A Critique of Proposed Strategies for Tackling Female Obesity in Egypt

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ABSTRACT
Background: obesity is a huge health problem in Egypt. Its prevalence is the double among Egyptian females as compared to males. It is estimated that 75% of females over the age of thirty are overweight or obese. However, 95% of Egyptian females are not taking any measures to control their weight; additionally there is no national program to address the problem. **Methods**: following specific appraisal criteria, this research article provides a critical appraisal of strategies that could help in addressing the problem of obesity among females. This article includes an appraisal of interventions of promoting healthy lifestyle changes; healthy diet and physical activity. It also provides an appraisal of using social media, primary healthcare clinics, and pharmacies as delivery strategies of the proposed interventions. **Findings:** the research article reveals the feasibility of the proposed strategies based on the criteria of effectiveness, cost-effectiveness, organizational feasibility, and gender appropriateness.
Keywords: female obesity, interventions, delivery strategies

INTRODUCTION

During the last 25 years, Egypt underwent a process of epidemiologic transition with a remarkable increase of non-communicable diseases [(1)], leading to 60% prevalence of obesity and overweight among Egyptians [(2)]. A particular issue in Egypt is that prevalence of obesity is more than double among females as compared to males [(3-5)].

It is estimated that 75% of Egyptian females, over the age of 30, are overweight or obese [(6)]. Egyptian adult females' obesity (BMI ≥30 kg/m²) and severe obesity (BMI ≥35 kg/m²) rose from the twelfth and the tenth highest in the world in 1975 to the seventh and the sixth highest in 2014 respectively [(7)]. Diet-related chronic diseases have increased in parallel with obesity, for instance, cardiovascular diseases' females annual mortality rose from 5% to 39%, from 1961 to 1985 [(8)]. Moreover, 95% of Egyptian females are not taking any measures to change their weight [(9)].

Management of obesity is one of the main approaches for achieving United Nations' third sustainable development goal, which aims to ensure healthy lives for all at all ages [(10)], and obesity tops the World Health Organization's public health agenda as the major preventable risk factor for many non-communicable diseases [(11)]. However, based on the author's knowledge and after searching key health databases; PubMed, Global health, Medline, Popline, and Web of science databases, there is no national program to tackle adult females' obesity in Egypt. Therefore, this research article provides an appraisal of interventions and

delivery strategies within the remit of Egyptian Ministry of Health to tackle obesity in Egypt's context.

METHODOLOGY

This research article is based on secondary data. It provides an appraisal of proposed interventions, and delivery strategies. The capacity of Egyptian Ministry of Health and its Department of Preventive Medicine was considered in choosing these strategies.

Potential strategies should be judged based on evidence to determine their level of potential success [(12)], and analysing strategies, following specific criteria, helps to avoid making false assumptions or poor decisions [(13)]. Therefore, the proposed strategies were appraised by following four appraisal criteria. These criteria are defined according to Walley and Wright [(13)], Brown [(14)], and Swinburn *et al*. [(12)].

Effectiveness: The degree to which an intervention can lead to desired outcomes [(12,14)]. In this context, it is the effectiveness of an intervention in tackling obesity.

Cost-effectiveness: The balance between financial costs of an intervention and its ability to achieve required effects [(14)].

Organizational feasibility: The ability to implement an intervention with the existing structure [(13)]. The structure includes the existing resources of facilities, and manpower.

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Gender appropriateness: The degree to which an intervention is suitable, accepted, and effective among targeted gender with respect to the cultural, and expectation contexts [13].

DISCUSSION

Intervention strategies

Unhealthy food and low physical exercise are the most modifiable factors that cause obesity. The combination of physical activity (PA) and healthy diet (HD) is very effective in obesity prevention [15]. Lifestyle changing interventions, promoting healthy diet and physical activity, are not only preventive measures, but are also the mainstay of all obesity treatment programs [16]. Therefore, this research article focuses on interventions that aim to promote healthy lifestyle changes by delivering health education messages about healthy diet and physical activity.

