

## The Social Psychology of Food and Body Image: Exploring New Dimensions in Public Health Policies in MENA

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### Abstract

Nutrition psychology offers much promise for addressing the large disease burden associated with mental health. In particular, body image is an important concept when assessing mental health in MENA and thus a target for intervention work. However, body image suffers from some conceptual confusion due to its multidimensional concept encompassing behavioral, perceptual, cognitive, affective, and attitudinal phenomena. The aim of this review is 1) to identify the main determinants of body image dissatisfaction and mental health related-problems in MENA region, 2) to explore innovative dimensions of public health prevention practices. A narrative literature review on body image and mental health related problems in MENA region was conducted from 2008 to 2018. Using specific search criteria through electronic databases, all related scientific research papers were identified and evaluated. Findings showed that body image dissatisfaction is linked with increased incidence of depression, low self-esteem and eating disorders. A simplistic exclusive focus on health information or medical treatment remains insufficient. It is important to explore the role of other environmental influences on body image perceptions and mental health-related behaviors. Multisectoral stakeholders should actively advocate improving mental health and lifestyles. This review suggested a comprehensive logic model of multilevel public health policies addressing all determinants of body image, perceptions and related behaviors. A multifaceted approach is crucial to avoid mental health problems related to body image dissatisfaction across the lifespan. The comprehensive logic model can be adapted to the need of all MENA countries.

**Keywords:** Nutrition Psychology; Body Image; Mental Health; Eating Disorders; Public Health Policies; MENA

### Abbreviations

BI: Body Image; BIS: Body Image Satisfaction; BID: Body Image Dissatisfaction; DALYs: Disability-Adjusted Life Years; ED: Eating Disorders; MENA: Middle East and North Africa; MHA: Mental Health Atlas; mhGAP: Mental Health Gap Action Programme; NP: Nutrition Psychology; WHO: World Health Organization.

### Introduction

*"Your body hears everything you mind says"*

Naomi Judd

It has been long established that a poor dietary behavior and unhealthy lifestyle are major causative factors in the development of chronic diseases [1-3] as well as having adverse mental, social and economic consequences [2,4]. Some studies showed that a positive change in health behavior and lifestyles has the potential

to reduce by 80% the global prevalence of chronic diseases [3,5]. Therefore, public health nutrition policies that focus on improving eating choices and patterns, and promoting healthy lifestyles must incorporate multifaceted programs and interventions that consider the complexities of human behavior and decision making [6]. Successful strategies and policies to enhance healthy lifestyles need to understand the attitudes and motives underlying consumers' food choices and perceptions of healthy lifestyles and bodies [6,7]. However, few policies examined motivation-food behavior associations using comprehensive approach and measurements tools [6,8].

The globalization of food perceptions and consumption patterns creates modern consumerism and trendy body image (BI) that is tremendously influencing people's lifestyles [9-12] and self-esteem [12,13]. For instance, consumers of today are looking for food products that satisfy their physical and emotional needs

[11,14,15], and that are strongly used and/or accepted by their social networks including peers, families, health experts and other influencers [12,16,17]. Therefore, food-related behaviors and decisions made by people are variably manipulated by a complex array of individual, demographic and environmental factors, and wider sociocultural processes and contexts [9,16-18]. Some of these food drivers and trends are specifically related to the nutrition transition in developing countries and the Middle East and North Africa (MENA) region [19]. Remarkable complicated health and economic consequences stemmed from such nutrition transition [9,20] and are associated with increasing rates of malnutrition, mental health complications (depression, eating disorders "ED", etc.), and non-communicable diseases such as diabetes type 2, cardiovascular diseases and some cancers [9,21].

Broadly, it is interesting to capture all aspects of food-decision making and to analyze the balance between constraining and enabling factors in food choices and eating patterns. Undeniably, each of these assumptions is open to several questions to understand why, what, how and who will affect what we consume and where [14,16,18,21]. For instance, and according to many studies, the extremely use of food images in media and publicity, celebrity endorsement in marketing strategies, brand placements in movies or fashion could explain emphasizing new eating behaviors and lifestyle patterns [16,20, 22,23] and help to promote a trendy, desirable and socially accepted BI [12].

