the indicators of physical environment and infrastructure, Urban HEART matrix. The analytic process involved identifying, appraising, and synthesizing documents' data. The document reviews were designed to identify the highlighted inequality issues and recommended responses and interventions related to urban planning**

**Index Terms- Healthy cities, Health city programme, Health equity assessment, Urban HEART.**

## INTRODUCTION

The processes occurring in urban areas are important to understand the economic, social, political, and health transformations in a country [1]. Urbanization has been expanding, and it is expected to grow over the coming years. More than 50 % of the population in the Eastern Mediterranean countries lives in cities and by 2030, the percentage of the world population living in urban areas will reach more than 60 % [2].

The concept of healthy city aims to create and enhance the physical, mental and social environments and go furthermore to expand those resources which help and encourage the communities to collaborate and mutually support each other to maximize developing the potential of the life functions [3]

The Urban Health Equity Assessment and Response Tool [Urban HEART] [4] is a collective effort and has been jointly developed by the WHO Centre for Health Development, Kobe [Japan], in collaboration with regional offices of WHO, and city and national officials from across the world.[5]

Health equity is a considered a key component of urban planning that tackles the issues of water, sanitation, waste management, housing, living conditions and neighborhood environment [6]. “There is a clear need for urban planners to integrate health considerations fully into their work, both in policy and practical terms, and for all sectors in cities to work together to improve health, wellbeing and quality of life” [7].

The World Health Organization, the Eastern Mediterranean Regional Office [WHO/EMRO] has supported the implementation of the Urban HEART tool in 13 middle east countries between the years of 1991 and 2015. Namely, Afghanistan, Bahrain, Egypt, Iran, Jordan, Kuwait, Lebanon, Morocco, Oman, Pakistan, Saudi Arabia, Sudan, and United Arab of Emirates. The process helped to draw the attention to identified inequality issues in target cities and propose responses and policies that derived evidence-based plans for action. Several implementations have had an impact on different health, socioeconomic, social, political, and environmental domains. However, It is not clear whether the proposed interventions and action plans have properly reflected the targeted responses for the identified issues, and in particular, in the domain of urban planning. [8]

The submitted reports by candidate cities that have applied to join the HCP [Health City Programme] initiative have been evaluated to be at different levels of completeness due to the phase of implementation for each city. These reports, however, hold significant data with regards to the indicators of physical environment and infrastructure, which is the interest of this study.

This study collates data from different HCP implementations using Urban HEART tool in the areas of physical environment and infrastructure to draw and introduces a set of recommendations for future implementations based on lessons learned.

### METHOD

This study documented the implementation of the Urban HEART tool in the countries of the Eastern Mediterranean Region [EMRO]. The design of the study involved both processes of observations and review of relevant documents of the United Nations related Sustainable Development Goals, reports of relevant summits, proposals for initiatives, communication products, WHO Community Based Initiative program since the year 1991, including user manuals for implementation of Urban HEART tools, directives and memoranda, minutes of periodical meetings, terms of references, guidelines, and implementation projects' documents.

The analytic process involved identifying, appraising, and synthesizing documents' data. The document reviews were designed to identify the highlighted equity issues and recommended responses and interventions related to urban planning.

The study then reviewed the output of the series of conducted Urban Health Equity and Assessment and Response Tool. This step involved reviewing how the reports generated evidence from assembled data, how health equity gaps were prioritized, and what best responses were identified.