Physical activity

PA is a highly recommended intervention for effective prevention and treatment of obesity [17,18]. Studies that evaluate interventions promoting PA, reveal their effectiveness in increasing people's awareness of the importance of PA, people's intention to become physically active, and people's PA amount and duration, in addition to number of days of their participation in exercises [19-25]. Furthermore, only walking 6–7 miles/week (~30 min/day) will be effective, if the goal of exercise is prevention of weight gain [26]. Therefore, promoting low-intensity PA such as walking which can be easily incorporated into daily activities is recommended [15]. Additionally, PA is effective in reducing the visceral fat that is most strongly associated with health complications [16]. Moreover, not only does PA increase energy expenditure during exercise itself, but it also consumes energy during post-exercise recovery period [27]. Studies that evaluate cost-effectiveness of interventions promoting PA reveal their well-accepted costs considering the gained health benefits as they are cost-effective in comparison to other preventive interventions [28-32]. Furthermore, physical inactivity is an avoidable factor that causes huge financial burden to healthcare systems. Physically active people have significantly lower medical costs than physically inactive people [33]. Additionally, costs of preparing for PA can be adapted to accommodate each country's affordability [18]. PA is a cost-effective intervention for instance in USA it was found that if only 10% of adults participate in walking programs, the country would save $5.6 billion [34].

Despite the huge urbanization process in Egypt, there are still areas appropriate for PA [35]. Moreover, more places for PA could be secured through a collaboration between different sectors for example Egypt has thousands of schools [36], and each of them has a yard that could be used after working hours and over the weekends. Furthermore, there is an initiative from Egypt's president to encourage cycling [37]. Therefore, the support for implementing interventions promoting cycling could be secured. For example some roadways could be closed to motorized vehicles during weekends to promote cycling, which was a successful intervention in Colombia [20].

Furthermore, developing a national PA guideline is recommended for promotion of PA [18]. Egypt has institutions that can develop these guidelines such as Alexandria's High Institute of Public Health, and Ministry of Youth and Sports [38,39]. Additionally, moderate exercises are very effective in obesity prevention [16], and Egyptians already perform moderate to vigorous PA through transport, occupational and domestic activities [18]. Therefore, these kind of activities could be easily encouraged and promoted.

PA has great health benefits for females, especially when the local context is considered, as many females in low middle income countries are already physically exhausted by other forms of tasks [40]. Additionally, the great success of the project of establishing a "female only" sports' facility, in the most conservative part of Egypt, governorate of Qena, reveals the gender appropriateness of this intervention when local context is considered [41]. Moreover, studies reveal the effectiveness of PA promoting interventions, amongst females, in increasing PA and decreasing body fat [42,43].

Healthy diet

HD is very effective in both prevention and treatment of obesity [15,44-46]. For example 400g of fruit and vegetables per day is recommended for prevention of obesity [47]. Moreover, simple lifestyle changes could have major impact on obesity prevention such as eating breakfast, eating slowly, and eating at home [44]. Furthermore, it was previously believed that

avoiding high-fat food prevents obesity, however, it's now thought that small amounts of high-fat foods as an infrequent treat is well-accepted [44,46].

Furthermore, studies that evaluate interventions promoting HD, reveal their effectiveness in improving people's awareness of the importance of HD, their overall eating behaviors, their self-efficacy of vegetable preparation and consumption, and their daily fruit consumption, in addition to reduction of their intake of unhealthy high-fat food such as French fries [48-52]. For example a health promotion program in Mauritius aimed to promote replacing cooking oil with soya bean oil has decreased the consumption of saturated fat by 3.5% [20].