Studies in MENA region often focus on particular types of food choices, eating patterns and lifestyles related to chronic diseases, rather than on food choices and decisions in general sense [24-26]. Thus, the existing studies are limited in the influences they consider and in the extent to which findings can be generalized to the entire population. There appear to be few studies that seek to present a comprehensive picture of what drives food-related attitudes, decisions and body image concerns [25,27,28]. Many of people's perceptions and decisions made in regard to food lifestyles patterns are characterized as rapid, instinctive, routinely made, and/or structured by emotions, social status, level of education, media, marketing, and other substantive concerns such as health issues, convenience and availability [12,18,29].

This paper covers a variety of issues and topics relating to nutrition psychology, physical activity, body image satisfaction (BIS) and dissatisfaction (BID), and reports mental health new dimensions in public health policies. The aim of this review is 1) to identify the main determinants of BID and mental health related-problems in MENA region, and 2) to explore innovative dimensions of public health prevention practices.

## Mental Health

Many of the makeovers in people's lifestyles and food consumption patterns discussed above are reflective of the nutrition transition, especially in MENA region, leading to a series of adverse changes in consumerism, physical activity, and physical and mental health [4,30]. It can have serious implications in terms of nutrition economics, public health outcomes and policies [4,31]. Mostly, nutrition transition and its physical and mental health consequences are central to epidemiological and demographic changeovers in countries [4,9,32].

According to the World Health Organization (WHO), "health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity". An important implication of this definition is that mental health is a fundamental part of health overall and it's more than the absence of psychological disorders or disabilities [33]. A multiple range of biological including genetics, psychological, socioeconomic and environmental factors, determines mental health [33,34]. Poor mental health is associated with physical and medical disorders, and social changes [33]. For instance, persistent body thinness pressures in media channels are recognized risks to mental health problems and unhealthy lifestyles such as eating disorders especially among adolescent girls [12,28].

Mental disorders comprise a broad range of problems, with different symptoms that are commonly characterized by some combination of abnormal beliefs, feelings, behaviors and relationships with others [33,35]. Table 1 summarizes and describes the six main mental disorders categories.

The burden of mental disorders, especially ED, continues to grow with significant impacts on health, societies and economics in all countries of the world [34-36]. For instance, depression is a very common mental disorder affecting all age groups and one of the main causes of daily life disabilities worldwide [26,33,35]. Although, there is a little difference in the prevalence of overall mental health problems between males and females, there are some gender discrepancies in the prevalence of specific disorders known as the most common ones such as depression and ED that reveal a marked females excess [35,37]. Table 2 is adopted from the WHO report "Gender in mental health research" and highlights the considerable differences between males and females in the prevalence of mental disorders throughout the lifespan [35].

Category	Description
Common mental disorders (Depression, anxiety, phobias, panic attacks, medically unexplained physical symptoms)	The most prevalent type  Depression can occur at any stage of the lifecycle but its impact can be different during certain stages
Schizophrenia	Often is a chronic disorder characterized by a marked change in behavior, and odd beliefs and hallucinations
Bipolar affective disorder	Consists of both manic and depressive episodes separated by period of normal mood
Brief psychotic disorders	Disorders that are brief in duration (up to 1 month)  Sudden in onset and associated with severe behavioral disturbance  In some cases, an organic causes such as brain infection may be responsible
Mental disorders in the childhood	Includes a variety of problems: autism, hyperactivity, depression and learning disabilities
Mental disorders in the elderly	Includes Dementia and Alzheimer: chronic or progressive deterioration in cognitive function that is commonly accompanied by deterioration of emotional control, social behavior and motivation
Substance use	Includes extreme alcohol, tobacco and drug abuse
Other disorders	Includes eating disorders and personality disorders

**Table 1:** Broad categories of severe mental disorders.

### Knowledge to Practice

Prevention programs have been shown to reduce some mental disorders (i.e. depression, ED) among children, adolescents and adults [33] but need to include and examine the age and gender dimensions to be more efficient and effective [35]. Most of these disorders can be successfully treated when cost-effective public health strategies and interventions are developed to promote, protect and restore mental health matters [33,38].

In the context of some national efforts to develop and implement effective and efficient mental health systems and policies [33,39], the WHO has evaluated evidence for mental health promotion and issued some documents/programs to support governments of countries from different levels of economic development in the goal of strengthening and promoting mental health [33,38,40-41].

