



## Stakeholder assessment of policy options to address obesity in Morocco

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### Abstract

The current study aimed to map and analyze how key stakeholders evaluated options for dealing with the rising incidence of obesity in Morocco. We followed the multi criteria mapping methodology through a structured interview to 37 stakeholders. The 12 options covered both dietary and physical activity issues and are deliberately geared toward changing people's environment. The criteria chosen by the participants were classified into 6 groups. Feasibility, costs, and societal benefits were the three groups of criteria most used by all participants to evaluate policy options. In an all-overall analysis, the more popular policy options were those groups as educational initiatives include: public health education; reinforcing food and nutrition in the school curriculum as well as controlling advertising and reinforcing physical activity in schools were found to be the most effective in combating obesity. The three measures dealing with education and training and strengthening physical activity education in schools were ranked highest by the interviewees.

**Keywords:** Multi-criteria mapping, obesity, policy options, stakeholder, Morocco.

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### 1. Introduction

Obesity is a pathology defined as an abnormal or excessive accumulation of fat in the adipose tissue that can lead to health problems [1]. For adults, WHO defines overweight, and obesity as follows: a person with a BMI  $\geq 25$  is considered overweight and obese when the BMI is over 30 [2]. Thus, according to WHO estimates in 2016, nearly 2 billion adults were overweight, of which 650 million were obese, representing 39% and 13% of the world population, respectively. In Morocco, according to the most recent data reported by the National Survey on Common Risk Factors for Non communicable Diseases 2017-2018, the incidence of overweight among adults over 20 years of age is 53%, of which 20% are obese. Obesity is more prevalent in urban areas (22.8%) than in rural areas (14.9%). Women (29%) are more exposed to this form of malnutrition than men (11%). The Ministry of Health also points out that the prevalence of obesity has increased by 34% between 2004 and 2017[3]. In 2018, the National Population and Family Health Survey showed that among children under five years of age, the prevalence of overweight is 10.8% and obesity is 2.9%. These affect boys more than girls; 12.3% versus 9.2% for overweight and 3.6% versus 2.2 % for obesity. Depending on the area of residence, urban areas are more affected by

overweight than rural areas (11.7% versus 9.7%). Among adolescents aged 13 to 17, the prevalence of overweight is 13.9%; 10.7% among boys and 17.8% among girls, and the prevalence of obesity is 3%; 2.7% among boys and 3.3% among girls [4]. Moreover, obesity is not only due to nutritional imbalance and physical inactivity, but it is a multifactorial pathology. Their occurrence is due to psychological, genetic, socio-economic and cultural factors. However, the overconsumption of food rich in fat and carbohydrates, urban development and lifestyle influence the obesity epidemic. In general, overweight and obesity are major risk factors for a number of chronic diseases including type 2 diabetes, metabolic syndromes, cardiovascular disease, hypertension, hyperlipidemia, certain cancers, sleep apnea, and osteoarthritis [5, 6]. In Morocco, the Ministry of health is responsible for the development and implementation of government policy on population health. Within this framework, it has prepared a multisectoral strategy for the prevention and control of non-communicable diseases 2016-2025; and which has given great importance to obesity as it is considered one of the risk factors for chronic diseases, especially in the context of "the establishment of a program for the fight against obesity, based on preventive measures, organization of the health care offer and early detection" [7].

The purpose of this article is to map the views of actors representing different sectors of activity on policy options, exploring concordances and divergences.