The adopted criteria for assessment covered the following key elements:

- 1) The programme implementation site is clean and has enough green areas.
- 2) An effective community-based solid waste management system is set up in the programme implementation site.
- 3) Water sources are mapped and protected. A water treatment plan has been established and the healthy city coordinating committee is aware of it.
- 4) All families have sustainable access to safe drinking - water and basic sanitation. They are aware of the dangers associated with unsafe water and know how to purify water using what is locally available.
- 5) Cluster representatives/volunteers are trained in maintaining healthy environments/healthy settings and related interventions accessible to the public such as healthy marketplaces, healthy hospitals, healthy schools, etc.
- 6) The community is involved in food safety and all healthy food shops/markets are monitored by the national food safety departments.
- 7) Healthy food markets are easily accessible selling essential products such as iodized salt

- 8) Smoking is prohibited in closed areas and public places and a plan for creating a smoke -free city has been developed, approved and put in place.
- 9) A community -based air quality management center is established in the healthy city programme implementation site [involving the municipality] to ensure that air pollution is monitored regularly. The community is aware of the dangers of air pollution.
- 10) City planners are implementing interventions that prevent air pollution.
- 11) Urban zoning and housing schemes conduct air pollution impact assessment before being approved. Such housing schemes ensure, for example, households' access to clean fuel, ventilation, improved kitchen stoves and heating appliances.

Finally, draft reports and dashboards were reviewed in terms of the implementation of Urban HEART in the Eastern Mediterranean to deliver different information items. The study extracted available data that were reported at the implementation phase in relation to [i] Access to safe water; [ii] Access to improved sanitation; [iii] Households served by municipality solid waste management system; [iv] Work-related death accidents [per 100 000 exposed workers]; [v] Work-related injuries [per 100 000 exposed workers]; [vi] Alcohol outlets [density per 100 000 inhabitants]; and [vii] Access to green spaces.

### DISCUSSION AND STUDY ANALYSIS

According to the Urban Health Equity Assessment and Response Tool [Urban HEART], the list of indicators is categorized into five major domains. The indicators are grouped within a general scheme specifying the comparative aspect of inequality between different districts and areas.[4]

This study involves analysis of the indicators of physical environment and infrastructure domain, which is relevant to urban planning, the scope of the study.

*A. The programme implementation site is clean and has enough green areas.*

Regardless of the availability of space, the desert nature of some cities - or not having widely distributed space to establish a playing and recreational areas with green space - all participating cities managed to allocate space, even cities with limited space such as the city of Om Al Hassan and Unaiza, cities in desert areas such as Sharoura. Not many participating cities paid attention to the proper planning and establishment of hydraulic waste management collection systems for their green areas. Only Dirriyah took this into consideration. Supporting families with productive projects was considered by some cities, such as the Aljournoum, by enabling green areas as marketing areas for family products, or cities with many areas, such as in the major city of Medinah.

All participating cities have reported to be covered under the supervision of the governorate or municipality level. Some cities have relatively quality green space but there is a lack of maintenance of many parks and some parks are not really in use by the community.

*B. An effective community-based solid waste management system is set up in the programme implementation site.*

A special attention was given to different types of waste management including medical waste management [60% of participating cities], food and organic waste management, green container [20%], demolition and construction waste management [20%], tire recycling [10%], and effluent treatment [20%]. In general, interventions are implemented through contracting private sector companies [e.g. for solid waste management, medical waste... etc.] is in the case of the Saudi Company for Environment Protection SEPCO covering medical waste. Regular awareness campaigns are not a common practice covering the company workers with the participation of school students and families.

*C. Water sources are mapped and protected. A water treatment plan has been established and the healthy city coordinating committee is aware of it.*

Mapping of all groundwater sources and using desalination systems was proved to be useful practices in almost every investigated city. All cities conduct a close follow-up on water quality at household level and examining samples on regular basis. Obliging all the households to use water-savers was not reported to be a common regulation [10%]. All households of participating cities have sustainable access to safe drinking -water and basic sanitation.

*D. The community is involved in food safety and all healthy food shops/markets are monitored by the national food safety departments.*

Unlike the majority of participating cities that recruits active volunteer groups for monitoring and ensuring healthy environment, Om Al Hassam, Bahrain [10%], relies on MoH and Governorate office to closely monitor Food safety.