For instance, Mental Health Atlas (MHA) is a WHO project that first appeared in 2001 with subsequent updates in 2005, 2011, 2014 and 2017 [40]. The aim of the MHA project is to assess mental health data from the WHO member states in order to demonstrate the mental health circumstances in these countries and if any progressive development is made in relation to mental health services, programs, laws and policies [40]. In addition, the WHO developed the mental health Gap Action Programme (mhGAP) in 2008 that aims at scaling up services for mental, neurological and substance use disorders for countries especially with low- and middle-income. Besides, the mhGAP has produced evidence-based guidelines for non-specialists to enable them to better identify, manage priorities in mental health problems, and use of a range of effective measures for prevention of different mental disorders across life-cycle stages [41].

In 2013, the WHO assembly approved the “Comprehensive Mental Health Action Plan for 2013-2020” that focuses on 4 main objectives to promote mental wellbeing including; 1) reinforce effective leadership and governance, 2) strengthen information systems, evidence and research, 3) provide integrated and comprehensive services in community-based settings, and 4) implement strategies for mental health promotion and prevention [38]. As there is no “One action fits all” each country will have to adapt the proposed Action Plan to its specific needs and national circumstances. Moreover, the implementation of this plan requires clear governmental actions, a leadership role taken by the Ministries of health, and national and international collaboration such as civil society and WHO respectively [38]. Indeed, the latest publication of MHA 2017 was remarkably significant in providing accurate information and data on the progress of countries towards the achievement of objectives and targets of the comprehensive Action Plan 2013-20 [40].

**Table 2**

Though the WHO has developed structured and systematic guidelines for nutrition [42] and public mental health policies [43], the process for priorities setting (i.e. prioritizing topics for guidelines and regulations development) didn't consider yet nutrition psychology policies as an emergent priority to promote people's health and wellbeing. This may result from lack of worldwide retrieved evidence to call for updating guidelines and recommendations in relation with this priority issue of public health in order to accommodate new and renewed high-level commitments from the governments and the WHO.

**Why Now?** The increase in mental disorders associated with unhealthy eating patterns and lifestyles behaviors among all age groups predicts ongoing public health problems in future years for many reasons but two are worth highlighting because they have been most dynamic in recent decades [12,36,43]. The first is the proliferation of "youth-obsessed cultures" where looking young is a translation of being thin. Second, the remarkable technological innovation is increasingly reaching youth who are exposed to an ever-increasing number of messages and images promoting the "thin ideal" and unhealthy lifestyle behaviors in order to reach the socially accepted body shape [34,36].

The following sections will demonstrate that such type of sociocultural environment, which has procreated multidisciplinary industries that promote dominant beauty ideals, weight loss diets, fitness trends and cosmetic surgeries, is likely to be the major factor in the emergence of nutrition psychology as a priority issue for mental public health policies development worldwide including MENA region.

### **Nutrition psychology**

Few people are aware of the relationship between nutrition and mental health disorders such as depression, while they easily understand the relationship between nutritional deficiencies and physical diseases. Nowadays, nutrition psychology (NP) a new subfield of health psychology that may be applied to numerous fields such as nutrition, psychology, marketing, food technology and labeling in order to contribute knowledge and information to psychology, health and social marketing [12,34]. However, there are 2 main areas of controversy within this new field of NP. The first is that the topic can be viewed in 2 different ways such as nutrition and food choices are affecting psychological functions, or psychological and mental conditions are influencing nutrition and overall health [44-46]. And the second controversy being the definition of what is "healthy behaviors and lifestyles" as related to nutrition and that might be relative to each individual and context. Thus, NP seeks to understand the correlation between nutritional and lifestyle behaviors, and the mental health and wellbeing [34].

Current research in psychoneuroimmunology showed the possibility of communication pathways that can provide a clearer un-

derstanding of the association between nutrition (food and physical activity), central nervous system and the immune system, thereby affecting individuals' mental health status. These findings may lead to greater acceptance of nutrition psychology value among health practitioners and policy makers addressing and promoting public health [34,44].

The following sub-sections take a close look at the internal psychological effects of why people do what they do, and how they are shaped and influenced by outside stimuli. An explicit explanation of the link between food, physical activity, BI, and mental and other health trends is also presented to clarify how NP today offers much promise for addressing the large disease burden associated with mental health.