## 2. Materials and methods

The MCM (Multi-Criteria Mapping) methodology was used: quantitative and qualitative data were collected from 37 stakeholders. The interview sessions took place in 2009 and 2010. A broad range of sectors was selected to ensure that the range of views gathered was as comprehensive as possible. These sectors are divided into 7 broad categories: A. Government; B. Agri-food; C. Health professionals; D. Education; E. Communications- Media; F. NGOs-Associations; G. Multilateral Partners. A key feature of the MCM method is that it fully recognizes the diversity of views and their uncertainty, while remaining focused on a very pragmatic comparison of the performance of different possible actions. During the interviews, which lasted between two and three hours, the interviewees were asked to give their opinion on a series of twelve action options selected by the project team. As shown in the table 1, these twelve options were grouped into five clusters: 1- Action to promote exercise and physical activity; 2- Changes in food supply and demand; 3- Measures on food and nutrition information; 4- Measures on education; 5- Institutional reforms. Finally, participants could choose their own action options and include them in the analysis as “additional options”. The MCM methodology has a simple four step structure: 1- Definition of the stock options; 2- Selection of a set of criteria that represent the factors deemed most important by the interviewee to evaluate the performance of the options; 3- Evaluation of the performance of the options according to each selected criteria using a numerical rating system; 4-Assignment of a weighting coefficient to each criteria in order to reflect its relative importance in relation to the other judging factors. Finally, using a simple formula, the scores for each option are multiplied by the weighting coefficient for each criteria, resulting in an overall ranking of the options that takes into account the optimistic and pessimistic judgments of the performance of each option. The analysis of the data collected was performed with the ‘MCM Analyst’ software. The six categories of criteria that are proposed by the project team to evaluate the options are as follows: 1-Efficacy in addressing obesity; 2-Extra health benefits; 3-Feasibility; 4-Social acceptability; 5-Costs; 6-Societal benefits. Finally, the main results are presented to the interviewees and discussed with them during feedback workshops.

## 3. Results

### 3.1. Distribution of the criteria according to the categories of actors

Table 2 shows the types of criteria that were most used by all participants and by the different categories of actors. It appears that feasibility, costs, and societal benefits were the three groups of criteria most used by all participants to evaluate policy options, accounting for 34% (58), 26% (44) and 18% (30) of the total number of criteria used, respectively (n=168). Efficacy in addressing obesity did not receive much attention: it accounted for only 7.7% (13) of all criteria.

### 3.2. Weighting for all participants

The range of weights by criteria groups for all participants is presented in figure 1. Feasibility, efficacy in addressing obesity and societal benefits are the criteria that received the greatest weights from some interviewees.