A good practice for food safety is to implement licensing and renewal of licenses for food markets [90%]. 20% of cities reported involving school students to be responsible about food safety in school cafeteria [i.e. the implementation of "Young Inspector" Project in Aljoumoum and Dirriyah, SAA] . 20% of cities reported the adoption of a hotline to report any violation case related to food safety by municipality [i.e. Riyadh Al Khabra, Uniza, SAA]. Implementing an accreditation system for the restaurants based on quality criteria is not a common practice among participating cities. [10%]". All cities have reported the establishment of national food safety departments and/or a public health unit at municipality or general hospital levels. One city went further established a center to examine the crops before selling in points of sale.

The center has laboratories equipped with high technology and capacity. All cities have reported achieving a level of implementation for healthy food markets. 33% of cities reported not having a single case of food poisoning in the past three years. The food safety center in one city has applied the concept of the Health Farm whereby farms that meet the standards are designated as health farms. 33% of cities reported the establishment of a section for organic food in the main city market"

*E. Smoking is prohibited in closed areas and public places and a plan for creating a smoke -free city has been developed, approved, and put in place.*

Under the umbrella of HCP, banning tobacco smoking is well signaled in the majority of participating cities in addition to providing smoking cessation services in health centers and hospitals free of charge. Few cities have initiated the protocol for cessation of smoking in public places [e.g., Taif]. Some cities reported no point for selling tobacco products as per the Governor Decree under the umbrella of HCP and water pipe smoking is prohibited in all coffees, restaurants and recreational places [e.g., Aljomoum]. Some cities are announced to be a non-smoking city [e.g., Meddina, SAA]"

*F. A community -based air quality management centre is established in the healthy city programme implementation site [involving the municipality] to ensure that air pollution is monitored regularly. The community is aware of the dangers of air pollution.*

*G. City planners are implementing interventions that prevent air pollution.*

30% of cities have established air quality measuring stations; 40% of cities assigns the responsibility to monitor the quality of air to the civil defense in the city and/or the civil aviation; Some cities [20%] have reported relying on huge number of palms and farms that help good quality of air. 40% of cities have the NGO consortium [through its volunteer groups] engaged in regular awareness campaigns and distributing the masks on regular bases. "60% of cities reported having technical examination of vehicles to measure rate of emissions of carbon by Traffic sector.

*H. Urban zoning and housing schemes conduct air pollution impact assessment before being approved. Such housing schemes ensure, for example, households' access to clean fuel, ventilation, improved kitchen stoves and heating appliances.*

30% of the civil defense departments reported conducting regular training sessions for the communities as well as the government sectors. 50% of cities have reported having green areas, palms, or treeing projects in collaboration with Ministry of Agriculture to purify air quality.

One city adopted shredding methods instead of burning the destroyed and contaminated palm trees. More

environmentally friendly approaches, geared by the community, and have heat isolation obliged to be installed in all buildings to rationale the use of air conditions". Environmental aspects are considered before giving the construction license for any residential area.

*The Implementation Phase*

Beyond the traditional way to collect and analyze data to track the health inequality issues. As mentioned before, in this study we will focus on the list of indicators relevant to Physical environment and Infrastructure.

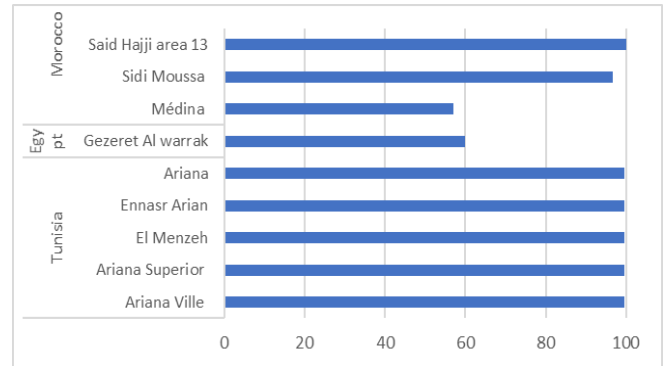
The implementation of the tool was taken place in 9 cities from three countries [namely Egypt, Morocco, and Tunisia]. Reviewing the final reports documenting the assessment and the results, Table I displays the matrix for the various indicators in the urban heart matrix for the physical environment and infrastructure. The color code used in the matrices is:

- red: the rate is below the national target and the urban average
- yellow: the rate is below the national target and equal to the urban average
- green: the rate is roughly equal to the national target and the urban average
- gray: No data available

**TABLE 1: URBAN HEART MATRIX, INDICATORS OF PHYSICAL ENVIRONMENT AND INFRASTRUCTURE**

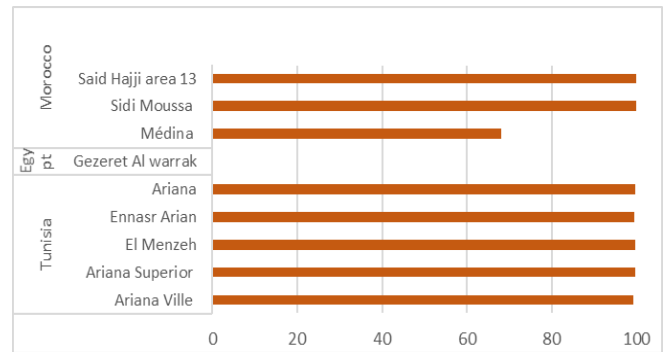
Indicator	Tunisia, Ariana				Urban average	Egy pt	Morocco, Sale					
	Ariana Ville	Ariana Superior	El Menzeh	Ennasr Arian			Coverage	Gezeret Al warrak	Medina	Sidi Moussa	Said Hajji area 13	Said Hajji area 14
Access to safe water	99	99	99	99	99	10	17.4	60	57	96	10	88
Access to improved sanitation	5	6	6	5	6	0	0	84	68	6	0	88
Households served by municipal solid waste management system	10	10	10	10	10	10	0	80	70	10	92	4
Work-related death accidents [per 100 000 exposed workers]	0	9	6.6	0	3.9	50	<1%					
Work-related injuries [per 100 000 exposed workers]	53	99	11	10	88	25						
Alcohol outlets [density per 100 000 inhabitants]	2.7	0	0	6.1	1.8	50						
Access to green spaces	6.5	2.8	5.4	6.3	4.9	75	100					

By analyzing the infrastructure and environmental indicators, Figure 1 displays that Ariana population was reported to have better access to safe water, improved sanitation and fewer work-related death and injuries than other urban or rural populations in Tunisia. The challenge is to achieve 100% benefit of these public services, starting with the districts of Ariana Ville and El Menzeh, then Ariana Superior and EnNasr.



**Figure 1 ACCESS TO SAFE WATER**

Figure 2 shows that both Ariana and Sale cities, in Tunisia and Morocco respectively, showed good access to improved sanitation, however the Gezeret el warak showed no access. Which requires urgent intervention.



**Figure 2 ACCESS TO IMPROVED SANITATION**

Access to green spaces one of the most important indicators, which should be taken into consideration. Systematic planning to best arrange urban green space and urban development is needed in the near future to deal with the benefits to biodiversity, human well-being and economic output. Figure 3 shows that this aspect needs a lot of improvement in Tunisia, Ariana city.