### **Food, physical activity and psychology**

Eating patterns and active lifestyles that influence people's energy intake and energy expenditure is per se affected by individual and environmental factors [47-49]. These factors are attitudes, knowledge, palatability, food availability and accessibility, emotional state and mood, experiences of the individuals, and the social and cultural environment in which the behaviors occur [47-48,50].

The mood factor and the state of mental health explicit matters related to general alertness, relaxation and stress management [49,51]. Previous studies showed that mood and stress play a major role in determining not only the quantity of consumed food, but also food quality and choices [34,44,49]. For instance, people with low levels of education and because of their lack of alternative resources, may use excessive eating as a way to regulate their moods and maintain their emotional wellbeing [46,49]. Another angle of viewing food and mood, particularly depression, involves elderly people who are vulnerable to unintentional weight loss or anorexia of aging- a factor that is often associated to increase morbidity and premature death [44]. Scientific literature also demonstrated that poorer psychological wellbeing can be viewed as both an antecedent and a consequence of problematic video-gaming among youth associated with low levels of physical activity [45].

Since eating patterns and lifestyle behaviors are modifiable determinants of chronic diseases [48] and mental health disorders [34,44,48], their alteration can result in reduction of nutrition-related diseases. Therefore, an improved diet, increased physical activity and weight loss can be comparable, or sometime superior, to medical interventions in preventing or delaying the onset of chronic diseases and mental disorders in high- risk populations [34,44]. In order to successfully design, implement and evaluate public health nutrition policies, decision- and policy- makers require reliable data relating to determinants of NP-related health risks, such as knowledge, perceptions and factors influencing changes in dietary behaviors [6,34].



Nutritional knowledge is one of the main factors influencing individuals' behavior toward a balanced diet, healthy lifestyle, and overall wellbeing [48]. Today, consumers' nutritional knowledge is mainly earned from media, specifically digitalized social media [52,53]. The traditional view of marketing and advertising tends to be one-way communication environment where consumers are passive recipients of nutrition advertised messages and information [52,53]. Because of the interactive aspect of digital media, consumers nowadays are increasingly engaged and in control over the digital media use process [53]. For instance, people can follow any personally perceived interesting advertising, and avoid or disregard any unwanted information. Therefore, media experts, marketers and advertisers are shifting toward new methods relying on the consumers'- engagement and -driven means of getting their information across such as, marketing in social media platforms and interactive online advertisements [12,22]. These approaches involve consumers in generating content, and in sharing and co-creating of information and messages in a set of highly networked digital media context [22,53].

Websites' pages, social media platforms of communication, games, videos, video-games, audio and images in digital format are all examples of digital media contexts, in which the networked nature of these contexts enable consumers, whenever and wherever they are, to move from one item of the media to the next, based on their interests and needs [22,53]. This allows consumers to move directly from being receptors of communicated information or message to adopters of concepts, ideas, and purchasers of related goods or services [22,54].

Thus, it's crucial to consider the impact of the emergent consumer-driven nature of the digitalized media context on population' nutritional information and perceptions of trendy dietary patterns, lifestyles and ideal BI [11,22,54]. This imposes new conceptual approaches to assess the credibility of nutritional information advertised in digital media contexts and their impact on consumers' lifestyles and wellbeing [22,55]. From another point of view, digitalized media contexts could serve as important platforms for: 1) interactive nutrition education, 2) improving BI perceptions especially among adolescents, 3) supporting mental health care programs, and 4) exploring new opportunities for NP services that extend beyond traditional clinical settings [22,55-57].

### **Body image**

By definition, BI is the mental image perceived by individuals of their body sizes and shapes, as well as their feelings about these characteristics and how they appear to others [13,58-59]. BI perceptions and concerns have many social and health implications especially among females and adolescents who perceived themselves "too thin" or "too fat" [58,60]. Further, discrepancies between actual body size or shape and preferred body ideals is

termed BID and is associated to low levels of body appreciation among both gender [13,58,59]. BID is a significant multifaceted concept that has been linked with increased occurrence of low self-esteem, negative mood, depression and increase risk of ED [58,61-63]. Indeed, the consequences and correlates of negative body perception may help explain anabolic steroid abuse among university males [58], accepting of cosmetic surgeries among females [13], and eating disorder behaviors among athletic females [60].