### 3.3. Evaluation of the options by the stakeholders according to the different criteria

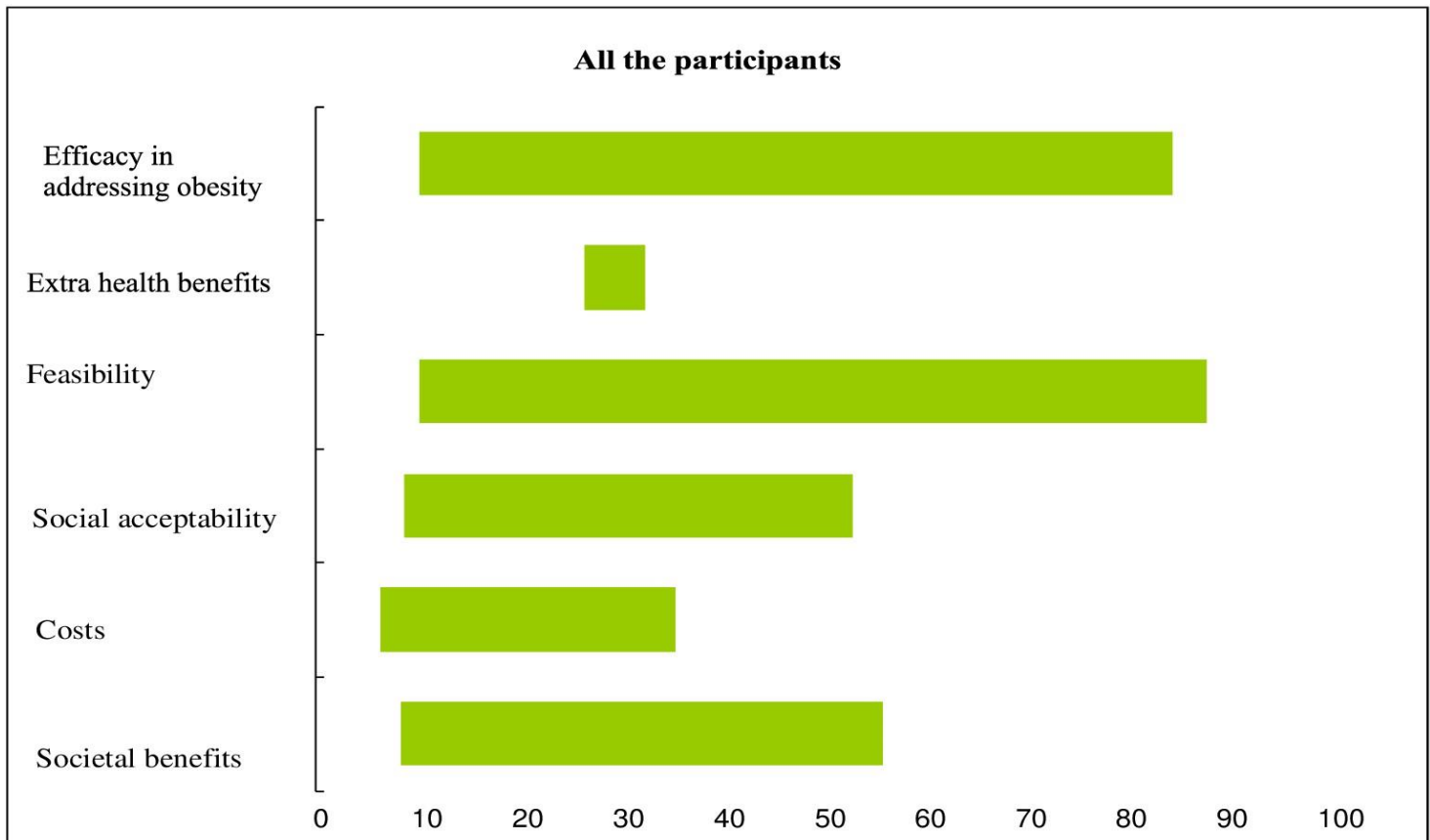
The evaluation of the policy options by the project participants according to the criteria categories is presented in figures 2. Two educational options: -public health education; -strengthening food and nutrition in the school curriculum, as well as controlling advertising and strengthening physical activity in schools were considered the most effective in combating obesity. All three educational options as well as school based physical activity were considered by the interviewees to be the most feasible. Interviewees felt that improving the availability of community sports and recreation facilities, strengthening food and nutrition in the school setting, and increasing physical activity in schools would be the most acceptable options to Moroccan society. Changes in planning and transportation policies, agricultural policy reform, and improving the availability of public sports and recreation facilities were the three most costly options. Changes in planning and transportation policies was also considered one of the least effective, least feasible and least socially acceptable options. According to the interviewees, two educational measures, strengthening food and nutrition in the school curriculum and health education, and strengthening physical activity in schools would provide the most benefit to society.