Some types of fruits are expensive in Egypt, however most vegetables and some fruits are of very low costs. For example a kilogram of tomatoes costs 6 to 45 British Pence (P), a kilogram of orange costs 36P, a kilogram of beans costs 50P, and one Lettuce costs 20P. Therefore, the recommended daily 400g of fruit and vegetables could cost as little as 15P [53-55]. Furthermore, Cost-benefit evaluation studies reveal the cost-effectiveness of many interventions that aim for HD promotion [56-62].

Egypt has specialized institutions in the field of nutrition that can develop the required health education messages that adapt its local context, such as the National Nutrition Institute, and Alexandria's High Institute of Public Health [6,38]. Moreover, Egypt has one of the oldest agricultural civilizations with a predominantly rural population [63]. The fruit-planted area has increased over the years [64]. There are variety of fruit and vegetable in Egypt with planted areas represent 15% of the total 14 million feddans of crop production [65]. Moreover, Egypt exports both fruits and vegetables [66].

Furthermore, the current Egyptian government is endorsing a plan of subsidy cancelation, and replacing it with cash support for people with limited income and has already cut huge amounts of oil subsidy [67]. Therefore, political support could be obtained to do the same with subsidised sugar, food oil, and bread *"Balady",* which could give the people more opportunities to avoid this high-caloric food.

Generally, HD promoting interventions amongst females are effective in improving eating patterns and quality of health [68]. Moreover, in Egypt's local context, females are usually more responsible for the type of food the family consumes.

Delivery strategies

Some delivery strategies that promote PA and HD could be very expensive and out of the capacity of the Egyptian Ministry of Health. Therefore, this research article suggests using social media, and the already existing health facilities such as primary healthcare clinics and pharmacies as delivery strategies. These strategies could be suitable for the Egyptian context based on their effectiveness, and feasibility.

Social media

The field of internet-based public health interventions is growing and using social media for health promotion and preventive medicine is promising [69-73]. Online social networks such as Facebook pages are effective in influencing people's health-related thoughts and behaviours [74]. Moreover, there is a growing number of recommendations in the literature for using web-based interventions to promote PA and HD, however there is a need for further studies as it is still a relatively new field [75,76]. Furthermore, social media is the main channel for Egyptian youth to discuss their thoughts [77]. For instance, the Egyptian 25th of January revolution was started from a Facebook page [78]. Therefore, it is expected to be effective in delivering health messages to the wider population.

Social media is believed to be a potential cost-effective approach of delivering health promotion behavioural interventions [76]. Online health interventions can reach large numbers of people at a very cheap cost [79]. As compared with different delivery strategies, social media is a very cheap and affordable approach for health promotion [80]. For example the US National Cancer Institute, with a budget of few thousand dollars and a team of only six members, was able to develop a health promotion campaign [80].

Using social networks such as Facebook for health promotion would be easily feasible and sustainable. After the Egyptian revolution the government recognized the importance of social networks. Currently, there are official accounts and pages on social networks for most governmental institutions such as directorates of health affairs. Moreover, the Egyptian Ministry of Health already uses social networks to communicate with its employees. Therefore,

it will be feasible to introduce health educating messages through the health directorates' accounts [81,82].

Social media has played an important role in bringing gender issues to the attention of the wider public, and it has proved its ability to empower females [83]. Moreover, females tend to spend more time using Facebook than males [84]. Additionally, E-communications has shown effectiveness in increasing physical activity among females when implemented as a health intervention [85]. In Egypt, there are around 6 million female Facebook users and the number is growing [86]. Therefore, it's expected that social media is an appropriate delivery strategy for Egyptian females.

Primary healthcare clinics (PHCs)

According to the Alma Ata Declaration, 1978, PHCs could provide health education to prevent and control health problems [87]. It became a fact that health promotion and working towards preventing chronic conditions is a responsibility of PHCs in everyday practice [88]. Therefore, health facilities can play an important role in advising patients and families on the benefits of PA and HD [20]. Moreover, systemic reviews of randomised control studies and other studies reveal the effectiveness of interventions promoting PA and HD in PHCs [20,25,89-91].