Food, fashion and movies industries use consumer-media-engagement concept that is detailed in previous sections of this manuscript to market their brands and ideas [22,64-65]. These industries are using digital media engagement concept to make their ideas, brands or products have personal relevance and integral roles in the consumers' life [22,64,66,67]. In response, these ideas and brands will be experienced motivationally by consumers' and therefore, strengthen emotional, psychological and/or physical people' interactions with such ideas or brands [22,66].

According to some researchers [12,14,68,69], media and social pressures represent the most important factors regarding having the ideal BI and the desire to be thin as means to decrease social anxiety and the stigma attached to "not being fit enough".

...I was 8 or 9. My doctor said, "you should lose weight. Don't you want to go to your high school prom?" He said that boys don't go out with fat girls...My mother was there when he said this. She had brought me to him to help to lose weight...they put me on pills. They just made me sleep...that was when I started to hide the food... (Sharon) [70],

Many sociocultural factors are associated with BID and eating disorders such as identification to the body image of celebrities, models, and athletes [27,36,60,71]. These disorders are heterogeneous and often require multimodality interventions and treatments and invite the need for a comprehensive framework that both recognizes and anticipates the multidimensionality and comorbidity of such NP disorders [57,59,72].

There is evidence suggesting that changing people' perception of physical changes to the body is more important than actual physical changes in improving the body image satisfaction (BIS) [61,73]. Given the importance of perceived BI to wellbeing, and physical and mental health, research interests in investigating the efficacy of physical activity-based interventions on BI on the one hand [34,62], and the importance of BI in athlete identities on the other hand are increasing worldwide [61].

The following section will exhibit the importance of BI concept when assessing mental health in MENA and thus a target for intervention work. However, BI suffers from some conceptual confusion

due to its multidimensional concept encompassing behavioral, perceptual, cognitive, affective, and attitudinal phenomena.

### The social psychology of food and body image in MENA

How does MENA compare in nutrition and mental disorders? The world development indicator database showed that MENA region has the lowest level of undernourishment among developing countries region. However, in the last 2 decades a disturbing trend of nutrition transition is also at work leading to a deterioration of the absolute nutritional status in MENA countries [74,75].

Until recently, ED prevalence was very low in Arabic countries due to cultural norms placing beauty value on plumpness [59,76]. Today, the WHO considered ED as one of the most prevalent mental disorders among all ages especially among adolescent females, and recommended that it should be considered a public health priority [35,40] especially in cultures in transition such as MENA region [36,77]. However, little is done in the MENA region to assess, prevent and treat the ED' individual and environmental predisposing factors [27,34,78]. Some studies showed that, based on mortality and disability data, weight problems and mental health concerns account for considerable ill-health across MENA region [26,78,79].

Leadership is recognized to influence health promotion, priority setting, partnership and alliances, intersectoral collaboration, stakeholders' mobilization, and strategic policies development, implementation and evaluation [6,38]. Strong and effective leadership in NP is essential to improve public mental health, both ideologically and operationally [34]. While there is immense literature describing the characteristics of effective leadership in many sectors, scientific literature examining public health leadership and its effectiveness on societies was limited [80]. Much of what was available includes some grey literature, opinion pieces and commentaries to develop and support public health leadership and to take relative actions [38,80]. There was even less writing on public mental health leadership to address NP attributes specifically, and in MENA region in particular [74].

Therefore, there is a need to examine and highlight key concepts from the existing literature in MENA region that can inform public health actions on NP and mental health, and that could be transferable to a theoretical logic model of joined policies adapted to each context in the region. Therefore, the following sections will present a brief review of NP and public mental health disorders studies done in MENA region.

#### Literature search strategy

A narrative literature review on body image and mental health related problems in MENA region was conducted to retrieve peer-reviewed scientific and medical journal articles, and books. Elec-

tronic databases (PubMed, MEDLINE, Google Scholar, Cochrane database) were searched covering the period from January 2008 to December 2018, utilizing a combination of the following MESH and entry key terms including mental health, BI, ED, NP, public health, MENA region, Arabic countries. The literature search was conducted in accordance with the guidelines of narrative review that stipulates the review components (i.e. multiple data sources) associated with a high-sensitivity search methodology [81]. In addition, references of published studies were searched manually for pertinent articles or annual statistics and data.

Eligible studies included only empirical research papers that were relevant to NP and mental disorders in MENA region. No language restrictions were applied. Exclusion criteria were mental health articles not related to nutrition, and duplicated publications or sub-studies of included articles.