## 4. Discussion

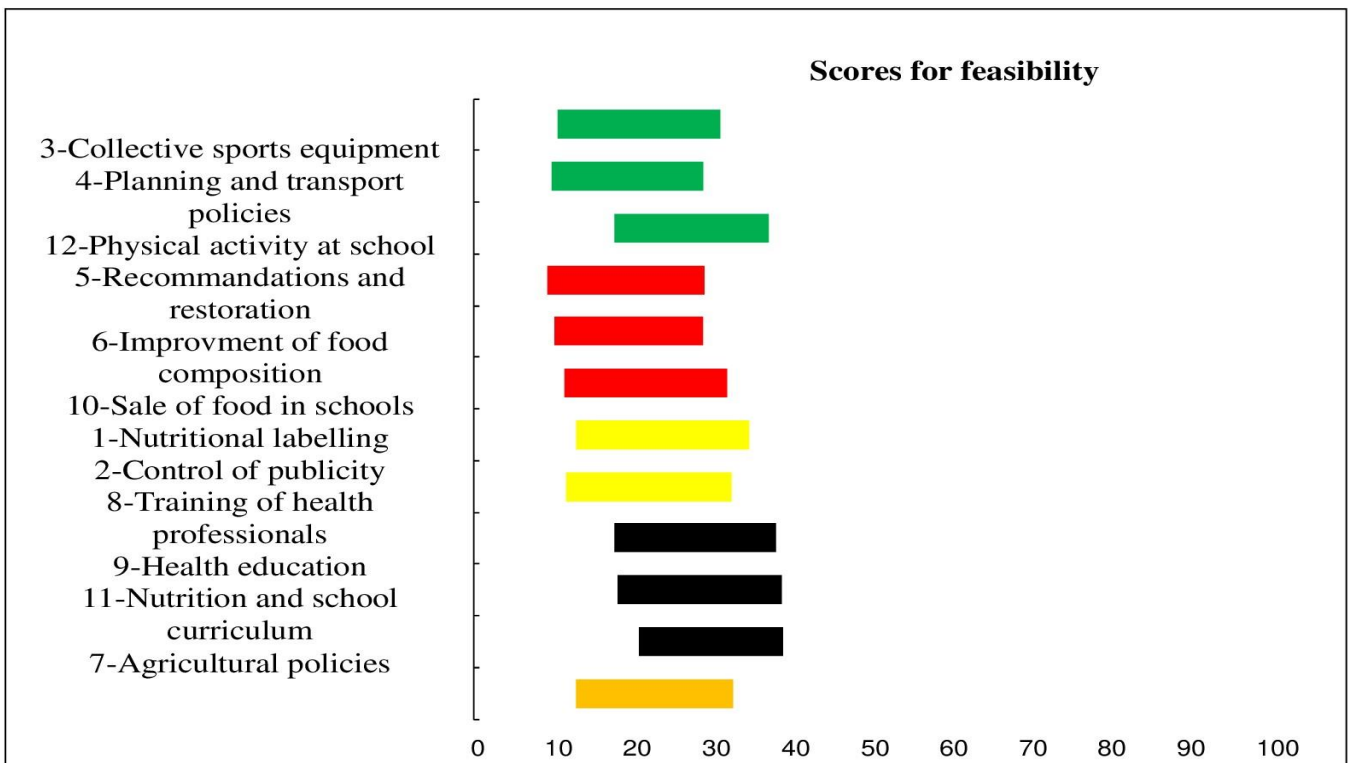
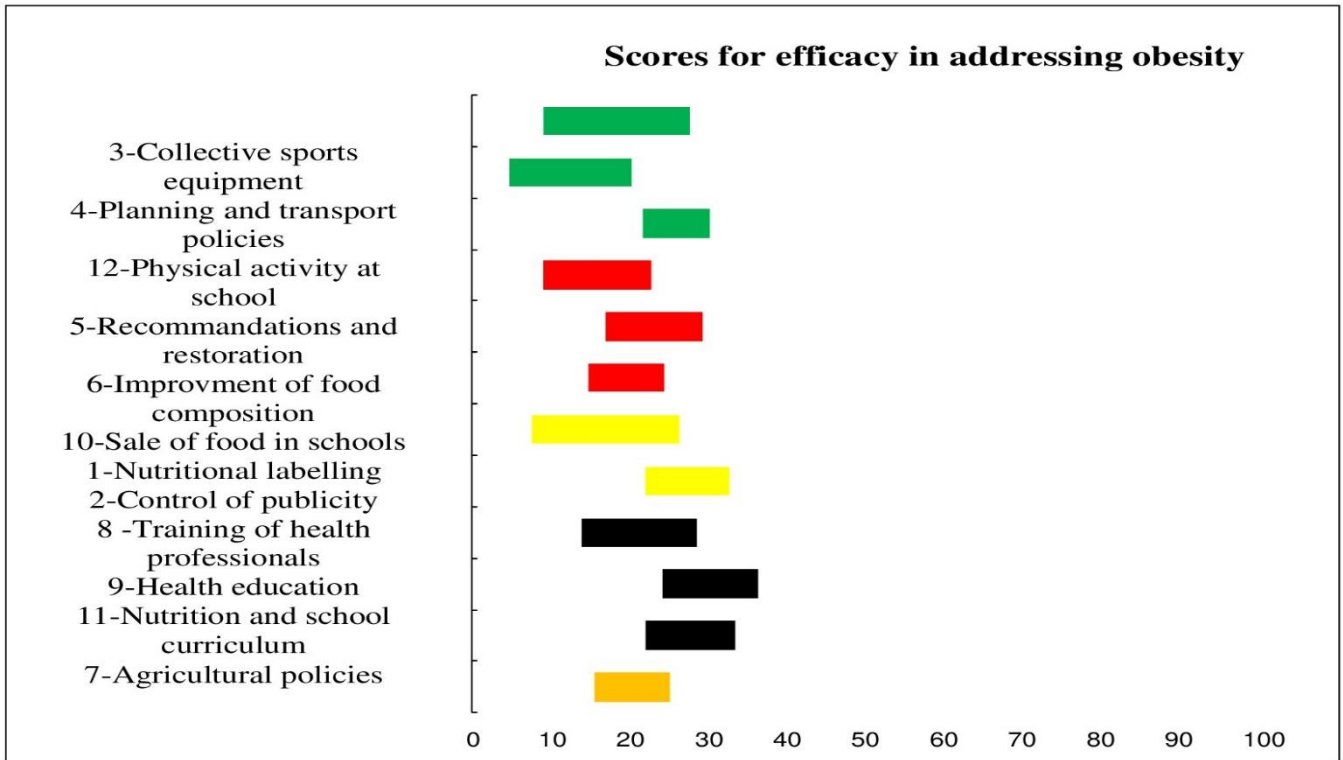
The results of this study showed that the feasibility, costs, and societal benefits were the three groups of criteria most used by all participants to evaluate policy options, accounting for 34% (58), 26% (44) and 18% (30) of the total number of criteria used, respectively (n=168). Efficacy in addressing obesity did not receive much attention: it accounted for only 7.7% (13) of all criteria. The frequency of use of the different groups of criteria varies according to the categories of actors: the government sector (A), health professionals (C), and NGOs (F) largely favored feasibility criteria, while the agri-food sector (B) favored cost criteria. Communication-media (E) and multilateral partners (G) most frequently chose both feasibility and cost criteria. After feasibility, the government sector and health professionals placed the most importance on costs and benefits to society. Surprisingly, health professionals do not give much importance to extra health benefits, nor do NGOs-Associations to benefit society. A study conducted in Hungary showed that efficacy, feasibility, social acceptability, and societal benefits were more important than costs [8]. In the same sense, another study conducted in Spain showed that the criteria considered to be the most important were efficacy and extra health benefits [9]. Thus, another study in Finland stated that the criteria relating to societal benefits and extra health benefits were the most used by all participants [10].