Promoting healthy lifestyle in PHCs is a cost-effective intervention that can reach a large part of the population [20,92]. Many studies show the cost-effectiveness of promoting PA in PHCs [28,31,93,94]. Generally, there are studies proving the cost-effectiveness of PHCs-based interventions to promote healthy lifestyle changes as a whole or PA alone. However, there is scarcity of evidence about cost-effectiveness of HD promotion alone and it is expected that targeting individuals at high risk will be more cost-effective [95]. However, this research article suggests the implementation of healthy lifestyle changes as a whole.

Egypt has more than 5000 PHCs and offices in both urban and rural areas [96-98]. Although there are no nutrition or diet specialists in PHCs, there are general practitioners and health educators in each PHC even in the most remote ones [96,99]. Therefore, both human resources and places are feasible to implement the proposed interventions. Moreover, there is already an ongoing training program called the package *"Alhezma"* to train PHCs' workers on many guidelines and protocols [100,101]. Therefore, training on how to deliver healthy lifestyle advice could be integrated into this training program.

In Egypt, the vast majority of PHCs' attendees are women as PHCs provide many services that lead to repeated contact with females such as prenatal, natal and post-natal care, providing contraception methods and advice, in addition to mother and child healthcare services such as vaccination [96,102]. Moreover, Egypt has previously achieved a tremendous improvement in maternity healthcare through PHCs [103]. Additionally, PHCs in Egypt have a female dominated workforce [99], which is culturally suitable for providing advice for females. Therefore, PHCs as a delivery strategy to reach Egyptian females is considered a very appropriate one.

Pharmacies

Pharmacies could be considered as the most available and accessible primary healthcare provider [104,105]. Pharmacists, can reach 90% of the population and can provide health education to patients about healthy lifestyles in everyday practice [106,107]. Both pharmacies and population could benefit from pharmacies-based health promotion of healthy lifestyles, as it will develop the staff skills, in addition to raising the population awareness [108].

Additionally, pharmacies can play an important role in addressing obesity [109,108]. Many studies have revealed the effectiveness of pharmacies-based health promotion and the pharmacists' willingness to offer health education to people [106,110-117].

Pharmacies-based public health interventions such as health promotion of smoking cessation, hypertension controlling, and immunization advocating are considered cost-effective strategies [118-122]. Therefore, assuming that costs of promoting healthy lifestyles are as equal as other pharmacy-based interventions, it could be a cost-effective strategy considering the major consequences of obesity.

Egypt has more than sixty five thousand private pharmacies distributed all over the country, in addition to a number of governmental pharmacies. There is even a law prohibiting the establishment of a new pharmacy unless there is 100 meter distance between it and the closest one [123-125]. Moreover, three thousand private pharmacies are in partnership with the government to distribute medications to people

covered by governmental health insurance. Pharmacies have to follow some conditions to be considered for this partnership [126]. Therefore the government could include providing health promotion as a new condition for this partnership. Additionally, pharmacists tend to provide health counselling for people, as this increases the pharmacies' attendance rates and consequently increase their sales. Therefore sustainability of this intervention could be achieved.

The huge number of pharmacies in Egypt makes them accessible and available for females even in rural and remote areas. Moreover, the vast majority of pharmacies have female assistant employees to help women in buying their products without dealing with males. Moreover, pharmacy-based health promotion on contraception and emergency pills has shown effectiveness in reaching females in the UK and is expected to do the same in Egypt [110]. All of which makes this intervention expected to be appropriate in reaching females in Egypt.

CONCLUSION AND RECOMMENDATIONS

Based on the appraisal of interventions of healthy lifestyle promotion; encouraging PA and HD, in addition to the appraisal of delivery strategies; social media, primary healthcare clinics and pharmacies, these strategies are promising, effective, and feasible in Egypt's context and the authors recommend these strategies to be implemented by the Egyptian Ministry of Health to help reduce the prevalence of obesity and overweight among its female population.

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The authors declare that they have no competing interests.

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