Data extraction and synthesis entailed one investigator, the author, identifying, reviewing, and evaluating the titles, abstracts and full articles of retrieved manuscripts. Certainly, abstracts that did not provide enough information about whether the publication contained suitable and relevant information about the BI, NP and mental health status of the MENA region were retrieved for full text evaluation.

This paper attempts to provide a brief summary about the social psychology of food and public mental health in MENA region with special attention to BI determinants, etiology, prognostic, and treatment implications along with a concise review of available actions for concurrent conditions. The author put forth a comprehensive integrative logic model of combined policies for prevention of BID and its disparate health behaviors consequences to be further tested and informed by future research studies.

#### Results

The total number of documents retrieved for global mental health research activity after searching the key words was 1530 articles. Of these articles, 521 articles represented the related research productivity in the Arabic countries and only 40 studies were retrieved between 2008 and 2018. Lebanon was the leading country in NP and public mental health research activity with 11 publications, followed by Egypt (6 publications) and Iran (5 publications). The following illustration summarizes the results of the search engines.

Similar to most parts of the world, this review identifies that the research and resources devoted to nutrition psychology and its mental health problems in MENA region are grossly inadequate [25,35,74]. The few studies that have been conducted in MENA region found a prevalence of psychiatric disorders, especially among youth, that is comparable to worldwide data [63,82,83]. Mental and

**Figure 2**

behavioral disorders are the leading causes of disability-adjusted life years (DALYs) among youth aged 15 to 19 year across all income groups, and DALYs lost to depression and anxiety is higher among girls [83].

Available studies in MENA countries have been limited so far to study specific mental disorders (BID, ED, depression, etc.) among specific age group such as children or adolescent [82] in specific settings (i.e. schools, universities) [28,63,82]. The response to the growing burden of mental disorders in this region has fallen short as evident by insufficient public mental health infrastructure, strategies and services [79,84]. Development and implementation of adequate public mental health approaches and policies targeting youth are particularly suboptimal in the region [28,79].

People with higher knowledge and awareness about health and nutrition are more likely to be fit or intend to change their behavior [85-87]. Certainly, the farther the levels of individuals' health literacy and mothers' education the better is the nutritional and mental behaviors of all family members, in particular of youth [30,86]. Therefore, a focus on tailored nutrition and health education interventions may benefit the MENA populations [30,74], along the exploration of strategies adopting a component challenging social structures and cultural norms [6,86] such as exploring opportunities to support NP education using digitalized media contexts [34,55-56,86]. A simplistic exclusive focus on health information or medical treatment remains insufficient [34,82,86,88,89]. It is important to explore the role of other environmental influences on BI perceptions and mental health-related behaviors [22,34,83].

The concept of BI and complications of its misperceptions, especially among youth, has been noted recently as a distressing public health issue in MENA region [28,82,83]. Findings showed that BID is linked with increased incidence of depression, low self-esteem and eating disorders [82,83]. Moreover, life satisfaction and self-rated health, which are known as independent morbidity and mortality factors, are negatively associated with BID [82,83]. Reviewed studies helped to understand the determinants of BID

required to take future actions aiming to improve wellbeing, as well as informing responsible food and ideal BI marketing strategies. Mostly, individuals demonstrated BID in adolescence stage in which physical changes associated with puberty exhibit negative eating patterns associated with dissatisfaction feeling [28,90]. Besides, sociocultural factors such as cultures-in-transition and acculturation, mass and digitalized media messages, food and fashion marketing images, as well as social (peers and family) pressures towards "thinness as standard of beauty" were associated with extremely preoccupation of individuals with their BI [28,51,82,83]. This review provided insights on BI determinants most appropriately interpreted in public health context where small combined and long-term changes can have large effects on BI perceptions and related behaviors.