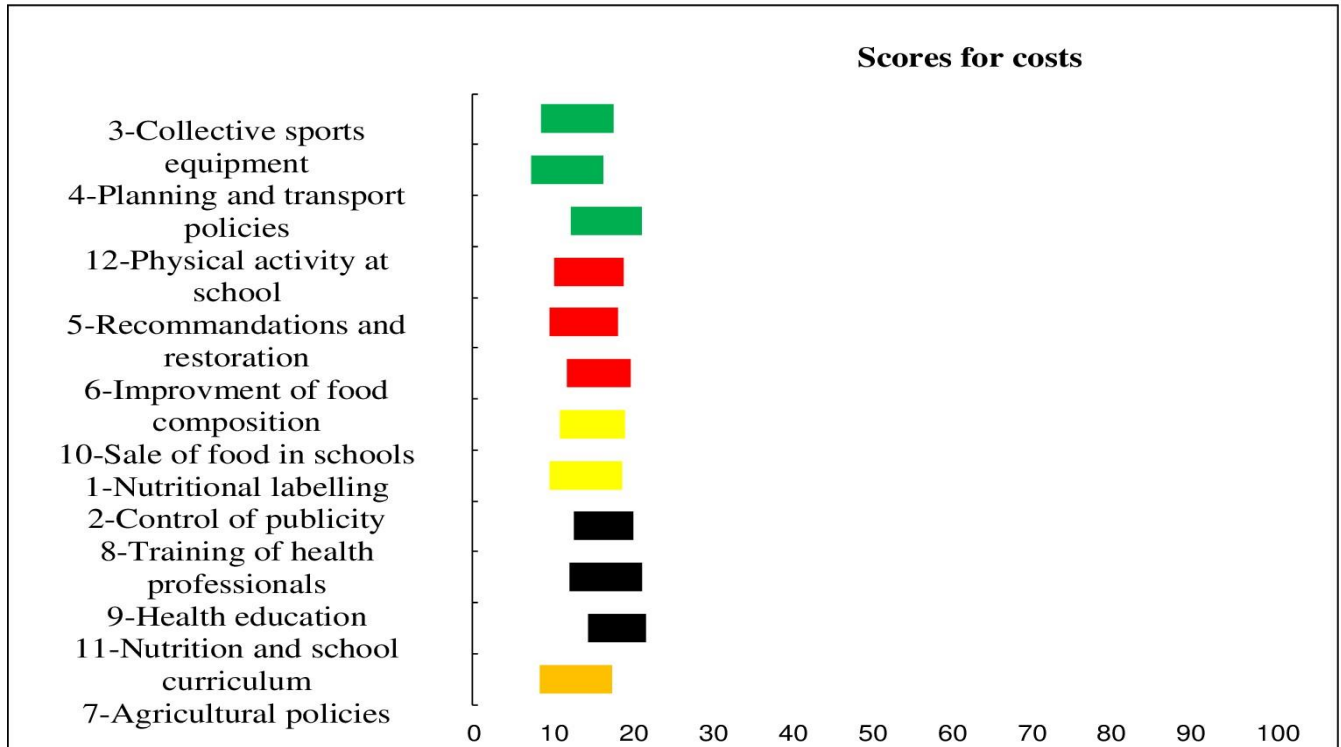
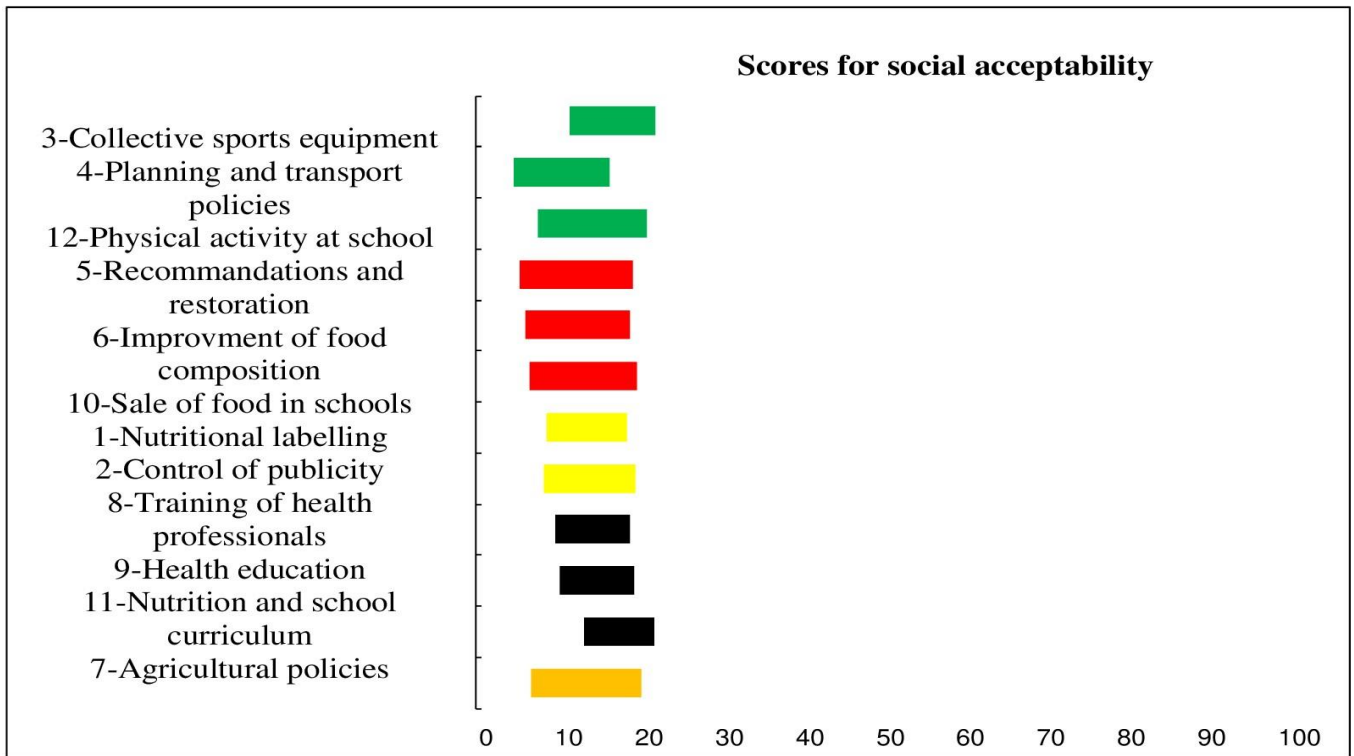
**Table 1:** Policy options