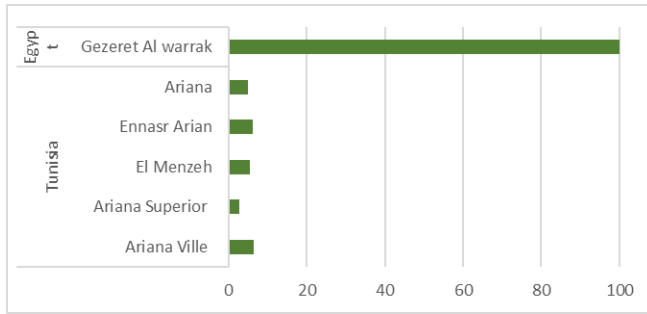


Figure 3 ACCESS TO GREEN SPACES

## RESULTS AND CONCLUSION

It was noticed that the stress of urbanization and work conditions, have contributed to the increased prevalence and burden of chronic diseases as reported in Ariana city, Tunisia. Physical inactivity was identified as one of the two preventable risk factors.

Regarding road traffic fatalities and injuries, more attention should be given to identifying specific actions to make the roads safer including enhancing road infrastructure and conditions, road assessment, adopting global and national design standards and specifications, and capacity building for optimal use of road networks and pedestrian use.

There is a need to advocate for environmental changes to encourage healthy lifestyle behavioral changes among community members, and to disseminate health messages using mass media, social marketing, etc. to promote the community dialogue.

The projects related to establishment of playing and recreational areas with green spaces should be well planned and properly distributed in response to community needs. Coordination team need to be established at the subnational level [e.g. governorates, municipalities, and districts]. It is essential to establish proper waste management collection systems in support of developed green and public sports spaces, and considering the allocated funds for such projects, hydraulic systems might be considered for big cities. All green areas need to be provided with special arrangements for handicapped and people with special needs considering that the reports of global organizations show that 15% of the total population worldwide experience some form of disability Krahn, G. L. [2011]. WHO World Report on Disability: a review. Disability and health journal, 4[3], 141-142.

Contrary to the high adoption of medical waste management [60%], increasing the management for other areas [i.e. Tire recycling, food and organic waste management, Effluent treatment] and establishing collaboration between municipalities and health centers are essential to sustain the outcomes of a healthy city.

Regulations need to be updated to oblige the use of water savors in case of adopting desalination systems and/or using artesian wells, which is still a common practice in several countries.

Food poisoning is anticipated to be an issue in the majority of big cities. Signing memoranda of understanding with well recognized reference labs for quality control is a good practice to follow.

Special measures and extra capacity need to be put in place during critical seasonal events and tourism, and a practical balance between the engagement of governmental bodies vs. community volunteers need to be hit. Scaling up the implementation of the concept of organic food sections in main city markets and indicating the calories of the served food in restaurants have been proven to be key practices to enhancing population health.

More cities are adopting the recommendations of HCP for tobacco banning. Limiting the number of selling points for tobacco, similar to alcohol, and the explicit signaling of the banning of water-pipe smoking - as a type of banned tobacco – would facilitate the banning practice.

Several reports have confirmed the perception that relying on palms and farms to purify air need not to be complemented with HCP recommendations for establishing an air quality station and utilize air purifying filters for industrial activity to prevent air pollution. There is a need for more raising awareness campaigns, frequent training sessions for communities and government sectors, and more engagement with NGOs and other volunteer bodies to adopt good practices and prevent air pollution. Adopting environment friendly methods to eliminate destroyed and contaminated palms and corps [e.g. shredding methods instead of burning methods]. National governing bodies [e.g. HCP coordination committees] need to be established in order to support different teams at all levels and analyze collected information and successful implementation for scaling up and repeating.

Commitment of governmental bodies need to be reflected in the proper formulation of governing bodies that would involve different stakeholders engaged in relevant areas such as urban planning, physical environment, infrastructure, and social mobilization. It is also essential to build capacity in the fields of planning, implementing, and evaluating community-based activities, and ensure proper planning and securing resources for sustained activities.

## STUDY LIMITATIONS AND RECOMMENDATIONS

Several reports included data gaps due to different reasons. One example is the unreported air pollution indicators for Ariana city. Future studies could review international HCP case studies with different tools and indicators had been adopted in different regions for the purpose of comparison and unifying tools and methodology as advised by the WHO.

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