Consistent with cultures-in-transition, results about ED showed that unhealthy dietary behaviors are on the rise in the Arab Middle Eastern countries including, Lebanon, United Arab Emirates, Oman, Kuwait, Jordan and Iran [28,46,83,91,92]. For instance, we can found fat phobia problems among Omani youth leading to excessive unhealthy dieting. Moreover, the treasured ideal of slimness has percolated through all levels of Arab Societies via the media and the expanding consumer market [34,83]. Popular and universal fashion and beauty brands have infiltrated Arab Countries bringing with them western images of beauty standards and the pervasive "thin" ideal. In 4 countries (Libya, Jordan, Syria and Palestine) ED were twice as common among females as males [33]. However, it is important to highlight that a greater number of males appear to report eating, weight and body shape concerns compared to western males (i.e. the first case of anorexia nervosa documented in Iraq was diagnosed in a 14 years old adolescent boy) [46]. And the risk of disordered eating among obese adolescents is 2 to 3 times higher than that of non-obese adolescents [89]. Such results about ED in MENA region can be termed a "culture change syndrome" [75]. These findings demonstrated the importance of situating ED of people in social and cultural contexts is very helpful, whilst they also indicate the difficulties and challenges of approaching ED within sociocultural factors rather than individual factors [69,83]. Local eating disorders prevention strategies should address the needs of both gender and consider potential depressive co-morbidity conditions at early ages [28,63,93].

The major BI determinants and public health challenges posed by individual (i.e. beliefs, family context, culture, etc.), lifestyles, occupational, and environmental factors associated with the development of unhealthy behaviors and mental disorders are not isolated to the MENA region; rather, they form part of universal health matters [44,83,88,91]. As such, these health problems require national partnerships, international collaboration and population-based public health actions to deal with the existing nutrition psychology priorities and to prevent the increasing outbreaks of public mental health disorders [6,38,88].

In addition, this based-evidence review supports the development of consumer focused mental health policy initiative directed at promoting healthy eating behaviors and lifestyles and decreasing BID among people living in the MENA region [73]. Moreover, findings highlighted the solutions and treatments gap, which provides further evidence for mental health advocacy, trans-disciplinary researches and multi-disciplinary policies focusing on NP and healthy lifestyle behaviors, and access to primary care and information services, respectively [30,79,88]. For instance, it is crucial to establish a routine psychological screening tool as an urgent step in bridging the prevention or treatment gaps of public mental disorders in the MENA populations [48,93].

This review has some limitations. Most MENA countries have weak health information systems, thus it lacks of data for some countries and the quality of data for many was challenging [24,25,63]. Besides, each country of the MENA region has a unique set of sociocultural, historical, geopolitical and economic characteristics that determines its health beliefs and systems [30,93,94]. Therefore, simple generalizations of conclusions cannot be drawn and are likely to be misleading. Furthermore, enormous cultural and beliefs disparities exist in countries and between countries of the MENA region, thus a double burden from the BID risk factor might exist in a country such as anorexia and obesity problems [82,88,89]. Finally, few attempts are made to explore how gender factors interact to influence certain risk factors, help-seeking behavior and the impact of nutrition psychology and mental health disorders [63,88].

The strength of this paper is being the first to review and report NP, BI determinants and mental disorders in the MENA region from 2008 to 2018. Additionally and similar to how governmental parties use financial data resources to monitor economic trends and make necessary adjustments to ensure sustained development, decision-makers in the MENA region can use our results to inform policy-makers in food, health, education, marketing and entertainments industries to promote wellbeing and public mental health.

Following these results, the author proposed in the next section new dimensions of public health policies based on the identified BI determinants in relation to the current NP priorities in MENA region, in order to scaling up overall health promotion efforts.

### **Nutrition psychology: new dimensions in public health policies**

It has been acknowledged that programs, interventions and policies interact with contexts [6,32]. The nature of this interactivity and how it defines any activity in NP has not been adequately addressed till now [77]. Studies showed that using multidisciplinary policies is likely to be more effective if the governing body designs an overall strategic approach embedded in planning and

development, rather than taking ad hoc approaches to specific issues [6,32].

To our knowledge there is no previous attempt to develop nutrition psychology- related policies neither to interconnect these multidisciplinary policies. Based on the findings and considering the grand challenges related to food, physical activity, psychology and health, this review suggests a comprehensive logic model of multilevel public health policies addressing BI determinants (Figure 3). This model illustrates the most comprehensive sociotechnical path for meeting the grand challenges in NP by setting focus on BI drivers and on priority areas for appropriate policies in several industries such as food, media, fashion and movies industries. As illustrated, individual (knowledge, beliefs, values), interpersonal (family pressure, peer pressure), community (culture, social structure) and public policy factors (laws, multisectoral policies) interact constantly on people's perceptions of the ideal, trendy and socially accepted BI.