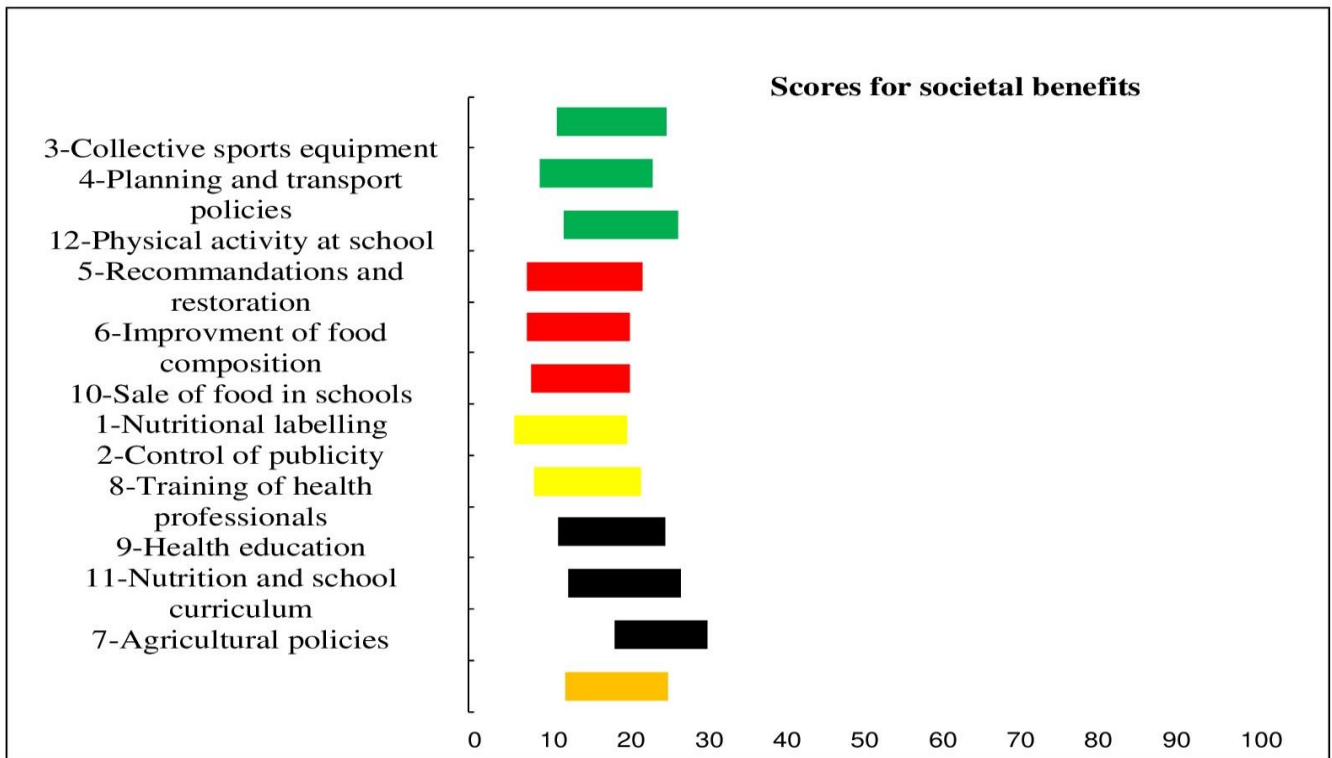
Option cluster	Policy options
1-Actions to promote exercise and physical activity	-improve the availability, access and use of community sports facilities. -promote physical activity through changes in planning and transportation policies. -strengthen the integration of physical activity in schools.
2- Modifying the supply of, and demand for, foodstuffs,	-develop nutritional standards and recommendations, and encourage food service professionals to provide healthier menus. -encourage improvement in food composition. -control the supply and sale of snacks, sweets and sugary drinks in schools.
3-Measures concerning food and nutritional information	-provide nutrition labelling for all processed and packaged foods, as proposed in the codex recommendations. -control food and beverage advertising and promotional messages, particularly those targeting children.
4-Measures related to education	-improve training of health professionals in obesity prevention, diagnosis and counseling for those at risk. -improve health education to enable people to make informed choices. -strengthen and revise food and nutrition topics in the school curriculum.
5-Institutional reforms	-reform agricultural policies to make them consistent with prevention and health promotion policies.