**Figure 3**

Therefore, the proposed comprehensive logic model is innovative in its design, components and holistic approach. It shows how the governing bodies are in a key position to take an overview on BI determinants, involve and control the concerned industries, set priorities and monitor regulations and strategic developments. Besides, it helps the multidisciplinary key stakeholders to take strategic ownerships and embed sociocultural- based policies in their businesses aims and objectives, and in their development and social responsibilities plans. Such contextual- based policies require micro-processes to build network of alliances with researches, health experts, public health nutritionists, industrials, model agencies, marketers, educational stakeholders to efficiently interpret how programs' adaptation to context is inevitable component of policy implementation and evaluation [6,32].



Contextually embedded policies in food, fashion, media and movies industries require an integration of efforts involved in building BIS among individuals. Food and entertainment industries and public health have traditionally been separate functions. The proposed contextually embedded logic model in this paper does not, however, distinguish between these functions. Rather, effort (multilevel policies in each industry) and effect (BIS and positive mental health) are integrated in the same conceptual logic model. Moreover, the innovative and comprehensive logic model could be coherent with regard to social psychology of food theme in MENA region in the modern digitalized era.

The inclusion and mainstreaming of BID determinants more explicitly within other priority health programs and partnerships, as well as within other relevant policy and laws sectors are fundamental means to cover the multidimensional enabling factors of BID and ED and promote public mental health. For instance, policies, laws and regulations in food, media, fashion and movies industries should be developed, reinforced, up dated and implemented including codes and standards of practice to monitor circulated unhealthy messages (media, movies), products (food), and BI sizes (fashion, movies). To enhance BIS, a formalized national structure is needed for motivation and engagement of multidisciplinary key stakeholders, including people with mental disorders, family members and peers in the development and implementation of policies, laws and services.

Finally, solutions to BID and NP problems require a joint mobilization of sociocultural (family, peers, communities), economic (food/media/fashion/movies industries) and political forces as well as substantial development and/or changes in governmental policies related to education, nutrition, health and communication in each country. Indeed, the proposed model provides impetus for further research and practical work in the NP area.

## Implications

### Research implication

To our knowledge, this paper is the first review on NP and BI determinants in MENA region suggesting an innovative robust theoretical model showing a new map road for multidomain researches and interventions in public mental health. Food, fashion, media and movies are powerful universal industries; therefore future researches should include larger and more comprehensive approaches to understand the inter-relations between their impact on BID and its implication on health. Accordingly, there is a need for research on how to align marketing strategies used by the food and entertainment industries with consumer's value-creating process and to explore whether how, why and when this leads to BID and mental disorders. Future research avenues are, thus, concerned with the empirical mapping of consumers' values and perceptions of archetype BI and healthy lifestyle patterns within and

across MENA countries to design a contextually embedded public health policy in each setting. With such a cross-sectional studies, it is not possible to establish significant causalities and reach general conclusions. Therefore, detailed, comprehensive and longitudinal analysis with efforts to track measures of all BI and NP underlying factors will allow for more definitive conclusions [95].

### Practical implication

Findings on the psychology of food and BID also have strategies and policies implications. Governmental concerned parties need to develop new regulations on marketing to limit unhealthy body sizes promotion in media, fashion and movies. It is crucial to raise questions about the adequacy of diffused extremely thin or photo-shopped BI in mass media channels and digitalized media contexts. Besides, industries must self-regulate their marketing strategies such as promoting healthier products choices according to the food industry-developed standards or by including healthy lifestyle messages on their advertisements, screens, clothes and/or labels, etc.

Given the significant health implications of unhealthy dietary behaviors due to BID, especially among adolescents, public health nutritionists and experts need to develop well-controlled studies and intervention programs to prepare youth for the pervasive advertising and marketing techniques. For instance, teachers, health experts and athletes can offer comments and explanations concerning the persuasive nature of BI placement in our daily life.

The proposed logic model can guide decision- and policy- makers at national and regional levels in the development and implementation of strategies and policies that promote healthy dietary and lifestyle behaviors, and psychological patterns in all communities through regulatory changes in education settings and surrounded environments.

## Conclusion

Policies intent on improving lifestyle patterns and public health need to pay attention to the role of NP as a key driver in food choice, dietary behavior and BI perception. A multifaceted approach is crucial to avoid mental health problems related to BID across the lifespan. The comprehensive logic model suggested in this study can be adapted to the need of all MENA countries.

## Conflict of Interest

No financial interest or any conflict of interest exists.

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