**Figure 1:** range of weights by criteria group for all participants.







Physical activity	25
Education	25
Information	18
Institutional reforms	18
Food supply and demand	20

Figures 2: option scores for criteria in each category.

**Table 2:** Number of criteria used according to the categories of criteria and actors.

Categories of criteria	A. Government sector (n=13)	B. Agri food (n=5)	C. Health professionals (n=5)	D. Education sector (n=4)	E. Communications sector, media (n=4)	F. ONG Associations (n=4)	G. Multilateral partners (n=2)	All participants (n=37)
<b>I – Efficacy in addressing obesity</b>	2	2	2	-	2	3	2	<b>13</b>
<b>II -Extra Health benefits</b>	4	-	1	-	-	-	-	<b>5</b>
<b>III- Feasibility</b>	27	1	10	5	4	7	4	<b>58</b>
<b>IV- Social acceptability</b>	8	1	2	1	2	3	1	<b>18</b>
<b>V-Costs</b>	13	10	6	6	3	3	3	<b>44</b>
<b>VI- Societal benefits</b>	10	3	5	3	4	1	4	<b>30</b>
<b>All criteria</b>	<b>64</b>	<b>17</b>	<b>26</b>	<b>15</b>	<b>15</b>	<b>17</b>	<b>14</b>	<b>168</b>

Similarly, the results of a study conducted in Greece indicated that feasibility and efficacy are the criteria most used by interviewees to evaluate options and are more valuable than cost criteria [11]. Our results also showed that, feasibility, efficacy and societal benefits are the criteria that received the highest weights from some of the interviewees but also those with the largest ranges of weights; this reflects an important divergence of view among the participants. The evaluation of the policy options according to the criteria categories showed the following results:

- Two educational options –Public health education (9); Strengthening food and nutrition in the school curriculum (11); as well as controlling advertising (2) and strengthening physical activity in schools (12) are ranked highest in terms of efficacy. Option 4 (planning and transportation policies) was rated the least effective.

-The three educational options 8,9,11 and school physical activity (12) were considered by the interviewees as the most feasible. Changing planning and transportation policies (4), developing nutritional standards and dietary recommendations (5), and incentives to improve food composition (6) were considered the least feasible.

-Improving the availability of community sports and recreation facilities (3), strengthening food and nutrition in the school curriculum (11), and increasing physical activity in schools (12) were considered the most acceptable options by Moroccan society. Changes in planning and transportation policies (4) would be the least acceptable.

- Interviewees consider that the costs would be particularly high to change planning and transportation policies (4), reform agricultural policies (7) or improve that availability of community sports and leisure facilities (3). Two educational measures, strengthening food and nutrition in the school curriculum (11) and health education (9) and strengthening physical activity in schools (12) are considered the least costly.

- According to the interviewees, two educational measures, strengthening food and nutrition in the school curriculum (11) and health education (9) and strengthening physical activity in schools (12) would provide the most benefit to society. Options aimed at changing food supply and demand and those dealing with food and nutrition information are ranked the lowest.

A study conducted in Spain showed that the most important options are those gathered under the education

group: including food and health in school curriculum, improving the training of health professionals in obesity prevention [9]. In another sense, a study carried out in Finland on 21 interviewees showed that options such as education measures, food and nutrition information measures and actions to promote exercise and physical activity were well ranked, although policies promoting institutional reforms were poorly ranked and were not considered as solutions to obesity [10]. The results of another study in Greece stated that educational options, improvement of public facilities and some options related to food and nutritional information (food labeling and advertising) were well ranked [11]. These results are consistent with those of Szponar, who found that education measures, particularly improving health education, were of greatest importance compared to physical activity options, supply and demand modification, and information options [12].

## 5. Conclusions

Our results from the Moroccan interviewees show that several policy approaches are possible when considering future strategies to combat obesity. Feasibility, costs, and societal benefits were the three groups of criteria that were most used by all participants to evaluate policy options. The three measures dealing with education and training and strengthening physical activity education in schools were ranked highest.

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